

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **LDS 1W-314**

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

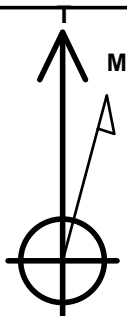
Ground Elevation: 4613.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1400464.70	3249728.59	40.429210	-104.602940	

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

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2154'FNL & 333'FEL, Sec. 1	1.0	0.0	0.0	Point
BHL 2170'FNL & 449'FEL, Sec. 2	6782.0	-10.3	-5440.0	Point



Azimuths to True North
Magnetic North: 8.34°

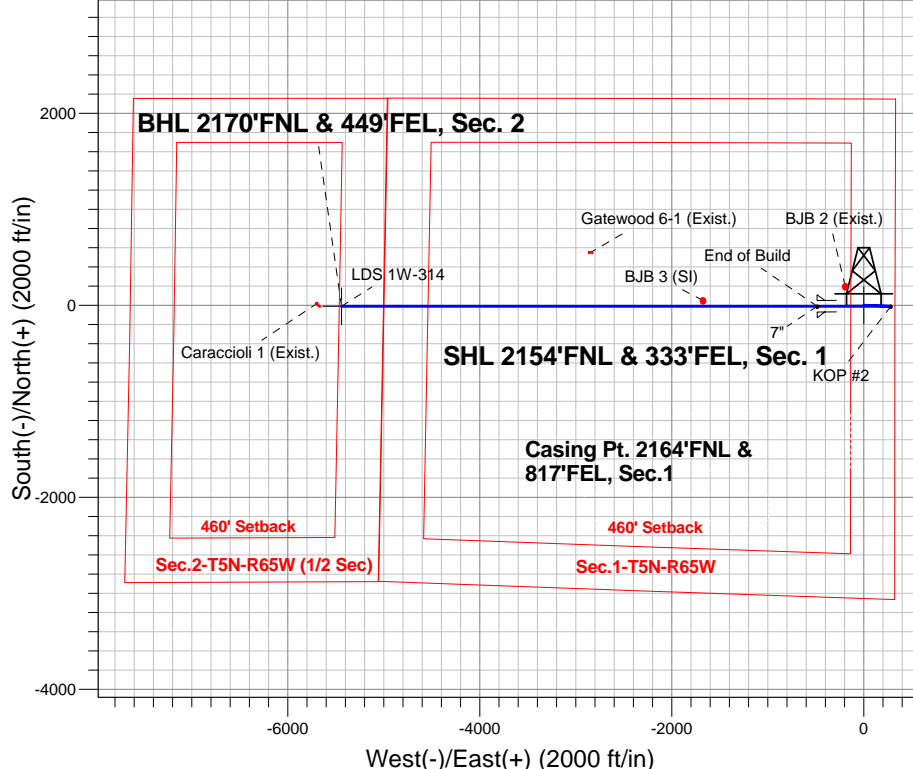
Magnetic Field
Strength: 52825.6srT
Dip Angle: 66.99°
Date: 9/4/2014
Model: IGRF2010

LDS 5N65W1W Pad Sec.1-T5N-R65W
LDS 1W-314
Plan #1 (9-4-14)

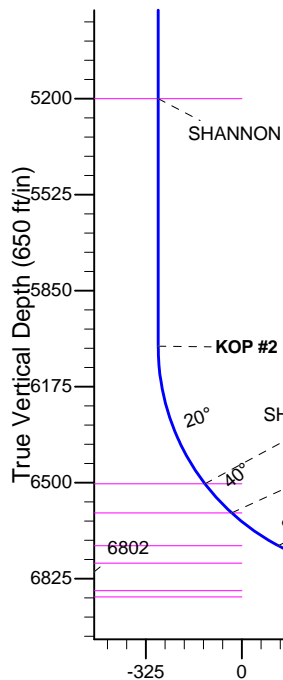
ANNOTATIONS

TVD	MD	Annotation
2000.0	2000.0	KOP #1
6037.9	6054.8	KOP #2
6801.9	7257.9	End of Build

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



ENSIGN
Directional



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2360.4	7.21	92.09	2359.5	-0.8	22.6	2.00	92.09	-22.6	
4	4256.5	7.21	92.09	4240.5	-9.5	260.4	0.00	0.00	-260.4	
5	4616.9	0.00	0.00	4600.0	-10.3	283.0	2.00	180.00	-283.0	
6	6054.8	0.00	0.00	6038.0	-10.3	283.0	0.00	0.00	-283.0	
7	7257.9	90.23	270.00	6801.9	-10.3	-484.0	7.50	270.00	484.0	
8	12213.9	90.23	270.00	6782.0	-10.3	-5440.0	0.00	0.00	5440.0	BHL 2170'FNL & 449'FEL, Sec. 2

BHL 2170'FNL & 449'FEL, Sec. 2

Vertical Section at 269.89° (650 ft/in)



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.1-T5N-R65W

LDS 5N65W1W Pad Sec.1-T5N-R65W

LDS 1W-314

Wellbore #1

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

Standard Planning Report

16 September, 2014

Database:	landmark	Local Co-ordinate Reference:	Well LDS 1W-314
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Project:	SEC.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	North Reference:	True
Well:	LDS 1W-314	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 5N65W1W Pad Sec.1-T5N-R65W											
Site Position:						Northing:			1,400,464.71 ft			Latitude:			40.429210		
From:			Lat/Long			Easting:			3,249,728.59ft			Longitude:			-104.602940		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.58 °		

Well	LDS 1W-314					
Well Position	+N/-S	0.0 ft	Northing:	1,400,464.70 ft	Latitude:	40.429210
	+E/-W	0.0 ft	Easting:	3,249,728.59 ft	Longitude:	-104.602940
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,613.0 ft

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

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	269.89

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,360.4	7.21	92.09	2,359.5	-0.8	22.6	2.00	2.00	0.00	92.09	
4,256.5	7.21	92.09	4,240.5	-9.5	260.4	0.00	0.00	0.00	0.00	
4,616.9	0.00	0.00	4,600.0	-10.3	283.0	2.00	-2.00	0.00	180.00	
6,054.8	0.00	0.00	6,038.0	-10.3	283.0	0.00	0.00	0.00	0.00	
7,257.9	90.23	270.00	6,801.9	-10.3	-484.0	7.50	7.50	0.00	270.00	
12,213.9	90.23	270.00	6,782.0	-10.3	-5,440.0	0.00	0.00	0.00	0.00	BHL 2170'FNL & 4'

Database:	landmark	Local Co-ordinate Reference:	Well LDS 1W-314
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Project:	SEC.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	North Reference:	True
Well:	LDS 1W-314	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
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
2,100.0	2.00	92.09	2,100.0	-0.1	1.7	-1.7	2.00	2.00	0.00
2,200.0	4.00	92.09	2,199.8	-0.3	7.0	-7.0	2.00	2.00	0.00
2,300.0	6.00	92.09	2,299.5	-0.6	15.7	-15.7	2.00	2.00	0.00
2,360.4	7.21	92.09	2,359.5	-0.8	22.6	-22.6	2.00	2.00	0.00
2,400.0	7.21	92.09	2,398.7	-1.0	27.6	-27.6	0.00	0.00	0.00
2,500.0	7.21	92.09	2,497.9	-1.5	40.1	-40.1	0.00	0.00	0.00
2,600.0	7.21	92.09	2,597.2	-1.9	52.7	-52.7	0.00	0.00	0.00
2,700.0	7.21	92.09	2,696.4	-2.4	65.2	-65.2	0.00	0.00	0.00
2,800.0	7.21	92.09	2,795.6	-2.8	77.7	-77.7	0.00	0.00	0.00
2,900.0	7.21	92.09	2,894.8	-3.3	90.3	-90.3	0.00	0.00	0.00
3,000.0	7.21	92.09	2,994.0	-3.8	102.8	-102.8	0.00	0.00	0.00
3,100.0	7.21	92.09	3,093.2	-4.2	115.4	-115.4	0.00	0.00	0.00
3,200.0	7.21	92.09	3,192.4	-4.7	127.9	-127.9	0.00	0.00	0.00
3,300.0	7.21	92.09	3,291.6	-5.1	140.4	-140.4	0.00	0.00	0.00
3,400.0	7.21	92.09	3,390.8	-5.6	153.0	-153.0	0.00	0.00	0.00
3,495.9	7.21	92.09	3,486.0	-6.0	165.0	-165.0	0.00	0.00	0.00
PARKMAN									
3,500.0	7.21	92.09	3,490.0	-6.0	165.5	-165.5	0.00	0.00	0.00
3,600.0	7.21	92.09	3,589.3	-6.5	178.1	-178.0	0.00	0.00	0.00
3,700.0	7.21	92.09	3,688.5	-7.0	190.6	-190.6	0.00	0.00	0.00
3,800.0	7.21	92.09	3,787.7	-7.4	203.1	-203.1	0.00	0.00	0.00
3,900.0	7.21	92.09	3,886.9	-7.9	215.7	-215.7	0.00	0.00	0.00
4,000.0	7.21	92.09	3,986.1	-8.3	228.2	-228.2	0.00	0.00	0.00
4,100.0	7.21	92.09	4,085.3	-8.8	240.8	-240.7	0.00	0.00	0.00
4,200.0	7.21	92.09	4,184.5	-9.2	253.3	-253.3	0.00	0.00	0.00
4,256.5	7.21	92.09	4,240.5	-9.5	260.4	-260.4	0.00	0.00	0.00
4,260.0	7.14	92.09	4,244.0	-9.5	260.8	-260.8	2.00	-2.00	0.00
SUSSEX									
4,300.0	6.34	92.09	4,283.8	-9.7	265.5	-265.5	2.00	-2.00	0.00
4,400.0	4.34	92.09	4,383.3	-10.0	274.8	-274.8	2.00	-2.00	0.00
4,500.0	2.34	92.09	4,483.1	-10.2	280.6	-280.6	2.00	-2.00	0.00

Database:	landmark	Local Co-ordinate Reference:	Well LDS 1W-314
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Project:	SEC.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	North Reference:	True
Well:	LDS 1W-314	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)
4,600.0	0.34	92.09	4,583.1	-10.3	283.0	-282.9	2.00	-2.00	0.00
4,616.9	0.00	0.00	4,600.0	-10.3	283.0	-283.0	2.00	-2.00	0.00
4,700.0	0.00	0.00	4,683.1	-10.3	283.0	-283.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,783.1	-10.3	283.0	-283.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,883.1	-10.3	283.0	-283.0	0.00	0.00	0.00
5,000.0	0.00	0.00	4,983.1	-10.3	283.0	-283.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,083.1	-10.3	283.0	-283.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,183.1	-10.3	283.0	-283.0	0.00	0.00	0.00
5,216.9	0.00	0.00	5,200.0	-10.3	283.0	-283.0	0.00	0.00	0.00
SHANNON									
5,300.0	0.00	0.00	5,283.1	-10.3	283.0	-283.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,383.1	-10.3	283.0	-283.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,483.1	-10.3	283.0	-283.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,583.1	-10.3	283.0	-283.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,683.1	-10.3	283.0	-283.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,783.1	-10.3	283.0	-283.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,883.1	-10.3	283.0	-283.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,983.1	-10.3	283.0	-283.0	0.00	0.00	0.00
6,054.8	0.00	0.00	6,037.9	-10.3	283.0	-283.0	0.00	0.00	0.00
KOP #2									
6,100.0	3.39	270.00	6,083.1	-10.3	281.7	-281.6	7.49	7.49	0.00
6,200.0	10.89	270.00	6,182.2	-10.3	269.3	-269.2	7.50	7.50	0.00
6,300.0	18.39	270.00	6,278.9	-10.3	244.0	-244.0	7.50	7.50	0.00
6,400.0	25.89	270.00	6,371.5	-10.3	206.3	-206.3	7.50	7.50	0.00
6,500.0	33.39	270.00	6,458.3	-10.3	156.9	-156.9	7.50	7.50	0.00
6,556.1	37.59	270.00	6,504.0	-10.3	124.4	-124.4	7.50	7.50	0.00
SHARON SPRINGS									
6,600.0	40.89	270.00	6,538.0	-10.3	96.6	-96.6	7.50	7.50	0.00
6,689.4	47.59	270.00	6,602.0	-10.3	34.3	-34.3	7.50	7.50	0.00
NIOBRARA A									
6,700.0	48.39	270.00	6,609.1	-10.3	26.4	-26.4	7.50	7.50	0.00
6,800.0	55.89	270.00	6,670.5	-10.3	-52.5	52.5	7.50	7.50	0.00
6,882.6	62.08	270.00	6,713.0	-10.3	-123.3	123.3	7.50	7.50	0.00
NIOBRARA B									
6,900.0	63.39	270.00	6,721.0	-10.3	-138.7	138.7	7.50	7.50	0.00
7,000.0	70.89	270.00	6,759.8	-10.3	-230.8	230.8	7.50	7.50	0.00
7,040.4	73.92	270.00	6,772.0	-10.3	-269.3	269.3	7.50	7.50	0.00
NIOBRARA C									
7,100.0	78.39	270.00	6,786.3	-10.3	-327.2	327.2	7.50	7.50	0.00
7,200.0	85.89	270.00	6,799.9	-10.3	-426.1	426.2	7.50	7.50	0.00
7,257.9	90.23	270.00	6,801.9	-10.3	-484.0	484.0	7.50	7.50	0.00
End of Build - 7"									
7,300.0	90.23	270.00	6,801.7	-10.3	-526.1	526.1	0.00	0.00	0.00
7,400.0	90.23	270.00	6,801.3	-10.3	-626.1	626.1	0.00	0.00	0.00
7,500.0	90.23	270.00	6,800.9	-10.3	-726.1	726.1	0.00	0.00	0.00
7,600.0	90.23	270.00	6,800.5	-10.3	-826.1	826.1	0.00	0.00	0.00
7,700.0	90.23	270.00	6,800.1	-10.3	-926.1	926.1	0.00	0.00	0.00
7,800.0	90.23	270.00	6,799.7	-10.3	-1,026.1	1,026.1	0.00	0.00	0.00
7,900.0	90.23	270.00	6,799.3	-10.3	-1,126.1	1,126.1	0.00	0.00	0.00
8,000.0	90.23	270.00	6,798.9	-10.3	-1,226.1	1,226.1	0.00	0.00	0.00
8,100.0	90.23	270.00	6,798.5	-10.3	-1,326.1	1,326.1	0.00	0.00	0.00
8,200.0	90.23	270.00	6,798.1	-10.3	-1,426.1	1,426.1	0.00	0.00	0.00

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Project:	SEC.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	North Reference:	True
Well:	LDS 1W-314	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)
8,300.0	90.23	270.00	6,797.7	-10.3	-1,526.1	1,526.1	0.00	0.00	0.00
8,400.0	90.23	270.00	6,797.3	-10.3	-1,626.1	1,626.1	0.00	0.00	0.00
8,500.0	90.23	270.00	6,796.9	-10.3	-1,726.1	1,726.1	0.00	0.00	0.00
8,600.0	90.23	270.00	6,796.5	-10.3	-1,826.1	1,826.1	0.00	0.00	0.00
8,700.0	90.23	270.00	6,796.1	-10.3	-1,926.1	1,926.1	0.00	0.00	0.00
8,800.0	90.23	270.00	6,795.7	-10.3	-2,026.1	2,026.1	0.00	0.00	0.00
8,900.0	90.23	270.00	6,795.3	-10.3	-2,126.1	2,126.1	0.00	0.00	0.00
9,000.0	90.23	270.00	6,794.9	-10.3	-2,226.1	2,226.1	0.00	0.00	0.00
9,100.0	90.23	270.00	6,794.5	-10.3	-2,326.1	2,326.1	0.00	0.00	0.00
9,200.0	90.23	270.00	6,794.1	-10.3	-2,426.1	2,426.1	0.00	0.00	0.00
9,300.0	90.23	270.00	6,793.7	-10.3	-2,526.1	2,526.1	0.00	0.00	0.00
9,400.0	90.23	270.00	6,793.3	-10.3	-2,626.1	2,626.1	0.00	0.00	0.00
9,500.0	90.23	270.00	6,792.9	-10.3	-2,726.1	2,726.1	0.00	0.00	0.00
9,600.0	90.23	270.00	6,792.5	-10.3	-2,826.1	2,826.1	0.00	0.00	0.00
9,700.0	90.23	270.00	6,792.1	-10.3	-2,926.1	2,926.1	0.00	0.00	0.00
9,800.0	90.23	270.00	6,791.7	-10.3	-3,026.1	3,026.1	0.00	0.00	0.00
9,900.0	90.23	270.00	6,791.3	-10.3	-3,126.1	3,126.1	0.00	0.00	0.00
10,000.0	90.23	270.00	6,790.9	-10.3	-3,226.1	3,226.1	0.00	0.00	0.00
10,100.0	90.23	270.00	6,790.5	-10.3	-3,326.1	3,326.1	0.00	0.00	0.00
10,200.0	90.23	270.00	6,790.1	-10.3	-3,426.1	3,426.1	0.00	0.00	0.00
10,300.0	90.23	270.00	6,789.7	-10.3	-3,526.1	3,526.1	0.00	0.00	0.00
10,400.0	90.23	270.00	6,789.3	-10.3	-3,626.1	3,626.1	0.00	0.00	0.00
10,500.0	90.23	270.00	6,788.9	-10.3	-3,726.1	3,726.1	0.00	0.00	0.00
10,600.0	90.23	270.00	6,788.5	-10.3	-3,826.1	3,826.1	0.00	0.00	0.00
10,700.0	90.23	270.00	6,788.1	-10.3	-3,926.1	3,926.1	0.00	0.00	0.00
10,800.0	90.23	270.00	6,787.7	-10.3	-4,026.1	4,026.1	0.00	0.00	0.00
10,900.0	90.23	270.00	6,787.3	-10.3	-4,126.1	4,126.1	0.00	0.00	0.00
11,000.0	90.23	270.00	6,786.9	-10.3	-4,226.1	4,226.1	0.00	0.00	0.00
11,100.0	90.23	270.00	6,786.5	-10.3	-4,326.1	4,326.1	0.00	0.00	0.00
11,200.0	90.23	270.00	6,786.1	-10.3	-4,426.1	4,426.1	0.00	0.00	0.00
11,300.0	90.23	270.00	6,785.7	-10.3	-4,526.1	4,526.1	0.00	0.00	0.00
11,400.0	90.23	270.00	6,785.3	-10.3	-4,626.1	4,626.1	0.00	0.00	0.00
11,500.0	90.23	270.00	6,784.9	-10.3	-4,726.1	4,726.1	0.00	0.00	0.00
11,600.0	90.23	270.00	6,784.5	-10.3	-4,826.1	4,826.1	0.00	0.00	0.00
11,700.0	90.23	270.00	6,784.1	-10.3	-4,926.1	4,926.1	0.00	0.00	0.00
11,800.0	90.23	270.00	6,783.7	-10.3	-5,026.1	5,026.1	0.00	0.00	0.00
11,900.0	90.23	270.00	6,783.3	-10.3	-5,126.1	5,126.1	0.00	0.00	0.00
12,000.0	90.23	270.00	6,782.9	-10.3	-5,226.1	5,226.1	0.00	0.00	0.00
12,100.0	90.23	270.00	6,782.5	-10.3	-5,326.1	5,326.1	0.00	0.00	0.00
12,200.0	90.23	270.00	6,782.1	-10.3	-5,426.1	5,426.1	0.00	0.00	0.00
12,213.9	90.23	270.00	6,782.0	-10.3	-5,440.0	5,440.0	0.00	0.00	0.00

Database:	landmark	Local Co-ordinate Reference:	Well LDS 1W-314
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Project:	SEC.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	North Reference:	True
Well:	LDS 1W-314	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 2170'FNL & 449'	0.00	0.00	6,782.0	-10.3	-5,440.0	1,400,399.35	3,244,289.23	40.429180	-104.622480
- plan hits target									
- Point									
SHL 2154'FNL & 333'	0.00	0.00	1.0	0.0	0.0	1,400,464.71	3,249,728.59	40.429210	-104.602940
- plan hits target									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(")	(")
7,257.9	6,801.9	7"		7	7-1/2

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(ft)	(ft)			(°)	(°)
3,495.9	3,486.0	PARKMAN		0.00	
4,260.0	4,244.0	SUSSEX		0.00	
5,216.9	5,200.0	SHANNON		0.00	
6,556.1	6,504.0	SHARON SPRINGS		0.00	
6,689.4	6,602.0	NIOBRARA A		0.00	
6,882.6	6,713.0	NIOBRARA B		0.00	
7,040.4	6,772.0	NIOBRARA C		0.00	
3,629.0	6,865.0	FT HAYS		0.00	
3,629.0	6,887.0	CODELL		0.00	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
(ft)	(ft)	(ft)	(ft)		
2,000.0	2,000.0	0.0	0.0	KOP #1	
6,054.8	6,037.9	-10.3	283.0	KOP #2	
7,257.9	6,801.9	-10.3	-484.0	End of Build	



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.1-T5N-R65W

LDS 5N65W1W Pad Sec.1-T5N-R65W

LDS 1W-314

Wellbore #1

Plan #1 (9-4-14)

Anticollision Report

16 September, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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	9/16/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,213.2	Plan #1 (9-4-14) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing Wells Sec.1-T5N-R65W						
BJB 2 (Exist.) - Wellbore #1 - Wellbore #1	6,958.6	6,731.2	207.1	55.0	1.361	Level 3, CC, ES, SF
BJB 3 (SI) - Wellbore #1 - Wellbore #1	8,447.1	6,801.1	61.4	-126.7	0.326	Level 1, CC, ES, SF
Gatewood 6-1 (Exist.) - Wellbore #1 - Wellbore #1	9,636.3	6,805.4	551.5	358.9	2.863	CC, ES
Gatewood 6-1 (Exist.) - Wellbore #1 - Wellbore #1	9,700.0	6,805.3	555.2	360.8	2.856	SF
Existing Wells Sec.2-T5N-R65W						
Caraccioli 1 (Exist.) - Wellbore #1 - Wellbore #1	12,213.9	6,803.0	252.6	84.7	1.504	CC, ES, SF
LDS 5N65W1W Pad Sec.1-T5N-R65W						
LDS 1V-234 - Wellbore #1 - Plan #1 (9-4-14)	1,400.0	1,400.0	29.1	23.1	4.803	CC, ES
LDS 1V-234 - Wellbore #1 - Plan #1 (9-4-14)	12,213.9	12,188.0	411.9	104.4	1.340	Level 3, SF
LDS 1V-434 - Wellbore #1 - Plan #1 (9-4-14)	1,000.0	1,000.0	58.4	54.1	13.665	CC, ES
LDS 1V-434 - Wellbore #1 - Plan #1 (9-4-14)	12,213.9	12,311.4	551.1	243.3	1.790	SF
LDS 1W-414 - Wellbore #1 - Plan #1 (9-4-14)	1,600.0	1,600.0	32.8	25.8	4.706	CC
LDS 1W-414 - Wellbore #1 - Plan #1 (9-4-14)	12,213.9	12,288.1	212.2	-78.5	0.730	Level 1, ES, SF

Offset Design												
Existing Wells Sec.1-T5N-R65W - BJB 2 (Exist.) - Wellbore #1 - Wellbore #1												
Survey Program: 7050-UNKNOWN												
Reference												
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)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor
0.0	0.0	0.0	0.0	0.0	0.0	-44.32	196.7	-192.1	275.3			
100.0	100.0	86.0	86.0	0.1	1.7	-44.32	196.7	-192.1	275.0	273.1	1.83	150.040
200.0	200.0	186.0	186.0	0.3	3.7	-44.32	196.7	-192.1	275.0	270.9	4.06	67.769
300.0	300.0	286.0	286.0	0.6	5.7	-44.32	196.7	-192.1	275.0	268.7	6.28	43.769
400.0	400.0	386.0	386.0	0.8	7.7	-44.32	196.7	-192.1	275.0	266.5	8.51	32.322
500.0	500.0	486.0	486.0	1.0	9.7	-44.32	196.7	-192.1	275.0	264.2	10.73	25.622
600.0	600.0	586.0	586.0	1.2	11.7	-44.32	196.7	-192.1	275.0	262.0	12.96	21.222
700.0	700.0	686.0	686.0	1.5	13.7	-44.32	196.7	-192.1	275.0	259.8	15.18	18.112
800.0	800.0	786.0	786.0	1.7	15.7	-44.32	196.7	-192.1	275.0	257.6	17.41	15.797
900.0	900.0	886.0	886.0	1.9	17.7	-44.32	196.7	-192.1	275.0	255.3	19.63	14.007
1,000.0	1,000.0	986.0	986.0	2.1	19.7	-44.32	196.7	-192.1	275.0	253.1	21.86	12.581
1,100.0	1,100.0	1,086.0	1,086.0	2.4	21.7	-44.32	196.7	-192.1	275.0	250.9	24.08	11.419

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 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 2 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7050-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
1,200.0	1,200.0	1,186.0	1,186.0	2.6	23.7	-44.32	196.7	-192.1	275.0	248.7	26.30	10.453		
1,300.0	1,300.0	1,286.0	1,286.0	2.8	25.7	-44.32	196.7	-192.1	275.0	246.4	28.53	9.638		
1,400.0	1,400.0	1,386.0	1,386.0	3.0	27.7	-44.32	196.7	-192.1	275.0	244.2	30.75	8.941		
1,500.0	1,500.0	1,486.0	1,486.0	3.3	29.7	-44.32	196.7	-192.1	275.0	242.0	32.98	8.337		
1,600.0	1,600.0	1,586.0	1,586.0	3.5	31.7	-44.32	196.7	-192.1	275.0	239.8	35.20	7.810		
1,700.0	1,700.0	1,686.0	1,686.0	3.7	33.7	-44.32	196.7	-192.1	275.0	237.5	37.43	7.346		
1,800.0	1,800.0	1,786.0	1,786.0	3.9	35.7	-44.32	196.7	-192.1	275.0	235.3	39.65	6.934		
1,900.0	1,900.0	1,886.0	1,886.0	4.2	37.7	-44.32	196.7	-192.1	275.0	233.1	41.88	6.566		
2,000.0	2,000.0	1,986.0	1,986.0	4.4	39.7	-44.32	196.7	-192.1	275.0	230.9	44.10	6.235		
2,100.0	2,100.0	2,086.0	2,086.0	4.6	41.7	-136.64	196.7	-192.1	276.2	229.9	46.30	5.966		
2,200.0	2,199.8	2,185.8	2,185.8	4.8	43.7	-137.32	196.7	-192.1	280.1	231.6	48.45	5.781		
2,300.0	2,299.5	2,285.5	2,285.5	5.0	45.7	-138.41	196.7	-192.1	286.5	236.0	50.55	5.668		
2,400.0	2,398.7	2,384.7	2,384.7	5.2	47.7	-139.87	196.7	-192.1	295.6	242.9	52.66	5.613		
2,500.0	2,497.9	2,483.9	2,483.9	5.5	49.7	-141.39	196.7	-192.1	305.3	250.5	54.84	5.567		
2,600.0	2,597.2	2,583.2	2,583.2	5.7	51.7	-142.81	196.7	-192.1	315.2	258.2	57.02	5.528		
2,700.0	2,696.4	2,682.4	2,682.4	6.0	53.6	-144.14	196.7	-192.1	325.3	266.1	59.21	5.495		
2,800.0	2,795.6	2,781.6	2,781.6	6.2	55.6	-145.39	196.7	-192.1	335.6	274.2	61.40	5.467		
2,900.0	2,894.8	2,880.8	2,880.8	6.5	57.6	-146.57	196.7	-192.1	346.0	282.5	63.59	5.442		
3,000.0	2,994.0	2,980.0	2,980.0	6.8	59.6	-147.68	196.7	-192.1	356.6	290.8	65.78	5.422		
3,100.0	3,093.2	3,079.2	3,079.2	7.0	61.6	-148.72	196.7	-192.1	367.3	299.3	67.97	5.404		
3,200.0	3,192.4	3,178.4	3,178.4	7.3	63.6	-149.71	196.7	-192.1	378.1	307.9	70.16	5.389		
3,300.0	3,291.6	3,277.6	3,277.6	7.6	65.6	-150.64	196.7	-192.1	389.0	316.6	72.36	5.376		
3,400.0	3,390.8	3,376.8	3,376.8	7.9	67.5	-151.52	196.7	-192.1	400.0	325.5	74.55	5.366		
3,500.0	3,490.0	3,476.0	3,476.0	8.2	69.5	-152.35	196.7	-192.1	411.1	334.4	76.75	5.357		
3,600.0	3,589.3	3,575.3	3,575.3	8.5	71.5	-153.14	196.7	-192.1	422.3	343.3	78.94	5.349		
3,700.0	3,688.5	3,674.5	3,674.5	8.8	73.5	-153.89	196.7	-192.1	433.5	352.4	81.14	5.343		
3,800.0	3,787.7	3,773.7	3,773.7	9.1	75.5	-154.60	196.7	-192.1	444.8	361.5	83.34	5.338		
3,900.0	3,886.9	3,872.9	3,872.9	9.4	77.5	-155.27	196.7	-192.1	456.2	370.7	85.54	5.334		
4,000.0	3,986.1	3,972.1	3,972.1	9.7	79.4	-155.91	196.7	-192.1	467.7	379.9	87.73	5.331		
4,100.0	4,085.3	4,071.3	4,071.3	10.0	81.4	-156.53	196.7	-192.1	479.2	389.2	89.93	5.328		
4,200.0	4,184.5	4,170.5	4,170.5	10.3	83.4	-157.11	196.7	-192.1	490.7	398.6	92.13	5.326		
4,300.0	4,283.8	4,269.8	4,269.8	10.6	85.4	-157.69	196.7	-192.1	502.0	407.5	94.46	5.314		
4,400.0	4,383.3	4,369.3	4,369.3	10.8	87.4	-158.15	196.7	-192.1	510.6	413.7	96.89	5.270		
4,500.0	4,483.1	4,469.1	4,469.1	11.0	89.4	-158.43	196.7	-192.1	516.0	416.8	99.23	5.200		
4,600.0	4,583.1	4,569.1	4,569.1	11.2	91.4	-158.54	196.7	-192.1	518.2	416.7	101.47	5.107		
4,700.0	4,683.1	4,669.1	4,669.1	11.3	93.4	-66.45	196.7	-192.1	518.3	413.7	104.60	4.955		
4,800.0	4,783.1	4,769.1	4,769.1	11.5	95.4	-66.45	196.7	-192.1	518.3	411.5	106.79	4.853		
4,900.0	4,883.1	4,869.1	4,869.1	11.7	97.4	-66.45	196.7	-192.1	518.3	409.3	108.99	4.755		
5,000.0	4,983.1	4,969.1	4,969.1	11.9	99.4	-66.45	196.7	-192.1	518.3	407.1	111.19	4.661		
5,100.0	5,083.1	5,069.1	5,069.1	12.1	101.4	-66.45	196.7	-192.1	518.3	404.9	113.39	4.571		
5,200.0	5,183.1	5,169.1	5,169.1	12.3	103.4	-66.45	196.7	-192.1	518.3	402.7	115.59	4.484		
5,300.0	5,283.1	5,269.1	5,269.1	12.5	105.4	-66.45	196.7	-192.1	518.3	400.5	117.79	4.400		
5,400.0	5,383.1	5,369.1	5,369.1	12.7	107.4	-66.45	196.7	-192.1	518.3	398.3	119.99	4.319		
5,500.0	5,483.1	5,469.1	5,469.1	12.9	109.4	-66.45	196.7	-192.1	518.3	396.1	122.19	4.241		
5,600.0	5,583.1	5,569.1	5,569.1	13.1	111.4	-66.45	196.7	-192.1	518.3	393.9	124.40	4.166		
5,700.0	5,683.1	5,669.1	5,669.1	13.3	113.4	-66.45	196.7	-192.1	518.3	391.7	126.60	4.094		
5,800.0	5,783.1	5,769.1	5,769.1	13.5	115.4	-66.45	196.7	-192.1	518.3	389.4	128.80	4.024		
5,900.0	5,883.1	5,869.1	5,869.1	13.7	117.4	-66.45	196.7	-192.1	518.3	387.2	131.01	3.956		
6,000.0	5,983.1	5,969.1	5,969.1	13.9	119.4	-66.45	196.7	-192.1	518.3	385.0	133.21	3.890		
6,100.0	6,083.1	6,069.1	6,069.1	14.1	121.4	23.64	196.7	-192.1	517.0	382.6	134.43	3.846		
6,200.0	6,182.2	6,168.2	6,168.2	14.3	123.4	24.56	196.7	-192.1	505.7	370.9	134.74	3.753		

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 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 2 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7050-UNKNOWN												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance									
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
6,300.0	6,278.9	6,264.9	6,264.9	14.3	125.3	26.58	196.7	-192.1	482.8	349.5	133.28	3.622	
6,400.0	6,371.5	6,357.5	6,357.5	14.4	127.1	30.01	196.7	-192.1	449.0	318.5	130.57	3.439	
6,500.0	6,458.3	6,444.3	6,444.3	14.5	128.9	35.39	196.7	-192.1	405.8	277.9	127.91	3.173	
6,600.0	6,538.0	6,524.0	6,524.0	14.7	130.5	43.49	196.7	-192.1	355.3	227.5	127.73	2.781	
6,700.0	6,609.1	6,595.1	6,595.1	15.1	131.9	54.98	196.7	-192.1	301.0	168.2	132.84	2.266	
6,800.0	6,670.5	6,656.5	6,656.5	15.7	133.1	69.29	196.7	-192.1	249.7	107.3	142.40	1.754	
6,900.0	6,721.0	6,707.0	6,707.0	16.7	134.1	83.41	196.7	-192.1	213.8	63.8	150.06	1.425	Level 3
6,958.6	6,745.2	6,731.2	6,731.2	17.5	134.6	90.00	196.7	-192.1	207.1	55.0	152.09	1.361	Level 3, CC, ES, SF
7,000.0	6,759.8	6,745.8	6,745.8	18.0	134.9	93.50	196.7	-192.1	210.6	58.0	152.66	1.380	Level 3
7,100.0	6,786.3	6,772.3	6,772.3	19.6	135.4	97.48	196.7	-192.1	247.2	93.4	153.79	1.608	
7,200.0	6,799.9	6,785.9	6,785.9	21.4	135.7	94.64	196.7	-192.1	312.5	155.9	156.64	1.995	
7,300.0	6,801.7	6,787.7	6,787.7	23.4	135.8	89.63	196.7	-192.1	393.0	233.8	159.19	2.469	
7,400.0	6,801.3	6,787.3	6,787.3	25.6	135.7	89.52	196.7	-192.1	480.9	319.5	161.33	2.981	
7,500.0	6,800.9	6,786.9	6,786.9	27.9	135.7	89.41	196.7	-192.1	572.7	409.2	163.58	3.501	
7,600.0	6,800.5	6,786.5	6,786.5	30.2	135.7	89.30	196.7	-192.1	667.0	501.0	165.93	4.020	
7,700.0	6,800.1	6,786.1	6,786.1	32.6	135.7	89.18	196.7	-192.1	762.6	594.3	168.35	4.530	
7,800.0	6,799.7	6,785.7	6,785.7	35.1	135.7	89.07	196.7	-192.1	859.3	688.5	170.82	5.031	
7,900.0	6,799.3	6,785.3	6,785.3	37.7	135.7	88.96	196.7	-192.1	956.7	783.3	173.34	5.519	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 3 (SI) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7027-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
7,500.0	6,800.9	6,804.9	6,804.9	27.9	136.1	93.54	51.1	-1,673.2	949.1	785.4	163.64	5.800		
7,600.0	6,800.5	6,804.5	6,804.5	30.2	136.1	93.17	51.1	-1,673.2	849.3	683.3	166.05	5.115		
7,700.0	6,800.1	6,804.1	6,804.1	32.6	136.1	92.80	51.1	-1,673.2	749.6	581.1	168.52	4.448		
7,800.0	6,799.7	6,803.7	6,803.7	35.1	136.1	92.42	51.1	-1,673.2	650.0	478.9	171.05	3.800		
7,900.0	6,799.3	6,803.3	6,803.3	37.7	136.1	92.05	51.1	-1,673.2	550.5	376.9	173.61	3.171		
8,000.0	6,798.9	6,802.9	6,802.9	40.2	136.1	91.67	51.1	-1,673.2	451.3	275.1	176.21	2.561		
8,100.0	6,798.5	6,802.5	6,802.5	42.8	136.1	91.30	51.1	-1,673.2	352.5	173.6	178.83	1.971		
8,200.0	6,798.1	6,802.1	6,802.1	45.5	136.0	90.93	51.1	-1,673.2	254.6	73.1	181.47	1.403 Level 3		
8,300.0	6,797.7	6,801.7	6,801.7	48.1	136.0	90.55	51.1	-1,673.2	159.4	-24.7	184.12	0.866 Level 1		
8,400.0	6,797.3	6,801.3	6,801.3	50.8	136.0	90.18	51.1	-1,673.2	77.4	-109.4	186.79	0.414 Level 1		
8,447.1	6,797.1	6,801.1	6,801.1	52.0	136.0	90.00	51.1	-1,673.2	61.4	-126.7	188.04	0.326 Level 1, CC, ES, SF		
8,500.0	6,796.9	6,800.9	6,800.9	53.4	136.0	89.80	51.1	-1,673.2	81.0	-108.4	189.46	0.428 Level 1		
8,600.0	6,796.5	6,800.5	6,800.5	56.1	136.0	89.43	51.1	-1,673.2	164.8	-27.4	192.13	0.858 Level 1		
8,700.0	6,796.1	6,800.1	6,800.1	58.8	136.0	89.05	51.1	-1,673.2	260.2	65.4	194.81	1.336 Level 3		
8,800.0	6,795.7	6,799.7	6,799.7	61.5	136.0	88.68	51.1	-1,673.2	358.2	160.7	197.49	1.814		
8,900.0	6,795.3	6,799.3	6,799.3	64.3	136.0	88.30	51.1	-1,673.2	457.0	256.9	200.17	2.283		
9,000.0	6,794.9	6,798.9	6,798.9	67.0	136.0	87.93	51.1	-1,673.2	556.3	353.5	202.84	2.742		
9,100.0	6,794.5	6,798.5	6,798.5	69.7	136.0	87.56	51.1	-1,673.2	655.8	450.3	205.52	3.191		
9,200.0	6,794.1	6,798.1	6,798.1	72.5	136.0	87.18	51.1	-1,673.2	755.4	547.2	208.19	3.628		
9,300.0	6,793.7	6,797.7	6,797.7	75.2	136.0	86.81	51.1	-1,673.2	855.1	644.2	210.85	4.055		
9,400.0	6,793.3	6,797.3	6,797.3	78.0	135.9	86.43	51.1	-1,673.2	954.9	741.4	213.51	4.472		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 6-1 (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)				
8,900.0	6,795.3	6,807.5	6,807.1	64.3	108.2	90.70	541.1	-2,862.4	919.9	747.5	172.43	5.335		
9,000.0	6,794.9	6,807.2	6,806.8	67.0	108.2	90.67	541.1	-2,862.4	842.0	666.9	175.15	4.807		
9,100.0	6,794.5	6,806.9	6,806.5	69.7	108.2	90.64	541.1	-2,862.4	769.2	591.4	177.88	4.324		
9,200.0	6,794.1	6,806.7	6,806.2	72.5	108.2	90.61	541.1	-2,862.4	703.2	522.6	180.62	3.893		
9,300.0	6,793.7	6,806.4	6,806.0	75.2	108.2	90.58	541.1	-2,862.4	645.9	462.6	183.36	3.523		
9,400.0	6,793.3	6,806.1	6,805.7	78.0	108.2	90.55	541.1	-2,862.4	600.0	413.9	186.11	3.224		
9,500.0	6,792.9	6,805.8	6,805.4	80.7	108.1	90.53	541.1	-2,862.4	568.1	379.2	188.86	3.008		
9,600.0	6,792.5	6,805.5	6,805.1	83.5	108.1	90.50	541.1	-2,862.4	552.7	361.1	191.61	2.884		
9,636.3	6,792.3	6,805.4	6,805.0	84.5	108.1	90.49	541.1	-2,862.4	551.5	358.9	192.61	2.863 CC, ES		
9,700.0	6,792.1	6,805.3	6,804.8	86.2	108.1	90.47	541.1	-2,862.4	555.2	360.8	194.37	2.856 SF		
9,800.0	6,791.7	6,805.0	6,804.6	89.0	108.1	90.44	541.2	-2,862.4	575.3	378.2	197.13	2.918		
9,900.0	6,791.3	6,804.7	6,804.3	91.8	108.1	90.41	541.2	-2,862.4	611.3	411.4	199.89	3.058		
10,000.0	6,790.9	6,804.4	6,804.0	94.5	108.1	90.38	541.2	-2,862.4	660.6	458.0	202.66	3.260		
10,100.0	6,790.5	6,804.2	6,803.7	97.3	108.1	90.35	541.2	-2,862.4	720.5	515.1	205.42	3.508		
10,200.0	6,790.1	6,803.9	6,803.4	100.1	108.1	90.32	541.2	-2,862.4	788.6	580.4	208.19	3.788		
10,300.0	6,789.7	6,803.6	6,803.2	102.8	108.1	90.29	541.2	-2,862.4	862.9	652.0	210.97	4.090		
10,400.0	6,789.3	6,803.3	6,802.9	105.6	108.1	90.26	541.2	-2,862.4	942.0	728.3	213.74	4.407		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 - Caraccioli 1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				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)	Minimum Separation (ft)	Separation Factor		
11,500.0	6,784.9	6,818.3	6,817.5	136.3	13.8	121.26	23.4	-5,690.0	964.7	834.9	129.80	7.432		
11,600.0	6,784.5	6,816.1	6,815.3	139.1	13.8	118.45	23.5	-5,690.1	864.8	729.2	135.64	6.376		
11,700.0	6,784.1	6,813.9	6,813.1	141.8	13.8	115.52	23.5	-5,690.1	764.9	623.5	141.46	5.407		
11,800.0	6,783.7	6,811.7	6,811.0	144.6	13.8	112.47	23.5	-5,690.2	665.0	517.9	147.18	4.519		
11,900.0	6,783.3	6,809.6	6,808.8	147.4	13.8	109.32	23.5	-5,690.2	565.2	412.5	152.72	3.701		
12,000.0	6,782.9	6,807.5	6,806.7	150.2	13.8	106.07	23.5	-5,690.2	465.5	307.5	158.00	2.946		
12,100.0	6,782.5	6,805.4	6,804.6	153.0	13.8	102.74	23.5	-5,690.3	365.8	202.9	162.95	2.245		
12,200.0	6,782.1	6,803.3	6,802.6	155.8	13.8	99.36	23.5	-5,690.3	266.4	98.9	167.48	1.591		
12,213.9	6,782.0	6,803.0	6,802.3	156.1	13.8	98.89	23.5	-5,690.3	252.6	84.7	167.94	1.504 CC, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-234 - Wellbore #1 - Plan #1 (9-4-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
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	0.00	0.00	29.1	0.0	29.1				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	0.00	29.1	0.0	29.1	28.9	0.22	129.669	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	0.00	29.1	0.0	29.1	28.5	0.67	43.223	
300.0	300.0	300.0	300.0	0.6	0.6	0.00	0.00	29.1	0.0	29.1	28.0	1.12	25.934	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	0.00	29.1	0.0	29.1	27.6	1.57	18.524	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	0.00	29.1	0.0	29.1	27.1	2.02	14.408	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	0.00	29.1	0.0	29.1	26.7	2.47	11.788	
700.0	700.0	700.0	700.0	1.5	1.5	0.00	0.00	29.1	0.0	29.1	26.2	2.92	9.975	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	0.00	29.1	0.0	29.1	25.8	3.37	8.645	
900.0	900.0	900.0	900.0	1.9	1.9	0.00	0.00	29.1	0.0	29.1	25.3	3.82	7.628	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	0.00	29.1	0.0	29.1	24.9	4.27	6.825	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	0.00	0.00	29.1	0.0	29.1	24.4	4.72	6.175	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	0.00	0.00	29.1	0.0	29.1	24.0	5.17	5.638	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	0.00	0.00	29.1	0.0	29.1	23.5	5.62	5.187	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	0.00	0.00	29.1	0.0	29.1	23.1	6.07	4.803 CC, ES	
1,500.0	1,500.0	1,499.2	1,499.1	3.3	3.3	1.97	1.97	30.5	1.1	30.5	24.0	6.51	4.688	
1,600.0	1,600.0	1,598.1	1,597.9	3.5	3.5	6.92	6.92	34.6	4.2	34.9	27.9	6.95	5.015	
1,700.0	1,700.0	1,696.5	1,696.0	3.7	3.7	12.82	12.82	41.3	9.4	42.5	35.1	7.40	5.746	
1,800.0	1,800.0	1,795.1	1,793.8	3.9	3.9	18.08	18.08	50.4	16.5	53.4	45.5	7.85	6.794	
1,900.0	1,900.0	1,894.3	1,892.3	4.2	4.2	21.72	21.72	60.0	23.9	65.0	56.7	8.32	7.814	
2,000.0	2,000.0	1,993.6	1,990.9	4.4	4.4	24.24	24.24	69.6	31.3	76.9	68.1	8.80	8.735	
2,100.0	2,100.0	2,092.9	2,089.5	4.6	4.7	-66.84	-66.84	79.2	38.8	88.1	78.9	9.19	9.589	
2,200.0	2,199.8	2,192.4	2,188.2	4.8	5.0	-67.91	-67.91	88.8	46.2	98.0	88.4	9.62	10.191	
2,300.0	2,299.5	2,291.9	2,286.9	5.0	5.2	-70.52	-70.52	98.4	53.7	106.8	96.7	10.07	10.609	
2,400.0	2,398.7	2,391.3	2,385.6	5.2	5.5	-74.31	-74.31	108.1	61.1	114.9	104.3	10.54	10.901	
2,500.0	2,497.9	2,490.6	2,484.2	5.5	5.8	-77.96	-77.96	117.7	68.6	123.3	112.2	11.03	11.177	
2,600.0	2,597.2	2,590.0	2,582.8	5.7	6.1	-81.13	-81.13	127.3	76.0	132.1	120.6	11.53	11.454	
2,700.0	2,696.4	2,689.3	2,681.4	6.0	6.4	-83.90	-83.90	136.9	83.5	141.3	129.2	12.05	11.725	
2,800.0	2,795.6	2,788.7	2,780.0	6.2	6.7	-86.33	-86.33	146.5	90.9	150.7	138.2	12.58	11.986	
2,900.0	2,894.8	2,888.1	2,878.6	6.5	7.0	-88.47	-88.47	156.1	98.4	160.4	147.3	13.11	12.236	
3,000.0	2,994.0	2,987.4	2,977.2	6.8	7.3	-90.36	-90.36	165.7	105.8	170.3	156.7	13.66	12.474	
3,100.0	3,093.2	3,086.8	3,075.9	7.0	7.5	-92.05	-92.05	175.4	113.3	180.4	166.2	14.21	12.699	
3,200.0	3,192.4	3,186.1	3,174.5	7.3	7.8	-93.55	-93.55	185.0	120.7	190.6	175.8	14.76	12.912	
3,300.0	3,291.6	3,285.5	3,273.1	7.6	8.1	-94.91	-94.91	194.6	128.1	200.9	185.6	15.32	13.113	
3,400.0	3,390.8	3,384.9	3,371.7	7.9	8.4	-96.13	-96.13	204.2	135.6	211.4	195.5	15.89	13.302	
3,500.0	3,490.0	3,484.2	3,470.3	8.2	8.7	-97.23	-97.23	213.8	143.0	221.9	205.4	16.46	13.480	
3,600.0	3,589.3	3,583.6	3,568.9	8.5	9.1	-98.23	-98.23	223.4	150.5	232.4	215.4	17.03	13.648	
3,700.0	3,688.5	3,682.9	3,667.5	8.8	9.4	-99.15	-99.15	233.0	157.9	243.1	225.5	17.61	13.807	
3,800.0	3,787.7	3,782.3	3,766.2	9.1	9.7	-99.99	-99.99	242.6	165.4	253.8	235.6	18.18	13.956	
3,900.0	3,886.9	3,881.7	3,864.8	9.4	10.0	-100.76	-100.76	252.3	172.8	264.6	245.8	18.77	14.098	
4,000.0	3,986.1	3,981.0	3,963.4	9.7	10.3	-101.48	-101.48	261.9	180.3	275.3	256.0	19.35	14.231	
4,100.0	4,085.3	4,080.4	4,062.0	10.0	10.6	-102.13	-102.13	271.5	187.7	286.2	266.3	19.93	14.358	
4,200.0	4,184.5	4,179.7	4,160.6	10.3	10.9	-102.74	-102.74	281.1	195.2	297.1	276.5	20.52	14.477	
4,300.0	4,283.8	4,279.1	4,259.2	10.6	11.2	-103.34	-103.34	290.7	202.6	307.9	286.8	21.09	14.595	
4,400.0	4,383.3	4,378.6	4,358.0	10.8	11.5	-103.50	-103.50	300.3	210.1	318.0	296.4	21.61	14.718	
4,500.0	4,483.1	4,478.1	4,456.7	11.0	11.8	-103.04	-103.04	309.9	217.5	327.4	305.3	22.09	14.821	
4,600.0	4,583.1	4,577.5	4,555.3	11.2	12.1	-102.03	-102.03	319.6	225.0	336.1	313.6	22.54	14.911	
4,700.0	4,683.1	4,676.7	4,653.8	11.3	12.4	-8.48	-8.48	329.2	232.4	344.5	322.8	21.64	15.919	
4,800.0	4,783.1	4,776.0	4,752.3	11.5	12.7	-7.05	-7.05	338.8	239.8	353.1	330.9	22.16	15.936	
4,900.0	4,883.1	4,875.2	4,850.8	11.7	13.0	-5.69	-5.69	348.4	247.3	361.9	339.2	22.68	15.959	
5,000.0	4,983.1	4,974.5	4,949.4	11.9	13.4	-4.39	-4.39	358.0	254.7	370.9	347.7	23.20	15.986	

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 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-234 - Wellbore #1 - Plan #1 (9-4-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
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	5,083.1	5,073.7	5,047.9	12.1	13.7	-3.16		367.6	262.1	380.1	356.4	23.73	16.017	
5,200.0	5,183.1	5,173.0	5,146.4	12.3	14.0	-1.98		377.2	269.6	389.5	365.2	24.26	16.052	
5,300.0	5,283.1	5,283.9	5,256.7	12.5	14.2	-0.92		386.3	276.7	397.6	372.8	24.76	16.055	
5,400.0	5,383.1	5,396.0	5,368.6	12.7	14.5	-0.26		392.1	281.2	402.7	377.5	25.22	15.968	
5,500.0	5,483.1	5,508.5	5,481.0	12.9	14.7	-0.01		394.4	283.0	404.8	379.1	25.64	15.789	
5,600.0	5,583.1	5,610.6	5,583.1	13.1	14.8	0.00		394.5	283.0	404.8	378.8	26.03	15.553	
5,700.0	5,683.1	5,710.6	5,683.1	13.3	15.0	0.00		394.5	283.0	404.8	378.4	26.44	15.313	
5,800.0	5,783.1	5,810.6	5,783.1	13.5	15.2	0.00		394.5	283.0	404.8	378.0	26.84	15.081	
5,900.0	5,883.1	5,910.6	5,883.1	13.7	15.4	0.00		394.5	283.0	404.8	377.6	27.25	14.855	
6,000.0	5,983.1	6,010.6	5,983.1	13.9	15.6	0.00		394.5	283.0	404.8	377.2	27.66	14.634	
6,049.9	6,033.0	6,060.5	6,033.0	14.0	15.6	90.10		394.5	283.0	404.8	376.3	28.48	14.212	
6,100.0	6,083.1	6,110.6	6,083.1	14.1	15.7	89.96		394.5	281.4	404.8	376.1	28.67	14.120	
6,200.0	6,182.2	6,210.5	6,181.9	14.3	15.8	89.76		394.5	267.6	404.8	375.9	28.91	14.005	
6,300.0	6,278.9	6,310.0	6,277.5	14.3	15.9	89.41		394.5	240.1	404.8	375.8	29.05	13.935	
6,400.0	6,371.5	6,409.1	6,367.9	14.4	15.8	88.92		394.5	199.6	404.9	375.7	29.17	13.881	
6,500.0	6,458.3	6,507.7	6,451.3	14.5	15.8	88.30		394.5	147.2	405.0	375.6	29.36	13.794	
6,600.0	6,538.0	6,605.5	6,526.0	14.7	15.8	87.57		394.5	84.2	405.2	375.4	29.76	13.613	
6,700.0	6,609.1	6,702.6	6,590.9	15.1	15.8	86.74		394.5	12.1	405.5	374.9	30.54	13.278	
6,800.0	6,670.5	6,798.8	6,644.8	15.7	16.1	85.82		394.5	-67.4	405.9	374.1	31.82	12.755	
6,900.0	6,721.0	6,894.1	6,687.1	16.7	17.1	84.84		394.5	-152.7	406.5	372.8	33.71	12.057	
7,000.0	6,759.8	6,988.4	6,717.3	18.0	18.4	83.82		394.5	-242.1	407.2	371.0	36.21	11.245	
7,100.0	6,786.3	7,081.8	6,735.1	19.6	19.9	82.77		394.5	-333.7	408.1	368.8	39.24	10.399	
7,200.0	6,799.9	7,174.3	6,740.8	21.4	21.6	81.71		394.5	-425.9	409.1	366.4	42.67	9.587	
7,300.0	6,801.7	7,274.1	6,740.1	23.4	23.6	81.34		394.5	-525.7	409.5	362.9	46.62	8.783	
7,400.0	6,801.3	7,374.1	6,739.4	25.6	25.8	81.30		394.5	-625.7	409.5	358.7	50.86	8.052	
7,500.0	6,800.9	7,474.1	6,738.7	27.9	28.0	81.26		394.5	-725.7	409.6	354.2	55.34	7.402	
7,600.0	6,800.5	7,574.1	6,738.0	30.2	30.4	81.22		394.5	-825.7	409.6	349.6	59.99	6.828	
7,700.0	6,800.1	7,674.1	6,737.3	32.6	32.8	81.18		394.5	-925.7	409.7	344.9	64.78	6.324	
7,800.0	6,799.7	7,774.1	6,736.6	35.1	35.3	81.14		394.5	-1,025.7	409.7	340.0	69.69	5.879	
7,900.0	6,799.3	7,874.1	6,735.9	37.7	37.8	81.10		394.5	-1,125.7	409.8	335.1	74.68	5.486	
8,000.0	6,798.9	7,974.1	6,735.2	40.2	40.4	81.06		394.5	-1,225.7	409.8	330.0	79.75	5.138	
8,100.0	6,798.5	8,074.1	6,734.5	42.8	42.9	81.01		394.5	-1,325.6	409.8	325.0	84.88	4.828	
8,200.0	6,798.1	8,174.1	6,733.8	45.5	45.6	80.97		394.5	-1,425.6	409.9	319.8	90.06	4.551	
8,300.0	6,797.7	8,274.1	6,733.1	48.1	48.2	80.93		394.5	-1,525.6	409.9	314.7	95.28	4.303	
8,400.0	6,797.3	8,374.1	6,732.4	50.8	50.9	80.89		394.5	-1,625.6	410.0	309.5	100.53	4.078	
8,500.0	6,796.9	8,474.1	6,731.7	53.4	53.5	80.85		394.5	-1,725.6	410.0	304.2	105.81	3.875	
8,600.0	6,796.5	8,574.1	6,731.0	56.1	56.2	80.81		394.5	-1,825.6	410.1	299.0	111.11	3.691	
8,700.0	6,796.1	8,674.1	6,730.3	58.8	58.9	80.77		394.5	-1,925.6	410.1	293.7	116.44	3.522	
8,800.0	6,795.7	8,774.1	6,729.6	61.5	61.6	80.73		394.5	-2,025.6	410.2	288.4	121.78	3.368	
8,900.0	6,795.3	8,874.1	6,728.9	64.3	64.3	80.69		394.5	-2,125.6	410.2	283.1	127.14	3.226	
9,000.0	6,794.9	8,974.1	6,728.2	67.0	67.1	80.65		394.5	-2,225.6	410.3	277.8	132.52	3.096	
9,100.0	6,794.5	9,074.1	6,727.5	69.7	69.8	80.60		394.5	-2,325.6	410.3	272.4	137.90	2.975	
9,200.0	6,794.1	9,174.1	6,726.8	72.5	72.5	80.56		394.5	-2,425.6	410.4	267.1	143.30	2.864	
9,300.0	6,793.7	9,274.1	6,726.1	75.2	75.3	80.52		394.5	-2,525.6	410.4	261.7	148.70	2.760	
9,400.0	6,793.3	9,374.1	6,725.4	78.0	78.0	80.48		394.5	-2,625.6	410.5	256.4	154.12	2.663	
9,500.0	6,792.9	9,474.1	6,724.7	80.7	80.8	80.44		394.5	-2,725.6	410.5	251.0	159.54	2.573	
9,600.0	6,792.5	9,574.1	6,724.0	83.5	83.5	80.40		394.5	-2,825.6	410.6	245.6	164.96	2.489	
9,700.0	6,792.1	9,674.1	6,723.3	86.2	86.3	80.36		394.5	-2,925.6	410.6	240.2	170.39	2.410	
9,800.0	6,791.7	9,774.1	6,722.6	89.0	89.0	80.32		394.5	-3,025.6	410.7	234.8	175.83	2.336	
9,900.0	6,791.3	9,874.1	6,721.9	91.8	91.8	80.28		394.5	-3,125.6	410.7	229.4	181.27	2.266	
10,000.0	6,790.9	9,974.1	6,721.2	94.5	94.6	80.24		394.5	-3,225.6	410.8	224.1	186.72	2.200	

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 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-234 - Wellbore #1 - Plan #1 (9-4-14)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,790.5	10,074.1	6,720.5	97.3	97.3	80.20	394.5	-3,325.6	410.8	218.7	192.16	2.138	
10,200.0	6,790.1	10,174.1	6,719.8	100.1	100.1	80.16	394.5	-3,425.6	410.9	213.3	197.61	2.079	
10,300.0	6,789.7	10,274.1	6,719.1	102.8	102.9	80.12	394.5	-3,525.6	410.9	207.9	203.07	2.024	
10,400.0	6,789.3	10,374.1	6,718.4	105.6	105.7	80.07	394.5	-3,625.6	411.0	202.4	208.52	1.971	
10,500.0	6,788.9	10,474.1	6,717.7	108.4	108.4	80.03	394.5	-3,725.6	411.0	197.0	213.98	1.921	
10,600.0	6,788.5	10,574.1	6,717.0	111.2	111.2	79.99	394.5	-3,825.6	411.1	191.6	219.44	1.873	
10,700.0	6,788.1	10,674.1	6,716.4	114.0	114.0	79.95	394.5	-3,925.6	411.1	186.2	224.90	1.828	
10,800.0	6,787.7	10,774.1	6,715.7	116.8	116.8	79.91	394.5	-4,025.6	411.2	180.8	230.36	1.785	
10,900.0	6,787.3	10,874.1	6,715.0	119.5	119.6	79.87	394.5	-4,125.6	411.2	175.4	235.83	1.744	
11,000.0	6,786.9	10,974.1	6,714.3	122.3	122.4	79.83	394.5	-4,225.6	411.3	170.0	241.29	1.705	
11,100.0	6,786.5	11,074.1	6,713.6	125.1	125.1	79.79	394.5	-4,325.6	411.3	164.6	246.75	1.667	
11,200.0	6,786.1	11,174.1	6,712.9	127.9	127.9	79.75	394.5	-4,425.6	411.4	159.2	252.22	1.631	
11,300.0	6,785.7	11,274.1	6,712.2	130.7	130.7	79.71	394.5	-4,525.6	411.4	153.8	257.69	1.597	
11,400.0	6,785.3	11,374.1	6,711.5	133.5	133.5	79.67	394.5	-4,625.6	411.5	148.3	263.15	1.564	
11,500.0	6,784.9	11,474.1	6,710.8	136.3	136.3	79.63	394.5	-4,725.6	411.5	142.9	268.62	1.532	
11,600.0	6,784.5	11,574.1	6,710.1	139.1	139.1	79.59	394.5	-4,825.5	411.6	137.5	274.09	1.502	
11,700.0	6,784.1	11,674.1	6,709.4	141.8	141.9	79.55	394.5	-4,925.5	411.7	132.1	279.55	1.473	Level 3
11,800.0	6,783.7	11,774.1	6,708.7	144.6	144.7	79.50	394.5	-5,025.5	411.7	126.7	285.02	1.444	Level 3
11,900.0	6,783.3	11,874.1	6,708.0	147.4	147.5	79.46	394.5	-5,125.5	411.8	121.3	290.48	1.417	Level 3
12,000.0	6,782.9	11,974.1	6,707.3	150.2	150.2	79.42	394.5	-5,225.5	411.8	115.9	295.95	1.391	Level 3
12,100.0	6,782.5	12,074.1	6,706.6	153.0	153.0	79.38	394.5	-5,325.5	411.9	110.5	301.42	1.366	Level 3
12,200.0	6,782.1	12,174.1	6,705.9	155.8	155.8	79.34	394.5	-5,425.5	411.9	105.0	306.88	1.342	Level 3
12,213.9	6,782.0	12,188.0	6,705.8	156.1	156.2	79.34	394.5	-5,439.4	411.9	104.4	307.51	1.340	Level 3, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-434 - Wellbore #1 - Plan #1 (9-4-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (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	2.73	2.73	58.3	2.8	58.4				
100.0	100.0	100.0	100.0	0.1	0.1	2.73	2.73	58.3	2.8	58.4	58.1	0.22	259.633	
200.0	200.0	200.0	200.0	0.3	0.3	2.73	2.73	58.3	2.8	58.4	57.7	0.67	86.544	
300.0	300.0	300.0	300.0	0.6	0.6	2.73	2.73	58.3	2.8	58.4	57.2	1.12	51.927	
400.0	400.0	400.0	400.0	0.8	0.8	2.73	2.73	58.3	2.8	58.4	56.8	1.57	37.090	
500.0	500.0	500.0	500.0	1.0	1.0	2.73	2.73	58.3	2.8	58.4	56.3	2.02	28.848	
600.0	600.0	600.0	600.0	1.2	1.2	2.73	2.73	58.3	2.8	58.4	55.9	2.47	23.603	
700.0	700.0	700.0	700.0	1.5	1.5	2.73	2.73	58.3	2.8	58.4	55.4	2.92	19.972	
800.0	800.0	800.0	800.0	1.7	1.7	2.73	2.73	58.3	2.8	58.4	55.0	3.37	17.309	
900.0	900.0	900.0	900.0	1.9	1.9	2.73	2.73	58.3	2.8	58.4	54.5	3.82	15.273	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	2.73	2.73	58.3	2.8	58.4	54.1	4.27	13.665 CC, ES	
1,100.0	1,100.0	1,098.2	1,098.2	2.4	2.4	3.49	3.49	59.7	3.6	59.9	55.2	4.71	12.703	
1,200.0	1,200.0	1,196.2	1,196.0	2.6	2.6	5.55	5.55	64.1	6.2	64.5	59.3	5.15	12.509	
1,300.0	1,300.0	1,293.7	1,293.2	2.8	2.8	8.38	8.38	71.2	10.5	72.3	66.7	5.60	12.908	
1,400.0	1,400.0	1,390.5	1,389.3	3.0	3.0	11.43	11.43	81.1	16.4	83.4	77.4	6.06	13.773	
1,500.0	1,500.0	1,487.9	1,485.6	3.3	3.3	14.28	14.28	93.6	23.8	97.6	91.1	6.54	14.932	
1,600.0	1,600.0	1,586.7	1,583.3	3.5	3.6	16.51	16.51	106.6	31.6	112.4	105.4	7.04	15.975	
1,700.0	1,700.0	1,685.5	1,680.9	3.7	3.9	18.21	18.21	119.6	39.4	127.4	119.8	7.55	16.866	
1,800.0	1,800.0	1,784.4	1,778.6	3.9	4.2	19.56	19.56	132.7	47.1	142.4	134.3	8.08	17.631	
1,900.0	1,900.0	1,883.2	1,876.2	4.2	4.5	20.65	20.65	145.7	54.9	157.5	148.9	8.61	18.291	
2,000.0	2,000.0	1,982.0	1,973.8	4.4	4.8	21.54	21.54	158.7	62.7	172.6	163.5	9.15	18.865	
2,100.0	2,100.0	2,080.9	2,071.6	4.6	5.1	-70.02	-70.02	171.7	70.4	187.2	178.0	9.24	20.263	
2,200.0	2,199.8	2,180.0	2,169.5	4.8	5.4	-70.50	-70.50	184.8	78.2	200.6	190.9	9.68	20.723	
2,300.0	2,299.5	2,279.1	2,267.4	5.0	5.8	-71.80	-71.80	197.9	86.0	213.0	202.8	10.14	21.006	
2,400.0	2,398.7	2,378.0	2,365.2	5.2	6.1	-73.81	-73.81	210.9	93.8	224.5	213.9	10.62	21.149	
2,500.0	2,497.9	2,477.0	2,463.0	5.5	6.4	-75.90	-75.90	224.0	101.6	236.3	225.1	11.11	21.256	
2,600.0	2,597.2	2,576.0	2,560.8	5.7	6.8	-77.79	-77.79	237.0	109.3	248.2	236.6	11.63	21.353	
2,700.0	2,696.4	2,674.9	2,658.6	6.0	7.1	-79.50	-79.50	250.1	117.1	260.5	248.3	12.15	21.440	
2,800.0	2,795.6	2,773.9	2,756.3	6.2	7.5	-81.06	-81.06	263.1	124.9	272.9	260.2	12.68	21.518	
2,900.0	2,894.8	2,872.8	2,854.1	6.5	7.8	-82.49	-82.49	276.2	132.7	285.6	272.3	13.23	21.587	
3,000.0	2,994.0	2,971.8	2,951.9	6.8	8.2	-83.79	-83.79	289.2	140.5	298.3	284.6	13.78	21.650	
3,100.0	3,093.2	3,070.8	3,049.7	7.0	8.5	-84.99	-84.99	302.2	148.2	311.3	296.9	14.34	21.705	
3,200.0	3,192.4	3,169.7	3,147.5	7.3	8.8	-86.09	-86.09	315.3	156.0	324.3	309.4	14.91	21.756	
3,300.0	3,291.6	3,268.7	3,245.3	7.6	9.2	-87.10	-87.10	328.3	163.8	337.5	322.0	15.48	21.801	
3,400.0	3,390.8	3,367.6	3,343.1	7.9	9.5	-88.04	-88.04	341.4	171.6	350.7	334.7	16.06	21.842	
3,500.0	3,490.0	3,466.6	3,440.9	8.2	9.9	-88.91	-88.91	354.4	179.4	364.1	347.4	16.64	21.879	
3,600.0	3,589.3	3,565.6	3,538.6	8.5	10.2	-89.72	-89.72	367.5	187.1	377.5	360.3	17.23	21.913	
3,700.0	3,688.5	3,664.5	3,636.4	8.8	10.6	-90.47	-90.47	380.5	194.9	391.0	373.2	17.82	21.944	
3,800.0	3,787.7	3,763.5	3,734.2	9.1	10.9	-91.18	-91.18	393.6	202.7	404.5	386.1	18.41	21.973	
3,900.0	3,886.9	3,862.4	3,832.0	9.4	11.3	-91.84	-91.84	406.6	210.5	418.1	399.1	19.01	21.999	
4,000.0	3,986.1	3,961.4	3,929.8	9.7	11.6	-92.45	-92.45	419.7	218.2	431.8	412.2	19.61	22.024	
4,100.0	4,085.3	4,060.4	4,027.6	10.0	12.0	-93.03	-93.03	432.7	226.0	445.5	425.3	20.21	22.047	
4,200.0	4,184.5	4,159.3	4,125.4	10.3	12.3	-93.57	-93.57	445.8	233.8	459.2	438.4	20.81	22.068	
4,300.0	4,283.8	4,258.3	4,223.2	10.6	12.7	-94.17	-94.17	458.8	241.6	473.0	451.6	21.40	22.098	
4,400.0	4,383.3	4,357.4	4,321.1	10.8	13.0	-94.54	-94.54	471.9	249.4	486.6	464.6	21.93	22.188	
4,500.0	4,483.1	4,456.4	4,419.0	11.0	13.4	-94.50	-94.50	484.9	257.2	499.9	477.4	22.42	22.299	
4,600.0	4,583.1	4,555.4	4,516.7	11.2	13.8	-94.07	-94.07	498.0	264.9	512.9	490.1	22.86	22.436	
4,700.0	4,683.1	4,664.3	4,624.5	11.3	14.1	-1.08	-1.08	511.7	273.1	525.4	502.0	23.37	22.481	
4,800.0	4,783.1	4,782.4	4,741.8	11.5	14.4	-0.34	-0.34	522.9	279.8	534.9	510.9	23.90	22.378	
4,900.0	4,883.1	4,901.3	4,860.5	11.7	14.6	0.11	0.11	530.0	284.0	540.8	516.4	24.37	22.191	
5,000.0	4,983.1	5,020.7	4,979.8	11.9	14.8	0.29	0.29	532.9	285.7	543.2	518.4	24.79	21.915	

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 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-434 - Wellbore #1 - Plan #1 (9-4-14)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
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	5,083.1	5,124.0	5,083.1	12.1	15.0	0.29	532.9	285.8	543.3	518.1	25.16	21.590			
5,200.0	5,183.1	5,224.0	5,183.1	12.3	15.2	0.29	532.9	285.8	543.3	517.7	25.55	21.265			
5,300.0	5,283.1	5,324.0	5,283.1	12.5	15.3	0.29	532.9	285.8	543.3	517.3	25.93	20.949			
5,400.0	5,383.1	5,424.0	5,383.1	12.7	15.5	0.29	532.9	285.8	543.3	516.9	26.32	20.641			
5,500.0	5,483.1	5,524.0	5,483.1	12.9	15.6	0.29	532.9	285.8	543.3	516.6	26.71	20.340			
5,600.0	5,583.1	5,624.0	5,583.1	13.1	15.8	0.29	532.9	285.8	543.3	516.2	27.10	20.046			
5,700.0	5,683.1	5,724.0	5,683.1	13.3	16.0	0.29	532.9	285.8	543.3	515.8	27.49	19.760			
5,800.0	5,783.1	5,824.0	5,783.1	13.5	16.2	0.29	532.9	285.8	543.3	515.4	27.89	19.481			
5,900.0	5,883.1	5,924.0	5,883.1	13.7	16.3	0.29	532.9	285.8	543.3	515.0	28.28	19.208			
6,000.0	5,983.1	6,024.0	5,983.1	13.9	16.5	0.29	532.9	285.8	543.3	514.6	28.68	18.942			
6,040.8	6,023.9	6,064.8	6,023.9	14.0	16.6	90.35	532.9	285.8	543.3	514.7	28.57	19.013			
6,100.0	6,083.1	6,124.0	6,083.1	14.1	16.7	90.43	532.9	285.8	543.3	514.5	28.80	18.862			
6,200.0	6,182.2	6,224.5	6,183.5	14.3	16.8	91.36	532.9	282.1	543.4	514.4	29.05	18.706			
6,300.0	6,278.9	6,326.5	6,284.0	14.3	16.9	92.31	532.9	265.4	543.7	514.5	29.19	18.629			
6,400.0	6,371.5	6,429.6	6,382.5	14.4	16.9	93.23	532.9	235.0	544.1	514.9	29.27	18.587			
6,500.0	6,458.3	6,534.1	6,477.1	14.5	16.9	94.09	532.9	191.1	544.7	515.3	29.40	18.523			
6,600.0	6,538.0	6,639.7	6,565.9	14.7	16.9	94.89	532.9	133.9	545.2	515.5	29.70	18.358			
6,700.0	6,609.1	6,746.5	6,646.7	15.1	16.9	95.60	532.9	64.3	545.9	515.5	30.33	18.000			
6,800.0	6,670.5	6,854.3	6,717.6	15.7	16.9	96.21	532.9	-16.8	546.5	515.0	31.46	17.371			
6,900.0	6,721.0	6,962.9	6,776.9	16.7	17.0	96.70	532.9	-107.7	547.0	513.8	33.24	16.458			
7,000.0	6,759.8	7,072.3	6,822.9	18.0	18.2	97.08	532.9	-206.8	547.4	511.7	35.72	15.327			
7,100.0	6,786.3	7,182.1	6,854.4	19.6	19.9	97.32	532.9	-312.0	547.7	508.9	38.87	14.092			
7,200.0	6,799.9	7,292.3	6,870.5	21.4	21.9	97.42	532.9	-420.8	547.9	505.3	42.56	12.871			
7,300.0	6,801.7	7,397.6	6,872.7	23.4	23.9	97.44	532.9	-526.1	547.9	501.3	46.57	11.764			
7,400.0	6,801.3	7,497.6	6,872.7	25.6	26.0	97.49	532.9	-626.1	547.9	497.1	50.80	10.787			
7,500.0	6,800.9	7,597.6	6,872.8	27.9	28.3	97.53	532.9	-726.1	548.0	492.7	55.26	9.917			
7,600.0	6,800.5	7,697.6	6,872.8	30.2	30.6	97.58	532.9	-826.1	548.0	488.1	59.90	9.149			
7,700.0	6,800.1	7,797.6	6,872.8	32.6	33.0	97.62	532.9	-926.1	548.1	483.4	64.70	8.472			
7,800.0	6,799.7	7,897.6	6,872.9	35.1	35.5	97.67	532.9	-1,026.1	548.2	478.6	69.60	7.876			
7,900.0	6,799.3	7,997.6	6,872.9	37.7	38.0	97.71	532.9	-1,126.1	548.2	473.6	74.60	7.349			
8,000.0	6,798.9	8,097.6	6,872.9	40.2	40.5	97.76	532.9	-1,226.1	548.3	468.6	79.67	6.882			
8,100.0	6,798.5	8,197.6	6,873.0	42.8	43.1	97.80	532.9	-1,326.1	548.3	463.5	84.80	6.466			
8,200.0	6,798.1	8,297.6	6,873.0	45.5	45.7	97.85	532.9	-1,426.1	548.4	458.4	89.98	6.094			
8,300.0	6,797.7	8,397.6	6,873.0	48.1	48.3	97.89	532.9	-1,526.1	548.5	453.3	95.21	5.761			
8,400.0	6,797.3	8,497.6	6,873.1	50.8	51.0	97.94	532.9	-1,626.1	548.5	448.1	100.46	5.460			
8,500.0	6,796.9	8,597.6	6,873.1	53.4	53.6	97.99	532.9	-1,726.1	548.6	442.8	105.75	5.187			
8,600.0	6,796.5	8,697.6	6,873.2	56.1	56.3	98.03	532.9	-1,826.1	548.6	437.6	111.06	4.940			
8,700.0	6,796.1	8,797.6	6,873.2	58.8	59.0	98.08	532.9	-1,926.1	548.7	432.3	116.40	4.714			
8,800.0	6,795.7	8,897.6	6,873.2	61.5	61.7	98.12	532.9	-2,026.1	548.8	427.0	121.75	4.507			
8,900.0	6,795.3	8,997.5	6,873.3	64.3	64.4	98.17	532.9	-2,126.1	548.8	421.7	127.12	4.317			
9,000.0	6,794.9	9,097.5	6,873.3	67.0	67.1	98.21	532.9	-2,226.1	548.9	416.4	132.50	4.142			
9,100.0	6,794.5	9,197.5	6,873.3	69.7	69.8	98.26	532.9	-2,326.1	548.9	411.1	137.90	3.981			
9,200.0	6,794.1	9,297.5	6,873.4	72.5	72.6	98.30	532.9	-2,426.1	549.0	405.7	143.30	3.831			
9,300.0	6,793.7	9,397.5	6,873.4	75.2	75.3	98.35	532.9	-2,526.1	549.1	400.4	148.71	3.692			
9,400.0	6,793.3	9,497.5	6,873.4	78.0	78.1	98.39	532.9	-2,626.1	549.1	395.0	154.14	3.563			
9,500.0	6,792.9	9,597.5	6,873.5	80.7	80.8	98.44	532.9	-2,726.1	549.2	389.6	159.57	3.442			
9,600.0	6,792.5	9,697.5	6,873.5	83.5	83.5	98.48	532.9	-2,826.1	549.3	384.3	165.00	3.329			
9,700.0	6,792.1	9,797.5	6,873.5	86.2	86.3	98.53	532.9	-2,926.1	549.3	378.9	170.44	3.223			
9,800.0	6,791.7	9,897.5	6,873.6	89.0	89.1	98.57	532.9	-3,026.1	549.4	373.5	175.89	3.124			
9,900.0	6,791.3	9,997.5	6,873.6	91.8	91.8	98.62	532.9	-3,126.1	549.5	368.1	181.34	3.030			
10,000.0	6,790.9	10,097.5	6,873.6	94.5	94.6	98.66	532.9	-3,226.1	549.5	362.7	186.79	2.942			

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 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-434 - Wellbore #1 - Plan #1 (9-4-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,100.0	6,790.5	10,197.5	6,873.7	97.3	97.3	98.71	532.9	-3,326.1	549.6	357.3	192.25	2.859		
10,200.0	6,790.1	10,297.5	6,873.7	100.1	100.1	98.75	532.9	-3,426.0	549.7	351.9	197.71	2.780		
10,300.0	6,789.7	10,397.5	6,873.7	102.8	102.9	98.80	532.9	-3,526.0	549.7	346.5	203.18	2.706		
10,400.0	6,789.3	10,497.5	6,873.8	105.6	105.7	98.84	532.9	-3,626.0	549.8	341.1	208.64	2.635		
10,500.0	6,788.9	10,597.5	6,873.8	108.4	108.4	98.89	532.9	-3,726.0	549.9	335.7	214.11	2.568		
10,600.0	6,788.5	10,697.5	6,873.8	111.2	111.2	98.93	532.9	-3,826.0	549.9	330.3	219.58	2.504		
10,700.0	6,788.1	10,797.5	6,873.9	114.0	114.0	98.98	532.9	-3,926.0	550.0	324.9	225.05	2.444		
10,800.0	6,787.7	10,897.5	6,873.9	116.8	116.8	99.02	532.9	-4,026.0	550.1	319.5	230.52	2.386		
10,900.0	6,787.3	10,997.5	6,874.0	119.5	119.6	99.07	532.9	-4,126.0	550.1	314.1	236.00	2.331		
11,000.0	6,786.9	11,097.5	6,874.0	122.3	122.3	99.11	532.9	-4,226.0	550.2	308.7	241.47	2.279		
11,100.0	6,786.5	11,197.5	6,874.0	125.1	125.1	99.16	532.9	-4,326.0	550.3	303.3	246.94	2.228		
11,200.0	6,786.1	11,297.5	6,874.1	127.9	127.9	99.20	532.9	-4,426.0	550.3	297.9	252.42	2.180		
11,300.0	6,785.7	11,397.5	6,874.1	130.7	130.7	99.24	532.9	-4,526.0	550.4	292.5	257.90	2.134		
11,400.0	6,785.3	11,497.5	6,874.1	133.5	133.5	99.29	532.9	-4,626.0	550.5	287.1	263.37	2.090		
11,500.0	6,784.9	11,597.5	6,874.2	136.3	136.3	99.33	532.9	-4,726.0	550.5	281.7	268.85	2.048		
11,600.0	6,784.5	11,697.5	6,874.2	139.1	139.1	99.38	532.9	-4,826.0	550.6	276.3	274.33	2.007		
11,700.0	6,784.1	11,797.5	6,874.2	141.8	141.8	99.42	532.9	-4,926.0	550.7	270.9	279.80	1.968		
11,800.0	6,783.7	11,897.5	6,874.3	144.6	144.6	99.47	532.9	-5,026.0	550.8	265.5	285.28	1.931		
11,900.0	6,783.3	11,997.5	6,874.3	147.4	147.4	99.51	532.9	-5,126.0	550.8	260.1	290.76	1.894		
12,000.0	6,782.9	12,097.5	6,874.3	150.2	150.2	99.56	532.9	-5,226.0	550.9	254.7	296.23	1.860		
12,100.0	6,782.5	12,197.5	6,874.4	153.0	153.0	99.60	532.9	-5,326.0	551.0	249.3	301.71	1.826		
12,200.0	6,782.1	12,297.5	6,874.4	155.8	155.8	99.65	532.9	-5,426.0	551.1	243.9	307.18	1.794		
12,213.9	6,782.0	12,311.4	6,874.4	156.1	156.2	99.65	532.9	-5,439.9	551.1	243.3	307.81	1.790 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 5N65W1W Pad Sec.1-T5N-R65W - LDS 1W-414 - Wellbore #1 - Plan #1 (9-4-14)											Offset Site Error: 0.0 ft	
Survey Program: 0-MWDD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Distance								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)			
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-32.8	0.0	32.8					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-32.8	0.0	32.8	32.6	0.22	145.877		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-32.8	0.0	32.8	32.1	0.67	48.626		
300.0	300.0	300.0	300.0	0.6	0.6	180.00	-32.8	0.0	32.8	31.7	1.12	29.175		
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-32.8	0.0	32.8	31.2	1.57	20.840		
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-32.8	0.0	32.8	30.8	2.02	16.209		
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-32.8	0.0	32.8	30.3	2.47	13.262		
700.0	700.0	700.0	700.0	1.5	1.5	180.00	-32.8	0.0	32.8	29.9	2.92	11.221		
800.0	800.0	800.0	800.0	1.7	1.7	180.00	-32.8	0.0	32.8	29.4	3.37	9.725		
900.0	900.0	900.0	900.0	1.9	1.9	180.00	-32.8	0.0	32.8	29.0	3.82	8.581		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	180.00	-32.8	0.0	32.8	28.5	4.27	7.678		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	180.00	-32.8	0.0	32.8	28.1	4.72	6.947		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	180.00	-32.8	0.0	32.8	27.6	5.17	6.342		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	180.00	-32.8	0.0	32.8	27.2	5.62	5.835		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	180.00	-32.8	0.0	32.8	26.7	6.07	5.403		
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	180.00	-32.8	0.0	32.8	26.3	6.52	5.030		
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	180.00	-32.8	0.0	32.8	25.8	6.97	4.706 CC		
1,700.0	1,700.0	1,699.4	1,699.3	3.7	3.7	177.50	-33.7	1.5	33.7	26.3	7.39	4.562		
1,800.0	1,800.0	1,798.5	1,798.3	3.9	3.9	170.86	-36.4	5.9	36.9	29.1	7.80	4.728		
1,900.0	1,900.0	1,897.1	1,896.6	4.2	4.1	162.19	-40.8	13.1	43.0	34.8	8.22	5.235		
2,000.0	2,000.0	1,995.7	1,994.4	4.4	4.3	153.86	-46.9	23.0	52.6	43.9	8.65	6.076		
2,100.0	2,100.0	2,095.1	2,093.1	4.6	4.5	56.90	-53.4	33.6	62.5	53.5	9.06	6.903		
2,200.0	2,199.8	2,194.7	2,191.9	4.8	4.8	55.65	-59.9	44.2	70.8	61.3	9.46	7.481		
2,300.0	2,299.5	2,294.5	2,290.9	5.0	5.0	56.79	-66.5	54.8	77.1	67.2	9.88	7.804		
2,400.0	2,398.7	2,394.3	2,389.9	5.2	5.3	59.71	-73.0	65.4	81.8	71.5	10.32	7.922		
2,500.0	2,497.9	2,494.1	2,489.0	5.5	5.5	62.72	-79.5	76.0	86.4	75.6	10.79	8.001		
2,600.0	2,597.2	2,593.9	2,588.0	5.7	5.8	65.42	-86.0	86.6	91.1	79.9	11.28	8.079		
2,700.0	2,696.4	2,693.7	2,687.0	6.0	6.1	67.85	-92.5	97.2	96.1	84.3	11.79	8.156		
2,800.0	2,795.6	2,793.5	2,786.0	6.2	6.4	70.03	-99.0	107.9	101.3	89.0	12.30	8.229		
2,900.0	2,894.8	2,893.3	2,885.0	6.5	6.7	72.01	-105.6	118.5	106.5	93.7	12.84	8.298		
3,000.0	2,994.0	2,993.1	2,984.1	6.8	7.0	73.79	-112.1	129.1	111.9	98.5	13.38	8.364		
3,100.0	3,093.2	3,092.9	3,083.1	7.0	7.2	75.41	-118.6	139.7	117.4	103.4	13.93	8.425		
3,200.0	3,192.4	3,192.7	3,182.1	7.3	7.5	76.88	-125.1	150.3	122.9	108.4	14.49	8.482		
3,300.0	3,291.6	3,292.5	3,281.1	7.6	7.8	78.23	-131.6	160.9	128.6	113.5	15.06	8.535		
3,400.0	3,390.8	3,392.3	3,380.1	7.9	8.2	79.46	-138.1	171.5	134.3	118.6	15.64	8.585		
3,500.0	3,490.0	3,492.1	3,479.1	8.2	8.5	80.60	-144.7	182.1	140.0	123.8	16.23	8.631		
3,600.0	3,589.3	3,591.9	3,578.2	8.5	8.8	81.64	-151.2	192.7	145.8	129.0	16.81	8.674		
3,700.0	3,688.5	3,691.7	3,677.2	8.8	9.1	82.60	-157.7	203.3	151.7	134.3	17.41	8.715		
3,800.0	3,787.7	3,791.5	3,776.2	9.1	9.4	83.49	-164.2	214.0	157.6	139.6	18.01	8.753		
3,900.0	3,886.9	3,891.2	3,875.2	9.4	9.7	84.32	-170.7	224.6	163.5	144.9	18.61	8.788		
4,000.0	3,986.1	3,991.0	3,974.2	9.7	10.0	85.08	-177.2	235.2	169.5	150.3	19.21	8.821		
4,100.0	4,085.3	4,090.8	4,073.2	10.0	10.3	85.80	-183.8	245.8	175.5	155.6	19.82	8.853		
4,200.0	4,184.5	4,190.6	4,172.3	10.3	10.6	86.47	-190.3	256.4	181.5	161.0	20.43	8.882		
4,300.0	4,283.8	4,291.5	4,272.3	10.6	10.9	87.09	-196.8	267.0	187.4	166.4	21.02	8.917		
4,400.0	4,383.3	4,395.0	4,375.4	10.8	11.2	87.53	-202.0	275.5	192.1	170.7	21.49	8.939		
4,500.0	4,483.1	4,498.6	4,478.8	11.0	11.4	87.80	-205.3	280.8	195.1	173.2	21.92	8.901		
4,600.0	4,583.1	4,602.4	4,582.5	11.2	11.6	87.91	-206.6	283.0	196.3	174.0	22.29	8.804		
4,700.0	4,683.1	4,703.0	4,683.1	11.3	11.8	180.00	-206.6	283.0	196.3	175.6	20.74	9.463		
4,800.0	4,783.1	4,803.0	4,783.1	11.5	11.9	180.00	-206.6	283.0	196.3	175.1	21.15	9.282		
4,900.0	4,883.1	4,903.0	4,883.1	11.7	12.1	180.00	-206.6	283.0	196.3	174.7	21.56	9.106		
5,000.0	4,983.1	5,003.0	4,983.1	11.9	12.3	180.00	-206.6	283.0	196.3	174.3	21.97	8.937		

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 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 5N65W1W Pad Sec.1-T5N-R65W - LDS 1W-414 - 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		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)			
5,100.0	5,083.1	5,103.0	5,083.1	12.1	12.5	180.00	-206.6	283.0	196.3	173.9	22.38	8.773	
5,200.0	5,183.1	5,203.0	5,183.1	12.3	12.7	180.00	-206.6	283.0	196.3	173.5	22.79	8.614	
5,300.0	5,283.1	5,303.0	5,283.1	12.5	12.8	180.00	-206.6	283.0	196.3	173.1	23.20	8.460	
5,400.0	5,383.1	5,403.0	5,383.1	12.7	13.0	180.00	-206.6	283.0	196.3	172.7	23.62	8.312	
5,500.0	5,483.1	5,503.0	5,483.1	12.9	13.2	180.00	-206.6	283.0	196.3	172.3	24.03	8.168	
5,600.0	5,583.1	5,603.0	5,583.1	13.1	13.4	180.00	-206.6	283.0	196.3	171.8	24.45	8.028	
5,700.0	5,683.1	5,703.0	5,683.1	13.3	13.6	180.00	-206.6	283.0	196.3	171.4	24.87	7.893	
5,800.0	5,783.1	5,803.0	5,783.1	13.5	13.8	180.00	-206.6	283.0	196.3	171.0	25.29	7.763	
5,900.0	5,883.1	5,903.0	5,883.1	13.7	14.0	180.00	-206.6	283.0	196.3	170.6	25.71	7.636	
6,000.0	5,983.1	6,003.0	5,983.1	13.9	14.2	180.00	-206.6	283.0	196.3	170.2	26.13	7.512	
6,051.4	6,034.5	6,054.4	6,034.5	14.0	14.3	-90.23	-206.6	283.0	196.3	168.3	27.95	7.023	
6,100.0	6,083.1	6,103.0	6,083.1	14.1	14.4	-90.39	-206.6	283.0	196.3	168.2	28.14	6.977	
6,200.0	6,182.2	6,203.2	6,183.2	14.3	14.5	-92.96	-206.6	279.4	196.6	168.2	28.36	6.930	
6,300.0	6,278.9	6,304.8	6,283.3	14.3	14.6	-95.61	-206.6	262.8	197.2	168.8	28.47	6.928	
6,400.0	6,371.5	6,407.6	6,381.6	14.4	14.7	-98.15	-206.6	232.7	198.3	169.8	28.51	6.956	
6,500.0	6,458.3	6,511.6	6,476.0	14.5	14.7	-100.55	-206.6	189.1	199.7	171.1	28.57	6.989	
6,600.0	6,538.0	6,616.9	6,564.5	14.7	14.8	-102.74	-206.6	132.3	201.3	172.5	28.77	6.996	
6,700.0	6,609.1	6,723.4	6,645.3	15.1	15.0	-104.68	-206.6	63.1	203.0	173.7	29.26	6.936	
6,800.0	6,670.5	6,830.9	6,716.3	15.7	15.4	-106.35	-206.6	-17.5	204.6	174.4	30.22	6.770	
6,900.0	6,721.0	6,939.3	6,775.8	16.7	16.3	-107.72	-206.6	-108.1	206.1	174.3	31.79	6.483	
7,000.0	6,759.8	7,048.5	6,822.1	18.0	17.6	-108.77	-206.6	-206.9	207.3	173.3	34.04	6.091	
7,100.0	6,786.3	7,158.3	6,854.0	19.6	19.3	-109.48	-206.6	-311.8	208.2	171.2	36.97	5.632	
7,200.0	6,799.9	7,268.4	6,870.6	21.4	21.3	-109.84	-206.6	-420.5	208.7	168.2	40.47	5.157	
7,300.0	6,801.7	7,374.2	6,872.8	23.4	23.4	-109.92	-206.6	-526.3	208.8	164.5	44.31	4.712	
7,400.0	6,801.3	7,474.2	6,872.6	25.6	25.5	-109.97	-206.6	-626.3	208.8	160.5	48.35	4.320	
7,500.0	6,800.9	7,574.2	6,872.4	27.9	27.8	-110.02	-206.6	-726.3	208.9	156.3	52.60	3.972	
7,600.0	6,800.5	7,674.2	6,872.2	30.2	30.2	-110.07	-206.6	-826.3	209.0	152.0	57.03	3.665	
7,700.0	6,800.1	7,774.2	6,872.0	32.6	32.6	-110.11	-206.6	-926.2	209.0	147.5	61.59	3.394	
7,800.0	6,799.7	7,874.2	6,871.8	35.1	35.1	-110.16	-206.6	-1,026.2	209.1	142.9	66.25	3.156	
7,900.0	6,799.3	7,974.2	6,871.6	37.7	37.6	-110.21	-206.6	-1,126.2	209.2	138.2	71.00	2.946	
8,000.0	6,798.9	8,074.2	6,871.4	40.2	40.2	-110.26	-206.6	-1,226.2	209.2	133.4	75.82	2.760	
8,100.0	6,798.5	8,174.2	6,871.2	42.8	42.8	-110.31	-206.6	-1,326.2	209.3	128.6	80.69	2.594	
8,200.0	6,798.1	8,274.2	6,871.0	45.5	45.4	-110.36	-206.6	-1,426.2	209.4	123.8	85.61	2.446	
8,300.0	6,797.7	8,374.2	6,870.8	48.1	48.0	-110.41	-206.6	-1,526.2	209.4	118.9	90.57	2.313	
8,400.0	6,797.3	8,474.2	6,870.5	50.8	50.7	-110.46	-206.6	-1,626.2	209.5	114.0	95.55	2.193	
8,500.0	6,796.9	8,574.2	6,870.3	53.4	53.4	-110.51	-206.6	-1,726.2	209.6	109.0	100.57	2.084	
8,600.0	6,796.5	8,674.2	6,870.1	56.1	56.1	-110.56	-206.6	-1,826.2	209.6	104.0	105.60	1.985	
8,700.0	6,796.1	8,774.2	6,869.9	58.8	58.8	-110.61	-206.6	-1,926.2	209.7	99.1	110.65	1.895	
8,800.0	6,795.7	8,874.2	6,869.7	61.5	61.5	-110.66	-206.6	-2,026.2	209.8	94.1	115.72	1.813	
8,900.0	6,795.3	8,974.2	6,869.5	64.3	64.2	-110.71	-206.6	-2,126.2	209.9	89.1	120.80	1.737	
9,000.0	6,794.9	9,074.2	6,869.3	67.0	66.9	-110.75	-206.6	-2,226.2	209.9	84.0	125.89	1.667	
9,100.0	6,794.5	9,174.2	6,869.1	69.7	69.7	-110.80	-206.6	-2,326.2	210.0	79.0	130.99	1.603	
9,200.0	6,794.1	9,274.2	6,868.9	72.5	72.4	-110.85	-206.6	-2,426.2	210.1	74.0	136.10	1.543	
9,300.0	6,793.7	9,374.2	6,868.7	75.2	75.1	-110.90	-206.6	-2,526.2	210.1	68.9	141.21	1.488 Level 3	
9,400.0	6,793.3	9,474.2	6,868.4	78.0	77.9	-110.95	-206.6	-2,626.2	210.2	63.9	146.34	1.436 Level 3	
9,500.0	6,792.9	9,574.2	6,868.2	80.7	80.6	-111.00	-206.6	-2,726.2	210.3	58.8	151.46	1.388 Level 3	
9,600.0	6,792.5	9,674.2	6,868.0	83.5	83.4	-111.05	-206.6	-2,826.2	210.3	53.7	156.59	1.343 Level 3	
9,700.0	6,792.1	9,774.2	6,867.8	86.2	86.2	-111.10	-206.6	-2,926.2	210.4	48.7	161.72	1.301 Level 3	
9,800.0	6,791.7	9,874.2	6,867.6	89.0	88.9	-111.15	-206.6	-3,026.2	210.5	43.6	166.86	1.261 Level 3	
9,900.0	6,791.3	9,974.2	6,867.4	91.8	91.7	-111.19	-206.6	-3,126.2	210.5	38.5	172.00	1.224 Level 2	
10,000.0	6,790.9	10,074.2	6,867.2	94.5	94.5	-111.24	-206.6	-3,226.2	210.6	33.5	177.14	1.189 Level 2	

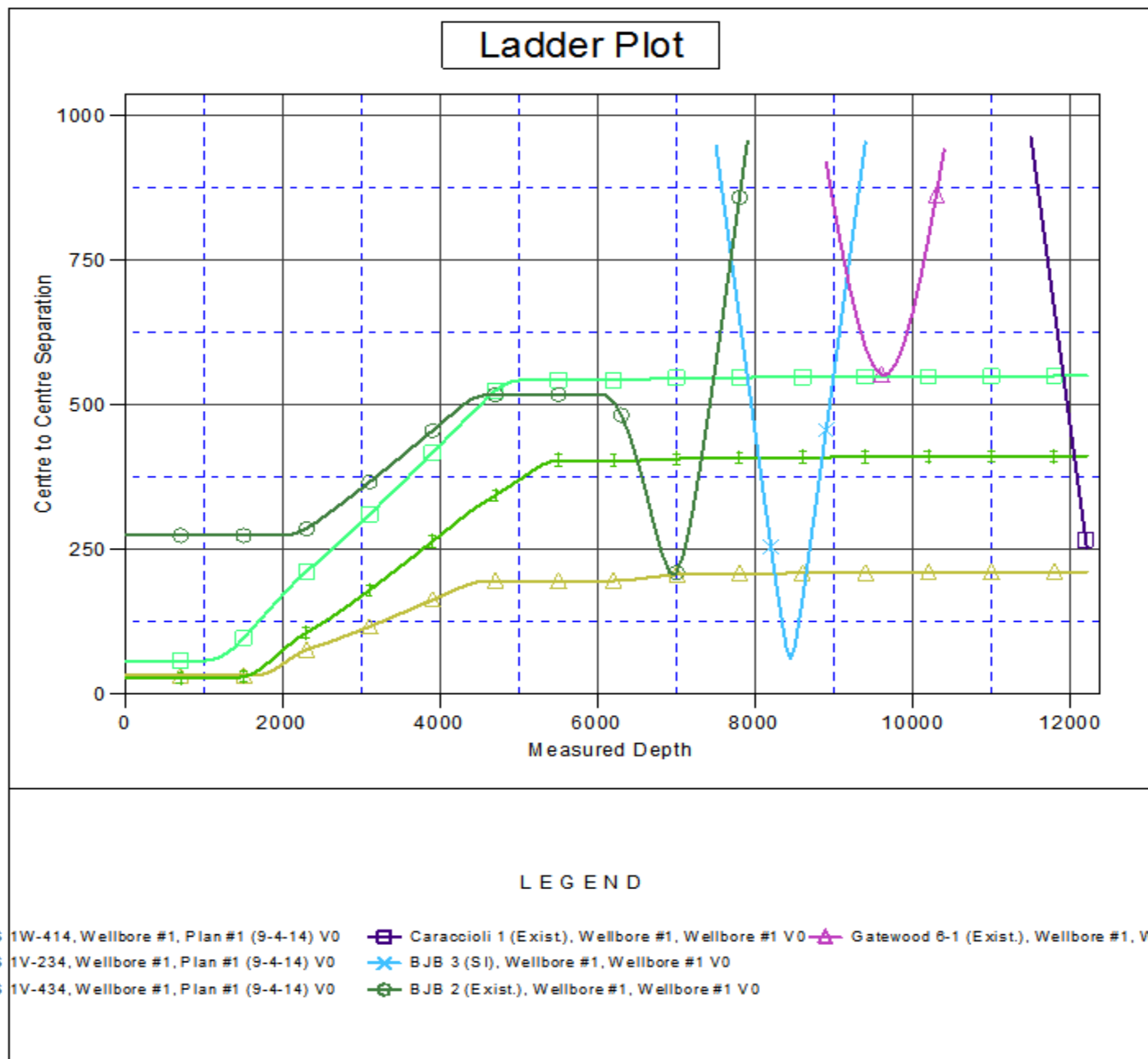
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 5N65W1W Pad Sec.1-T5N-R65W - LDS 1W-414 - Wellbore #1 - Plan #1 (9-4-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,790.5	10,174.2	6,867.0	97.3	97.2	-111.29		-206.6	-3,326.2	210.7	28.4	182.28	1.156	Level 2
10,200.0	6,790.1	10,274.2	6,866.8	100.1	100.0	-111.34		-206.6	-3,426.2	210.7	23.3	187.42	1.124	Level 2
10,300.0	6,789.7	10,374.2	6,866.6	102.8	102.8	-111.39		-206.6	-3,526.2	210.8	18.3	192.56	1.095	Level 2
10,400.0	6,789.3	10,474.2	6,866.4	105.6	105.6	-111.44		-206.6	-3,626.2	210.9	13.2	197.70	1.067	Level 2
10,500.0	6,788.9	10,574.2	6,866.1	108.4	108.3	-111.49		-206.6	-3,726.2	211.0	8.1	202.84	1.040	Level 2
10,600.0	6,788.5	10,674.2	6,865.9	111.2	111.1	-111.53		-206.6	-3,826.2	211.0	3.0	207.98	1.015	Level 2
10,700.0	6,788.1	10,774.2	6,865.7	114.0	113.9	-111.58		-206.6	-3,926.2	211.1	-2.0	213.12	0.990	Level 1
10,800.0	6,787.7	10,874.2	6,865.5	116.8	116.7	-111.63		-206.6	-4,026.2	211.2	-7.1	218.26	0.967	Level 1
10,900.0	6,787.3	10,974.2	6,865.3	119.5	119.5	-111.68		-206.6	-4,126.2	211.2	-12.2	223.40	0.946	Level 1
11,000.0	6,786.9	11,074.2	6,865.1	122.3	122.3	-111.73		-206.6	-4,226.2	211.3	-17.2	228.54	0.925	Level 1
11,100.0	6,786.5	11,174.2	6,864.9	125.1	125.0	-111.78		-206.6	-4,326.2	211.4	-22.3	233.68	0.905	Level 1
11,200.0	6,786.1	11,274.2	6,864.7	127.9	127.8	-111.82		-206.6	-4,426.2	211.5	-27.4	238.81	0.885	Level 1
11,300.0	6,785.7	11,374.2	6,864.5	130.7	130.6	-111.87		-206.6	-4,526.2	211.5	-32.4	243.95	0.867	Level 1
11,400.0	6,785.3	11,474.2	6,864.3	133.5	133.4	-111.92		-206.6	-4,626.2	211.6	-37.5	249.08	0.850	Level 1
11,500.0	6,784.9	11,574.2	6,864.1	136.3	136.2	-111.97		-206.6	-4,726.2	211.7	-42.5	254.21	0.833	Level 1
11,600.0	6,784.5	11,674.2	6,863.8	139.1	139.0	-112.02		-206.6	-4,826.2	211.7	-47.6	259.34	0.816	Level 1
11,700.0	6,784.1	11,774.2	6,863.6	141.8	141.8	-112.07		-206.6	-4,926.2	211.8	-52.7	264.46	0.801	Level 1
11,800.0	6,783.7	11,874.2	6,863.4	144.6	144.6	-112.11		-206.6	-5,026.2	211.9	-57.7	269.59	0.786	Level 1
11,900.0	6,783.3	11,974.2	6,863.2	147.4	147.4	-112.16		-206.6	-5,126.2	212.0	-62.8	274.71	0.772	Level 1
12,000.0	6,782.9	12,074.2	6,863.0	150.2	150.2	-112.21		-206.6	-5,226.2	212.0	-67.8	279.83	0.758	Level 1
12,100.0	6,782.5	12,174.2	6,862.8	153.0	153.0	-112.26		-206.6	-5,326.2	212.1	-72.8	284.95	0.744	Level 1
12,200.0	6,782.1	12,274.2	6,862.6	155.8	155.8	-112.31		-206.6	-5,426.2	212.2	-77.9	290.06	0.731	Level 1
12,213.9	6,782.0	12,288.1	6,862.6	156.1	156.1	-112.31		-206.6	-5,440.1	212.2	-78.5	290.64	0.730	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 @ 4628.0ft (Original Well Elev) Coordinates are relative to: LDS 1W-314
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.58°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1W-314
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4628.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1W Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4628.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1W-314	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 @ 4628.0ft (Original Well Elev) Coordinates are relative to: LDS 1W-314

Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.58°

