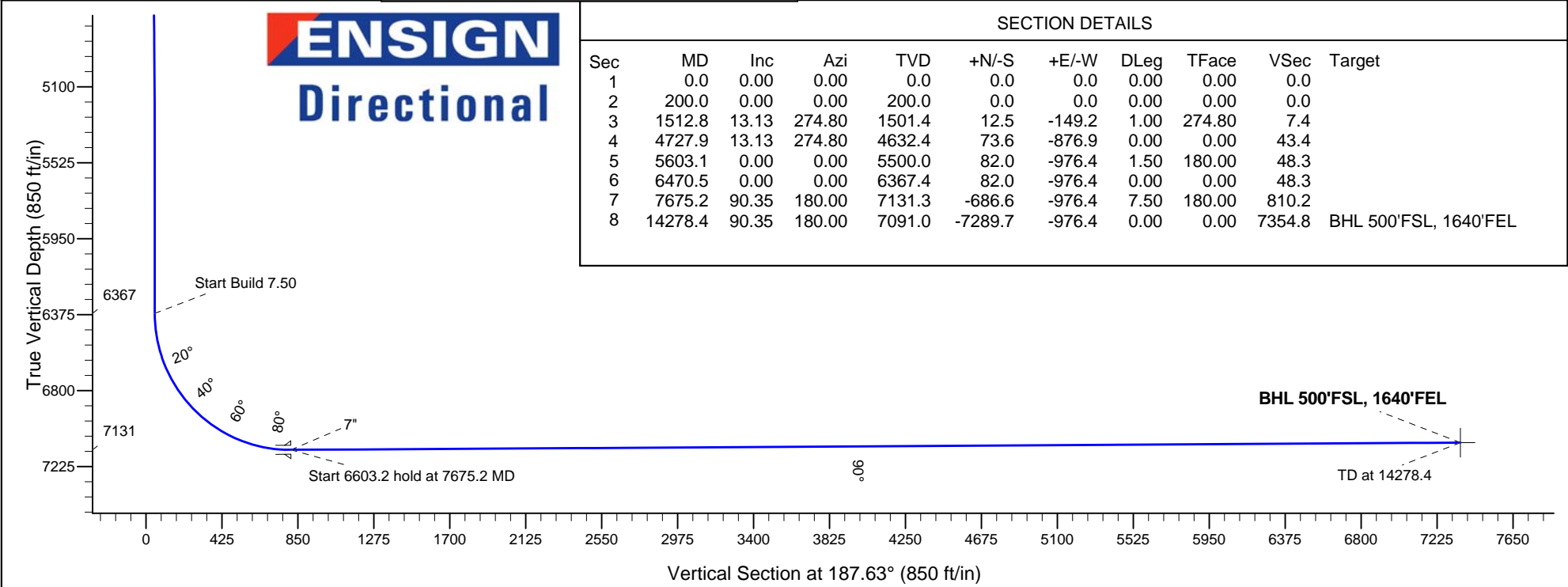
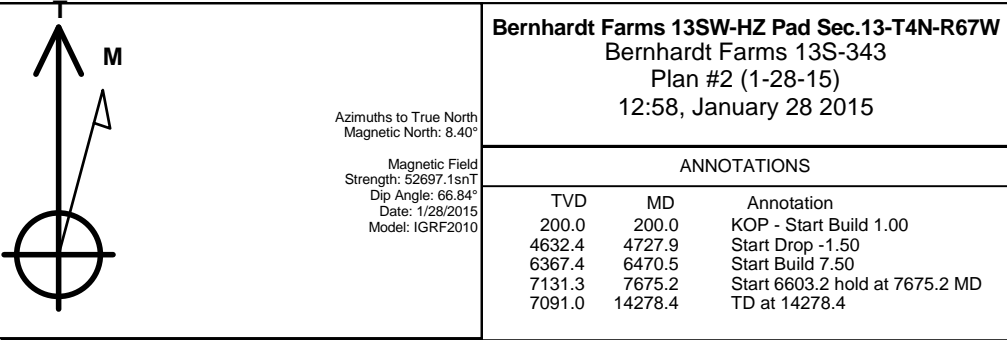


Well Name: Bernhardt Farms 13S-343						
Surface Location: Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W						
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone						
Ground Elevation: 4737.0						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1357007.18	3186244.30	40.311460	-104.832150	
		RKB - 13'	WELL @ 4750.0ft (RKB - 13')			

WELLBORE TARGET DETAILS				
Name	TVD	+N/-S	+E/-W	Shape
SHL 2549'FSL, 681'FEL	1.0	0.0	0.0	Point
BHL 500'FSL, 1640'FEL	7091.0	-7289.7	-976.4	Point





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.13-T4N-R67W

Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W

Bernhardt Farms 13S-343

Wellbore #1

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

Standard Planning Report

28 January, 2015

Database:	Landmark	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Project:	SEC.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	North Reference:	True
Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-28-15)		

Project	SEC.13-T4N-R67W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

SiteBernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W					
Site Position:		Northing:		1,357,036.42 ft	
From:		Easting:		3,186,255.24 ft	
Position Uncertainty:		Slot Radius:		Grid Convergence:	
Lat/Long		0.0 ft		"	
				°	

Well	Bernhardt Farms 13S-343					
Well Position	+N-S	-29.2 ft	Northing:	1,357,007.18 ft	Latitude:	40.311460
	+E-W	-11.2 ft	Easting:	3,186,244.30 ft	Longitude:	-104.832150
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,737.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/28/2015	8.41	66.84	52,697

Design	Plan #2 (1-28-15)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	187.63

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,512.8	13.13	274.80	1,501.4	12.5	-149.2	1.00	1.00	0.00	274.80	
4,727.9	13.13	274.80	4,632.4	73.6	-876.9	0.00	0.00	0.00	0.00	
5,603.1	0.00	0.00	5,500.0	82.0	-976.4	1.50	-1.50	0.00	180.00	
6,470.5	0.00	0.00	6,367.4	82.0	-976.4	0.00	0.00	0.00	0.00	
7,675.2	90.35	180.00	7,131.3	-686.6	-976.4	7.50	7.50	0.00	180.00	
14,278.4	90.35	180.00	7,091.0	-7,289.7	-976.4	0.00	0.00	0.00	0.00	BHL 500'FSL, 1640

Database:	Landmark	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Project:	SEC.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	North Reference:	True
Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-28-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 2549'FSL, 681'FEL									
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
KOP - Start Build 1.00									
300.0	1.00	274.80	300.0	0.1	-0.9	0.0	1.00	1.00	0.00
400.0	2.00	274.80	400.0	0.3	-3.5	0.2	1.00	1.00	0.00
500.0	3.00	274.80	499.9	0.7	-7.8	0.4	1.00	1.00	0.00
600.0	4.00	274.80	599.7	1.2	-13.9	0.7	1.00	1.00	0.00
700.0	5.00	274.80	699.4	1.8	-21.7	1.1	1.00	1.00	0.00
800.0	6.00	274.80	798.9	2.6	-31.3	1.5	1.00	1.00	0.00
900.0	7.00	274.80	898.3	3.6	-42.6	2.1	1.00	1.00	0.00
1,000.0	8.00	274.80	997.4	4.7	-55.6	2.8	1.00	1.00	0.00
1,100.0	9.00	274.80	1,096.3	5.9	-70.3	3.5	1.00	1.00	0.00
1,200.0	10.00	274.80	1,194.9	7.3	-86.7	4.3	1.00	1.00	0.00
1,300.0	11.00	274.80	1,293.3	8.8	-104.9	5.2	1.00	1.00	0.00
1,400.0	12.00	274.80	1,391.2	10.5	-124.8	6.2	1.00	1.00	0.00
1,500.0	13.00	274.80	1,488.9	12.3	-146.3	7.2	1.00	1.00	0.00
1,512.8	13.13	274.80	1,501.4	12.5	-149.2	7.4	1.00	1.00	0.00
1,600.0	13.13	274.80	1,586.3	14.2	-169.0	8.4	0.00	0.00	0.00
1,700.0	13.13	274.80	1,683.7	16.1	-191.6	9.5	0.00	0.00	0.00
1,800.0	13.13	274.80	1,781.0	18.0	-214.2	10.6	0.00	0.00	0.00
1,900.0	13.13	274.80	1,878.4	19.9	-236.9	11.7	0.00	0.00	0.00
2,000.0	13.13	274.80	1,975.8	21.8	-259.5	12.8	0.00	0.00	0.00
2,100.0	13.13	274.80	2,073.2	23.7	-282.1	14.0	0.00	0.00	0.00
2,200.0	13.13	274.80	2,170.6	25.6	-304.8	15.1	0.00	0.00	0.00
2,300.0	13.13	274.80	2,268.0	27.5	-327.4	16.2	0.00	0.00	0.00
2,400.0	13.13	274.80	2,365.4	29.4	-350.0	17.3	0.00	0.00	0.00
2,500.0	13.13	274.80	2,462.7	31.3	-372.7	18.5	0.00	0.00	0.00
2,600.0	13.13	274.80	2,560.1	33.2	-395.3	19.6	0.00	0.00	0.00
2,700.0	13.13	274.80	2,657.5	35.1	-417.9	20.7	0.00	0.00	0.00
2,800.0	13.13	274.80	2,754.9	37.0	-440.6	21.8	0.00	0.00	0.00
2,900.0	13.13	274.80	2,852.3	38.9	-463.2	22.9	0.00	0.00	0.00
3,000.0	13.13	274.80	2,949.7	40.8	-485.8	24.1	0.00	0.00	0.00
3,100.0	13.13	274.80	3,047.1	42.7	-508.5	25.2	0.00	0.00	0.00
3,200.0	13.13	274.80	3,144.4	44.6	-531.1	26.3	0.00	0.00	0.00
3,300.0	13.13	274.80	3,241.8	46.5	-553.7	27.4	0.00	0.00	0.00
3,400.0	13.13	274.80	3,339.2	48.4	-576.4	28.5	0.00	0.00	0.00
3,500.0	13.13	274.80	3,436.6	50.3	-599.0	29.7	0.00	0.00	0.00
3,600.0	13.13	274.80	3,534.0	52.2	-621.6	30.8	0.00	0.00	0.00
3,647.2	13.13	274.80	3,580.0	53.1	-632.3	31.3	0.00	0.00	0.00
PARKMAN									
3,700.0	13.13	274.80	3,631.4	54.1	-644.3	31.9	0.00	0.00	0.00
3,800.0	13.13	274.80	3,728.8	56.0	-666.9	33.0	0.00	0.00	0.00
3,900.0	13.13	274.80	3,826.2	57.9	-689.5	34.1	0.00	0.00	0.00
4,000.0	13.13	274.80	3,923.5	59.8	-712.2	35.3	0.00	0.00	0.00
4,100.0	13.13	274.80	4,020.9	61.7	-734.8	36.4	0.00	0.00	0.00
4,181.2	13.13	274.80	4,100.0	63.3	-753.2	37.3	0.00	0.00	0.00
SUSSEX									
4,200.0	13.13	274.80	4,118.3	63.6	-757.4	37.5	0.00	0.00	0.00
4,300.0	13.13	274.80	4,215.7	65.5	-780.1	38.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Project:	SEC.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	North Reference:	True
Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-28-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,400.0	13.13	274.80	4,313.1	67.4	-802.7	39.7	0.00	0.00	0.00
4,500.0	13.13	274.80	4,410.5	69.3	-825.3	40.9	0.00	0.00	0.00
4,600.0	13.13	274.80	4,507.9	71.2	-848.0	42.0	0.00	0.00	0.00
4,700.0	13.13	274.80	4,605.2	73.1	-870.6	43.1	0.00	0.00	0.00
4,727.9	13.13	274.80	4,632.4	73.6	-876.9	43.4	0.00	0.00	0.00
Start Drop -1.50									
4,766.5	12.55	274.80	4,670.0	74.4	-885.4	43.8	1.50	-1.50	0.00
SHANNON									
4,800.0	12.05	274.80	4,702.8	75.0	-892.6	44.2	1.50	-1.50	0.00
4,900.0	10.55	274.80	4,800.8	76.6	-912.1	45.2	1.50	-1.50	0.00
5,000.0	9.05	274.80	4,899.4	78.0	-929.0	46.0	1.50	-1.50	0.00
5,100.0	7.55	274.80	4,998.3	79.2	-943.4	46.7	1.50	-1.50	0.00
5,200.0	6.05	274.80	5,097.6	80.2	-955.2	47.3	1.50	-1.50	0.00
5,300.0	4.55	274.80	5,197.2	81.0	-964.4	47.8	1.50	-1.50	0.00
5,400.0	3.05	274.80	5,297.0	81.5	-971.0	48.1	1.50	-1.50	0.00
5,500.0	1.55	274.80	5,396.9	81.9	-975.0	48.3	1.50	-1.50	0.00
5,600.0	0.05	274.80	5,496.9	82.0	-976.4	48.3	1.50	-1.50	0.00
5,603.1	0.00	0.00	5,500.0	82.0	-976.4	48.3	1.50	-1.50	0.00
5,700.0	0.00	0.00	5,596.9	82.0	-976.4	48.3	0.00	0.00	0.00
5,800.0	0.00	0.00	5,696.9	82.0	-976.4	48.3	0.00	0.00	0.00
5,900.0	0.00	0.00	5,796.9	82.0	-976.4	48.3	0.00	0.00	0.00
6,000.0	0.00	0.00	5,896.9	82.0	-976.4	48.3	0.00	0.00	0.00
6,100.0	0.00	0.00	5,996.9	82.0	-976.4	48.3	0.00	0.00	0.00
6,200.0	0.00	0.00	6,096.9	82.0	-976.4	48.3	0.00	0.00	0.00
6,300.0	0.00	0.00	6,196.9	82.0	-976.4	48.3	0.00	0.00	0.00
6,400.0	0.00	0.00	6,296.9	82.0	-976.4	48.3	0.00	0.00	0.00
6,470.5	0.00	0.00	6,367.4	82.0	-976.4	48.3	0.00	0.00	0.00
Start Build 7.50									
6,500.0	2.21	180.00	6,396.9	81.4	-976.4	48.9	7.49	7.49	0.00
6,600.0	9.71	180.00	6,496.3	71.1	-976.4	59.2	7.50	7.50	0.00
6,700.0	17.21	180.00	6,593.4	47.8	-976.4	82.2	7.50	7.50	0.00
6,800.0	24.71	180.00	6,686.8	12.0	-976.4	117.7	7.50	7.50	0.00
6,900.0	32.21	180.00	6,774.6	-35.6	-976.4	164.9	7.50	7.50	0.00
6,968.7	37.36	180.00	6,831.0	-74.7	-976.4	203.7	7.50	7.50	0.00
SHARON SPRINGS									
7,000.0	39.71	180.00	6,855.5	-94.3	-976.4	223.0	7.50	7.50	0.00
7,100.0	47.21	180.00	6,928.0	-163.0	-976.4	291.2	7.50	7.50	0.00
7,200.0	54.71	180.00	6,991.0	-240.6	-976.4	368.1	7.50	7.50	0.00
7,300.0	62.21	180.00	7,043.2	-325.8	-976.4	452.5	7.50	7.50	0.00
7,400.0	69.71	180.00	7,083.9	-417.0	-976.4	543.0	7.50	7.50	0.00
7,500.0	77.21	180.00	7,112.4	-512.8	-976.4	637.9	7.50	7.50	0.00
7,600.0	84.71	180.00	7,128.1	-611.5	-976.4	735.7	7.50	7.50	0.00
7,675.2	90.35	180.00	7,131.3	-686.6	-976.4	810.2	7.50	7.50	0.00
Start 6603.2 hold at 7675.2 MD - 7"									
7,700.0	90.35	180.00	7,131.2	-711.4	-976.4	834.7	0.00	0.00	0.00
7,800.0	90.35	180.00	7,130.6	-811.4	-976.4	933.8	0.00	0.00	0.00
7,900.0	90.35	180.00	7,130.0	-911.4	-976.4	1,033.0	0.00	0.00	0.00
8,000.0	90.35	180.00	7,129.4	-1,011.4	-976.4	1,132.1	0.00	0.00	0.00
8,100.0	90.35	180.00	7,128.7	-1,111.4	-976.4	1,231.2	0.00	0.00	0.00
8,200.0	90.35	180.00	7,128.1	-1,211.4	-976.4	1,330.3	0.00	0.00	0.00
8,300.0	90.35	180.00	7,127.5	-1,311.4	-976.4	1,429.4	0.00	0.00	0.00
8,400.0	90.35	180.00	7,126.9	-1,411.4	-976.4	1,528.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Project:	SEC.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	North Reference:	True
Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-28-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,500.0	90.35	180.00	7,126.3	-1,511.4	-976.4	1,627.6	0.00	0.00	0.00
8,600.0	90.35	180.00	7,125.7	-1,611.4	-976.4	1,726.8	0.00	0.00	0.00
8,700.0	90.35	180.00	7,125.1	-1,711.4	-976.4	1,825.9	0.00	0.00	0.00
8,800.0	90.35	180.00	7,124.5	-1,811.4	-976.4	1,925.0	0.00	0.00	0.00
8,900.0	90.35	180.00	7,123.9	-1,911.4	-976.4	2,024.1	0.00	0.00	0.00
9,000.0	90.35	180.00	7,123.2	-2,011.4	-976.4	2,123.2	0.00	0.00	0.00
9,100.0	90.35	180.00	7,122.6	-2,111.4	-976.4	2,222.3	0.00	0.00	0.00
9,200.0	90.35	180.00	7,122.0	-2,211.4	-976.4	2,321.4	0.00	0.00	0.00
9,300.0	90.35	180.00	7,121.4	-2,311.4	-976.4	2,420.5	0.00	0.00	0.00
9,400.0	90.35	180.00	7,120.8	-2,411.4	-976.4	2,519.7	0.00	0.00	0.00
9,500.0	90.35	180.00	7,120.2	-2,511.4	-976.4	2,618.8	0.00	0.00	0.00
9,600.0	90.35	180.00	7,119.6	-2,611.4	-976.4	2,717.9	0.00	0.00	0.00
9,700.0	90.35	180.00	7,119.0	-2,711.4	-976.4	2,817.0	0.00	0.00	0.00
9,800.0	90.35	180.00	7,118.4	-2,811.4	-976.4	2,916.1	0.00	0.00	0.00
9,900.0	90.35	180.00	7,117.7	-2,911.4	-976.4	3,015.2	0.00	0.00	0.00
10,000.0	90.35	180.00	7,117.1	-3,011.4	-976.4	3,114.3	0.00	0.00	0.00
10,100.0	90.35	180.00	7,116.5	-3,111.4	-976.4	3,213.4	0.00	0.00	0.00
10,200.0	90.35	180.00	7,115.9	-3,211.4	-976.4	3,312.6	0.00	0.00	0.00
10,300.0	90.35	180.00	7,115.3	-3,311.4	-976.4	3,411.7	0.00	0.00	0.00
10,400.0	90.35	180.00	7,114.7	-3,411.4	-976.4	3,510.8	0.00	0.00	0.00
10,500.0	90.35	180.00	7,114.1	-3,511.4	-976.4	3,609.9	0.00	0.00	0.00
10,600.0	90.35	180.00	7,113.5	-3,611.4	-976.4	3,709.0	0.00	0.00	0.00
10,700.0	90.35	180.00	7,112.9	-3,711.4	-976.4	3,808.1	0.00	0.00	0.00
10,800.0	90.35	180.00	7,112.2	-3,811.4	-976.4	3,907.2	0.00	0.00	0.00
10,900.0	90.35	180.00	7,111.6	-3,911.4	-976.4	4,006.4	0.00	0.00	0.00
11,000.0	90.35	180.00	7,111.0	-4,011.4	-976.4	4,105.5	0.00	0.00	0.00
11,100.0	90.35	180.00	7,110.4	-4,111.3	-976.4	4,204.6	0.00	0.00	0.00
11,200.0	90.35	180.00	7,109.8	-4,211.3	-976.4	4,303.7	0.00	0.00	0.00
11,300.0	90.35	180.00	7,109.2	-4,311.3	-976.4	4,402.8	0.00	0.00	0.00
11,400.0	90.35	180.00	7,108.6	-4,411.3	-976.4	4,501.9	0.00	0.00	0.00
11,500.0	90.35	180.00	7,108.0	-4,511.3	-976.4	4,601.0	0.00	0.00	0.00
11,600.0	90.35	180.00	7,107.4	-4,611.3	-976.4	4,700.1	0.00	0.00	0.00
11,700.0	90.35	180.00	7,106.8	-4,711.3	-976.4	4,799.3	0.00	0.00	0.00
11,800.0	90.35	180.00	7,106.1	-4,811.3	-976.4	4,898.4	0.00	0.00	0.00
11,900.0	90.35	180.00	7,105.5	-4,911.3	-976.4	4,997.5	0.00	0.00	0.00
12,000.0	90.35	180.00	7,104.9	-5,011.3	-976.4	5,096.6	0.00	0.00	0.00
12,100.0	90.35	180.00	7,104.3	-5,111.3	-976.4	5,195.7	0.00	0.00	0.00
12,200.0	90.35	180.00	7,103.7	-5,211.3	-976.4	5,294.8	0.00	0.00	0.00
12,300.0	90.35	180.00	7,103.1	-5,311.3	-976.4	5,393.9	0.00	0.00	0.00
12,400.0	90.35	180.00	7,102.5	-5,411.3	-976.4	5,493.0	0.00	0.00	0.00
12,500.0	90.35	180.00	7,101.9	-5,511.3	-976.4	5,592.2	0.00	0.00	0.00
12,600.0	90.35	180.00	7,101.3	-5,611.3	-976.4	5,691.3	0.00	0.00	0.00
12,700.0	90.35	180.00	7,100.6	-5,711.3	-976.4	5,790.4	0.00	0.00	0.00
12,800.0	90.35	180.00	7,100.0	-5,811.3	-976.4	5,889.5	0.00	0.00	0.00
12,900.0	90.35	180.00	7,099.4	-5,911.3	-976.4	5,988.6	0.00	0.00	0.00
13,000.0	90.35	180.00	7,098.8	-6,011.3	-976.4	6,087.7	0.00	0.00	0.00
13,100.0	90.35	180.00	7,098.2	-6,111.3	-976.4	6,186.8	0.00	0.00	0.00
13,200.0	90.35	180.00	7,097.6	-6,211.3	-976.4	6,286.0	0.00	0.00	0.00
13,300.0	90.35	180.00	7,097.0	-6,311.3	-976.4	6,385.1	0.00	0.00	0.00
13,400.0	90.35	180.00	7,096.4	-6,411.3	-976.4	6,484.2	0.00	0.00	0.00
13,500.0	90.35	180.00	7,095.8	-6,511.3	-976.4	6,583.3	0.00	0.00	0.00
13,600.0	90.35	180.00	7,095.1	-6,611.3	-976.4	6,682.4	0.00	0.00	0.00



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.13-T4N-R67W

Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W

Bernhardt Farms 13S-343

Wellbore #1

Plan #2 (1-28-15)

Anticollision Report

28 January, 2015



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

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

Survey Tool Program	Date 1/28/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	14,278.4	Plan #2 (1-28-15) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W						
Bernhardt Farms 13S-203 - Wellbore #1 - Plan #2 (1-28-	200.0	200.0	31.2	30.5	46.291	CC
Bernhardt Farms 13S-203 - Wellbore #1 - Plan #2 (1-28-	300.0	300.0	31.5	30.4	28.256	ES
Bernhardt Farms 13S-203 - Wellbore #1 - Plan #2 (1-28-	14,278.4	14,114.2	513.9	233.6	1.834	SF
Bernhardt Farms 13S-323 - Wellbore #1 - Plan #2 (1-28-	200.0	200.0	62.4	61.7	92.566	CC
Bernhardt Farms 13S-323 - Wellbore #1 - Plan #2 (1-28-	300.0	300.0	62.7	61.6	56.269	ES
Bernhardt Farms 13S-323 - Wellbore #1 - Plan #2 (1-28-	14,278.4	14,186.4	839.7	557.0	2.970	SF
Bernhardt Farms 13W-243 - Wellbore #1 - Plan #2 (1-28	200.0	200.0	92.7	92.0	137.416	CC
Bernhardt Farms 13W-243 - Wellbore #1 - Plan #2 (1-28	300.0	300.0	92.9	91.8	83.404	ES
Bernhardt Farms 13W-243 - Wellbore #1 - Plan #2 (1-28	1,200.0	1,194.9	142.2	136.8	26.663	SF
Bernhardt Farms 13W-403 - Wellbore #1 - Plan #2 (1-28	200.0	200.0	120.4	119.8	178.606	CC
Bernhardt Farms 13W-403 - Wellbore #1 - Plan #2 (1-28	300.0	300.0	120.7	119.6	108.355	ES
Bernhardt Farms 13W-403 - Wellbore #1 - Plan #2 (1-28	1,200.0	1,191.7	168.3	163.0	31.652	SF
Existing Wells - Sec.13-T4N-R67W						
Bernhardt 13D (Exist) - Wellbore #1 - Wellbore #1	8,351.3	7,099.9	368.3	320.5	7.713	CC, ES
Bernhardt 13D (Exist) - Wellbore #1 - Wellbore #1	8,400.0	7,099.7	371.5	322.9	7.654	SF
Bernhardt 13T (Exist) - Wellbore #1 - Wellbore #1	9,372.7	7,091.3	149.6	86.6	2.375	CC, ES, SF
Bernhardt 24C (Exist) - Wellbore #1 - Wellbore #1	10,935.2	7,086.2	263.4	171.1	2.856	CC, ES, SF
Brindl 1 (Exist) - Wellbore #1 - Wellbore #1	7,719.5	7,157.4	644.4	607.4	17.396	CC, ES
Brindl 1 (Exist) - Wellbore #1 - Wellbore #1	7,900.0	7,154.3	669.2	629.8	16.965	SF
Bryce 1 (Exist) - Wellbore #1 - Wellbore #1	8,778.9	7,183.1	409.5	354.1	7.395	CC, ES
Bryce 1 (Exist) - Wellbore #1 - Wellbore #1	8,800.0	7,182.7	410.0	354.3	7.356	SF
Jennifer 1 (Exist) - Wellbore #1 - Wellbore #1	11,425.8	7,079.3	648.6	547.2	6.394	CC, ES
Jennifer 1 (Exist) - Wellbore #1 - Wellbore #1	11,500.0	7,078.7	652.9	550.0	6.349	SF
Johnny 1 (Exist) - Wellbore #1 - Wellbore #1	10,129.8	7,086.1	572.7	493.4	7.226	CC, ES
Johnny 1 (Exist) - Wellbore #1 - Wellbore #1	10,200.0	7,085.7	577.0	496.4	7.162	SF
Johnston 34-24 (Exist) - Wellbore #1 - Wellbore #1	14,135.1	7,062.7	360.1	206.0	2.336	CC, ES, SF
Johnston 5 (Exist) - Wellbore #1 - Wellbore #1	13,808.5	7,103.0	64.6	-83.5	0.436	Level 1, CC, ES, SF
Orr 33-24 (Exist) - Wellbore #1 - Wellbore #1	12,664.8	7,075.4	256.5	129.7	2.023	CC, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W - Bernhardt Farms 13S-203 - Wellbore #1 - Plan #2														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	20.94	29.2	11.2	31.2						
100.0	100.0	100.0	100.0	0.1	0.1	20.94	29.2	11.2	31.2	31.0	0.22	138.874			
200.0	200.0	200.0	200.0	0.3	0.3	20.94	29.2	11.2	31.2	30.5	0.67	46.291 CC			
300.0	300.0	300.0	300.0	0.6	0.6	107.66	29.2	11.2	31.5	30.4	1.11	28.256 ES			
400.0	400.0	400.0	400.0	0.8	0.8	112.07	29.2	11.2	32.4	30.8	1.55	20.827			
500.0	499.9	499.9	499.9	1.0	1.0	118.83	29.2	11.2	34.2	32.2	2.00	17.093			
600.0	599.7	599.7	599.7	1.2	1.2	126.98	29.2	11.2	37.6	35.1	2.46	15.280			
700.0	699.4	699.4	699.4	1.5	1.5	135.36	29.2	11.2	42.8	39.8	2.92	14.659			
800.0	798.9	798.9	798.9	1.8	1.7	143.04	29.2	11.2	50.0	46.7	3.37	14.829			
900.0	898.3	898.3	898.3	2.0	1.9	149.55	29.2	11.2	59.5	55.7	3.83	15.529			
1,000.0	997.4	997.4	997.4	2.4	2.1	154.83	29.2	11.2	71.1	66.8	4.29	16.582			
1,100.0	1,096.3	1,097.6	1,097.6	2.7	2.3	158.87	29.2	10.3	83.9	79.2	4.73	17.747			
1,200.0	1,194.9	1,198.1	1,198.1	3.0	2.5	161.79	29.5	7.8	97.1	92.0	5.17	18.804			
1,300.0	1,293.3	1,298.9	1,298.8	3.4	2.8	163.99	30.0	3.4	110.5	104.9	5.61	19.707			
1,400.0	1,391.2	1,399.9	1,399.6	3.8	3.0	165.69	30.7	-2.7	124.0	117.9	6.06	20.475			
1,500.0	1,488.9	1,501.2	1,500.5	4.3	3.2	167.04	31.6	-10.6	137.6	131.1	6.51	21.126			
1,512.8	1,501.4	1,514.2	1,513.5	4.3	3.2	167.19	31.7	-11.8	139.3	132.8	6.57	21.201			
1,600.0	1,586.3	1,602.8	1,601.6	4.7	3.5	168.09	32.7	-20.3	150.6	143.6	6.99	21.548			
1,700.0	1,683.7	1,704.6	1,702.9	5.2	3.7	168.84	33.9	-31.9	161.9	154.4	7.47	21.669			
1,800.0	1,781.0	1,804.1	1,801.5	5.7	4.0	169.42	35.3	-43.9	172.4	164.5	7.96	21.671			
1,900.0	1,878.4	1,903.5	1,900.2	6.2	4.3	169.94	36.6	-55.9	183.0	174.6	8.45	21.667			
2,000.0	1,975.8	2,002.9	1,998.9	6.6	4.5	170.40	37.9	-67.9	193.6	184.7	8.94	21.659			
2,100.0	2,073.2	2,102.3	2,097.6	7.1	4.8	170.81	39.3	-79.9	204.3	194.8	9.44	21.648			
2,200.0	2,170.6	2,201.8	2,196.3	7.6	5.1	171.18	40.6	-91.9	214.9	205.0	9.93	21.635			
2,300.0	2,268.0	2,301.2	2,295.0	8.1	5.4	171.51	41.9	-104.0	225.5	215.1	10.43	21.621			
2,400.0	2,365.4	2,400.6	2,393.7	8.6	5.7	171.82	43.3	-116.0	236.2	225.2	10.93	21.605			
2,500.0	2,462.7	2,500.0	2,492.4	9.1	6.0	172.10	44.6	-128.0	246.8	235.4	11.43	21.590			
2,600.0	2,560.1	2,599.5	2,591.0	9.6	6.3	172.35	45.9	-140.0	257.5	245.5	11.93	21.574			
2,700.0	2,657.5	2,698.9	2,689.7	10.1	6.6	172.59	47.3	-152.0	268.1	255.7	12.44	21.558			
2,800.0	2,754.9	2,798.3	2,788.4	10.6	6.9	172.80	48.6	-164.1	278.8	265.8	12.94	21.542			
2,900.0	2,852.3	2,897.7	2,887.1	11.1	7.2	173.01	50.0	-176.1	289.4	276.0	13.45	21.527			
3,000.0	2,949.7	2,997.2	2,985.8	11.5	7.5	173.19	51.3	-188.1	300.1	286.1	13.95	21.512			
3,100.0	3,047.1	3,096.6	3,084.5	12.0	7.8	173.37	52.6	-200.1	310.8	296.3	14.46	21.497			
3,200.0	3,144.4	3,196.0	3,183.2	12.5	8.1	173.53	54.0	-212.1	321.4	306.5	14.96	21.483			
3,300.0	3,241.8	3,295.4	3,281.9	13.0	8.5	173.68	55.3	-224.1	332.1	316.6	15.47	21.469			
3,400.0	3,339.2	3,394.9	3,380.5	13.5	8.8	173.82	56.6	-236.2	342.8	326.8	15.98	21.455			
3,500.0	3,436.6	3,494.3	3,479.2	14.0	9.1	173.96	58.0	-248.2	353.5	337.0	16.49	21.442			
3,600.0	3,534.0	3,593.7	3,577.9	14.5	9.4	174.08	59.3	-260.2	364.2	347.2	16.99	21.429			
3,700.0	3,631.4	3,693.1	3,676.6	15.0	9.7	174.20	60.6	-272.2	374.8	357.3	17.50	21.416			
3,800.0	3,728.8	3,792.6	3,775.3	15.5	10.0	174.32	62.0	-284.2	385.5	367.5	18.01	21.404			
3,900.0	3,826.2	3,892.0	3,874.0	16.0	10.3	174.42	63.3	-296.3	396.2	377.7	18.52	21.393			
4,000.0	3,923.5	3,991.4	3,972.7	16.5	10.6	174.52	64.6	-308.3	406.9	387.9	19.03	21.381			
4,100.0	4,020.9	4,090.8	4,071.3	17.0	11.0	174.62	66.0	-320.3	417.6	398.0	19.54	21.370			
4,200.0	4,118.3	4,190.3	4,170.0	17.5	11.3	174.71	67.3	-332.3	428.3	408.2	20.05	21.360			
4,300.0	4,215.7	4,289.7	4,268.7	18.0	11.6	174.80	68.6	-344.3	439.0	418.4	20.56	21.350			
4,400.0	4,313.1	4,389.1	4,367.4	18.5	11.9	174.88	70.0	-356.3	449.6	428.6	21.07	21.340			
4,500.0	4,410.5	4,488.5	4,466.1	19.0	12.2	174.96	71.3	-368.4	460.3	438.8	21.58	21.330			
4,600.0	4,507.9	4,588.0	4,564.8	19.5	12.5	175.03	72.7	-380.4	471.0	448.9	22.09	21.321			
4,700.0	4,605.2	4,687.4	4,663.5	20.0	12.9	175.10	74.0	-392.4	481.7	459.1	22.60	21.312			
4,727.9	4,632.4	4,715.1	4,691.0	20.1	12.9	175.12	74.4	-395.8	484.7	462.0	22.75	21.309			

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 Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W - Bernhardt Farms 13S-203 - Wellbore #1 - Plan #2										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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
4,800.0	4,702.8	4,786.9	4,762.2	20.4	13.2	175.17	75.3	-404.4	491.7	468.6	23.12	21.266			
4,900.0	4,800.8	4,886.6	4,861.2	20.7	13.5	175.22	76.7	-416.5	499.3	475.7	23.61	21.148			
5,000.0	4,899.4	4,986.5	4,960.3	21.0	13.8	175.23	78.0	-428.6	504.2	480.1	24.07	20.945			
5,100.0	4,998.3	5,083.6	5,056.8	21.3	14.1	175.22	79.3	-440.2	506.6	482.1	24.50	20.674			
5,200.0	5,097.6	5,171.9	5,144.6	21.6	14.3	175.21	80.3	-449.4	508.0	483.1	24.86	20.437			
5,300.0	5,197.2	5,260.2	5,232.6	21.8	14.5	175.20	81.1	-456.6	509.1	483.9	25.18	20.219			
5,400.0	5,297.0	5,348.5	5,320.8	21.9	14.7	175.19	81.7	-461.7	509.9	484.4	25.47	20.016			
5,500.0	5,396.9	5,436.8	5,409.0	22.1	14.8	175.18	82.0	-464.8	510.3	484.6	25.74	19.826			
5,603.1	5,500.0	5,527.9	5,500.0	22.2	15.0	89.98	82.2	-465.9	510.5	484.5	26.00	19.636			
5,700.0	5,596.9	5,624.7	5,596.9	22.3	15.1	89.98	82.2	-465.9	510.5	484.2	26.36	19.370			
5,800.0	5,696.9	5,724.7	5,696.9	22.4	15.3	89.98	82.2	-465.9	510.5	483.8	26.73	19.097			
5,900.0	5,796.9	5,824.7	5,796.9	22.5	15.5	89.98	82.2	-465.9	510.5	483.4	27.11	18.830			
6,000.0	5,896.9	5,924.7	5,896.9	22.7	15.6	89.98	82.2	-465.9	510.5	483.0	27.49	18.569			
6,100.0	5,996.9	6,024.7	5,996.9	22.8	15.8	89.98	82.2	-465.9	510.5	482.6	27.88	18.314			
6,200.0	6,096.9	6,124.7	6,096.9	22.9	16.0	89.98	82.2	-465.9	510.5	482.2	28.26	18.064			
6,300.0	6,196.9	6,224.7	6,196.9	23.0	16.2	89.98	82.2	-465.9	510.5	481.9	28.65	17.820			
6,370.0	6,266.9	6,294.7	6,266.9	23.1	16.3	89.98	82.2	-465.9	510.5	481.6	28.92	17.653			
6,400.0	6,296.9	6,324.7	6,296.9	23.1	16.3	90.01	81.9	-465.9	510.5	481.5	29.03	17.584			
6,403.3	6,300.2	6,328.1	6,300.2	23.2	16.3	90.02	81.8	-465.9	510.5	481.5	29.04	17.577			
6,470.5	6,367.4	6,394.9	6,366.8	23.2	16.5	90.56	77.0	-465.9	510.5	481.3	29.27	17.440			
6,500.0	6,396.9	6,423.9	6,395.6	23.3	16.5	-89.06	73.1	-465.9	510.6	481.2	29.36	17.388			
6,550.0	6,446.7	6,472.8	6,443.7	23.3	16.6	-88.42	64.1	-465.9	510.7	481.2	29.51	17.306			
6,600.0	6,496.3	6,521.4	6,490.8	23.4	16.6	-87.80	52.1	-465.9	510.9	481.2	29.66	17.228			
6,650.0	6,545.2	6,569.7	6,536.7	23.4	16.7	-87.18	37.2	-465.9	511.1	481.3	29.80	17.151			
6,700.0	6,593.4	6,617.7	6,581.3	23.5	16.8	-86.57	19.6	-465.9	511.4	481.5	29.96	17.071			
6,750.0	6,640.7	6,665.3	6,624.4	23.5	16.9	-85.99	-0.7	-465.9	511.8	481.6	30.13	16.985			
6,800.0	6,686.8	6,712.6	6,665.9	23.6	16.9	-85.42	-23.4	-465.9	512.2	481.8	30.32	16.891			
6,850.0	6,731.5	6,759.7	6,705.7	23.6	17.0	-84.87	-48.5	-465.9	512.6	482.0	30.54	16.785			
6,900.0	6,774.6	6,806.5	6,743.7	23.7	17.1	-84.34	-75.8	-465.9	513.0	482.2	30.78	16.666			
6,950.0	6,816.0	6,853.1	6,779.7	23.7	17.2	-83.84	-105.3	-465.9	513.5	482.4	31.06	16.531			
7,000.0	6,855.5	6,900.0	6,814.2	23.8	17.4	-83.36	-137.2	-465.9	514.0	482.6	31.38	16.377			
7,050.0	6,892.9	6,945.5	6,845.7	23.9	17.5	-82.92	-170.0	-465.9	514.5	482.7	31.75	16.206			
7,100.0	6,928.0	6,991.5	6,875.4	24.0	17.7	-82.50	-205.0	-465.9	514.9	482.8	32.15	16.014			
7,150.0	6,960.8	7,037.2	6,902.8	24.1	17.9	-82.11	-241.6	-465.9	515.4	482.8	32.61	15.804			
7,200.0	6,991.0	7,082.8	6,928.0	24.2	18.1	-81.76	-279.6	-465.9	515.9	482.7	33.12	15.575			
7,250.0	7,018.5	7,128.2	6,950.7	24.3	18.4	-81.43	-318.9	-465.9	516.3	482.6	33.68	15.330			
7,300.0	7,043.2	7,173.5	6,971.0	24.5	18.7	-81.14	-359.4	-465.9	516.7	482.4	34.29	15.068			
7,350.0	7,065.1	7,218.6	6,988.9	24.7	19.0	-80.89	-400.9	-465.9	517.0	482.1	34.95	14.792			
7,400.0	7,083.9	7,263.7	7,004.2	24.9	19.3	-80.67	-443.2	-465.9	517.4	481.7	35.67	14.505			
7,450.0	7,099.7	7,308.7	7,017.0	25.2	19.7	-80.48	-486.4	-465.9	517.6	481.2	36.44	14.207			
7,500.0	7,112.4	7,353.6	7,027.2	25.4	20.2	-80.34	-530.1	-465.9	517.9	480.6	37.25	13.901			
7,550.0	7,121.9	7,400.0	7,035.0	25.8	20.6	-80.22	-575.8	-465.9	518.0	479.9	38.13	13.584			
7,550.4	7,121.9	7,400.0	7,035.0	25.8	20.6	-80.22	-575.8	-465.9	518.0	479.9	38.14	13.583			
7,600.0	7,128.1	7,443.3	7,039.8	26.1	21.1	-80.15	-618.8	-465.9	518.1	479.1	39.03	13.275			
7,650.0	7,131.1	7,488.0	7,042.2	26.5	21.6	-80.12	-663.5	-465.9	518.2	478.2	39.98	12.960			
7,675.2	7,131.3	7,511.0	7,042.4	26.7	21.9	-80.12	-686.5	-465.9	518.2	477.7	40.49	12.800			
7,700.0	7,131.2	7,535.8	7,042.4	26.9	22.2	-80.13	-711.3	-465.9	518.2	477.1	41.10	12.606			
7,800.0	7,130.6	7,635.8	7,042.2	27.9	23.5	-80.18	-811.3	-465.9	518.1	474.4	43.69	11.858			
7,900.0	7,130.0	7,735.8	7,042.0	28.9	24.8	-80.23	-911.3	-465.9	518.0	471.6	46.45	11.153			
8,000.0	7,129.4	7,835.8	7,041.9	30.1	26.3	-80.28	-1,011.3	-465.9	517.9	468.6	49.34	10.497			
8,100.0	7,128.7	7,935.8	7,041.7	31.3	27.7	-80.33	-1,111.3	-465.9	517.9	465.5	52.35	9.892			

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 Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W - Bernhardt Farms 13S-203 - Wellbore #1 - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
8,200.0	7,128.1	8,035.8	7,041.6	32.6	29.3	-80.38	-1,211.3	-465.9	517.8	462.3	55.46	9.336		
8,300.0	7,127.5	8,135.8	7,041.4	34.0	30.9	-80.43	-1,311.3	-465.9	517.7	459.1	58.65	8.827		
8,400.0	7,126.9	8,235.8	7,041.3	35.4	32.5	-80.48	-1,411.3	-465.9	517.6	455.7	61.91	8.361		
8,500.0	7,126.3	8,335.8	7,041.1	36.9	34.1	-80.52	-1,511.3	-465.9	517.6	452.3	65.24	7.934		
8,600.0	7,125.7	8,435.8	7,040.9	38.4	35.8	-80.57	-1,611.3	-465.9	517.5	448.9	68.61	7.543		
8,700.0	7,125.1	8,535.8	7,040.8	40.0	37.5	-80.62	-1,711.3	-465.9	517.4	445.4	72.02	7.184		
8,800.0	7,124.5	8,635.8	7,040.6	41.6	39.2	-80.67	-1,811.3	-465.9	517.3	441.9	75.48	6.854		
8,900.0	7,123.9	8,735.8	7,040.5	43.2	41.0	-80.72	-1,911.3	-465.9	517.3	438.3	78.97	6.551		
9,000.0	7,123.2	8,835.8	7,040.3	44.8	42.7	-80.77	-2,011.3	-465.9	517.2	434.7	82.48	6.270		
9,100.0	7,122.6	8,935.8	7,040.2	46.5	44.5	-80.82	-2,111.3	-465.9	517.1	431.1	86.02	6.011		
9,200.0	7,122.0	9,035.8	7,040.0	48.2	46.3	-80.87	-2,211.3	-465.9	517.1	427.5	89.59	5.771		
9,300.0	7,121.4	9,135.8	7,039.8	49.9	48.0	-80.92	-2,311.3	-465.9	517.0	423.8	93.18	5.549		
9,400.0	7,120.8	9,235.8	7,039.7	51.6	49.8	-80.97	-2,411.3	-465.9	516.9	420.1	96.78	5.341		
9,500.0	7,120.2	9,335.8	7,039.5	53.3	51.7	-81.02	-2,511.3	-465.9	516.8	416.4	100.40	5.148		
9,600.0	7,119.6	9,435.8	7,039.4	55.1	53.5	-81.07	-2,611.3	-465.9	516.8	412.7	104.03	4.967		
9,700.0	7,119.0	9,535.8	7,039.2	56.8	55.3	-81.12	-2,711.2	-465.9	516.7	409.0	107.68	4.798		
9,800.0	7,118.4	9,635.8	7,039.1	58.6	57.1	-81.17	-2,811.2	-465.9	516.6	405.3	111.34	4.640		
9,900.0	7,117.7	9,735.8	7,038.9	60.4	59.0	-81.22	-2,911.2	-465.9	516.6	401.6	115.01	4.491		
10,000.0	7,117.1	9,835.8	7,038.7	62.2	60.8	-81.27	-3,011.2	-465.9	516.5	397.8	118.69	4.352		
10,100.0	7,116.5	9,935.8	7,038.6	64.0	62.6	-81.32	-3,111.2	-465.9	516.4	394.0	122.38	4.220		
10,200.0	7,115.9	10,035.8	7,038.4	65.8	64.5	-81.37	-3,211.2	-465.9	516.4	390.3	126.08	4.095		
10,300.0	7,115.3	10,135.8	7,038.3	67.6	66.3	-81.42	-3,311.2	-465.9	516.3	386.5	129.79	3.978		
10,400.0	7,114.7	10,235.8	7,038.1	69.4	68.2	-81.47	-3,411.2	-465.9	516.2	382.7	133.50	3.867		
10,500.0	7,114.1	10,335.8	7,038.0	71.2	70.1	-81.52	-3,511.2	-465.9	516.2	378.9	137.22	3.762		
10,600.0	7,113.5	10,435.8	7,037.8	73.0	71.9	-81.57	-3,611.2	-465.9	516.1	375.1	140.94	3.662		
10,700.0	7,112.9	10,535.8	7,037.6	74.9	73.8	-81.62	-3,711.2	-465.9	516.0	371.3	144.68	3.567		
10,800.0	7,112.2	10,635.8	7,037.5	76.7	75.7	-81.67	-3,811.2	-465.9	516.0	367.5	148.41	3.476		
10,900.0	7,111.6	10,735.8	7,037.3	78.5	77.5	-81.72	-3,911.2	-465.9	515.9	363.7	152.15	3.391		
11,000.0	7,111.0	10,835.8	7,037.2	80.4	79.4	-81.77	-4,011.2	-465.9	515.8	359.9	155.90	3.309		
11,100.0	7,110.4	10,935.7	7,037.0	82.2	81.3	-81.82	-4,111.2	-465.9	515.8	356.1	159.65	3.231		
11,200.0	7,109.8	11,035.7	7,036.9	84.1	83.1	-81.87	-4,211.2	-465.9	515.7	352.3	163.41	3.156		
11,300.0	7,109.2	11,135.7	7,036.7	85.9	85.0	-81.92	-4,311.2	-465.9	515.6	348.5	167.17	3.085		
11,400.0	7,108.6	11,235.7	7,036.5	87.8	86.9	-81.97	-4,411.2	-465.9	515.6	344.6	170.93	3.016		
11,500.0	7,108.0	11,335.7	7,036.4	89.6	88.8	-82.02	-4,511.2	-465.9	515.5	340.8	174.70	2.951		
11,600.0	7,107.4	11,435.7	7,036.2	91.5	90.7	-82.07	-4,611.2	-465.9	515.4	337.0	178.47	2.888		
11,700.0	7,106.8	11,535.7	7,036.1	93.3	92.6	-82.12	-4,711.2	-465.9	515.4	333.1	182.24	2.828		
11,800.0	7,106.1	11,635.7	7,035.9	95.2	94.4	-82.17	-4,811.2	-465.9	515.3	329.3	186.01	2.770		
11,900.0	7,105.5	11,735.7	7,035.8	97.1	96.3	-82.22	-4,911.2	-465.9	515.3	325.5	189.79	2.715		
12,000.0	7,104.9	11,835.7	7,035.6	98.9	98.2	-82.27	-5,011.2	-465.9	515.2	321.6	193.58	2.661		
12,100.0	7,104.3	11,935.7	7,035.4	100.8	100.1	-82.32	-5,111.2	-465.9	515.1	317.8	197.36	2.610		
12,200.0	7,103.7	12,035.7	7,035.3	102.7	102.0	-82.37	-5,211.2	-465.9	515.1	313.9	201.15	2.561		
12,300.0	7,103.1	12,135.7	7,035.1	104.6	103.9	-82.42	-5,311.2	-465.9	515.0	310.1	204.93	2.513		
12,400.0	7,102.5	12,235.7	7,035.0	106.4	105.8	-82.47	-5,411.2	-465.9	515.0	306.2	208.73	2.467		
12,500.0	7,101.9	12,335.7	7,034.8	108.3	107.7	-82.52	-5,511.2	-465.9	514.9	302.4	212.52	2.423		
12,600.0	7,101.3	12,435.7	7,034.7	110.2	109.6	-82.57	-5,611.2	-465.9	514.8	298.5	216.31	2.380		
12,700.0	7,100.6	12,535.7	7,034.5	112.1	111.5	-82.62	-5,711.2	-465.9	514.8	294.7	220.11	2.339		
12,800.0	7,100.0	12,635.7	7,034.3	114.0	113.4	-82.67	-5,811.2	-465.9	514.7	290.8	223.91	2.299		
12,900.0	7,099.4	12,735.7	7,034.2	115.8	115.3	-82.72	-5,911.2	-465.9	514.7	286.9	227.71	2.260		
13,000.0	7,098.8	12,835.7	7,034.0	117.7	117.2	-82.77	-6,011.2	-465.9	514.6	283.1	231.51	2.223		
13,100.0	7,098.2	12,935.7	7,033.9	119.6	119.1	-82.82	-6,111.2	-465.9	514.5	279.2	235.32	2.187		

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 Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design										Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W - Bernhardt Farms 13S-203 - Wellbore #1 - Plan #2			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)				
13,200.0	7,097.6	13,035.7	7,033.7	121.5	121.0	-82.87	-6,211.2	-465.9	514.5	275.4	239.13	2.152			
13,300.0	7,097.0	13,135.7	7,033.6	123.4	122.9	-82.92	-6,311.2	-465.9	514.4	271.5	242.93	2.118			
13,400.0	7,096.4	13,235.7	7,033.4	125.3	124.8	-82.97	-6,411.2	-465.9	514.4	267.6	246.74	2.085			
13,500.0	7,095.8	13,335.7	7,033.2	127.2	126.7	-83.02	-6,511.2	-465.9	514.3	263.8	250.55	2.053			
13,600.0	7,095.1	13,435.7	7,033.1	129.0	128.6	-83.07	-6,611.2	-465.9	514.3	259.9	254.37	2.022			
13,700.0	7,094.5	13,535.7	7,032.9	130.9	130.5	-83.12	-6,711.2	-465.9	514.2	256.0	258.18	1.992			
13,800.0	7,093.9	13,635.7	7,032.8	132.8	132.4	-83.17	-6,811.2	-465.9	514.2	252.2	261.99	1.962			
13,900.0	7,093.3	13,735.7	7,032.6	134.7	134.3	-83.22	-6,911.2	-465.9	514.1	248.3	265.81	1.934			
14,000.0	7,092.7	13,835.7	7,032.5	136.6	136.2	-83.27	-7,011.2	-465.9	514.1	244.4	269.63	1.907			
14,100.0	7,092.1	13,935.7	7,032.3	138.5	138.1	-83.32	-7,111.2	-465.9	514.0	240.6	273.45	1.880			
14,200.0	7,091.5	14,035.7	7,032.1	140.4	140.0	-83.37	-7,211.2	-465.9	513.9	236.7	277.27	1.854			
14,278.4	7,091.0	14,114.2	7,032.0	141.9	141.5	-83.41	-7,289.6	-465.9	513.9	233.6	280.26	1.834 SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W - Bernhardt Farms 13S-323 - Wellbore #1 - Plan #2										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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	20.94	58.3	22.3	62.4					
100.0	100.0	100.0	100.0	0.1	0.1	20.94	58.3	22.3	62.4	62.2	0.22	277.697		
200.0	200.0	200.0	200.0	0.3	0.3	20.94	58.3	22.3	62.4	61.7	0.67	92.566	CC	
300.0	300.0	300.0	300.0	0.6	0.6	106.91	58.3	22.3	62.7	61.6	1.11	56.269	ES	
400.0	400.0	400.0	400.0	0.8	0.8	109.16	58.3	22.3	63.5	61.9	1.55	40.855		
500.0	499.9	499.9	499.9	1.0	1.0	112.77	58.3	22.3	65.0	63.0	2.00	32.460		
600.0	599.7	599.7	599.7	1.2	1.2	117.52	58.3	22.3	67.6	65.2	2.46	27.474		
700.0	699.4	699.4	699.4	1.5	1.5	123.05	58.3	22.3	71.6	68.7	2.93	24.466		
800.0	798.9	798.9	798.9	1.8	1.7	128.96	58.3	22.3	77.3	73.9	3.40	22.753		
900.0	898.3	898.3	898.3	2.0	1.9	134.84	58.3	22.3	84.9	81.0	3.87	21.951		
1,000.0	997.4	997.4	997.4	2.4	2.1	140.37	58.3	22.3	94.6	90.2	4.33	21.812		
1,100.0	1,096.3	1,096.3	1,096.3	2.7	2.4	145.37	58.3	22.3	106.4	101.6	4.80	22.161		
1,200.0	1,194.9	1,194.9	1,194.9	3.0	2.6	149.75	58.3	22.3	120.4	115.1	5.26	22.868		
1,300.0	1,293.3	1,293.3	1,293.3	3.4	2.8	153.52	58.3	22.3	136.5	130.8	5.73	23.838		
1,400.0	1,391.2	1,391.2	1,391.2	3.8	3.0	156.73	58.3	22.3	154.7	148.5	6.19	25.002		
1,500.0	1,488.9	1,488.9	1,488.9	4.3	3.2	159.46	58.3	22.3	174.8	168.2	6.65	26.306		
1,512.8	1,501.4	1,501.4	1,501.4	4.3	3.3	159.77	58.3	22.3	177.5	170.8	6.70	26.482		
1,600.0	1,586.3	1,586.3	1,586.3	4.7	3.5	161.77	58.3	22.3	196.3	189.2	7.11	27.594		
1,700.0	1,683.7	1,683.7	1,683.7	5.2	3.7	163.63	58.3	22.3	218.0	210.4	7.58	28.747		
1,800.0	1,781.0	1,781.0	1,781.0	5.7	3.9	165.16	58.3	22.3	239.9	231.9	8.06	29.781		
1,900.0	1,878.4	1,878.4	1,878.4	6.2	4.1	166.43	58.3	22.3	262.0	253.5	8.53	30.712		
2,000.0	1,975.8	1,975.8	1,975.8	6.6	4.3	167.50	58.3	22.3	284.2	275.1	9.01	31.551		
2,100.0	2,073.2	2,077.1	2,077.1	7.1	4.5	168.43	58.4	21.8	305.9	296.4	9.48	32.264		
2,200.0	2,170.6	2,180.5	2,180.5	7.6	4.8	169.15	58.8	19.5	326.1	316.2	9.95	32.772		
2,300.0	2,268.0	2,284.6	2,284.5	8.1	5.0	169.71	59.5	15.4	344.6	334.2	10.42	33.060		
2,400.0	2,365.4	2,386.4	2,386.1	8.6	5.2	170.13	60.5	9.7	361.6	350.7	10.90	33.183		
2,500.0	2,462.7	2,484.9	2,484.5	9.1	5.4	170.49	61.5	3.9	378.4	367.0	11.37	33.277		
2,600.0	2,560.1	2,583.5	2,582.9	9.6	5.6	170.82	62.5	-1.8	395.2	383.3	11.85	33.359		
2,700.0	2,657.5	2,682.0	2,681.2	10.1	5.8	171.12	63.6	-7.6	412.0	399.7	12.32	33.432		
2,800.0	2,754.9	2,780.6	2,779.6	10.6	6.1	171.40	64.6	-13.4	428.8	416.0	12.80	33.495		
2,900.0	2,852.3	2,879.2	2,878.0	11.1	6.3	171.65	65.6	-19.1	445.6	432.3	13.28	33.551		
3,000.0	2,949.7	2,977.7	2,976.4	11.5	6.5	171.89	66.6	-24.9	462.4	448.7	13.76	33.601		
3,100.0	3,047.1	3,076.3	3,074.8	12.0	6.7	172.11	67.6	-30.6	479.3	465.0	14.24	33.645		
3,200.0	3,144.4	3,174.8	3,173.2	12.5	7.0	172.32	68.6	-36.4	496.1	481.4	14.73	33.684		
3,300.0	3,241.8	3,273.4	3,271.5	13.0	7.2	172.51	69.6	-42.2	512.9	497.7	15.21	33.718		
3,400.0	3,339.2	3,371.9	3,369.9	13.5	7.4	172.69	70.7	-47.9	529.8	514.1	15.70	33.749		
3,500.0	3,436.6	3,470.5	3,468.3	14.0	7.7	172.86	71.7	-53.7	546.7	530.5	16.18	33.777		
3,600.0	3,534.0	3,569.1	3,566.7	14.5	7.9	173.02	72.7	-59.4	563.5	546.8	16.67	33.802		
3,700.0	3,631.4	3,667.6	3,665.1	15.0	8.1	173.17	73.7	-65.2	580.4	563.2	17.16	33.825		
3,800.0	3,728.8	3,766.2	3,763.5	15.5	8.3	173.32	74.7	-70.9	597.2	579.6	17.65	33.845		
3,900.0	3,826.2	3,864.7	3,861.8	16.0	8.6	173.45	75.7	-76.7	614.1	596.0	18.14	33.863		
4,000.0	3,923.5	3,963.3	3,960.2	16.5	8.8	173.58	76.7	-82.5	631.0	612.4	18.62	33.879		
4,100.0	4,020.9	4,061.8	4,058.6	17.0	9.1	173.70	77.8	-88.2	647.9	628.7	19.11	33.894		
4,200.0	4,118.3	4,160.4	4,157.0	17.5	9.3	173.81	78.8	-94.0	664.7	645.1	19.60	33.907		
4,300.0	4,215.7	4,258.9	4,255.4	18.0	9.5	173.92	79.8	-99.7	681.6	661.5	20.10	33.919		
4,400.0	4,313.1	4,357.5	4,353.8	18.5	9.8	174.02	80.8	-105.5	698.5	677.9	20.59	33.930		
4,500.0	4,410.5	4,456.1	4,452.1	19.0	10.0	174.12	81.8	-111.3	715.4	694.3	21.08	33.939		
4,600.0	4,507.9	4,554.6	4,550.5	19.5	10.2	174.22	82.8	-117.0	732.3	710.7	21.57	33.948		
4,700.0	4,605.2	4,653.2	4,648.9	20.0	10.5	174.30	83.8	-122.8	749.2	727.1	22.06	33.956		
4,727.9	4,632.4	4,680.7	4,676.4	20.1	10.5	174.33	84.1	-124.4	753.9	731.7	22.20	33.958		
4,800.0	4,702.8	4,751.8	4,747.4	20.4	10.7	174.40	84.9	-128.5	765.4	742.8	22.57	33.909		

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 Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W - Bernhardt Farms 13S-323 - Wellbore #1 - Plan #2										Offset Site Error:		0.0 ft
Survey Program: 0-MWID												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
4,900.0	4,800.8	4,838.7	4,834.1	20.7	10.9	174.48	85.7	-133.1	779.7	756.7	23.00	33.896		
5,000.0	4,899.4	4,921.1	4,916.4	21.0	11.1	174.56	86.1	-135.8	793.5	770.1	23.39	33.922		
5,100.0	4,998.3	5,004.6	5,000.0	21.3	11.2	174.65	86.3	-136.7	806.8	783.0	23.76	33.956		
5,200.0	5,097.6	5,102.2	5,097.6	21.6	11.4	174.75	86.3	-136.7	818.5	794.4	24.15	33.900		
5,300.0	5,197.2	5,201.8	5,197.2	21.8	11.6	174.82	86.3	-136.7	827.7	803.2	24.53	33.747		
5,400.0	5,297.0	5,301.6	5,297.0	21.9	11.8	174.87	86.3	-136.7	834.3	809.4	24.89	33.522		
5,500.0	5,396.9	5,401.5	5,396.9	22.1	12.0	174.90	86.3	-136.7	838.3	813.1	25.23	33.228		
5,603.1	5,500.0	5,504.6	5,500.0	22.2	12.3	89.71	86.3	-136.7	839.7	814.1	25.56	32.847		
5,700.0	5,596.9	5,601.5	5,596.9	22.3	12.5	89.71	86.3	-136.7	839.7	813.8	25.94	32.370		
5,800.0	5,696.9	5,701.5	5,696.9	22.4	12.7	89.71	86.3	-136.7	839.7	813.4	26.33	31.887		
5,900.0	5,796.9	5,801.5	5,796.9	22.5	12.9	89.71	86.3	-136.7	839.7	813.0	26.73	31.417		
6,000.0	5,896.9	5,901.5	5,896.9	22.7	13.1	89.71	86.3	-136.7	839.7	812.6	27.12	30.958		
6,100.0	5,996.9	6,001.5	5,996.9	22.8	13.3	89.71	86.3	-136.7	839.7	812.2	27.52	30.511		
6,200.0	6,096.9	6,101.5	6,096.9	22.9	13.5	89.71	86.3	-136.7	839.7	811.8	27.92	30.076		
6,300.0	6,196.9	6,201.5	6,196.9	23.0	13.7	89.71	86.3	-136.7	839.7	811.4	28.32	29.650		
6,400.0	6,296.9	6,301.5	6,296.9	23.1	14.0	89.71	86.3	-136.7	839.7	811.0	28.72	29.236		
6,470.5	6,367.4	6,372.0	6,367.4	23.2	14.1	89.71	86.3	-136.7	839.7	810.7	29.01	28.950		
6,500.0	6,396.9	6,401.7	6,397.0	23.3	14.2	-90.30	85.8	-136.7	839.7	810.6	29.12	28.839		
6,550.0	6,446.7	6,451.9	6,447.2	23.3	14.3	-90.31	82.3	-136.7	839.7	810.4	29.29	28.671		
6,600.0	6,496.3	6,502.2	6,497.0	23.4	14.3	-90.31	75.6	-136.7	839.7	810.3	29.45	28.513		
6,650.0	6,545.2	6,552.6	6,546.3	23.4	14.4	-90.32	65.6	-136.7	839.7	810.1	29.61	28.362		
6,700.0	6,593.4	6,602.9	6,594.8	23.5	14.5	-90.32	52.3	-136.7	839.7	810.0	29.76	28.213		
6,750.0	6,640.7	6,653.2	6,642.4	23.5	14.6	-90.33	35.9	-136.7	839.7	809.8	29.92	28.062		
6,800.0	6,686.8	6,703.5	6,688.8	23.6	14.7	-90.33	16.4	-136.7	839.7	809.6	30.10	27.902		
6,850.0	6,731.5	6,753.8	6,733.7	23.6	14.8	-90.33	-6.1	-136.7	839.7	809.4	30.29	27.726		
6,900.0	6,774.6	6,804.1	6,777.1	23.7	14.9	-90.32	-31.5	-136.7	839.7	809.2	30.50	27.528		
6,950.0	6,816.0	6,854.4	6,818.8	23.7	15.1	-90.32	-59.8	-136.7	839.7	809.0	30.76	27.301		
7,000.0	6,855.5	6,904.7	6,858.5	23.8	15.2	-90.32	-90.7	-136.7	839.7	808.7	31.06	27.039		
7,050.0	6,892.9	6,955.0	6,896.0	23.9	15.4	-90.31	-124.1	-136.7	839.7	808.3	31.41	26.736		
7,100.0	6,928.0	7,005.3	6,931.3	24.0	15.6	-90.30	-160.0	-136.7	839.7	807.9	31.82	26.390		
7,150.0	6,960.8	7,055.6	6,964.1	24.1	15.8	-90.30	-198.0	-136.7	839.7	807.4	32.30	25.997		
7,200.0	6,991.0	7,105.9	6,994.4	24.2	16.1	-90.29	-238.2	-136.7	839.7	806.9	32.86	25.557		
7,250.0	7,018.5	7,156.2	7,022.0	24.3	16.5	-90.28	-280.2	-136.7	839.7	806.2	33.49	25.074		
7,300.0	7,043.2	7,206.4	7,046.7	24.5	16.8	-90.26	-324.0	-136.7	839.7	805.5	34.20	24.550		
7,350.0	7,065.1	7,256.7	7,068.5	24.7	17.2	-90.25	-369.3	-136.7	839.7	804.7	35.00	23.992		
7,400.0	7,083.9	7,306.9	7,087.2	24.9	17.7	-90.24	-415.8	-136.7	839.7	803.8	35.88	23.405		
7,450.0	7,099.7	7,357.1	7,102.9	25.2	18.2	-90.22	-463.6	-136.7	839.7	802.9	36.83	22.798		
7,500.0	7,112.4	7,407.4	7,115.3	25.4	18.7	-90.20	-512.2	-136.7	839.7	801.8	37.86	22.179		
7,550.0	7,121.9	7,457.5	7,124.6	25.8	19.3	-90.19	-561.5	-136.7	839.7	800.7	38.96	21.555		
7,600.0	7,128.1	7,507.7	7,130.6	26.1	19.9	-90.17	-611.3	-136.7	839.7	799.6	40.11	20.933		
7,650.0	7,131.1	7,557.9	7,133.3	26.5	20.5	-90.15	-661.4	-136.7	839.7	798.4	41.32	20.321		
7,675.2	7,131.3	7,583.1	7,133.4	26.7	20.9	-90.14	-686.6	-136.7	839.7	797.8	41.95	20.017		
7,700.0	7,131.2	7,607.9	7,133.3	26.9	21.2	-90.14	-711.4	-136.7	839.7	797.1	42.58	19.720		
7,800.0	7,130.6	7,707.9	7,132.7	27.9	22.6	-90.14	-811.4	-136.7	839.7	794.5	45.23	18.566		
7,900.0	7,130.0	7,807.9	7,132.1	28.9	24.0	-90.14	-911.4	-136.7	839.7	791.7	48.04	17.480		
8,000.0	7,129.4	7,907.9	7,131.4	30.1	25.5	-90.14	-1,011.4	-136.7	839.7	788.7	50.98	16.471		
8,100.0	7,128.7	8,007.9	7,130.8	31.3	27.0	-90.14	-1,111.4	-136.7	839.7	785.7	54.04	15.539		
8,200.0	7,128.1	8,107.9	7,130.2	32.6	28.6	-90.14	-1,211.4	-136.7	839.7	782.5	57.19	14.683		
8,300.0	7,127.5	8,207.9	7,129.6	34.0	30.3	-90.14	-1,311.4	-136.7	839.7	779.3	60.42	13.898		
8,400.0	7,126.9	8,307.9	7,129.0	35.4	31.9	-90.14	-1,411.4	-136.7	839.7	776.0	63.72	13.179		

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 Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W - Bernhardt Farms 13S-323 - Wellbore #1 - Plan #2										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 (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			
8,500.0	7,126.3	8,407.9	7,128.4	36.9	33.6	-90.14	-1,511.4	-136.7	839.7	772.6	67.07	12.520			
8,600.0	7,125.7	8,507.9	7,127.8	38.4	35.4	-90.14	-1,611.4	-136.7	839.7	769.2	70.47	11.915			
8,700.0	7,125.1	8,607.9	7,127.2	40.0	37.1	-90.14	-1,711.4	-136.7	839.7	765.8	73.92	11.359			
8,800.0	7,124.5	8,707.9	7,126.6	41.6	38.8	-90.14	-1,811.4	-136.7	839.7	762.3	77.41	10.848			
8,900.0	7,123.9	8,807.9	7,125.9	43.2	40.6	-90.14	-1,911.4	-136.7	839.7	758.8	80.92	10.377			
9,000.0	7,123.2	8,907.9	7,125.3	44.8	42.4	-90.14	-2,011.4	-136.7	839.7	755.2	84.47	9.941			
9,100.0	7,122.6	9,007.9	7,124.7	46.5	44.2	-90.14	-2,111.4	-136.7	839.7	751.7	88.03	9.538			
9,200.0	7,122.0	9,107.9	7,124.1	48.2	46.0	-90.14	-2,211.4	-136.7	839.7	748.1	91.63	9.164			
9,300.0	7,121.4	9,207.9	7,123.5	49.9	47.8	-90.14	-2,311.4	-136.7	839.7	744.5	95.24	8.817			
9,400.0	7,120.8	9,307.9	7,122.9	51.6	49.6	-90.14	-2,411.4	-136.7	839.7	740.8	98.86	8.494			
9,500.0	7,120.2	9,407.9	7,122.3	53.3	51.5	-90.14	-2,511.4	-136.7	839.7	737.2	102.51	8.192			
9,600.0	7,119.6	9,507.9	7,121.7	55.1	53.3	-90.14	-2,611.4	-136.7	839.7	733.5	106.16	7.910			
9,700.0	7,119.0	9,607.9	7,121.1	56.8	55.1	-90.14	-2,711.4	-136.7	839.7	729.9	109.83	7.645			
9,800.0	7,118.4	9,707.9	7,120.4	58.6	57.0	-90.14	-2,811.4	-136.7	839.7	726.2	113.51	7.397			
9,900.0	7,117.7	9,807.9	7,119.8	60.4	58.8	-90.14	-2,911.4	-136.7	839.7	722.5	117.20	7.165			
10,000.0	7,117.1	9,907.9	7,119.2	62.2	60.7	-90.14	-3,011.4	-136.7	839.7	718.8	120.90	6.945			
10,100.0	7,116.5	10,007.9	7,118.6	64.0	62.5	-90.14	-3,111.4	-136.7	839.7	715.1	124.61	6.739			
10,200.0	7,115.9	10,107.9	7,118.0	65.8	64.4	-90.14	-3,211.4	-136.7	839.7	711.4	128.33	6.543			
10,300.0	7,115.3	10,207.9	7,117.4	67.6	66.3	-90.14	-3,311.4	-136.7	839.7	707.6	132.05	6.359			
10,400.0	7,114.7	10,307.9	7,116.8	69.4	68.1	-90.14	-3,411.4	-136.7	839.7	703.9	135.78	6.184			
10,500.0	7,114.1	10,407.9	7,116.2	71.2	70.0	-90.14	-3,511.4	-136.7	839.7	700.2	139.51	6.019			
10,600.0	7,113.5	10,507.9	7,115.6	73.0	71.9	-90.14	-3,611.4	-136.7	839.7	696.4	143.25	5.862			
10,700.0	7,112.9	10,607.9	7,114.9	74.9	73.8	-90.14	-3,711.4	-136.7	839.7	692.7	147.00	5.712			
10,800.0	7,112.2	10,707.9	7,114.3	76.7	75.6	-90.14	-3,811.4	-136.7	839.7	688.9	150.75	5.570			
10,900.0	7,111.6	10,807.9	7,113.7	78.5	77.5	-90.14	-3,911.4	-136.7	839.7	685.2	154.51	5.435			
11,000.0	7,111.0	10,907.9	7,113.1	80.4	79.4	-90.14	-4,011.4	-136.7	839.7	681.4	158.26	5.306			
11,100.0	7,110.4	11,007.9	7,112.5	82.2	81.3	-90.14	-4,111.4	-136.7	839.7	677.7	162.03	5.182			
11,200.0	7,109.8	11,107.9	7,111.9	84.1	83.2	-90.14	-4,211.4	-136.7	839.7	673.9	165.79	5.065			
11,300.0	7,109.2	11,207.9	7,111.3	85.9	85.1	-90.14	-4,311.4	-136.7	839.7	670.1	169.56	4.952			
11,400.0	7,108.6	11,307.9	7,110.7	87.8	86.9	-90.14	-4,411.4	-136.7	839.7	666.4	173.34	4.844			
11,500.0	7,108.0	11,407.9	7,110.1	89.6	88.8	-90.14	-4,511.4	-136.7	839.7	662.6	177.11	4.741			
11,600.0	7,107.4	11,507.9	7,109.5	91.5	90.7	-90.14	-4,611.4	-136.7	839.7	658.8	180.89	4.642			
11,700.0	7,106.8	11,607.9	7,108.8	93.3	92.6	-90.14	-4,711.4	-136.7	839.7	655.0	184.67	4.547			
11,800.0	7,106.1	11,707.9	7,108.2	95.2	94.5	-90.14	-4,811.3	-136.7	839.7	651.2	188.45	4.456			
11,900.0	7,105.5	11,807.9	7,107.6	97.1	96.4	-90.14	-4,911.3	-136.7	839.7	647.5	192.24	4.368			
12,000.0	7,104.9	11,907.9	7,107.0	98.9	98.3	-90.14	-5,011.3	-136.7	839.7	643.7	196.02	4.284			
12,100.0	7,104.3	12,007.9	7,106.4	100.8	100.2	-90.14	-5,111.3	-136.7	839.7	639.9	199.81	4.202			
12,200.0	7,103.7	12,107.9	7,105.8	102.7	102.1	-90.14	-5,211.3	-136.7	839.7	636.1	203.60	4.124			
12,300.0	7,103.1	12,207.9	7,105.2	104.6	104.0	-90.14	-5,311.3	-136.7	839.7	632.3	207.40	4.049			
12,400.0	7,102.5	12,307.9	7,104.6	106.4	105.9	-90.14	-5,411.3	-136.7	839.7	628.5	211.19	3.976			
12,500.0	7,101.9	12,407.9	7,104.0	108.3	107.8	-90.14	-5,511.3	-136.7	839.7	624.7	214.99	3.906			
12,600.0	7,101.3	12,507.9	7,103.3	110.2	109.7	-90.14	-5,611.3	-136.7	839.7	620.9	218.79	3.838			
12,700.0	7,100.6	12,607.9	7,102.7	112.1	111.6	-90.14	-5,711.3	-136.7	839.7	617.1	222.58	3.772			
12,800.0	7,100.0	12,707.9	7,102.1	114.0	113.5	-90.14	-5,811.3	-136.7	839.7	613.3	226.38	3.709			
12,900.0	7,099.4	12,807.9	7,101.5	115.8	115.4	-90.14	-5,911.3	-136.7	839.7	609.5	230.19	3.648			
13,000.0	7,098.8	12,907.9	7,100.9	117.7	117.3	-90.14	-6,011.3	-136.7	839.7	605.7	233.99	3.589			
13,100.0	7,098.2	13,007.9	7,100.3	119.6	119.2	-90.14	-6,111.3	-136.7	839.7	601.9	237.79	3.531			
13,200.0	7,097.6	13,107.9	7,099.7	121.5	121.1	-90.14	-6,211.3	-136.7	839.7	598.1	241.60	3.476			
13,300.0	7,097.0	13,207.9	7,099.1	123.4	123.0	-90.14	-6,311.3	-136.7	839.7	594.3	245.40	3.422			
13,400.0	7,096.4	13,307.9	7,098.5	125.3	124.9	-90.14	-6,411.3	-136.7	839.7	590.5	249.21	3.369			
13,500.0	7,095.8	13,407.9	7,097.8	127.2	126.8	-90.14	-6,511.3	-136.7	839.7	586.7	253.02	3.319			

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 Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design											Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W - Bernhardt Farms 13S-323 - Wellbore #1 - Plan #2		Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
13,600.0	7,095.1	13,507.9	7,097.2	129.0	128.7	-90.14	-6,611.3	-136.7	839.7	582.9	256.83	3.269			
13,700.0	7,094.5	13,607.9	7,096.6	130.9	130.6	-90.14	-6,711.3	-136.7	839.7	579.1	260.64	3.222			
13,800.0	7,093.9	13,707.9	7,096.0	132.8	132.5	-90.14	-6,811.3	-136.7	839.7	575.2	264.45	3.175			
13,900.0	7,093.3	13,807.9	7,095.4	134.7	134.4	-90.14	-6,911.3	-136.7	839.7	571.4	268.26	3.130			
14,000.0	7,092.7	13,907.9	7,094.8	136.6	136.3	-90.14	-7,011.3	-136.7	839.7	567.6	272.07	3.086			
14,100.0	7,092.1	14,007.9	7,094.2	138.5	138.2	-90.14	-7,111.3	-136.7	839.7	563.8	275.89	3.044			
14,200.0	7,091.5	14,107.9	7,093.6	140.4	140.2	-90.14	-7,211.3	-136.7	839.7	560.0	279.70	3.002			
14,278.4	7,091.0	14,186.4	7,093.1	141.9	141.7	-90.14	-7,289.7	-136.7	839.7	557.0	282.69	2.970 SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W - Bernhardt Farms 13W-243 - Wellbore #1 - Plan #										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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	19.33	87.4	30.7	92.7					
100.0	100.0	100.0	100.0	0.1	0.1	19.33	87.4	30.7	92.7	92.4	0.22	412.248		
200.0	200.0	200.0	200.0	0.3	0.3	19.33	87.4	30.7	92.7	92.0	0.67	137.416	CC	
300.0	300.0	300.0	300.0	0.6	0.6	105.05	87.4	30.7	92.9	91.8	1.11	83.404	ES	
400.0	400.0	400.0	400.0	0.8	0.8	106.59	87.4	30.7	93.6	92.0	1.55	60.241		
500.0	499.9	499.9	499.9	1.0	1.0	109.10	87.4	30.7	94.9	92.9	2.00	47.371		
600.0	599.7	599.7	599.7	1.2	1.2	112.48	87.4	30.7	97.1	94.6	2.46	39.416		
700.0	699.4	699.4	699.4	1.5	1.5	116.58	87.4	30.7	100.4	97.4	2.93	34.235		
800.0	798.9	798.9	798.9	1.8	1.7	121.21	87.4	30.7	105.0	101.6	3.41	30.820		
900.0	898.3	898.3	898.3	2.0	1.9	126.13	87.4	30.7	111.3	107.4	3.89	28.632		
1,000.0	997.4	997.4	997.4	2.4	2.1	131.10	87.4	30.7	119.5	115.2	4.37	27.345		
1,100.0	1,096.3	1,096.3	1,096.3	2.7	2.4	135.93	87.4	30.7	129.8	124.9	4.85	26.742		
1,200.0	1,194.9	1,194.9	1,194.9	3.0	2.6	140.45	87.4	30.7	142.2	136.8	5.33	26.663	SF	
1,300.0	1,293.3	1,291.1	1,291.1	3.4	2.8	144.63	87.4	31.4	157.4	151.6	5.79	27.174		
1,400.0	1,391.2	1,386.1	1,386.1	3.8	3.0	148.55	87.4	33.7	176.2	170.0	6.24	28.264		
1,500.0	1,488.9	1,480.0	1,479.9	4.3	3.2	152.08	87.4	37.5	198.8	192.1	6.68	29.778		
1,512.8	1,501.4	1,491.9	1,491.8	4.3	3.2	152.50	87.4	38.1	202.0	195.2	6.73	29.999		
1,600.0	1,586.3	1,574.5	1,574.2	4.7	3.4	155.24	87.4	42.7	224.3	217.2	7.12	31.482		
1,700.0	1,683.7	1,670.4	1,670.0	5.2	3.6	157.83	87.4	48.1	250.5	242.9	7.57	33.083		
1,800.0	1,781.0	1,766.4	1,765.8	5.7	3.8	159.93	87.4	53.6	277.1	269.0	8.02	34.542		
1,900.0	1,878.4	1,862.3	1,861.6	6.2	4.0	161.66	87.4	59.0	303.9	295.5	8.47	35.867		
2,000.0	1,975.8	1,958.3	1,957.4	6.6	4.2	163.12	87.4	64.5	331.0	322.1	8.93	37.074		
2,100.0	2,073.2	2,054.2	2,053.2	7.1	4.4	164.35	87.4	69.9	358.3	348.9	9.39	38.162		
2,200.0	2,170.6	2,150.2	2,149.0	7.6	4.7	165.41	87.4	75.3	385.7	375.8	9.85	39.158		
2,300.0	2,268.0	2,246.1	2,244.8	8.1	4.9	166.33	87.4	80.8	413.2	402.9	10.31	40.067		
2,400.0	2,365.4	2,342.1	2,340.6	8.6	5.1	167.13	87.4	86.2	440.8	430.0	10.78	40.897		
2,500.0	2,462.7	2,438.0	2,436.4	9.1	5.3	167.84	87.4	91.6	468.4	457.2	11.24	41.659		
2,600.0	2,560.1	2,534.0	2,532.2	9.6	5.6	168.47	87.4	97.1	496.1	484.4	11.71	42.359		
2,700.0	2,657.5	2,629.9	2,628.0	10.1	5.8	169.04	87.4	102.5	523.9	511.7	12.18	43.004		
2,800.0	2,754.9	2,725.9	2,723.8	10.6	6.0	169.54	87.4	108.0	551.7	539.1	12.65	43.600		
2,900.0	2,852.3	2,821.8	2,819.6	11.1	6.2	170.00	87.4	113.4	579.6	566.4	13.13	44.151		
3,000.0	2,949.7	2,917.8	2,915.3	11.5	6.5	170.42	87.4	118.8	607.4	593.8	13.60	44.664		
3,100.0	3,047.1	3,013.7	3,011.1	12.0	6.7	170.80	87.4	124.3	635.3	621.3	14.07	45.140		
3,200.0	3,144.4	3,109.7	3,106.9	12.5	6.9	171.15	87.4	129.7	663.3	648.7	14.55	45.584		
3,300.0	3,241.8	3,205.6	3,202.7	13.0	7.2	171.47	87.4	135.2	691.2	676.2	15.03	45.999		
3,400.0	3,339.2	3,301.5	3,298.5	13.5	7.4	171.77	87.4	140.6	719.2	703.7	15.50	46.387		
3,500.0	3,436.6	3,397.5	3,394.3	14.0	7.6	172.04	87.4	146.0	747.1	731.2	15.98	46.751		
3,600.0	3,534.0	3,493.4	3,490.1	14.5	7.9	172.29	87.4	151.5	775.1	758.7	16.46	47.093		
3,700.0	3,631.4	3,589.4	3,585.9	15.0	8.1	172.53	87.4	156.9	803.1	786.2	16.94	47.415		
3,800.0	3,728.8	3,685.3	3,681.7	15.5	8.3	172.75	87.4	162.3	831.2	813.8	17.42	47.718		
3,900.0	3,826.2	3,781.3	3,777.5	16.0	8.6	172.95	87.4	167.8	859.2	841.3	17.90	48.004		
4,000.0	3,923.5	3,877.2	3,873.3	16.5	8.8	173.15	87.4	173.2	887.2	868.9	18.38	48.274		
4,100.0	4,020.9	3,973.2	3,969.1	17.0	9.0	173.33	87.4	178.7	915.3	896.4	18.86	48.529		
4,200.0	4,118.3	4,069.1	4,064.9	17.5	9.3	173.50	87.4	184.1	943.3	924.0	19.34	48.772		
4,300.0	4,215.7	4,165.1	4,160.6	18.0	9.5	173.66	87.4	189.5	971.4	951.6	19.82	49.002		
4,400.0	4,313.1	4,261.0	4,256.4	18.5	9.7	173.81	87.4	195.0	999.5	979.2	20.31	49.220		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W - Bernhardt Farms 13W-403 - Wellbore #1 - Plan #										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)			
0.0	0.0	0.0	0.0	0.0	0.0	20.33	112.9	41.8	120.4					
100.0	100.0	100.0	100.0	0.1	0.1	20.33	112.9	41.8	120.4	120.2	0.22	535.819		
200.0	200.0	200.0	200.0	0.3	0.3	20.33	112.9	41.8	120.4	119.8	0.67	178.606	CC	
300.0	300.0	300.0	300.0	0.6	0.6	105.92	112.9	41.8	120.7	119.6	1.11	108.355	ES	
400.0	400.0	400.0	400.0	0.8	0.8	107.10	112.9	41.8	121.4	119.9	1.55	78.146		
500.0	499.9	499.9	499.9	1.0	1.0	109.03	112.9	41.8	122.8	120.8	2.00	61.260		
600.0	599.7	599.7	599.7	1.2	1.2	111.66	112.9	41.8	124.9	122.4	2.46	50.691		
700.0	699.4	699.4	699.4	1.5	1.5	114.89	112.9	41.8	128.0	125.1	2.93	43.640		
800.0	798.9	798.9	798.9	1.8	1.7	118.60	112.9	41.8	132.3	128.9	3.41	38.791		
900.0	898.3	898.3	898.3	2.0	1.9	122.66	112.9	41.8	138.1	134.2	3.90	35.445		
1,000.0	997.4	997.4	997.4	2.4	2.1	126.90	112.9	41.8	145.6	141.2	4.39	33.191		
1,100.0	1,096.3	1,095.0	1,095.0	2.7	2.3	131.37	112.7	42.6	155.4	150.6	4.86	31.977		
1,200.0	1,194.9	1,191.7	1,191.7	3.0	2.5	136.11	112.1	44.9	168.3	163.0	5.32	31.652	SF	
1,300.0	1,293.3	1,287.4	1,287.2	3.4	2.7	140.84	111.0	48.8	184.6	178.8	5.77	31.992		
1,400.0	1,391.2	1,381.9	1,381.6	3.8	2.9	145.32	109.5	54.1	204.6	198.4	6.22	32.894		
1,500.0	1,488.9	1,475.0	1,474.5	4.3	3.1	149.44	107.5	60.8	228.4	221.7	6.67	34.262		
1,512.8	1,501.4	1,486.9	1,486.3	4.3	3.1	149.93	107.3	61.7	231.7	225.0	6.72	34.468		
1,600.0	1,586.3	1,567.0	1,566.0	4.7	3.3	153.16	105.3	68.8	255.4	248.3	7.11	35.906		
1,700.0	1,683.7	1,657.9	1,656.5	5.2	3.6	156.36	102.6	78.1	284.5	277.0	7.56	37.653		
1,800.0	1,781.0	1,747.8	1,745.7	5.7	3.8	159.10	99.6	88.7	315.7	307.7	8.00	39.461		
1,900.0	1,878.4	1,837.8	1,834.9	6.2	4.0	161.48	96.2	100.6	348.7	340.3	8.45	41.281		
2,000.0	1,975.8	1,931.1	1,927.2	6.6	4.3	163.57	92.6	113.3	382.6	373.7	8.90	43.012		
2,100.0	2,073.2	2,024.3	2,019.4	7.1	4.6	165.32	88.9	126.1	416.9	407.5	9.35	44.574		
2,200.0	2,170.6	2,117.5	2,111.7	7.6	4.9	166.81	85.3	138.8	451.4	441.6	9.81	46.021		
2,300.0	2,268.0	2,210.8	2,204.0	8.1	5.2	168.08	81.7	151.5	486.2	475.9	10.27	47.343		
2,400.0	2,365.4	2,304.0	2,296.3	8.6	5.5	169.19	78.1	164.3	521.2	510.4	10.73	48.554		
2,500.0	2,462.7	2,397.3	2,388.6	9.1	5.8	170.16	74.4	177.0	556.3	545.1	11.20	49.666		
2,600.0	2,560.1	2,490.5	2,480.9	9.6	6.1	171.01	70.8	189.7	591.6	579.9	11.67	50.688		
2,700.0	2,657.5	2,583.7	2,573.2	10.1	6.4	171.77	67.2	202.5	626.9	614.8	12.14	51.630		
2,800.0	2,754.9	2,677.0	2,665.5	10.6	6.7	172.45	63.6	215.2	662.4	649.7	12.62	52.500		
2,900.0	2,852.3	2,770.2	2,757.8	11.1	7.0	173.06	59.9	227.9	697.9	684.8	13.09	53.305		
3,000.0	2,949.7	2,863.4	2,850.1	11.5	7.3	173.61	56.3	240.7	733.4	719.9	13.57	54.052		
3,100.0	3,047.1	2,956.7	2,942.4	12.0	7.6	174.11	52.7	253.4	769.1	755.0	14.05	54.746		
3,200.0	3,144.4	3,049.9	3,034.6	12.5	7.9	174.57	49.1	266.1	804.8	790.2	14.53	55.392		
3,300.0	3,241.8	3,143.1	3,126.9	13.0	8.2	174.98	45.4	278.9	840.5	825.5	15.01	55.995		
3,400.0	3,339.2	3,236.4	3,219.2	13.5	8.5	175.37	41.8	291.6	876.2	860.7	15.49	56.559		
3,500.0	3,436.6	3,329.6	3,311.5	14.0	8.9	175.72	38.2	304.3	912.0	896.0	15.98	57.086		
3,600.0	3,534.0	3,422.8	3,403.8	14.5	9.2	176.05	34.6	317.1	947.8	931.4	16.46	57.582		
3,700.0	3,631.4	3,516.1	3,496.1	15.0	9.5	176.35	30.9	329.8	983.7	966.7	16.95	58.047		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Bernhardt 13D (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft
Survey Program: 523-NS-GYRO-MS													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	
7,450.0	7,099.7	7,068.5	7,067.3	25.2	16.6	-55.42	-1,362.6	-607.7	970.8	940.7	30.12	32.234	
7,500.0	7,112.4	7,081.9	7,080.8	25.4	16.6	-63.24	-1,362.6	-607.9	926.3	894.1	32.14	28.817	
7,550.0	7,121.9	7,092.0	7,090.8	25.8	16.6	-71.55	-1,362.7	-608.1	881.4	847.2	34.22	25.760	
7,600.0	7,128.1	7,098.6	7,097.5	26.1	16.6	-79.86	-1,362.7	-608.2	836.6	800.6	36.03	23.221	
7,650.0	7,131.1	7,101.9	7,100.7	26.5	16.6	-87.63	-1,362.7	-608.2	792.1	754.7	37.40	21.177	
7,675.2	7,131.3	7,102.2	7,101.1	26.7	16.6	-91.22	-1,362.7	-608.2	769.8	731.9	37.93	20.298	
7,700.0	7,131.2	7,102.1	7,101.0	26.9	16.6	-91.21	-1,362.7	-608.2	748.2	709.9	38.23	19.570	
7,800.0	7,130.6	7,101.8	7,100.6	27.9	16.6	-91.15	-1,362.7	-608.2	662.9	623.4	39.51	16.781	
7,900.0	7,130.0	7,101.4	7,100.3	28.9	16.6	-91.10	-1,362.7	-608.2	582.4	541.6	40.87	14.253	
8,000.0	7,129.4	7,101.1	7,099.9	30.1	16.6	-91.04	-1,362.7	-608.2	508.9	466.6	42.30	12.032	
8,100.0	7,128.7	7,100.7	7,099.6	31.3	16.6	-90.99	-1,362.7	-608.2	445.8	402.0	43.79	10.181	
8,200.0	7,128.1	7,100.4	7,099.2	32.6	16.6	-90.94	-1,362.7	-608.2	398.1	352.8	45.33	8.783	
8,300.0	7,127.5	7,100.0	7,098.9	34.0	16.6	-90.89	-1,362.7	-608.2	371.8	324.9	46.91	7.925	
8,351.3	7,127.2	7,099.9	7,098.7	34.7	16.6	-90.86	-1,362.7	-608.2	368.3	320.5	47.74	7.713 CC, ES	
8,400.0	7,126.9	7,099.7	7,098.6	35.4	16.6	-90.83	-1,362.7	-608.2	371.5	322.9	48.53	7.654 SF	
8,500.0	7,126.3	7,099.4	7,098.2	36.9	16.6	-90.78	-1,362.7	-608.2	397.2	347.0	50.19	7.914	
8,600.0	7,125.7	7,099.1	7,097.9	38.4	16.6	-90.73	-1,362.7	-608.2	444.4	392.5	51.87	8.568	
8,700.0	7,125.1	7,098.7	7,097.6	40.0	16.6	-90.68	-1,362.7	-608.2	507.2	453.6	53.57	9.468	
8,800.0	7,124.5	7,098.4	7,097.3	41.6	16.6	-90.63	-1,362.7	-608.2	580.5	525.2	55.29	10.499	
8,900.0	7,123.9	7,098.1	7,097.0	43.2	16.6	-90.58	-1,362.7	-608.1	660.9	603.8	57.03	11.588	
9,000.0	7,123.2	7,097.8	7,096.6	44.8	16.6	-90.53	-1,362.7	-608.1	746.0	687.2	58.79	12.690	
9,100.0	7,122.6	7,097.5	7,096.3	46.5	16.6	-90.49	-1,362.7	-608.1	834.4	773.9	60.55	13.780	
9,200.0	7,122.0	7,097.2	7,096.0	48.2	16.6	-90.44	-1,362.7	-608.1	925.2	862.9	62.33	14.842	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Bernhardt 13T (Exist) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft		
Survey Program: 521-NS-GYRO-MS										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		
8,400.0	7,126.9	7,102.7	7,100.3	35.4	14.2	-94.34	-2,384.0	-826.8	984.1	937.9	46.23	21.287		
8,500.0	7,126.3	7,101.5	7,099.1	36.9	14.2	-93.89	-2,384.0	-826.8	885.4	837.5	47.87	18.494		
8,600.0	7,125.7	7,100.3	7,098.0	38.4	14.2	-93.45	-2,384.1	-826.8	787.0	737.5	49.54	15.885		
8,700.0	7,125.1	7,099.1	7,096.8	40.0	14.2	-93.00	-2,384.1	-826.8	689.1	637.9	51.24	13.450		
8,800.0	7,124.5	7,098.0	7,095.6	41.6	14.2	-92.55	-2,384.1	-826.8	591.9	539.0	52.95	11.179		
8,900.0	7,123.9	7,096.8	7,094.5	43.2	14.2	-92.10	-2,384.1	-826.8	495.8	441.1	54.67	9.069		
9,000.0	7,123.2	7,095.6	7,093.3	44.8	14.2	-91.66	-2,384.1	-826.8	401.6	345.2	56.41	7.119		
9,100.0	7,122.6	7,094.5	7,092.1	46.5	14.2	-91.21	-2,384.1	-826.8	311.0	252.9	58.16	5.348		
9,200.0	7,122.0	7,093.3	7,091.0	48.2	14.2	-90.76	-2,384.1	-826.8	228.5	168.6	59.92	3.813		
9,300.0	7,121.4	7,092.1	7,089.8	49.9	14.2	-90.32	-2,384.1	-826.8	166.3	104.6	61.69	2.696		
9,372.7	7,121.0	7,091.3	7,089.0	51.1	14.2	-89.99	-2,384.1	-826.8	149.6	86.6	62.98	2.375 CC, ES, SF		
9,400.0	7,120.8	7,091.0	7,088.6	51.6	14.2	-89.87	-2,384.1	-826.8	152.0	88.6	63.47	2.396		
9,500.0	7,120.2	7,089.8	7,087.5	53.3	14.2	-89.43	-2,384.1	-826.8	196.4	131.1	65.25	3.010		
9,600.0	7,119.6	7,088.7	7,086.3	55.1	14.2	-88.98	-2,384.1	-826.8	272.1	205.0	67.03	4.059		
9,700.0	7,119.0	7,087.5	7,085.2	56.8	14.2	-88.54	-2,384.1	-826.8	359.8	291.0	68.82	5.228		
9,800.0	7,118.4	7,086.3	7,084.0	58.6	14.2	-88.10	-2,384.1	-826.8	452.7	382.1	70.61	6.411		
9,900.0	7,117.7	7,085.2	7,082.8	60.4	14.2	-87.65	-2,384.1	-826.8	548.0	475.6	72.40	7.569		
10,000.0	7,117.1	7,084.0	7,081.7	62.2	14.2	-87.21	-2,384.1	-826.8	644.8	570.6	74.20	8.691		
10,100.0	7,116.5	7,082.9	7,080.5	64.0	14.2	-86.77	-2,384.2	-826.8	742.5	666.5	75.99	9.771		
10,200.0	7,115.9	7,081.7	7,079.4	65.8	14.2	-86.33	-2,384.2	-826.8	840.6	762.9	77.78	10.808		
10,300.0	7,115.3	7,080.6	7,078.2	67.6	14.2	-85.89	-2,384.2	-826.8	939.2	859.6	79.57	11.804		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells - Sec.13-T4N-R67W - Bernhardt 24C (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft	
Survey Program: 500-NS-GYRO-MS														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		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
							+N/-S (ft)	+E/-W (ft)								
10,000.0	7,117.1	7,092.3	7,091.4	62.2	14.5	-91.95	-3,946.5	-713.1	971.5	896.6	74.87	12.977				
10,100.0	7,116.5	7,091.6	7,090.7	64.0	14.5	-91.81	-3,946.5	-713.1	875.7	799.0	76.71	11.416				
10,200.0	7,115.9	7,091.0	7,090.1	65.8	14.5	-91.66	-3,946.5	-713.1	780.9	702.3	78.55	9.941				
10,300.0	7,115.3	7,090.3	7,089.4	67.6	14.5	-91.52	-3,946.5	-713.1	687.6	607.2	80.40	8.552				
10,400.0	7,114.7	7,089.7	7,088.8	69.4	14.5	-91.38	-3,946.5	-713.1	596.4	514.2	82.26	7.251				
10,500.0	7,114.1	7,089.0	7,088.1	71.2	14.5	-91.23	-3,946.5	-713.1	508.6	424.5	84.11	6.047				
10,600.0	7,113.5	7,088.4	7,087.4	73.0	14.5	-91.09	-3,946.5	-713.1	426.2	340.3	85.97	4.958				
10,700.0	7,112.9	7,087.7	7,086.8	74.9	14.5	-90.95	-3,946.5	-713.1	353.1	265.2	87.83	4.020				
10,800.0	7,112.2	7,087.0	7,086.1	76.7	14.5	-90.81	-3,946.5	-713.0	296.0	206.3	89.70	3.300				
10,900.0	7,111.6	7,086.4	7,085.5	78.5	14.5	-90.66	-3,946.5	-713.0	265.7	174.1	91.56	2.902				
10,935.2	7,111.4	7,086.2	7,085.2	79.2	14.5	-90.61	-3,946.5	-713.0	263.4	171.1	92.22	2.856 CC, ES, SF				
11,000.0	7,111.0	7,085.7	7,084.8	80.4	14.5	-90.52	-3,946.5	-713.0	271.2	177.8	93.43	2.903				
11,100.0	7,110.4	7,085.1	7,084.2	82.2	14.5	-90.38	-3,946.5	-713.0	310.7	215.4	95.30	3.260				
11,200.0	7,109.8	7,084.4	7,083.5	84.1	14.5	-90.23	-3,946.5	-713.0	373.5	276.3	97.17	3.844				
11,300.0	7,109.2	7,083.8	7,082.8	85.9	14.5	-90.09	-3,946.5	-713.0	450.0	350.9	99.05	4.543				
11,400.0	7,108.6	7,083.1	7,082.2	87.8	14.5	-89.95	-3,946.5	-713.0	534.3	433.3	100.92	5.294				
11,500.0	7,108.0	7,082.5	7,081.5	89.6	14.5	-89.81	-3,946.5	-713.0	623.2	520.4	102.79	6.063				
11,600.0	7,107.4	7,081.8	7,080.9	91.5	14.5	-89.67	-3,946.5	-713.0	715.1	610.4	104.67	6.832				
11,700.0	7,106.8	7,081.1	7,080.2	93.3	14.5	-89.52	-3,946.5	-713.0	808.9	702.4	106.55	7.592				
11,800.0	7,106.1	7,080.5	7,079.6	95.2	14.5	-89.38	-3,946.5	-713.0	904.0	795.6	108.42	8.338				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Brindl 1 (Exist) - Wellbore #1 - Wellbore #1														Offset Site Error: 0.0 ft
Survey Program: 100-NS-GYRO-MS														Offset Well Error: 0.0 ft
Reference	Offset	Semi Major Axis		Distance		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		
6,750.0	6,640.7	6,668.6	6,665.0	23.5	14.2	41.65	-733.6	-1,613.3	995.5	961.7	33.75	29.499		
6,800.0	6,686.8	6,715.7	6,712.1	23.6	14.3	43.22	-733.2	-1,614.0	980.8	947.6	33.23	29.511		
6,850.0	6,731.5	6,755.8	6,752.2	23.6	14.4	44.96	-732.9	-1,614.7	964.2	931.5	32.67	29.513		
6,900.0	6,774.6	6,794.7	6,791.0	23.7	14.5	46.97	-732.8	-1,615.5	945.9	913.8	32.09	29.475		
6,950.0	6,816.0	6,840.3	6,836.6	23.7	14.6	49.50	-732.7	-1,616.4	925.9	894.4	31.56	29.343		
7,000.0	6,855.5	6,884.9	6,881.3	23.8	14.7	52.41	-732.5	-1,616.9	904.3	873.2	31.11	29.067		
7,050.0	6,892.9	6,922.3	6,918.6	23.9	14.7	55.45	-732.3	-1,617.3	881.3	850.5	30.79	28.620		
7,100.0	6,928.0	6,954.8	6,951.1	24.0	14.8	58.63	-732.1	-1,617.7	857.4	826.8	30.64	27.981		
7,150.0	6,960.8	6,985.0	6,981.3	24.1	14.9	62.01	-732.0	-1,618.2	833.1	802.4	30.70	27.141		
7,200.0	6,991.0	7,014.2	7,010.5	24.2	14.9	65.60	-731.8	-1,618.8	808.7	777.7	30.96	26.118		
7,250.0	7,018.5	7,042.5	7,038.8	24.3	15.0	69.34	-731.6	-1,619.3	784.4	752.9	31.42	24.965		
7,300.0	7,043.2	7,068.0	7,064.3	24.5	15.1	73.04	-731.4	-1,619.7	760.6	728.6	32.00	23.768		
7,350.0	7,065.1	7,090.5	7,086.8	24.7	15.1	76.58	-731.3	-1,620.0	737.8	705.2	32.65	22.598		
7,400.0	7,083.9	7,110.3	7,106.6	24.9	15.2	79.88	-731.3	-1,620.3	716.5	683.2	33.31	21.512		
7,450.0	7,099.7	7,126.9	7,123.2	25.2	15.2	82.81	-731.2	-1,620.5	697.1	663.2	33.94	20.542		
7,500.0	7,112.4	7,140.0	7,136.3	25.4	15.2	85.27	-731.1	-1,620.6	680.2	645.7	34.53	19.700		
7,550.0	7,121.9	7,149.6	7,145.9	25.8	15.2	87.20	-731.0	-1,620.7	666.2	631.1	35.09	18.985		
7,600.0	7,128.1	7,155.6	7,151.9	26.1	15.2	88.56	-730.9	-1,620.8	655.4	619.7	35.64	18.391		
7,650.0	7,131.1	7,158.1	7,154.5	26.5	15.3	89.34	-730.9	-1,620.8	648.2	612.0	36.20	17.908		
7,675.2	7,131.3	7,158.1	7,154.5	26.7	15.3	89.50	-730.9	-1,620.8	646.0	609.5	36.49	17.702		
7,700.0	7,131.2	7,157.7	7,154.0	26.9	15.3	89.46	-730.9	-1,620.8	644.7	607.9	36.79	17.523		
7,719.5	7,131.1	7,157.4	7,153.7	27.1	15.2	89.43	-730.9	-1,620.8	644.4	607.4	37.04	17.396 CC, ES		
7,800.0	7,130.6	7,156.0	7,152.3	27.9	15.2	89.31	-730.9	-1,620.8	649.4	611.4	38.08	17.056		
7,900.0	7,130.0	7,154.3	7,150.6	28.9	15.2	89.16	-730.9	-1,620.8	669.2	629.8	39.45	16.965 SF		
8,000.0	7,129.4	7,152.7	7,149.0	30.1	15.2	89.02	-731.0	-1,620.8	702.8	661.9	40.89	17.189		
8,100.0	7,128.7	7,151.1	7,147.4	31.3	15.2	88.87	-731.0	-1,620.7	748.3	706.0	42.39	17.655		
8,200.0	7,128.1	7,149.5	7,145.9	32.6	15.2	88.74	-731.0	-1,620.7	803.8	759.9	43.94	18.295		
8,300.0	7,127.5	7,148.0	7,144.3	34.0	15.2	88.60	-731.0	-1,620.7	867.3	821.7	45.53	19.050		
8,400.0	7,126.9	7,146.5	7,142.8	35.4	15.2	88.47	-731.0	-1,620.7	937.1	890.0	47.15	19.874		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Bryce 1 (Exist) - Wellbore #1 - Wellbore #1														Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS														Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		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			
7,900.0	7,130.0	7,198.6	7,197.7	28.9	17.1	91.83	-1,790.1	-1,386.0	969.5	928.3	41.16	23.554			
8,000.0	7,129.4	7,196.8	7,195.9	30.1	17.1	91.58	-1,790.1	-1,385.9	879.8	837.2	42.61	20.649			
8,100.0	7,128.7	7,195.0	7,194.1	31.3	17.1	91.33	-1,790.1	-1,385.9	792.7	748.6	44.12	17.968			
8,200.0	7,128.1	7,193.2	7,192.4	32.6	17.1	91.09	-1,790.1	-1,385.9	709.0	663.3	45.68	15.521			
8,300.0	7,127.5	7,191.5	7,190.6	34.0	17.1	90.84	-1,790.1	-1,385.9	630.0	582.7	47.28	13.325			
8,400.0	7,126.9	7,189.7	7,188.8	35.4	17.1	90.59	-1,790.2	-1,385.9	557.8	508.9	48.92	11.403			
8,500.0	7,126.3	7,187.9	7,187.1	36.9	17.1	90.35	-1,790.2	-1,385.9	495.4	444.8	50.59	9.792			
8,600.0	7,125.7	7,186.2	7,185.3	38.4	17.1	90.10	-1,790.2	-1,385.9	446.8	394.6	52.28	8.546			
8,700.0	7,125.1	7,184.5	7,183.6	40.0	17.1	89.86	-1,790.2	-1,385.9	417.0	363.0	54.00	7.722			
8,778.9	7,124.6	7,183.1	7,182.2	41.2	17.1	89.67	-1,790.2	-1,385.9	409.5	354.1	55.37	7.395 CC, ES			
8,800.0	7,124.5	7,182.7	7,181.9	41.6	17.1	89.62	-1,790.2	-1,385.9	410.0	354.3	55.74	7.356 SF			
8,900.0	7,123.9	7,181.0	7,180.1	43.2	17.1	89.38	-1,790.3	-1,385.9	427.0	369.5	57.49	7.428			
9,000.0	7,123.2	7,179.3	7,178.4	44.8	17.1	89.14	-1,790.3	-1,385.8	465.4	406.1	59.26	7.853			
9,100.0	7,122.6	7,177.6	7,176.7	46.5	17.1	88.90	-1,790.3	-1,385.8	520.4	459.3	61.04	8.526			
9,200.0	7,122.0	7,175.9	7,175.0	48.2	17.1	88.66	-1,790.3	-1,385.8	587.4	524.5	62.83	9.349			
9,300.0	7,121.4	7,174.2	7,173.3	49.9	17.1	88.42	-1,790.3	-1,385.8	662.7	598.1	64.62	10.255			
9,400.0	7,120.8	7,172.5	7,171.6	51.6	17.1	88.19	-1,790.4	-1,385.8	743.9	677.5	66.43	11.198			
9,500.0	7,120.2	7,170.8	7,169.9	53.3	17.1	87.95	-1,790.4	-1,385.8	829.2	761.0	68.24	12.150			
9,600.0	7,119.6	7,169.1	7,168.3	55.1	17.1	87.72	-1,790.4	-1,385.8	917.5	847.4	70.06	13.095			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells - Sec.13-T4N-R67W - Jennifer 1 (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
							+N/-S (ft)	+E/-W (ft)						
10,700.0	7,112.9	7,085.5	7,084.5	74.9	14.5	90.18	-4,437.1	-1,625.0	973.4	885.6	87.79	11.087		
10,800.0	7,112.2	7,084.7	7,083.6	76.7	14.5	90.10	-4,437.1	-1,625.0	901.3	811.6	89.67	10.051		
10,900.0	7,111.6	7,083.8	7,082.7	78.5	14.5	90.02	-4,437.1	-1,625.0	834.9	743.4	91.54	9.121		
11,000.0	7,111.0	7,082.9	7,081.8	80.4	14.5	89.95	-4,437.1	-1,625.0	775.9	682.5	93.42	8.305		
11,100.0	7,110.4	7,082.1	7,081.0	82.2	14.5	89.87	-4,437.1	-1,625.0	725.8	630.5	95.30	7.616		
11,200.0	7,109.8	7,081.2	7,080.1	84.1	14.5	89.80	-4,437.1	-1,625.0	686.8	589.6	97.18	7.067		
11,300.0	7,109.2	7,080.4	7,079.3	85.9	14.5	89.72	-4,437.1	-1,625.0	660.7	561.6	99.06	6.669		
11,400.0	7,108.6	7,079.6	7,078.5	87.8	14.5	89.65	-4,437.1	-1,625.0	649.1	548.2	100.95	6.430		
11,425.8	7,108.4	7,079.3	7,078.3	88.2	14.5	89.63	-4,437.1	-1,625.0	648.6	547.2	101.43	6.394 CC, ES		
11,500.0	7,108.0	7,078.7	7,077.7	89.6	14.5	89.58	-4,437.1	-1,625.0	652.9	550.0	102.84	6.349 SF		
11,600.0	7,107.4	7,077.9	7,076.9	91.5	14.5	89.51	-4,437.1	-1,625.0	671.6	566.9	104.72	6.413		
11,700.0	7,106.8	7,077.1	7,076.1	93.3	14.5	89.44	-4,437.1	-1,625.0	704.2	597.6	106.61	6.605		
11,800.0	7,106.1	7,076.3	7,075.3	95.2	14.5	89.37	-4,437.1	-1,625.0	748.8	640.3	108.50	6.902		
11,900.0	7,105.5	7,075.6	7,074.5	97.1	14.5	89.30	-4,437.1	-1,625.0	803.5	693.1	110.39	7.279		
12,000.0	7,104.9	7,074.8	7,073.7	98.9	14.5	89.23	-4,437.1	-1,625.0	866.3	754.0	112.28	7.715		
12,100.0	7,104.3	7,074.0	7,073.0	100.8	14.5	89.16	-4,437.1	-1,625.0	935.6	821.4	114.18	8.194		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Johnny 1 (Exist) - Wellbore #1 - Wellbore #1														Offset Site Error: 0.0 ft
Survey Program: 100-NS-GYRO-MS														Offset Well Error: 0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,400.0	7,120.8	7,090.6	7,088.3	51.6	16.6	89.99	89.99	-3,141.2	-1,549.1	927.7	861.8	65.87	14.084	
9,500.0	7,120.2	7,090.0	7,087.6	53.3	16.6	89.93	89.93	-3,141.2	-1,549.1	851.3	783.6	67.68	12.577	
9,600.0	7,119.6	7,089.4	7,087.0	55.1	16.6	89.87	89.87	-3,141.2	-1,549.1	780.2	710.7	69.51	11.225	
9,700.0	7,119.0	7,088.8	7,086.4	56.8	16.6	89.81	89.81	-3,141.2	-1,549.1	716.1	644.7	71.34	10.038	
9,800.0	7,118.4	7,088.1	7,085.8	58.6	16.6	89.74	89.74	-3,141.2	-1,549.1	660.9	587.7	73.17	9.032	
9,900.0	7,117.7	7,087.5	7,085.2	60.4	16.6	89.68	89.68	-3,141.2	-1,549.1	617.1	542.1	75.01	8.227	
10,000.0	7,117.1	7,086.9	7,084.6	62.2	16.6	89.62	89.62	-3,141.2	-1,549.1	587.2	510.4	76.86	7.641	
10,100.0	7,116.5	7,086.3	7,083.9	64.0	16.6	89.56	89.56	-3,141.2	-1,549.1	573.5	494.8	78.71	7.286	
10,129.8	7,116.3	7,086.1	7,083.8	64.5	16.6	89.54	89.54	-3,141.2	-1,549.1	572.7	493.4	79.26	7.226 CC, ES	
10,200.0	7,115.9	7,085.7	7,083.3	65.8	16.6	89.50	89.50	-3,141.2	-1,549.1	577.0	496.4	80.56	7.162 SF	
10,300.0	7,115.3	7,085.0	7,082.7	67.6	16.6	89.43	89.43	-3,141.2	-1,549.1	597.4	515.0	82.42	7.249	
10,400.0	7,114.7	7,084.4	7,082.1	69.4	16.6	89.37	89.37	-3,141.2	-1,549.1	633.2	548.9	84.28	7.513	
10,500.0	7,114.1	7,083.8	7,081.5	71.2	16.6	89.31	89.31	-3,141.2	-1,549.1	681.9	595.8	86.14	7.916	
10,600.0	7,113.5	7,083.2	7,080.8	73.0	16.6	89.25	89.25	-3,141.2	-1,549.0	741.0	653.0	88.01	8.419	
10,700.0	7,112.9	7,082.6	7,080.2	74.9	16.6	89.19	89.19	-3,141.2	-1,549.0	808.1	718.2	89.88	8.991	
10,800.0	7,112.2	7,081.9	7,079.6	76.7	16.6	89.12	89.12	-3,141.2	-1,549.0	881.5	789.8	91.75	9.608	
10,900.0	7,111.6	7,081.3	7,079.0	78.5	16.6	89.06	89.06	-3,141.2	-1,549.0	959.8	866.1	93.63	10.251	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Johnston 34-24 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error: 0.0 ft
Reference	Offset	Semi Major Axis		Distance		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	
13,300.0	7,097.0	7,062.4	7,061.6	123.4	15.8	89.00	-7,146.3	-1,336.5	909.4	771.2	138.26	6.578	
13,400.0	7,096.4	7,062.4	7,061.6	125.3	15.8	89.01	-7,146.3	-1,336.5	818.6	678.4	140.16	5.840	
13,500.0	7,095.8	7,062.5	7,061.7	127.2	15.8	89.01	-7,146.3	-1,336.5	730.1	588.0	142.07	5.139	
13,600.0	7,095.1	7,062.5	7,061.7	129.0	15.8	89.02	-7,146.3	-1,336.5	645.0	501.0	143.97	4.480	
13,700.0	7,094.5	7,062.5	7,061.7	130.9	15.8	89.02	-7,146.3	-1,336.5	564.8	418.9	145.87	3.872	
13,800.0	7,093.9	7,062.6	7,061.8	132.8	15.8	89.03	-7,146.3	-1,336.5	491.9	344.1	147.78	3.329	
13,900.0	7,093.3	7,062.6	7,061.8	134.7	15.8	89.04	-7,146.3	-1,336.5	430.1	280.4	149.68	2.873	
14,000.0	7,092.7	7,062.7	7,061.9	136.6	15.8	89.04	-7,146.3	-1,336.5	384.6	233.0	151.59	2.537	
14,100.0	7,092.1	7,062.7	7,061.9	138.5	15.8	89.05	-7,146.3	-1,336.5	361.8	208.3	153.49	2.357	
14,135.1	7,091.9	7,062.7	7,061.9	139.2	15.8	89.05	-7,146.3	-1,336.5	360.1	206.0	154.16	2.336	CC, ES, SF
14,200.0	7,091.5	7,062.7	7,061.9	140.4	15.8	89.05	-7,146.3	-1,336.5	365.9	210.5	155.40	2.355	
14,278.4	7,091.0	7,062.8	7,062.0	141.9	15.8	89.06	-7,146.3	-1,336.5	387.6	230.7	156.89	2.470	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Johnston 5 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft
Survey Program: 550-NS-GYRO-MS													Offset Well Error: 0.0 ft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
12,900.0	7,099.4	7,105.2	7,071.5	115.8	16.2	-92.30	-6,819.8	-911.8	910.8	779.9	130.89	6.958	
13,000.0	7,098.8	7,105.0	7,071.2	117.7	16.2	-92.09	-6,819.8	-911.8	811.1	678.3	132.79	6.108	
13,100.0	7,098.2	7,104.7	7,071.0	119.6	16.2	-91.87	-6,819.8	-911.8	711.4	576.7	134.69	5.282	
13,200.0	7,097.6	7,104.5	7,070.7	121.5	16.2	-91.65	-6,819.8	-911.8	611.9	475.3	136.59	4.480	
13,300.0	7,097.0	7,104.2	7,070.5	123.4	16.2	-91.43	-6,819.8	-911.8	512.6	374.1	138.48	3.701	
13,400.0	7,096.4	7,104.0	7,070.2	125.3	16.2	-91.21	-6,819.8	-911.8	413.6	273.2	140.38	2.946	
13,500.0	7,095.8	7,103.8	7,070.0	127.2	16.2	-90.99	-6,819.8	-911.8	315.2	172.9	142.28	2.215	
13,600.0	7,095.1	7,103.5	7,069.7	129.0	16.2	-90.77	-6,819.8	-911.8	218.3	74.1	144.17	1.514	
13,700.0	7,094.5	7,103.3	7,069.5	130.9	16.2	-90.55	-6,819.8	-911.8	126.3	-19.8	146.07	0.864 Level 1	
13,800.0	7,093.9	7,103.0	7,069.2	132.8	16.2	-90.33	-6,819.8	-911.8	65.1	-82.8	147.96	0.440 Level 1	
13,808.5	7,093.9	7,103.0	7,069.2	133.0	16.2	-90.31	-6,819.8	-911.8	64.6	-83.5	148.12	0.436 Level 1, CC, ES, SF	
13,900.0	7,093.3	7,102.7	7,069.0	134.7	16.2	-90.10	-6,819.8	-911.8	112.0	-37.8	149.85	0.747 Level 1	
14,000.0	7,092.7	7,102.5	7,068.7	136.6	16.2	-89.88	-6,819.8	-911.8	202.1	50.4	151.74	1.332 Level 3	
14,100.0	7,092.1	7,102.2	7,068.5	138.5	16.2	-89.65	-6,819.8	-911.8	298.6	144.9	153.63	1.944	
14,200.0	7,091.5	7,102.0	7,068.2	140.4	16.2	-89.43	-6,819.8	-911.8	396.8	241.3	155.51	2.552	
14,278.4	7,091.0	7,101.8	7,068.0	141.9	16.2	-89.25	-6,819.8	-911.8	474.4	317.4	156.99	3.022	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Orr 33-24 (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		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)			
11,700.0	7,106.8	7,082.1	7,080.3	93.3	16.5	91.00	-5,676.1	-1,232.9	998.3	889.8	108.46	9.204	
11,800.0	7,106.1	7,081.4	7,079.6	95.2	16.5	90.84	-5,676.1	-1,232.9	902.0	791.6	110.36	8.173	
11,900.0	7,105.5	7,080.7	7,079.0	97.1	16.5	90.69	-5,676.1	-1,232.9	806.6	694.4	112.26	7.185	
12,000.0	7,104.9	7,080.0	7,078.3	98.9	16.5	90.54	-5,676.1	-1,232.9	712.5	598.4	114.16	6.241	
12,100.0	7,104.3	7,079.3	7,077.6	100.8	16.5	90.38	-5,676.1	-1,232.9	620.3	504.2	116.06	5.344	
12,200.0	7,103.7	7,078.6	7,076.9	102.7	16.5	90.23	-5,676.1	-1,232.9	530.8	412.9	117.97	4.500	
12,300.0	7,103.1	7,077.9	7,076.2	104.6	16.4	90.07	-5,676.1	-1,232.9	445.9	326.1	119.87	3.720	
12,400.0	7,102.5	7,077.2	7,075.5	106.4	16.4	89.92	-5,676.1	-1,232.9	368.6	246.9	121.77	3.027	
12,500.0	7,101.9	7,076.5	7,074.8	108.3	16.4	89.77	-5,676.1	-1,232.9	304.9	181.2	123.67	2.465	
12,600.0	7,101.3	7,075.8	7,074.1	110.2	16.4	89.61	-5,676.1	-1,232.9	264.6	139.0	125.58	2.107	
12,664.8	7,100.9	7,075.4	7,073.7	111.4	16.4	89.51	-5,676.1	-1,232.9	256.5	129.7	126.81	2.023 CC, ES, SF	
12,700.0	7,100.6	7,075.2	7,073.4	112.1	16.4	89.46	-5,676.1	-1,232.9	258.9	131.4	127.48	2.031	
12,800.0	7,100.0	7,074.5	7,072.7	114.0	16.4	89.30	-5,676.1	-1,232.9	290.0	160.6	129.38	2.241	
12,900.0	7,099.4	7,073.8	7,072.0	115.8	16.4	89.15	-5,676.1	-1,232.9	348.0	216.7	131.28	2.651	
13,000.0	7,098.8	7,073.1	7,071.4	117.7	16.4	89.00	-5,676.1	-1,232.9	422.1	288.9	133.18	3.169	
13,100.0	7,098.2	7,072.4	7,070.7	119.6	16.4	88.84	-5,676.1	-1,232.9	505.2	370.1	135.08	3.740	
13,200.0	7,097.6	7,071.7	7,070.0	121.5	16.4	88.69	-5,676.1	-1,232.9	593.5	456.5	136.98	4.333	
13,300.0	7,097.0	7,071.0	7,069.3	123.4	16.4	88.53	-5,676.1	-1,232.8	685.0	546.2	138.89	4.932	
13,400.0	7,096.4	7,070.3	7,068.6	125.3	16.4	88.38	-5,676.1	-1,232.8	778.7	637.9	140.78	5.531	
13,500.0	7,095.8	7,069.6	7,067.9	127.2	16.4	88.22	-5,676.1	-1,232.8	873.7	731.0	142.68	6.123	
13,600.0	7,095.1	7,068.9	7,067.2	129.0	16.4	88.07	-5,676.1	-1,232.8	969.7	825.2	144.58	6.707	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4750.0ft (RKB - 13')

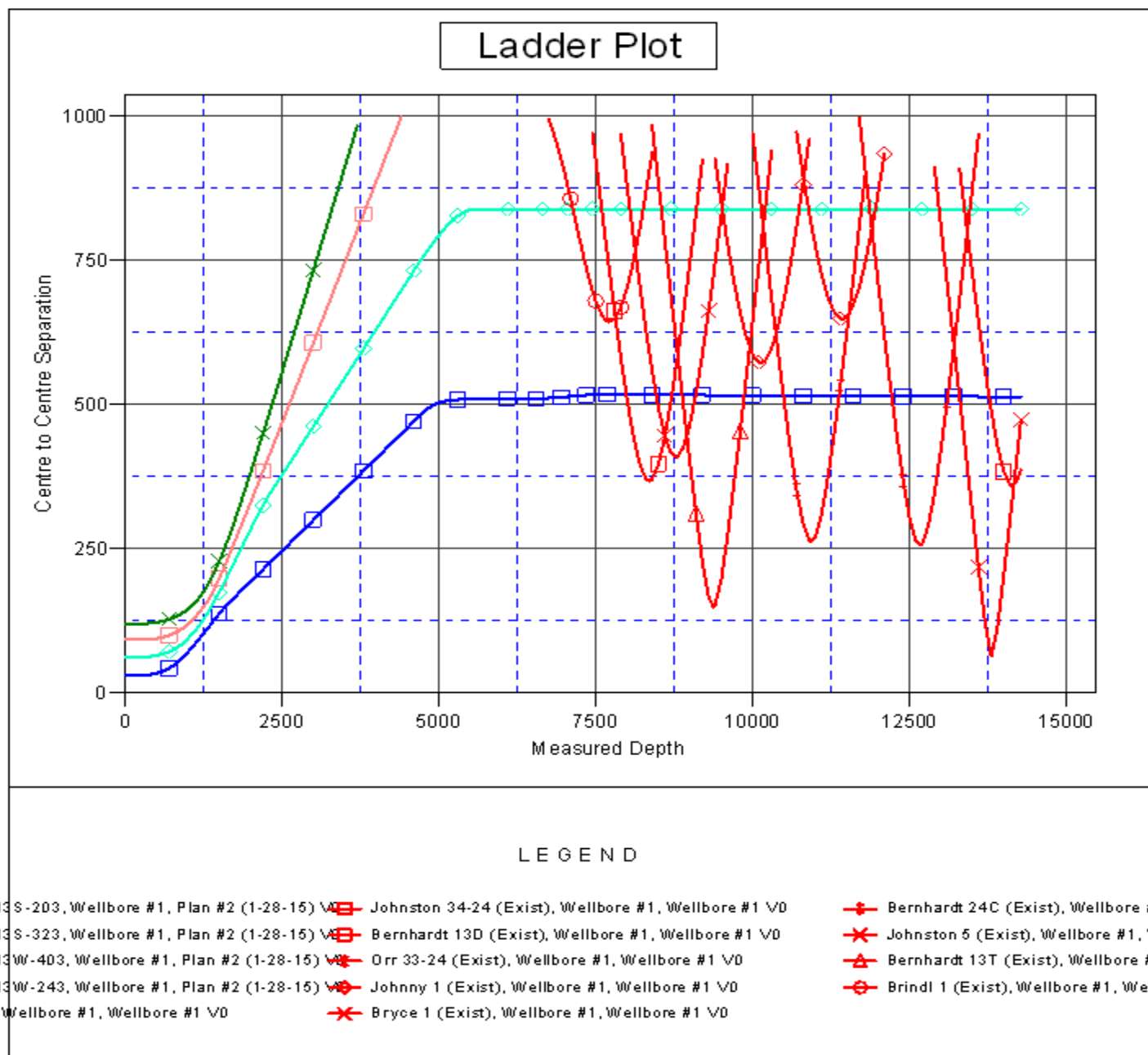
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Bernhardt Farms 13S-343

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.43°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13S-343
Project:	SEC.13-T4N-R67W	TVD Reference:	WELL @ 4750.0ft (RKB - 13')
Reference Site:	Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W	MD Reference:	WELL @ 4750.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bernhardt Farms 13S-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4750.0ft (RKB - 13')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Bernhardt Farms 13S-343

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.43°

