

PETROLEUM DEVELOPMENT CORP Weld County CO

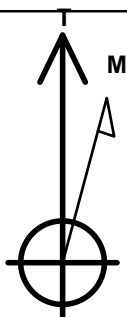
Well Name: **Bernhardt Farms 13W-243**

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	1357094.83	3186274.32	40.311700	-104.832040	
RKB - 13' WELL @ 4750.0ft (RKB - 13')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2634'FSL, 650'FEL	1.0	0.0	0.0	Point
BHL 500'FSL,405'FEL	7006.0	-7399.0	228.8	Point



Azimuths to True North
Magnetic North: 8.40°

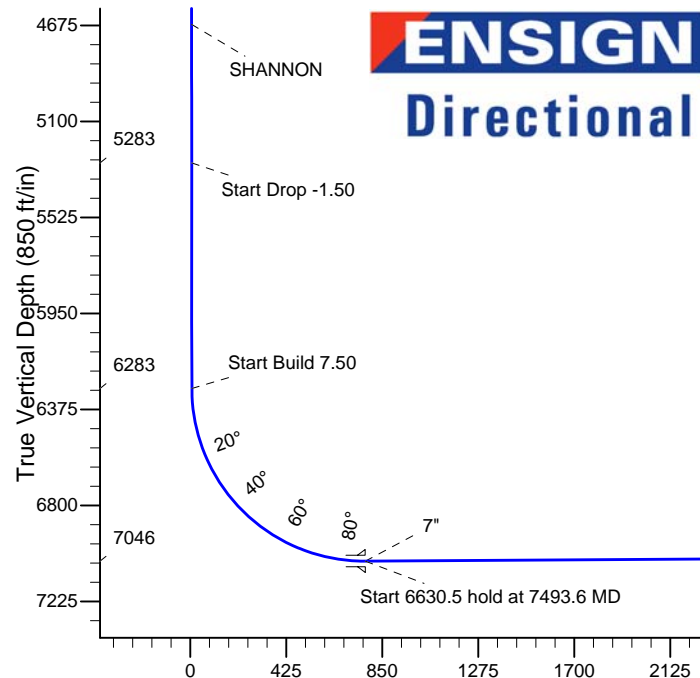
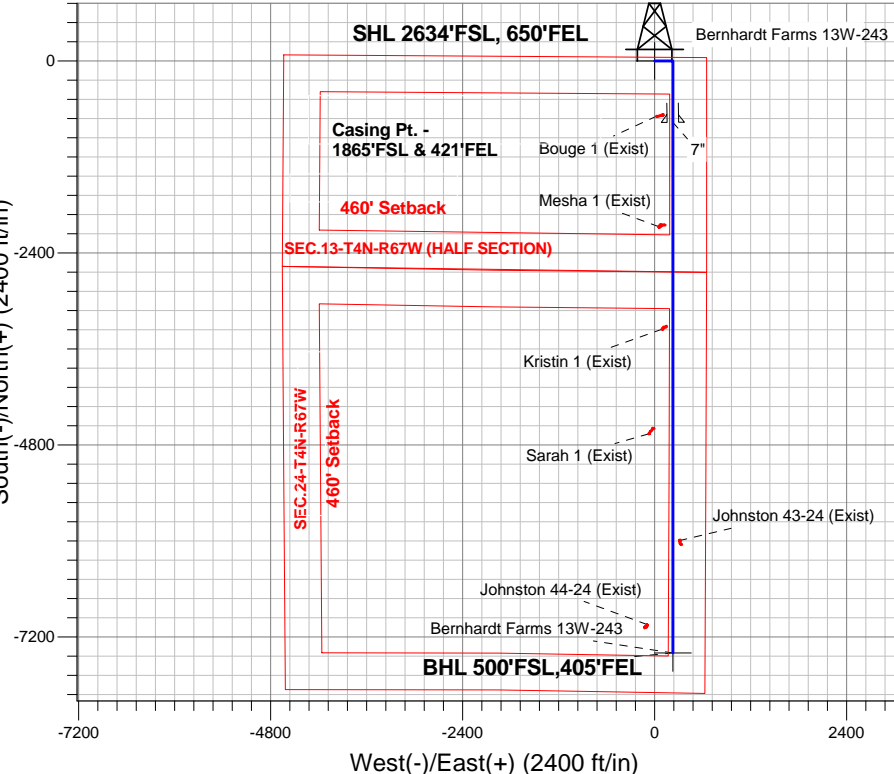
Magnetic Field
Strength: 52697.2srT
Dip Angle: 66.84°
Date: 1/28/2015
Model: IGRF2010

Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W
Bernhardt Farms 13W-243
Plan #2 (1-28-15)
13:52, January 28 2015

ANNOTATIONS

TVD	MD	Annotation
1200.0	1200.0	KOP - Start Build 1.00
5283.5	5289.7	Start Drop -1.50
6282.6	6288.9	Start Build 7.50
7046.5	7493.6	Start 6630.5 hold at 7493.6 MD
7006.0	14124.1	TD at 14124.1

South(-)/North(+) (2400 ft/in)



ENSIGN
Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	1524.9	3.25	90.00	1524.8	0.0	9.2	1.00	90.00	0.3	
4	5289.7	3.25	90.00	5283.5	0.0	222.6	0.00	0.00	6.9	
5	5506.3	0.00	0.00	5500.0	0.0	228.8	1.50	180.00	7.1	
6	6288.9	0.00	0.00	6282.6	0.0	228.8	0.00	0.00	7.1	
7	7493.6	90.35	180.00	7046.5	-768.6	228.8	7.50	180.00	775.3	
8	14124.1	90.35	180.00	7006.0	-7399.0	228.8	0.00	0.00	7402.6	BHL 500'FSL,405'FEL

Vertical Section at 178.23° (850 ft/in)

BHL 500'FSL,405'FEL

TD at 14124.1



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.13-T4N-R67W

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

Bernhardt Farms 13W-243

Wellbore #1

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

Standard Planning Report

28 January, 2015

Database:	Landmark	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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

Site		Bernhardt Farms 13SW-HZ Pad Sec.13-T4N-R67W				
Site Position:		Northing:	1,357,036.42 ft	Latitude:	40.311540	
From:	Lat/Long	Easting:	3,186,255.24 ft	Longitude:	-104.832110	
Position Uncertainty:		0.0 ft	Slot Radius:	"	Grid Convergence:	0.43 °

Well	Bernhardt Farms 13W-243					
Well Position	+N-S	58.3 ft	Northing:	1,357,094.83 ft	Latitude:	40.311700
	+E-W	19.5 ft	Easting:	3,186,274.32 ft	Longitude:	-104.832040
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	178.23

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,524.9	3.25	90.00	1,524.8	0.0	9.2	1.00	1.00	0.00	90.00	
5,289.7	3.25	90.00	5,283.5	0.0	222.6	0.00	0.00	0.00	0.00	
5,506.3	0.00	0.00	5,500.0	0.0	228.8	1.50	-1.50	0.00	180.00	
6,288.9	0.00	0.00	6,282.6	0.0	228.8	0.00	0.00	0.00	0.00	
7,493.6	90.35	180.00	7,046.5	-768.6	228.8	7.50	7.50	0.00	180.00	
14,124.1	90.35	180.00	7,006.0	-7,399.0	228.8	0.00	0.00	0.00	0.00	BHL 500'FSL,405'F

Database:	Landmark	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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 2634'FSL, 650'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
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.00									
1,300.0	1.00	90.00	1,300.0	0.0	0.9	0.0	1.00	1.00	0.00
1,400.0	2.00	90.00	1,400.0	0.0	3.5	0.1	1.00	1.00	0.00
1,500.0	3.00	90.00	1,499.9	0.0	7.9	0.2	1.00	1.00	0.00
1,524.9	3.25	90.00	1,524.8	0.0	9.2	0.3	1.00	1.00	0.00
1,600.0	3.25	90.00	1,599.7	0.0	13.5	0.4	0.00	0.00	0.00
1,700.0	3.25	90.00	1,699.5	0.0	19.1	0.6	0.00	0.00	0.00
1,800.0	3.25	90.00	1,799.4	0.0	24.8	0.8	0.00	0.00	0.00
1,900.0	3.25	90.00	1,899.2	0.0	30.5	0.9	0.00	0.00	0.00
2,000.0	3.25	90.00	1,999.1	0.0	36.1	1.1	0.00	0.00	0.00
2,100.0	3.25	90.00	2,098.9	0.0	41.8	1.3	0.00	0.00	0.00
2,200.0	3.25	90.00	2,198.7	0.0	47.5	1.5	0.00	0.00	0.00
2,300.0	3.25	90.00	2,298.6	0.0	53.1	1.6	0.00	0.00	0.00
2,400.0	3.25	90.00	2,398.4	0.0	58.8	1.8	0.00	0.00	0.00
2,500.0	3.25	90.00	2,498.3	0.0	64.5	2.0	0.00	0.00	0.00
2,600.0	3.25	90.00	2,598.1	0.0	70.2	2.2	0.00	0.00	0.00
2,700.0	3.25	90.00	2,697.9	0.0	75.8	2.3	0.00	0.00	0.00
2,800.0	3.25	90.00	2,797.8	0.0	81.5	2.5	0.00	0.00	0.00
2,900.0	3.25	90.00	2,897.6	0.0	87.2	2.7	0.00	0.00	0.00
3,000.0	3.25	90.00	2,997.5	0.0	92.8	2.9	0.00	0.00	0.00
3,100.0	3.25	90.00	3,097.3	0.0	98.5	3.0	0.00	0.00	0.00
3,200.0	3.25	90.00	3,197.1	0.0	104.2	3.2	0.00	0.00	0.00
3,300.0	3.25	90.00	3,297.0	0.0	109.8	3.4	0.00	0.00	0.00
3,400.0	3.25	90.00	3,396.8	0.0	115.5	3.6	0.00	0.00	0.00
3,500.0	3.25	90.00	3,496.7	0.0	121.2	3.7	0.00	0.00	0.00
3,583.5	3.25	90.00	3,580.0	0.0	125.9	3.9	0.00	0.00	0.00
PARKMAN									
3,600.0	3.25	90.00	3,596.5	0.0	126.8	3.9	0.00	0.00	0.00
3,700.0	3.25	90.00	3,696.3	0.0	132.5	4.1	0.00	0.00	0.00
3,800.0	3.25	90.00	3,796.2	0.0	138.2	4.3	0.00	0.00	0.00
3,900.0	3.25	90.00	3,896.0	0.0	143.8	4.4	0.00	0.00	0.00
4,000.0	3.25	90.00	3,995.8	0.0	149.5	4.6	0.00	0.00	0.00
4,100.0	3.25	90.00	4,095.7	0.0	155.2	4.8	0.00	0.00	0.00
4,104.3	3.25	90.00	4,100.0	0.0	155.4	4.8	0.00	0.00	0.00
SUSSEX									
4,200.0	3.25	90.00	4,195.5	0.0	160.8	5.0	0.00	0.00	0.00
4,300.0	3.25	90.00	4,295.4	0.0	166.5	5.1	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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	3.25	90.00	4,395.2	0.0	172.2	5.3	0.00	0.00	0.00
4,500.0	3.25	90.00	4,495.0	0.0	177.8	5.5	0.00	0.00	0.00
4,600.0	3.25	90.00	4,594.9	0.0	183.5	5.7	0.00	0.00	0.00
4,675.2	3.25	90.00	4,670.0	0.0	187.8	5.8	0.00	0.00	0.00
SHANNON									
4,700.0	3.25	90.00	4,694.7	0.0	189.2	5.8	0.00	0.00	0.00
4,800.0	3.25	90.00	4,794.6	0.0	194.9	6.0	0.00	0.00	0.00
4,900.0	3.25	90.00	4,894.4	0.0	200.5	6.2	0.00	0.00	0.00
5,000.0	3.25	90.00	4,994.2	0.0	206.2	6.4	0.00	0.00	0.00
5,100.0	3.25	90.00	5,094.1	0.0	211.9	6.5	0.00	0.00	0.00
5,200.0	3.25	90.00	5,193.9	0.0	217.5	6.7	0.00	0.00	0.00
5,289.7	3.25	90.00	5,283.5	0.0	222.6	6.9	0.00	0.00	0.00
Start Drop -1.50									
5,300.0	3.10	90.00	5,293.8	0.0	223.2	6.9	1.50	-1.50	0.00
5,400.0	1.60	90.00	5,393.7	0.0	227.3	7.0	1.50	-1.50	0.00
5,500.0	0.10	90.00	5,493.7	0.0	228.7	7.1	1.50	-1.50	0.00
5,506.3	0.00	0.00	5,500.0	0.0	228.8	7.1	1.50	-1.50	0.00
5,600.0	0.00	0.00	5,593.7	0.0	228.8	7.1	0.00	0.00	0.00
5,700.0	0.00	0.00	5,693.7	0.0	228.8	7.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,793.7	0.0	228.8	7.1	0.00	0.00	0.00
5,900.0	0.00	0.00	5,893.7	0.0	228.8	7.1	0.00	0.00	0.00
6,000.0	0.00	0.00	5,993.7	0.0	228.8	7.1	0.00	0.00	0.00
6,100.0	0.00	0.00	6,093.7	0.0	228.8	7.1	0.00	0.00	0.00
6,200.0	0.00	0.00	6,193.7	0.0	228.8	7.1	0.00	0.00	0.00
6,288.9	0.00	0.00	6,282.6	0.0	228.8	7.1	0.00	0.00	0.00
Start Build 7.50									
6,300.0	0.83	180.00	6,293.7	-0.1	228.8	7.1	7.49	7.49	0.00
6,400.0	8.33	180.00	6,393.3	-8.1	228.8	15.1	7.50	7.50	0.00
6,500.0	15.83	180.00	6,491.0	-29.0	228.8	36.0	7.50	7.50	0.00
6,600.0	23.33	180.00	6,585.1	-62.5	228.8	69.5	7.50	7.50	0.00
6,700.0	30.83	180.00	6,674.1	-108.0	228.8	115.0	7.50	7.50	0.00
6,800.0	38.33	180.00	6,756.4	-164.7	228.8	171.7	7.50	7.50	0.00
6,900.0	45.83	180.00	6,830.5	-231.6	228.8	238.6	7.50	7.50	0.00
6,900.7	45.88	180.00	6,831.0	-232.1	228.8	239.1	7.50	7.50	0.00
SHARON SPRINGS									
7,000.0	53.33	180.00	6,895.3	-307.7	228.8	314.6	7.50	7.50	0.00
7,100.0	60.83	180.00	6,949.6	-391.6	228.8	398.5	7.50	7.50	0.00
7,200.0	68.33	180.00	6,992.5	-481.9	228.8	488.7	7.50	7.50	0.00
7,300.0	75.83	180.00	7,023.3	-576.9	228.8	583.7	7.50	7.50	0.00
7,400.0	83.33	180.00	7,041.3	-675.2	228.8	682.0	7.50	7.50	0.00
7,493.6	90.35	180.00	7,046.5	-768.6	228.8	775.3	7.50	7.50	0.00
Start 6630.5 hold at 7493.6 MD - 7"									
7,500.0	90.35	180.00	7,046.5	-775.0	228.8	781.7	0.00	0.00	0.00
7,600.0	90.35	180.00	7,045.9	-875.0	228.8	881.7	0.00	0.00	0.00
7,700.0	90.35	180.00	7,045.2	-975.0	228.8	981.6	0.00	0.00	0.00
7,800.0	90.35	180.00	7,044.6	-1,075.0	228.8	1,081.6	0.00	0.00	0.00
7,900.0	90.35	180.00	7,044.0	-1,175.0	228.8	1,181.5	0.00	0.00	0.00
8,000.0	90.35	180.00	7,043.4	-1,275.0	228.8	1,281.5	0.00	0.00	0.00
8,100.0	90.35	180.00	7,042.8	-1,375.0	228.8	1,381.4	0.00	0.00	0.00
8,200.0	90.35	180.00	7,042.2	-1,475.0	228.8	1,481.4	0.00	0.00	0.00
8,300.0	90.35	180.00	7,041.6	-1,575.0	228.8	1,581.3	0.00	0.00	0.00
8,400.0	90.35	180.00	7,041.0	-1,675.0	228.8	1,681.3	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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	7,040.4	-1,775.0	228.8	1,781.2	0.00	0.00	0.00
8,600.0	90.35	180.00	7,039.7	-1,875.0	228.8	1,881.2	0.00	0.00	0.00
8,700.0	90.35	180.00	7,039.1	-1,975.0	228.8	1,981.1	0.00	0.00	0.00
8,800.0	90.35	180.00	7,038.5	-2,075.0	228.8	2,081.1	0.00	0.00	0.00
8,900.0	90.35	180.00	7,037.9	-2,175.0	228.8	2,181.0	0.00	0.00	0.00
9,000.0	90.35	180.00	7,037.3	-2,275.0	228.8	2,281.0	0.00	0.00	0.00
9,100.0	90.35	180.00	7,036.7	-2,375.0	228.8	2,380.9	0.00	0.00	0.00
9,200.0	90.35	180.00	7,036.1	-2,475.0	228.8	2,480.9	0.00	0.00	0.00
9,300.0	90.35	180.00	7,035.5	-2,575.0	228.8	2,580.8	0.00	0.00	0.00
9,400.0	90.35	180.00	7,034.9	-2,675.0	228.8	2,680.8	0.00	0.00	0.00
9,500.0	90.35	180.00	7,034.2	-2,775.0	228.8	2,780.7	0.00	0.00	0.00
9,600.0	90.35	180.00	7,033.6	-2,875.0	228.8	2,880.7	0.00	0.00	0.00
9,700.0	90.35	180.00	7,033.0	-2,975.0	228.8	2,980.6	0.00	0.00	0.00
9,800.0	90.35	180.00	7,032.4	-3,075.0	228.8	3,080.6	0.00	0.00	0.00
9,900.0	90.35	180.00	7,031.8	-3,175.0	228.8	3,180.5	0.00	0.00	0.00
10,000.0	90.35	180.00	7,031.2	-3,275.0	228.8	3,280.5	0.00	0.00	0.00
10,100.0	90.35	180.00	7,030.6	-3,375.0	228.8	3,380.4	0.00	0.00	0.00
10,200.0	90.35	180.00	7,030.0	-3,475.0	228.8	3,480.4	0.00	0.00	0.00
10,300.0	90.35	180.00	7,029.4	-3,575.0	228.8	3,580.3	0.00	0.00	0.00
10,400.0	90.35	180.00	7,028.7	-3,675.0	228.8	3,680.3	0.00	0.00	0.00
10,500.0	90.35	180.00	7,028.1	-3,775.0	228.8	3,780.2	0.00	0.00	0.00
10,600.0	90.35	180.00	7,027.5	-3,875.0	228.8	3,880.2	0.00	0.00	0.00
10,700.0	90.35	180.00	7,026.9	-3,975.0	228.8	3,980.1	0.00	0.00	0.00
10,800.0	90.35	180.00	7,026.3	-4,075.0	228.8	4,080.1	0.00	0.00	0.00
10,900.0	90.35	180.00	7,025.7	-4,175.0	228.8	4,180.0	0.00	0.00	0.00
11,000.0	90.35	180.00	7,025.1	-4,275.0	228.8	4,280.0	0.00	0.00	0.00
11,100.0	90.35	180.00	7,024.5	-4,375.0	228.8	4,379.9	0.00	0.00	0.00
11,200.0	90.35	180.00	7,023.9	-4,475.0	228.8	4,479.9	0.00	0.00	0.00
11,300.0	90.35	180.00	7,023.3	-4,575.0	228.8	4,579.8	0.00	0.00	0.00
11,400.0	90.35	180.00	7,022.6	-4,675.0	228.8	4,679.8	0.00	0.00	0.00
11,500.0	90.35	180.00	7,022.0	-4,775.0	228.8	4,779.7	0.00	0.00	0.00
11,600.0	90.35	180.00	7,021.4	-4,875.0	228.8	4,879.7	0.00	0.00	0.00
11,700.0	90.35	180.00	7,020.8	-4,974.9	228.8	4,979.6	0.00	0.00	0.00
11,800.0	90.35	180.00	7,020.2	-5,074.9	228.8	5,079.6	0.00	0.00	0.00
11,900.0	90.35	180.00	7,019.6	-5,174.9	228.8	5,179.5	0.00	0.00	0.00
12,000.0	90.35	180.00	7,019.0	-5,274.9	228.8	5,279.5	0.00	0.00	0.00
12,100.0	90.35	180.00	7,018.4	-5,374.9	228.8	5,379.4	0.00	0.00	0.00
12,200.0	90.35	180.00	7,017.8	-5,474.9	228.8	5,479.4	0.00	0.00	0.00
12,300.0	90.35	180.00	7,017.1	-5,574.9	228.8	5,579.3	0.00	0.00	0.00
12,400.0	90.35	180.00	7,016.5	-5,674.9	228.8	5,679.3	0.00	0.00	0.00
12,500.0	90.35	180.00	7,015.9	-5,774.9	228.8	5,779.2	0.00	0.00	0.00
12,600.0	90.35	180.00	7,015.3	-5,874.9	228.8	5,879.2	0.00	0.00	0.00
12,700.0	90.35	180.00	7,014.7	-5,974.9	228.8	5,979.1	0.00	0.00	0.00
12,800.0	90.35	180.00	7,014.1	-6,074.9	228.8	6,079.1	0.00	0.00	0.00
12,900.0	90.35	180.00	7,013.5	-6,174.9	228.8	6,179.0	0.00	0.00	0.00
13,000.0	90.35	180.00	7,012.9	-6,274.9	228.8	6,279.0	0.00	0.00	0.00
13,100.0	90.35	180.00	7,012.3	-6,374.9	228.8	6,378.9	0.00	0.00	0.00
13,200.0	90.35	180.00	7,011.6	-6,474.9	228.8	6,478.9	0.00	0.00	0.00
13,300.0	90.35	180.00	7,011.0	-6,574.9	228.8	6,578.8	0.00	0.00	0.00
13,400.0	90.35	180.00	7,010.4	-6,674.9	228.8	6,678.8	0.00	0.00	0.00
13,500.0	90.35	180.00	7,009.8	-6,774.9	228.8	6,778.7	0.00	0.00	0.00
13,600.0	90.35	180.00	7,009.2	-6,874.9	228.8	6,878.7	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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)
13,700.0	90.35	180.00	7,008.6	-6,974.9	228.8	6,978.6	0.00	0.00	0.00
13,800.0	90.35	180.00	7,008.0	-7,074.9	228.8	7,078.6	0.00	0.00	0.00
13,900.0	90.35	180.00	7,007.4	-7,174.9	228.8	7,178.5	0.00	0.00	0.00
14,000.0	90.35	180.00	7,006.8	-7,274.9	228.8	7,278.5	0.00	0.00	0.00
14,100.0	90.35	180.00	7,006.1	-7,374.9	228.8	7,378.5	0.00	0.00	0.00
14,124.1	90.35	180.00	7,006.0	-7,399.0	228.8	7,402.5	0.00	0.00	0.00
TD at 14124.1 - BHL 500'FSL,405'FEL									

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL 2634'FSL, 650'FI	0.00	0.00	1.0	0.0	0.0	1,357,094.85	3,186,274.32	40.311700	-104.832040
- plan hits target center									
- Point									
BHL 500'FSL,405'FEL	0.00	0.00	7,006.0	-7,399.0	228.8	1,349,698.06	3,186,558.79	40.291390	-104.831220
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,493.6	7,046.5	7"	7	7-1/2	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,583.5	3,580.0	PARKMAN		0.00	
4,104.3	4,100.0	SUSSEX		0.00	
4,675.2	4,670.0	SHANNON		0.00	
6,900.7	6,831.0	SHARON SPRINGS		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
1,200.0	1,200.0	0.0	0.0	KOP - Start Build 1.00
5,289.7	5,283.5	0.0	9.2	Start Drop -1.50
6,288.9	6,282.6	0.0	222.6	Start Build 7.50
7,493.6	7,046.5	0.0	228.8	Start 6630.5 hold at 7493.6 MD
14,124.1	7,006.0	0.0	228.8	TD at 14124.1



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.13-T4N-R67W

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

Bernhardt Farms 13W-243

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 13W-243
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 13W-243	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	14,124.1	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)	Distance 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-	1,000.0	1,000.0	61.5	57.2	14.392	CC
Bernhardt Farms 13S-203 - Wellbore #1 - Plan #2 (1-28-	1,100.0	1,099.8	61.7	56.9	13.098	ES
Bernhardt Farms 13S-203 - Wellbore #1 - Plan #2 (1-28-	14,124.1	14,125.8	725.9	441.9	2.556	SF
Bernhardt Farms 13S-323 - Wellbore #1 - Plan #2 (1-28-	1,200.0	1,200.0	30.3	25.1	5.865	CC
Bernhardt Farms 13S-323 - Wellbore #1 - Plan #2 (1-28-	1,300.0	1,300.0	30.6	25.0	5.454	ES
Bernhardt Farms 13S-323 - Wellbore #1 - Plan #2 (1-28-	14,124.1	14,202.0	405.6	126.7	1.454	Level 3, SF
Bernhardt Farms 13S-343 - Wellbore #1 - Plan #2 (1-28-	200.0	200.0	92.7	92.0	137.416	CC
Bernhardt Farms 13S-343 - Wellbore #1 - Plan #2 (1-28-	300.0	299.6	92.9	91.8	83.470	ES
Bernhardt Farms 13S-343 - Wellbore #1 - Plan #2 (1-28-	1,200.0	1,186.1	141.6	136.1	26.013	SF
Bernhardt Farms 13W-403 - Wellbore #1 - Plan #2 (1-28	1,000.0	1,000.0	27.8	23.6	6.518	CC
Bernhardt Farms 13W-403 - Wellbore #1 - Plan #2 (1-28	1,100.0	1,099.9	28.0	23.3	5.947	ES
Bernhardt Farms 13W-403 - Wellbore #1 - Plan #2 (1-28	14,124.1	14,228.9	413.9	179.2	1.763	SF
Existing Wells - Sec.13-T4N-R67W						
Bouge 1 (Exist) - Wellbore #1 - Wellbore #1	7,415.7	7,008.2	203.6	168.4	5.783	CC, ES, SF
Johnston 43-24 (Exist) - Wellbore #1 - Wellbore #1	12,718.9	6,988.8	81.4	-172.5	0.321	Level 1, CC, ES, SF
Johnston 44-24 (Exist) - Wellbore #1 - Wellbore #1	13,771.8	6,983.4	323.9	174.5	2.168	CC, ES, SF
Kristin 1 (Exist) - Wellbore #1 - Wellbore #1	10,078.8	7,000.0	136.2	55.2	1.682	CC, ES, SF
Mesha 1 (Exist) - Wellbore #1 - Wellbore #1	8,800.9	7,005.5	175.7	119.0	3.099	CC, ES, SF
Sarah 1 (Exist) - Wellbore #1 - Wellbore #1	11,385.8	6,993.9	302.1	5.5	1.019	Level 2, CC, ES, SF

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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning				
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	(ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-161.48	-58.3	-19.5	61.5								
100.0	100.0	100.0	100.0	0.1	0.1	-161.48	-58.3	-19.5	61.5	61.2	0.22	273.455					
200.0	200.0	200.0	200.0	0.3	0.3	-161.48	-58.3	-19.5	61.5	60.8	0.67	91.152					
300.0	300.0	300.0	300.0	0.6	0.6	-161.48	-58.3	-19.5	61.5	60.3	1.12	54.691					
400.0	400.0	400.0	400.0	0.8	0.8	-161.48	-58.3	-19.5	61.5	59.9	1.57	39.065					
500.0	500.0	500.0	500.0	1.0	1.0	-161.48	-58.3	-19.5	61.5	59.4	2.02	30.384					

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 13W-243
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 13W-243	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		
600.0	600.0	600.0	600.0		1.2	1.2	-161.48	-58.3	-19.5	61.5	59.0	2.47	24.860	
700.0	700.0	700.0	700.0		1.5	1.5	-161.48	-58.3	-19.5	61.5	58.5	2.92	21.035	
800.0	800.0	800.0	800.0		1.7	1.7	-161.48	-58.3	-19.5	61.5	58.1	3.37	18.230	
900.0	900.0	900.0	900.0		1.9	1.9	-161.48	-58.3	-19.5	61.5	57.6	3.82	16.086	
1,000.0	1,000.0	1,000.0	1,000.0		2.1	2.1	-161.48	-58.3	-19.5	61.5	57.2	4.27	14.392 CC	
1,100.0	1,100.0	1,099.8	1,099.8		2.4	2.3	-160.69	-58.2	-20.4	61.7	56.9	4.71	13.098 ES	
1,200.0	1,200.0	1,199.5	1,199.4		2.6	2.6	-158.36	-57.9	-23.0	62.3	57.2	5.14	12.130	
1,300.0	1,300.0	1,299.0	1,298.9		2.8	2.8	116.09	-57.4	-27.3	64.0	58.4	5.56	11.509	
1,400.0	1,400.0	1,398.2	1,397.9		3.0	3.0	122.86	-56.8	-33.3	67.7	61.7	5.97	11.326	
1,500.0	1,499.9	1,496.8	1,496.2		3.2	3.2	130.95	-55.9	-40.9	74.3	67.9	6.40	11.613	
1,524.9	1,524.8	1,521.3	1,520.6		3.3	3.3	133.03	-55.7	-43.1	76.5	70.0	6.50	11.762	
1,600.0	1,599.7	1,594.8	1,593.7		3.4	3.4	139.04	-54.9	-50.2	84.2	77.4	6.82	12.346	
1,700.0	1,699.5	1,692.3	1,690.6		3.6	3.7	145.99	-53.7	-61.0	96.9	89.6	7.25	13.357	
1,800.0	1,799.4	1,790.6	1,788.2		3.9	4.0	151.63	-52.3	-72.9	111.4	103.7	7.69	14.496	
1,900.0	1,899.2	1,889.0	1,885.9		4.1	4.2	155.95	-51.0	-84.8	126.8	118.7	8.12	15.615	
2,000.0	1,999.1	1,987.4	1,983.6		4.3	4.5	159.33	-49.7	-96.7	142.7	134.1	8.55	16.684	
2,100.0	2,098.9	2,085.8	2,081.2		4.5	4.8	162.03	-48.4	-108.6	159.0	150.0	8.99	17.690	
2,200.0	2,198.7	2,184.3	2,178.9		4.8	5.1	164.22	-47.1	-120.5	175.6	166.1	9.42	18.629	
2,300.0	2,298.6	2,282.7	2,276.6		5.0	5.4	166.04	-45.7	-132.4	192.4	182.5	9.86	19.502	
2,400.0	2,398.4	2,381.1	2,374.3		5.2	5.6	167.56	-44.4	-144.3	209.3	199.0	10.30	20.314	
2,500.0	2,498.3	2,479.5	2,472.0		5.5	5.9	168.86	-43.1	-156.2	226.4	215.6	10.75	21.067	
2,600.0	2,598.1	2,577.9	2,569.6		5.7	6.2	169.97	-41.8	-168.1	243.5	232.4	11.19	21.766	
2,700.0	2,697.9	2,676.3	2,667.3		6.0	6.5	170.94	-40.5	-180.0	260.8	249.1	11.63	22.416	
2,800.0	2,797.8	2,774.7	2,765.0		6.2	6.8	171.79	-39.1	-191.9	278.1	266.0	12.08	23.022	
2,900.0	2,897.6	2,873.1	2,862.7		6.4	7.1	172.53	-37.8	-203.8	295.4	282.9	12.53	23.586	
3,000.0	2,997.5	2,971.6	2,960.4		6.7	7.4	173.20	-36.5	-215.7	312.9	299.9	12.97	24.113	
3,100.0	3,097.3	3,070.0	3,058.1		6.9	7.8	173.79	-35.2	-227.6	330.3	316.9	13.42	24.606	
3,200.0	3,197.1	3,168.4	3,155.7		7.2	8.1	174.33	-33.8	-239.5	347.8	333.9	13.87	25.067	
3,300.0	3,297.0	3,266.8	3,253.4		7.4	8.4	174.81	-32.5	-251.4	365.3	350.9	14.32	25.501	
3,400.0	3,396.8	3,365.2	3,351.1		7.6	8.7	175.25	-31.2	-263.3	382.8	368.0	14.77	25.908	
3,500.0	3,496.7	3,463.6	3,448.8		7.9	9.0	175.65	-29.9	-275.2	400.3	385.1	15.23	26.291	
3,600.0	3,596.5	3,562.0	3,546.5		8.1	9.3	176.02	-28.6	-287.0	417.9	402.2	15.68	26.652	
3,700.0	3,696.3	3,660.4	3,644.2		8.4	9.6	176.36	-27.2	-298.9	435.4	419.3	16.13	26.993	
3,800.0	3,796.2	3,758.9	3,741.8		8.6	9.9	176.67	-25.9	-310.8	453.0	436.4	16.59	27.315	
3,900.0	3,896.0	3,857.3	3,839.5		8.9	10.2	176.96	-24.6	-322.7	470.6	453.6	17.04	27.620	
4,000.0	3,995.8	3,955.7	3,937.2		9.1	10.5	177.22	-23.3	-334.6	488.2	470.7	17.49	27.909	
4,100.0	4,095.7	4,054.1	4,034.9		9.3	10.8	177.47	-21.9	-346.5	505.9	487.9	17.95	28.184	
4,200.0	4,195.5	4,152.5	4,132.6		9.6	11.2	177.71	-20.6	-358.4	523.5	505.1	18.40	28.444	
4,300.0	4,295.4	4,250.9	4,230.2		9.8	11.5	177.92	-19.3	-370.3	541.1	522.3	18.86	28.692	
4,400.0	4,395.2	4,349.3	4,327.9		10.1	11.8	178.13	-18.0	-382.2	558.8	539.4	19.31	28.929	
4,500.0	4,495.0	4,447.8	4,425.6		10.3	12.1	178.32	-16.7	-394.1	576.4	556.6	19.77	29.154	
4,600.0	4,594.9	4,546.2	4,523.3		10.6	12.4	178.50	-15.3	-406.0	594.1	573.8	20.23	29.369	
4,700.0	4,694.7	4,644.6	4,621.0		10.8	12.7	178.67	-14.0	-417.9	611.7	591.0	20.68	29.574	
4,800.0	4,794.6	4,743.0	4,718.7		11.1	13.0	178.83	-12.7	-429.8	629.4	608.2	21.14	29.770	
4,900.0	4,894.4	4,841.4	4,816.3		11.3	13.3	178.98	-11.4	-441.7	647.0	625.4	21.60	29.958	
5,000.0	4,994.2	4,939.8	4,914.0		11.5	13.7	179.12	-10.1	-453.6	664.7	642.7	22.06	30.138	
5,100.0	5,094.1	5,038.2	5,011.7		11.8	14.0	179.25	-8.7	-465.5	682.4	659.9	22.51	30.310	
5,200.0	5,193.9	5,153.2	5,125.9		12.0	14.3	179.39	-7.3	-478.3	699.2	676.2	22.98	30.431	
5,289.7	5,283.5	5,262.0	5,234.3		12.3	14.5	179.49	-6.3	-487.4	711.7	688.3	23.38	30.440	
5,300.0	5,293.8	5,274.5	5,246.8		12.3	14.5	179.50	-6.2	-488.2	713.0	689.5	23.43	30.431	
5,400.0	5,393.7	5,396.9	5,369.1		12.5	14.7	179.56	-5.5	-494.3	722.0	698.2	23.86	30.257	

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 13W-243
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 13W-243	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					
5,506.3	5,500.0	5,527.9	5,500.0	12.7	15.0	-90.42	-5.3	-496.6	725.3	701.0	24.32	29.830					
5,600.0	5,593.7	5,621.5	5,593.7	12.8	15.1	-90.42	-5.3	-496.6	725.3	700.6	24.68	29.384					
5,700.0	5,693.7	5,721.5	5,693.7	13.0	15.3	-90.42	-5.3	-496.6	725.3	700.2	25.09	28.907					
5,800.0	5,793.7	5,821.5	5,793.7	13.2	15.5	-90.42	-5.3	-496.6	725.3	699.8	25.50	28.443					
5,900.0	5,893.7	5,921.5	5,893.7	13.4	15.6	-90.42	-5.3	-496.6	725.3	699.4	25.91	27.993					
6,000.0	5,993.7	6,021.5	5,993.7	13.6	15.8	-90.42	-5.3	-496.6	725.3	699.0	26.32	27.555					
6,100.0	6,093.7	6,121.5	6,093.7	13.8	16.0	-90.42	-5.3	-496.6	725.3	698.6	26.74	27.130					
6,200.0	6,193.7	6,221.5	6,193.7	14.0	16.2	-90.42	-5.3	-496.6	725.3	698.2	27.15	26.716					
6,257.8	6,251.5	6,279.3	6,251.5	14.2	16.3	-90.42	-5.3	-496.6	725.3	697.9	27.39	26.482					
6,288.9	6,282.6	6,310.4	6,282.5	14.2	16.3	-90.42	-5.3	-496.6	725.3	697.8	27.52	26.359					
6,300.0	6,293.7	6,321.4	6,293.6	14.2	16.3	89.58	-5.4	-496.6	725.3	697.8	27.56	26.317					
6,350.0	6,343.6	6,371.0	6,343.1	14.3	16.4	89.56	-8.0	-496.6	725.3	697.6	27.75	26.140					
6,400.0	6,393.3	6,420.7	6,392.4	14.4	16.5	89.54	-13.8	-496.6	725.3	697.4	27.93	25.971					
6,450.0	6,442.5	6,470.3	6,441.2	14.5	16.6	89.52	-22.8	-496.6	725.3	697.2	28.11	25.806					
6,500.0	6,491.0	6,519.9	6,489.3	14.6	16.6	89.51	-34.9	-496.6	725.3	697.1	28.29	25.642					
6,550.0	6,538.6	6,569.5	6,536.5	14.7	16.7	89.50	-50.2	-496.6	725.3	696.9	28.48	25.473					
6,600.0	6,585.1	6,619.1	6,582.5	14.8	16.8	89.49	-68.4	-496.6	725.3	696.7	28.68	25.295					
6,650.0	6,630.4	6,668.6	6,627.4	15.0	16.9	89.48	-89.6	-496.6	725.3	696.4	28.90	25.102					
6,700.0	6,674.1	6,718.2	6,670.7	15.1	17.0	89.47	-113.7	-496.6	725.3	696.2	29.14	24.888					
6,750.0	6,716.2	6,767.8	6,712.4	15.3	17.1	89.47	-140.5	-496.6	725.3	695.9	29.43	24.647					
6,800.0	6,756.4	6,817.3	6,752.2	15.4	17.2	89.47	-169.9	-496.6	725.3	695.6	29.76	24.374					
6,850.0	6,794.6	6,866.9	6,790.1	15.6	17.3	89.47	-201.9	-496.6	725.3	695.2	30.14	24.065					
6,900.0	6,830.5	6,916.5	6,825.8	15.8	17.4	89.48	-236.3	-496.6	725.3	694.8	30.58	23.716					
6,950.0	6,864.2	6,966.1	6,859.2	16.1	17.6	89.48	-272.9	-496.6	725.3	694.2	31.10	23.326					
7,000.0	6,895.3	7,015.6	6,890.2	16.4	17.8	89.49	-311.6	-496.6	725.3	693.7	31.68	22.896					
7,050.0	6,923.9	7,065.2	6,918.6	16.7	18.0	89.50	-352.2	-496.6	725.3	693.0	32.34	22.428					
7,100.0	6,949.6	7,114.8	6,944.3	17.1	18.3	89.51	-394.6	-496.6	725.3	692.3	33.08	21.925					
7,150.0	6,972.6	7,164.4	6,967.2	17.5	18.6	89.53	-438.6	-496.6	725.3	691.4	33.91	21.393					
7,200.0	6,992.5	7,214.0	6,987.2	18.0	18.9	89.54	-484.0	-496.6	725.3	690.5	34.81	20.838					
7,250.0	7,009.5	7,263.7	7,004.2	18.5	19.3	89.56	-530.6	-496.6	725.3	689.5	35.79	20.267					
7,300.0	7,023.3	7,313.3	7,018.1	19.0	19.8	89.58	-578.3	-496.6	725.3	688.5	36.84	19.687					
7,350.0	7,033.9	7,363.0	7,029.0	19.6	20.3	89.60	-626.7	-496.6	725.3	687.4	37.97	19.105					
7,400.0	7,041.3	7,412.6	7,036.7	20.2	20.8	89.63	-675.8	-496.6	725.3	686.2	39.15	18.527					
7,450.0	7,045.5	7,462.4	7,041.1	20.8	21.3	89.65	-725.3	-496.6	725.3	684.9	40.39	17.959					
7,493.6	7,046.5	7,505.7	7,042.4	21.4	21.8	89.68	-768.6	-496.6	725.3	683.8	41.50	17.477					
7,500.0	7,046.5	7,512.1	7,042.4	21.5	21.9	89.68	-775.0	-496.6	725.3	683.7	41.67	17.406					
7,600.0	7,045.9	7,612.1	7,042.2	22.8	23.2	89.71	-875.0	-496.6	725.3	680.9	44.38	16.343					
7,700.0	7,045.2	7,712.1	7,042.1	24.2	24.5	89.75	-975.0	-496.6	725.3	678.1	47.24	15.353					
7,800.0	7,044.6	7,812.1	7,041.9	25.7	25.9	89.79	-1,075.0	-496.6	725.3	675.1	50.24	14.438					
7,900.0	7,044.0	7,912.1	7,041.8	27.3	27.4	89.82	-1,175.0	-496.6	725.3	672.0	53.34	13.598					
8,000.0	7,043.4	8,012.1	7,041.6	28.9	28.9	89.86	-1,275.0	-496.6	725.3	668.8	56.53	12.830					
8,100.0	7,042.8	8,112.1	7,041.4	30.5	30.5	89.89	-1,375.0	-496.6	725.3	665.5	59.80	12.129					
8,200.0	7,042.2	8,212.1	7,041.3	32.2	32.1	89.93	-1,475.0	-496.6	725.3	662.2	63.13	11.489					
8,300.0	7,041.6	8,312.1	7,041.1	33.9	33.7	89.96	-1,575.0	-496.6	725.3	658.8	66.52	10.904					
8,398.3	7,041.0	8,410.4	7,041.0	35.6	35.4	90.00	-1,673.3	-496.6	725.3	655.4	69.90	10.377					
8,400.0	7,041.0	8,412.1	7,041.0	35.6	35.4	90.00	-1,675.0	-496.6	725.3	655.4	69.95	10.368					
8,500.0	7,040.4	8,512.1	7,040.8	37.3	37.1	90.04	-1,775.0	-496.6	725.3	651.9	73.43	9.878					
8,600.0	7,039.7	8,612.1	7,040.7	39.1	38.8	90.07	-1,875.0	-496.6	725.3	648.4	76.94	9.427					
8,700.0	7,039.1	8,712.1	7,040.5	40.8	40.5	90.11	-1,975.0	-496.6	725.3	644.8	80.48	9.013					
8,800.0	7,038.5	8,812.1	7,040.3	42.6	42.3	90.14	-2,075.0	-496.6	725.3	641.3	84.04	8.631					

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 13W-243
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 13W-243	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-MWDD										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
8,900.0	7,037.9	8,912.1	7,040.2	44.4	44.1	90.18	-2,175.0	-496.6	725.3	637.7	87.63	8.277	
9,000.0	7,037.3	9,012.1	7,040.0	46.2	45.8	90.22	-2,275.0	-496.6	725.3	634.1	91.24	7.950	
9,100.0	7,036.7	9,112.1	7,039.9	48.0	47.6	90.25	-2,375.0	-496.6	725.3	630.5	94.86	7.646	
9,200.0	7,036.1	9,212.1	7,039.7	49.8	49.4	90.29	-2,475.0	-496.6	725.3	626.8	98.51	7.363	
9,300.0	7,035.5	9,312.1	7,039.6	51.7	51.2	90.32	-2,575.0	-496.6	725.3	623.2	102.16	7.100	
9,400.0	7,034.9	9,412.1	7,039.4	53.5	53.0	90.36	-2,675.0	-496.6	725.3	619.5	105.83	6.853	
9,500.0	7,034.2	9,512.1	7,039.2	55.3	54.9	90.39	-2,775.0	-496.6	725.3	615.8	109.51	6.623	
9,600.0	7,033.6	9,612.1	7,039.1	57.2	56.7	90.43	-2,875.0	-496.6	725.3	612.1	113.21	6.407	
9,700.0	7,033.0	9,712.1	7,038.9	59.0	58.5	90.47	-2,975.0	-496.6	725.3	608.4	116.91	6.204	
9,800.0	7,032.4	9,812.1	7,038.8	60.9	60.4	90.50	-3,075.0	-496.6	725.3	604.7	120.62	6.014	
9,900.0	7,031.8	9,912.1	7,038.6	62.7	62.2	90.54	-3,175.0	-496.6	725.3	601.0	124.33	5.834	
10,000.0	7,031.2	10,012.1	7,038.5	64.6	64.0	90.57	-3,275.0	-496.6	725.3	597.3	128.06	5.664	
10,100.0	7,030.6	10,112.1	7,038.3	66.5	65.9	90.61	-3,375.0	-496.6	725.4	593.6	131.79	5.504	
10,200.0	7,030.0	10,212.1	7,038.1	68.3	67.8	90.65	-3,475.0	-496.6	725.4	589.8	135.53	5.352	
10,300.0	7,029.4	10,312.1	7,038.0	70.2	69.6	90.68	-3,575.0	-496.6	725.4	586.1	139.27	5.208	
10,400.0	7,028.7	10,412.1	7,037.8	72.1	71.5	90.72	-3,675.0	-496.6	725.4	582.4	143.01	5.072	
10,500.0	7,028.1	10,512.1	7,037.7	74.0	73.3	90.75	-3,775.0	-496.6	725.4	578.6	146.77	4.942	
10,600.0	7,027.5	10,612.1	7,037.5	75.8	75.2	90.79	-3,875.0	-496.6	725.4	574.9	150.52	4.819	
10,700.0	7,026.9	10,712.1	7,037.4	77.7	77.1	90.83	-3,975.0	-496.6	725.4	571.1	154.28	4.702	
10,800.0	7,026.3	10,812.1	7,037.2	79.6	79.0	90.86	-4,075.0	-496.6	725.4	567.4	158.04	4.590	
10,900.0	7,025.7	10,912.1	7,037.0	81.5	80.8	90.90	-4,175.0	-496.6	725.4	563.6	161.81	4.483	
11,000.0	7,025.1	11,012.1	7,036.9	83.4	82.7	90.93	-4,275.0	-496.6	725.4	559.8	165.58	4.381	
11,100.0	7,024.5	11,112.1	7,036.7	85.2	84.6	90.97	-4,375.0	-496.6	725.4	556.1	169.35	4.283	
11,200.0	7,023.9	11,212.1	7,036.6	87.1	86.5	91.00	-4,475.0	-496.6	725.4	552.3	173.13	4.190	
11,300.0	7,023.3	11,312.1	7,036.4	89.0	88.3	91.04	-4,575.0	-496.6	725.4	548.5	176.91	4.101	
11,400.0	7,022.6	11,412.1	7,036.3	90.9	90.2	91.08	-4,675.0	-496.6	725.4	544.8	180.69	4.015	
11,500.0	7,022.0	11,512.1	7,036.1	92.8	92.1	91.11	-4,775.0	-496.6	725.4	541.0	184.47	3.933	
11,600.0	7,021.4	11,612.1	7,035.9	94.7	94.0	91.15	-4,875.0	-496.6	725.5	537.2	188.25	3.854	
11,700.0	7,020.8	11,712.1	7,035.8	96.6	95.9	91.18	-4,975.0	-496.6	725.5	533.4	192.04	3.778	
11,800.0	7,020.2	11,812.1	7,035.6	98.5	97.8	91.22	-5,075.0	-496.6	725.5	529.6	195.83	3.705	
11,900.0	7,019.6	11,912.1	7,035.5	100.4	99.7	91.26	-5,175.0	-496.6	725.5	525.9	199.62	3.634	
12,000.0	7,019.0	12,012.1	7,035.3	102.3	101.6	91.29	-5,275.0	-496.6	725.5	522.1	203.41	3.567	
12,100.0	7,018.4	12,112.1	7,035.2	104.2	103.5	91.33	-5,375.0	-496.6	725.5	518.3	207.20	3.501	
12,200.0	7,017.8	12,212.1	7,035.0	106.1	105.3	91.36	-5,475.0	-496.6	725.5	514.5	211.00	3.439	
12,300.0	7,017.1	12,312.0	7,034.8	108.0	107.2	91.40	-5,575.0	-496.6	725.5	510.7	214.79	3.378	
12,400.0	7,016.5	12,412.0	7,034.7	109.9	109.1	91.43	-5,675.0	-496.6	725.5	507.0	218.59	3.319	
12,500.0	7,015.9	12,512.0	7,034.5	111.8	111.0	91.47	-5,775.0	-496.6	725.6	503.2	222.39	3.263	
12,600.0	7,015.3	12,612.0	7,034.4	113.7	112.9	91.51	-5,875.0	-496.6	725.6	499.4	226.19	3.208	
12,700.0	7,014.7	12,712.0	7,034.2	115.6	114.8	91.54	-5,975.0	-496.6	725.6	495.6	229.99	3.155	
12,800.0	7,014.1	12,812.0	7,034.1	117.5	116.7	91.58	-6,075.0	-496.6	725.6	491.8	233.79	3.104	
12,900.0	7,013.5	12,912.0	7,033.9	119.4	118.6	91.61	-6,175.0	-496.6	725.6	488.0	237.59	3.054	
13,000.0	7,012.9	13,012.0	7,033.7	121.3	120.5	91.65	-6,275.0	-496.6	725.6	484.2	241.39	3.006	
13,100.0	7,012.3	13,112.0	7,033.6	123.2	122.4	91.68	-6,375.0	-496.6	725.6	480.4	245.19	2.959	
13,200.0	7,011.6	13,212.0	7,033.4	125.1	124.3	91.72	-6,475.0	-496.6	725.6	476.6	249.00	2.914	
13,300.0	7,011.0	13,312.0	7,033.3	127.0	126.2	91.76	-6,575.0	-496.6	725.7	472.9	252.80	2.870	
13,400.0	7,010.4	13,412.0	7,033.1	128.9	128.1	91.79	-6,675.0	-496.6	725.7	469.1	256.61	2.828	
13,500.0	7,009.8	13,512.0	7,033.0	130.8	130.0	91.83	-6,775.0	-496.6	725.7	465.3	260.41	2.787	
13,600.0	7,009.2	13,612.0	7,032.8	132.7	131.9	91.86	-6,875.0	-496.6	725.7	461.5	264.22	2.747	
13,700.0	7,008.6	13,712.0	7,032.6	134.6	133.8	91.90	-6,974.9	-496.6	725.7	457.7	268.03	2.708	
13,800.0	7,008.0	13,812.0	7,032.5	136.5	135.7	91.94	-7,074.9	-496.6	725.7	453.9	271.84	2.670	
13,900.0	7,007.4	13,912.0	7,032.3	138.4	137.6	91.97	-7,174.9	-496.6	725.7	450.1	275.64	2.633	

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 13W-243
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 13W-243	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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
14,000.0	7,006.8	14,012.0	7,032.2	140.3	139.6	92.01	-7,274.9	-496.6	725.8	446.3	279.45	2.597				
14,100.0	7,006.1	14,112.0	7,032.0	142.2	141.5	92.04	-7,374.9	-496.6	725.8	442.5	283.26	2.562				
14,104.1	7,006.1	14,116.1	7,032.0	142.3	141.5	92.04	-7,379.0	-496.6	725.8	442.4	283.42	2.561				
14,124.1	7,006.0	14,125.8	7,032.0	142.7	141.7	92.05	-7,388.7	-496.6	725.9	441.9	283.98	2.556 SF				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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	-163.98	-29.1	-8.4	30.3				
100.0	100.0	100.0	100.0	0.1	0.1	-163.98	-29.1	-8.4	30.3	30.1	0.22	134.886	
200.0	200.0	200.0	200.0	0.3	0.3	-163.98	-29.1	-8.4	30.3	29.6	0.67	44.962	
300.0	300.0	300.0	300.0	0.6	0.6	-163.98	-29.1	-8.4	30.3	29.2	1.12	26.977	
400.0	400.0	400.0	400.0	0.8	0.8	-163.98	-29.1	-8.4	30.3	28.7	1.57	19.269	
500.0	500.0	500.0	500.0	1.0	1.0	-163.98	-29.1	-8.4	30.3	28.3	2.02	14.987	
600.0	600.0	600.0	600.0	1.2	1.2	-163.98	-29.1	-8.4	30.3	27.8	2.47	12.262	
700.0	700.0	700.0	700.0	1.5	1.5	-163.98	-29.1	-8.4	30.3	27.4	2.92	10.376	
800.0	800.0	800.0	800.0	1.7	1.7	-163.98	-29.1	-8.4	30.3	26.9	3.37	8.992	
900.0	900.0	900.0	900.0	1.9	1.9	-163.98	-29.1	-8.4	30.3	26.5	3.82	7.934	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-163.98	-29.1	-8.4	30.3	26.0	4.27	7.099	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-163.98	-29.1	-8.4	30.3	25.6	4.72	6.423	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-163.98	-29.1	-8.4	30.3	25.1	5.17	5.865 CC	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	107.59	-29.1	-8.4	30.6	25.0	5.61	5.454 ES	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	112.13	-29.1	-8.4	31.5	25.4	6.03	5.216	
1,500.0	1,499.9	1,499.9	1,499.9	3.2	3.3	119.07	-29.1	-8.4	33.3	26.9	6.46	5.161	
1,524.9	1,524.8	1,524.8	1,524.8	3.3	3.3	121.06	-29.1	-8.4	34.0	27.5	6.57	5.180	
1,600.0	1,599.7	1,599.7	1,599.7	3.4	3.5	126.80	-29.1	-8.4	36.4	29.5	6.90	5.280	
1,700.0	1,699.5	1,699.5	1,699.5	3.6	3.7	133.30	-29.1	-8.4	40.1	32.7	7.33	5.465	
1,800.0	1,799.4	1,799.4	1,799.4	3.9	3.9	138.65	-29.1	-8.4	44.2	36.4	7.77	5.682	
1,900.0	1,899.2	1,899.2	1,899.2	4.1	4.2	143.07	-29.1	-8.4	48.6	40.3	8.21	5.914	
2,000.0	1,999.1	1,999.1	1,999.1	4.3	4.4	146.74	-29.1	-8.4	53.2	44.5	8.65	6.150	
2,100.0	2,098.9	2,098.9	2,098.9	4.5	4.6	149.81	-29.1	-8.4	58.0	48.9	9.09	6.383	
2,200.0	2,198.7	2,198.7	2,198.7	4.8	4.8	152.41	-29.1	-8.4	63.0	53.5	9.53	6.608	
2,300.0	2,298.6	2,298.6	2,298.6	5.0	5.1	154.62	-29.1	-8.4	68.1	58.1	9.98	6.823	
2,400.0	2,398.4	2,398.4	2,398.4	5.2	5.3	156.52	-29.1	-8.4	73.2	62.8	10.42	7.029	
2,500.0	2,498.3	2,498.3	2,498.3	5.5	5.5	158.17	-29.1	-8.4	78.5	67.6	10.86	7.223	
2,600.0	2,598.1	2,596.9	2,596.9	5.7	5.7	159.87	-29.0	-9.2	84.5	73.2	11.29	7.480	
2,700.0	2,697.9	2,695.2	2,695.2	6.0	5.9	161.86	-28.6	-11.6	92.0	80.3	11.71	7.860	
2,800.0	2,797.8	2,793.2	2,793.1	6.2	6.1	163.96	-27.8	-15.8	101.3	89.1	12.13	8.347	
2,900.0	2,897.6	2,890.9	2,890.6	6.4	6.3	166.06	-26.8	-21.5	112.1	99.6	12.55	8.934	
3,000.0	2,997.5	2,989.3	2,988.8	6.7	6.5	168.05	-25.6	-28.6	124.4	111.5	12.97	9.591	
3,100.0	3,097.3	3,088.5	3,087.6	6.9	6.8	169.71	-24.3	-36.0	137.0	123.6	13.40	10.224	
3,200.0	3,197.1	3,187.6	3,186.5	7.2	7.0	171.09	-23.0	-43.3	149.7	135.8	13.83	10.823	
3,300.0	3,297.0	3,286.7	3,285.3	7.4	7.2	172.26	-21.7	-50.7	162.4	148.1	14.26	11.390	
3,400.0	3,396.8	3,385.9	3,384.2	7.6	7.4	173.26	-20.4	-58.0	175.2	160.5	14.69	11.926	
3,500.0	3,496.7	3,485.0	3,483.0	7.9	7.7	174.12	-19.1	-65.4	188.0	172.9	15.12	12.433	
3,600.0	3,596.5	3,584.2	3,581.9	8.1	7.9	174.87	-17.8	-72.7	200.9	185.3	15.56	12.913	
3,700.0	3,696.3	3,683.3	3,680.8	8.4	8.1	175.53	-16.5	-80.1	213.8	197.8	15.99	13.368	
3,800.0	3,796.2	3,782.4	3,779.6	8.6	8.4	176.12	-15.2	-87.4	226.7	210.3	16.43	13.800	
3,900.0	3,896.0	3,881.6	3,878.5	8.9	8.6	176.64	-13.9	-94.7	239.6	222.8	16.86	14.209	
4,000.0	3,995.8	3,980.7	3,977.3	9.1	8.8	177.11	-12.6	-102.1	252.6	235.3	17.30	14.598	
4,100.0	4,095.7	4,079.8	4,076.2	9.3	9.1	177.53	-11.3	-109.4	265.6	247.8	17.74	14.968	
4,200.0	4,195.5	4,179.0	4,175.0	9.6	9.3	177.91	-10.1	-116.8	278.6	260.4	18.18	15.320	
4,300.0	4,295.4	4,278.1	4,273.9	9.8	9.6	178.26	-8.8	-124.1	291.5	272.9	18.62	15.655	
4,400.0	4,395.2	4,377.2	4,372.7	10.1	9.8	178.58	-7.5	-131.5	304.6	285.5	19.06	15.975	
4,500.0	4,495.0	4,476.4	4,471.6	10.3	10.0	178.88	-6.2	-138.8	317.6	298.1	19.51	16.280	
4,600.0	4,594.9	4,575.5	4,570.5	10.6	10.3	179.15	-4.9	-146.1	330.6	310.7	19.95	16.572	
4,700.0	4,694.7	4,674.7	4,669.3	10.8	10.5	179.40	-3.6	-153.5	343.6	323.2	20.39	16.850	
4,800.0	4,794.6	4,779.4	4,773.8	11.1	10.8	179.63	-2.3	-160.8	356.2	335.4	20.84	17.094	
4,900.0	4,894.4	4,889.1	4,883.4	11.3	11.0	179.77	-1.4	-165.6	366.3	345.0	21.27	17.219	

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 13W-243
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 13W-243	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		
5,000.0	4,994.2	4,999.4	4,993.6	11.5	11.2	179.82	-1.1	-167.4	373.6	351.9	21.70	17.212		
5,100.0	5,094.1	5,099.8	5,094.1	11.8	11.4	179.83	-1.1	-167.4	379.2	357.1	22.13	17.137		
5,200.0	5,193.9	5,199.7	5,193.9	12.0	11.6	179.83	-1.1	-167.4	384.9	362.3	22.57	17.051		
5,289.7	5,283.5	5,289.2	5,283.5	12.3	11.8	179.83	-1.1	-167.4	390.0	367.0	22.97	16.976		
5,300.0	5,293.8	5,299.5	5,293.8	12.3	11.8	179.83	-1.1	-167.4	390.6	367.5	23.02	16.967		
5,400.0	5,393.7	5,399.4	5,393.7	12.5	12.0	179.83	-1.1	-167.4	394.6	371.2	23.43	16.841		
5,506.3	5,500.0	5,505.7	5,500.0	12.7	12.3	-90.16	-1.1	-167.4	396.1	372.3	23.87	16.597		
5,600.0	5,593.7	5,599.4	5,593.7	12.8	12.5	-90.16	-1.1	-167.4	396.1	371.9	24.26	16.329		
5,700.0	5,693.7	5,699.4	5,693.7	13.0	12.7	-90.16	-1.1	-167.4	396.1	371.4	24.68	16.047		
5,800.0	5,793.7	5,799.4	5,793.7	13.2	12.9	-90.16	-1.1	-167.4	396.1	371.0	25.11	15.775		
5,900.0	5,893.7	5,899.4	5,893.7	13.4	13.1	-90.16	-1.1	-167.4	396.1	370.6	25.54	15.511		
6,000.0	5,993.7	5,999.4	5,993.7	13.6	13.3	-90.16	-1.1	-167.4	396.1	370.2	25.97	15.256		
6,100.0	6,093.7	6,099.4	6,093.7	13.8	13.5	-90.16	-1.1	-167.4	396.1	369.7	26.39	15.008		
6,200.0	6,193.7	6,199.4	6,193.7	14.0	13.7	-90.16	-1.1	-167.4	396.1	369.3	26.82	14.768		
6,288.9	6,282.6	6,288.3	6,282.6	14.2	13.9	-90.16	-1.1	-167.4	396.1	368.9	27.21	14.560		
6,300.0	6,293.7	6,299.4	6,293.7	14.2	14.0	89.85	-1.1	-167.4	396.1	368.9	27.25	14.536		
6,330.7	6,324.3	6,330.0	6,324.3	14.3	14.0	90.00	-1.1	-167.4	396.1	368.7	27.38	14.469		
6,350.0	6,343.6	6,349.3	6,343.6	14.3	14.1	90.19	-1.1	-167.4	396.1	368.7	27.46	14.427		
6,400.0	6,393.3	6,399.2	6,393.5	14.4	14.2	90.94	-1.5	-167.4	396.2	368.5	27.65	14.326		
6,450.0	6,442.5	6,449.5	6,443.7	14.5	14.3	91.76	-4.7	-167.4	396.3	368.5	27.84	14.237		
6,500.0	6,491.0	6,500.2	6,493.9	14.6	14.4	92.57	-11.3	-167.4	396.5	368.5	28.02	14.153		
6,550.0	6,538.6	6,551.3	6,544.0	14.7	14.4	93.37	-21.3	-167.4	396.8	368.6	28.20	14.071		
6,600.0	6,585.1	6,602.7	6,593.6	14.8	14.5	94.16	-34.8	-167.4	397.2	368.8	28.39	13.989		
6,650.0	6,630.4	6,654.6	6,642.7	15.0	14.6	94.93	-51.6	-167.4	397.6	369.0	28.60	13.904		
6,700.0	6,674.1	6,706.8	6,690.8	15.1	14.7	95.69	-72.0	-167.4	398.1	369.3	28.82	13.813		
6,750.0	6,716.2	6,759.5	6,737.7	15.3	14.8	96.42	-95.7	-167.4	398.6	369.6	29.07	13.711		
6,800.0	6,756.4	6,812.5	6,783.3	15.4	14.9	97.12	-122.9	-167.4	399.2	369.9	29.36	13.596		
6,850.0	6,794.6	6,865.9	6,827.2	15.6	15.1	97.79	-153.4	-167.4	399.8	370.1	29.70	13.464		
6,900.0	6,830.5	6,919.7	6,869.1	15.8	15.2	98.42	-187.1	-167.4	400.5	370.4	30.09	13.310		
6,950.0	6,864.2	6,973.9	6,908.7	16.1	15.4	99.02	-223.9	-167.4	401.1	370.6	30.54	13.133		
7,000.0	6,895.3	7,028.4	6,945.9	16.4	15.7	99.58	-263.7	-167.4	401.8	370.7	31.07	12.931		
7,050.0	6,923.9	7,083.2	6,980.4	16.7	16.0	100.09	-306.3	-167.4	402.4	370.7	31.68	12.702		
7,100.0	6,949.6	7,138.3	7,011.9	17.1	16.3	100.56	-351.6	-167.4	403.0	370.6	32.37	12.449		
7,150.0	6,972.6	7,193.7	7,040.1	17.5	16.7	100.98	-399.2	-167.4	403.5	370.4	33.15	12.172		
7,200.0	6,992.5	7,249.3	7,065.0	18.0	17.1	101.35	-448.9	-167.4	404.0	370.0	34.03	11.874		
7,250.0	7,009.5	7,305.2	7,086.2	18.5	17.7	101.66	-500.6	-167.4	404.5	369.5	35.00	11.557		
7,300.0	7,023.3	7,361.2	7,103.7	19.0	18.2	101.92	-553.8	-167.4	404.9	368.8	36.06	11.228		
7,350.0	7,033.9	7,417.4	7,117.2	19.6	18.8	102.12	-608.3	-167.4	405.2	368.0	37.20	10.891		
7,400.0	7,041.3	7,473.7	7,126.7	20.2	19.5	102.27	-663.8	-167.4	405.4	367.0	38.42	10.550		
7,450.0	7,045.5	7,530.1	7,132.1	20.8	20.1	102.35	-719.9	-167.4	405.5	365.8	39.72	10.210		
7,493.6	7,046.5	7,579.2	7,133.5	21.4	20.8	102.38	-769.1	-167.4	405.6	364.7	40.89	9.918		
7,500.0	7,046.5	7,585.7	7,133.4	21.5	20.9	102.38	-775.6	-167.4	405.6	364.5	41.06	9.878		
7,600.0	7,045.9	7,685.7	7,132.8	22.8	22.2	102.38	-875.6	-167.4	405.6	361.8	43.73	9.274		
7,700.0	7,045.2	7,785.7	7,132.2	24.2	23.6	102.38	-975.6	-167.4	405.6	359.0	46.55	8.712		
7,800.0	7,044.6	7,885.7	7,131.6	25.7	25.1	102.38	-1,075.6	-167.4	405.6	356.1	49.50	8.193		
7,900.0	7,044.0	7,985.7	7,131.0	27.3	26.6	102.38	-1,175.5	-167.4	405.6	353.0	52.55	7.718		
8,000.0	7,043.4	8,085.7	7,130.4	28.9	28.2	102.38	-1,275.5	-167.4	405.6	349.9	55.69	7.283		
8,100.0	7,042.8	8,185.7	7,129.8	30.5	29.9	102.38	-1,375.5	-167.4	405.6	346.7	58.90	6.886		
8,200.0	7,042.2	8,285.7	7,129.1	32.2	31.5	102.38	-1,475.5	-167.4	405.6	343.4	62.17	6.523		
8,300.0	7,041.6	8,385.7	7,128.5	33.9	33.2	102.38	-1,575.5	-167.4	405.6	340.1	65.50	6.192		

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 13W-243
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 13W-243	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				
8,400.0	7,041.0	8,485.7	7,127.9	35.6	34.9	102.38	-1,675.5	-167.4	405.6	336.7	68.87	5.889				
8,500.0	7,040.4	8,585.7	7,127.3	37.3	36.7	102.38	-1,775.5	-167.4	405.6	333.3	72.28	5.611				
8,600.0	7,039.7	8,685.7	7,126.7	39.1	38.4	102.38	-1,875.5	-167.4	405.6	329.8	75.72	5.356				
8,700.0	7,039.1	8,785.7	7,126.1	40.8	40.2	102.38	-1,975.5	-167.4	405.6	326.4	79.20	5.121				
8,800.0	7,038.5	8,885.7	7,125.5	42.6	41.9	102.38	-2,075.5	-167.4	405.6	322.9	82.69	4.904				
8,900.0	7,037.9	8,985.7	7,124.9	44.4	43.7	102.38	-2,175.5	-167.4	405.6	319.3	86.21	4.704				
9,000.0	7,037.3	9,085.7	7,124.3	46.2	45.5	102.38	-2,275.5	-167.4	405.6	315.8	89.76	4.518				
9,100.0	7,036.7	9,185.7	7,123.6	48.0	47.4	102.38	-2,375.5	-167.4	405.6	312.2	93.31	4.346				
9,200.0	7,036.1	9,285.7	7,123.0	49.8	49.2	102.38	-2,475.5	-167.4	405.6	308.7	96.89	4.186				
9,300.0	7,035.5	9,385.7	7,122.4	51.7	51.0	102.38	-2,575.5	-167.4	405.6	305.1	100.47	4.036				
9,400.0	7,034.9	9,485.7	7,121.8	53.5	52.8	102.38	-2,675.5	-167.4	405.6	301.5	104.07	3.897				
9,500.0	7,034.2	9,585.7	7,121.2	55.3	54.7	102.38	-2,775.5	-167.4	405.6	297.9	107.68	3.766				
9,600.0	7,033.6	9,685.7	7,120.6	57.2	56.5	102.38	-2,875.5	-167.4	405.6	294.3	111.30	3.644				
9,700.0	7,033.0	9,785.7	7,120.0	59.0	58.4	102.38	-2,975.5	-167.4	405.6	290.6	114.93	3.529				
9,800.0	7,032.4	9,885.7	7,119.4	60.9	60.2	102.38	-3,075.5	-167.4	405.6	287.0	118.57	3.420				
9,900.0	7,031.8	9,985.7	7,118.8	62.7	62.1	102.38	-3,175.5	-167.4	405.6	283.3	122.22	3.318				
10,000.0	7,031.2	10,085.7	7,118.1	64.6	63.9	102.38	-3,275.5	-167.4	405.6	279.7	125.87	3.222				
10,100.0	7,030.6	10,185.7	7,117.5	66.5	65.8	102.38	-3,375.5	-167.4	405.6	276.0	129.53	3.131				
10,200.0	7,030.0	10,285.7	7,116.9	68.3	67.7	102.38	-3,475.5	-167.4	405.6	272.4	133.20	3.045				
10,300.0	7,029.4	10,385.7	7,116.3	70.2	69.5	102.38	-3,575.5	-167.4	405.6	268.7	136.87	2.963				
10,400.0	7,028.7	10,485.7	7,115.7	72.1	71.4	102.38	-3,675.5	-167.4	405.6	265.0	140.54	2.886				
10,500.0	7,028.1	10,585.7	7,115.1	74.0	73.3	102.38	-3,775.5	-167.4	405.6	261.3	144.22	2.812				
10,600.0	7,027.5	10,685.7	7,114.5	75.8	75.2	102.38	-3,875.5	-167.4	405.6	257.7	147.90	2.742				
10,700.0	7,026.9	10,785.7	7,113.9	77.7	77.0	102.38	-3,975.5	-167.4	405.6	254.0	151.59	2.675				
10,800.0	7,026.3	10,885.7	7,113.3	79.6	78.9	102.38	-4,075.5	-167.4	405.6	250.3	155.28	2.612				
10,900.0	7,025.7	10,985.7	7,112.6	81.5	80.8	102.38	-4,175.5	-167.4	405.6	246.6	158.98	2.551				
11,000.0	7,025.1	11,085.7	7,112.0	83.4	82.7	102.38	-4,275.5	-167.4	405.6	242.9	162.68	2.493				
11,100.0	7,024.5	11,185.7	7,111.4	85.2	84.6	102.38	-4,375.5	-167.4	405.6	239.2	166.38	2.438				
11,200.0	7,023.9	11,285.7	7,110.8	87.1	86.5	102.38	-4,475.5	-167.4	405.6	235.5	170.08	2.385				
11,300.0	7,023.3	11,385.7	7,110.2	89.0	88.4	102.38	-4,575.5	-167.4	405.6	231.8	173.79	2.334				
11,400.0	7,022.6	11,485.7	7,109.6	90.9	90.2	102.38	-4,675.5	-167.4	405.6	228.1	177.50	2.285				
11,500.0	7,022.0	11,585.7	7,109.0	92.8	92.1	102.38	-4,775.5	-167.4	405.6	224.4	181.21	2.238				
11,600.0	7,021.4	11,685.7	7,108.4	94.7	94.0	102.38	-4,875.5	-167.4	405.6	220.6	184.92	2.193				
11,700.0	7,020.8	11,785.7	7,107.8	96.6	95.9	102.38	-4,975.5	-167.4	405.6	216.9	188.64	2.150				
11,800.0	7,020.2	11,885.7	7,107.1	98.5	97.8	102.38	-5,075.5	-167.4	405.6	213.2	192.35	2.108				
11,900.0	7,019.6	11,985.7	7,106.5	100.4	99.7	102.38	-5,175.5	-167.4	405.6	209.5	196.07	2.068				
12,000.0	7,019.0	12,085.7	7,105.9	102.3	101.6	102.38	-5,275.5	-167.4	405.6	205.8	199.79	2.030				
12,100.0	7,018.4	12,185.7	7,105.3	104.2	103.5	102.38	-5,375.5	-167.4	405.6	202.0	203.51	1.993				
12,200.0	7,017.8	12,285.7	7,104.7	106.1	105.4	102.38	-5,475.5	-167.4	405.6	198.3	207.24	1.957				
12,300.0	7,017.1	12,385.7	7,104.1	108.0	107.3	102.38	-5,575.5	-167.4	405.6	194.6	210.96	1.922				
12,400.0	7,016.5	12,485.7	7,103.5	109.9	109.2	102.38	-5,675.5	-167.4	405.6	190.9	214.69	1.889				
12,500.0	7,015.9	12,585.7	7,102.9	111.8	111.1	102.38	-5,775.5	-167.4	405.6	187.1	218.42	1.857				
12,600.0	7,015.3	12,685.7	7,102.3	113.7	113.0	102.38	-5,875.5	-167.4	405.6	183.4	222.14	1.826				
12,700.0	7,014.7	12,785.7	7,101.7	115.6	114.9	102.38	-5,975.5	-167.4	405.6	179.7	225.87	1.796				
12,800.0	7,014.1	12,885.7	7,101.0	117.5	116.8	102.38	-6,075.5	-167.4	405.6	176.0	229.60	1.766				
12,900.0	7,013.5	12,985.7	7,100.4	119.4	118.7	102.38	-6,175.5	-167.4	405.6	172.2	233.34	1.738				
13,000.0	7,012.9	13,085.7	7,099.8	121.3	120.6	102.38	-6,275.5	-167.4	405.6	168.5	237.07	1.711				
13,100.0	7,012.3	13,185.7	7,099.2	123.2	122.5	102.38	-6,375.5	-167.4	405.6	164.8	240.80	1.684				
13,200.0	7,011.6	13,285.7	7,098.6	125.1	124.4	102.38	-6,475.5	-167.4	405.6	161.0	244.54	1.658				
13,300.0	7,011.0	13,385.7	7,098.0	127.0	126.3	102.38	-6,575.4	-167.4	405.6	157.3	248.27	1.634				
13,400.0	7,010.4	13,485.7	7,097.4	128.9	128.2	102.38	-6,675.4	-167.4	405.6	153.6	252.01	1.609				

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 13W-243
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 13W-243	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

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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
13,500.0	7,009.8	13,585.7	7,096.8	130.8	130.1	102.38	-6,775.4	-167.4	405.6	149.8	255.75	1.586	
13,600.0	7,009.2	13,685.7	7,096.2	132.7	132.1	102.38	-6,875.4	-167.4	405.6	146.1	259.49	1.563	
13,700.0	7,008.6	13,785.7	7,095.5	134.6	134.0	102.38	-6,975.4	-167.4	405.6	142.3	263.22	1.541	
13,800.0	7,008.0	13,885.7	7,094.9	136.5	135.9	102.38	-7,075.4	-167.4	405.6	138.6	266.96	1.519	
13,900.0	7,007.4	13,985.7	7,094.3	138.4	137.8	102.38	-7,175.4	-167.4	405.6	134.9	270.70	1.498	Level 3
14,000.0	7,006.8	14,085.7	7,093.7	140.3	139.7	102.38	-7,275.4	-167.4	405.6	131.1	274.44	1.478	Level 3
14,100.0	7,006.1	14,185.7	7,093.1	142.2	141.6	102.38	-7,375.4	-167.4	405.6	127.4	278.19	1.458	Level 3
14,106.7	7,006.1	14,192.4	7,093.1	142.4	141.7	102.38	-7,382.1	-167.4	405.6	127.1	278.44	1.457	Level 3
14,124.1	7,006.0	14,202.0	7,093.0	142.7	141.9	102.38	-7,391.7	-167.4	405.6	126.7	278.94	1.454	Level 3, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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-343 - 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	-160.67	-87.4	-30.7	92.7					
100.0	100.0	100.0	100.0	0.1	0.1	-160.67	-87.4	-30.7	92.7	92.4	0.22	412.248		
200.0	200.0	200.0	200.0	0.3	0.3	-160.67	-87.4	-30.7	92.7	92.0	0.67	137.416	CC	
300.0	300.0	299.6	299.6	0.6	0.6	-160.15	-87.4	-31.5	92.9	91.8	1.11	83.470	ES	
400.0	400.0	399.1	399.1	0.8	0.8	-158.62	-87.1	-34.1	93.6	92.0	1.55	60.301		
500.0	500.0	498.5	498.4	1.0	1.0	-156.12	-86.8	-38.4	94.9	92.9	2.00	47.495		
600.0	600.0	597.7	597.4	1.2	1.2	-152.75	-86.3	-44.4	97.1	94.6	2.45	39.616		
700.0	700.0	696.7	696.1	1.5	1.5	-148.67	-85.6	-52.1	100.3	97.4	2.91	34.485		
800.0	800.0	795.4	794.4	1.7	1.7	-144.07	-84.8	-61.5	104.9	101.6	3.38	31.066		
900.0	900.0	893.8	892.1	1.9	2.0	-139.18	-83.9	-72.5	111.2	107.3	3.86	28.796		
1,000.0	1,000.0	991.7	989.2	2.1	2.3	-134.24	-82.9	-85.1	119.3	114.9	4.36	27.336		
1,100.0	1,100.0	1,089.2	1,085.6	2.4	2.6	-129.44	-81.7	-99.3	129.4	124.5	4.89	26.461		
1,200.0	1,200.0	1,186.1	1,181.2	2.6	3.0	-124.93	-80.3	-115.0	141.6	136.1	5.44	26.013	SF	
1,300.0	1,300.0	1,282.3	1,275.9	2.8	3.4	149.26	-78.9	-132.2	156.6	150.8	5.79	27.051		
1,400.0	1,400.0	1,377.5	1,369.3	3.0	3.7	153.21	-77.3	-150.8	175.3	169.1	6.23	28.121		
1,500.0	1,499.9	1,471.6	1,461.1	3.2	4.2	156.77	-75.7	-170.7	197.8	191.1	6.68	29.622		
1,524.9	1,524.8	1,494.8	1,483.8	3.3	4.3	157.59	-75.2	-175.9	203.9	197.1	6.78	30.056		
1,600.0	1,599.7	1,566.3	1,553.4	3.4	4.6	159.95	-73.9	-192.0	223.2	216.1	7.12	31.345		
1,700.0	1,699.5	1,662.2	1,646.8	3.6	5.0	162.57	-72.1	-213.7	249.4	241.8	7.57	32.960		
1,800.0	1,799.4	1,758.1	1,740.3	3.9	5.5	164.68	-70.2	-235.4	275.9	267.9	8.01	34.435		
1,900.0	1,899.2	1,854.1	1,833.7	4.1	5.9	166.43	-68.4	-257.1	302.8	294.3	8.46	35.777		
2,000.0	1,999.1	1,950.0	1,927.2	4.3	6.4	167.89	-66.6	-278.9	329.9	321.0	8.92	36.997		
2,100.0	2,098.9	2,046.0	2,020.6	4.5	6.9	169.13	-64.8	-300.6	357.1	347.8	9.37	38.107		
2,200.0	2,198.7	2,141.9	2,114.0	4.8	7.3	170.20	-62.9	-322.3	384.5	374.7	9.83	39.119		
2,300.0	2,298.6	2,237.9	2,207.5	5.0	7.8	171.12	-61.1	-344.0	412.0	401.7	10.29	40.043		
2,400.0	2,398.4	2,333.8	2,300.9	5.2	8.3	171.93	-59.3	-365.7	439.6	428.9	10.75	40.890		
2,500.0	2,498.3	2,429.8	2,394.3	5.5	8.7	172.65	-57.5	-387.4	467.3	456.0	11.21	41.666		
2,600.0	2,598.1	2,525.7	2,487.8	5.7	9.2	173.28	-55.6	-409.2	495.0	483.3	11.68	42.381		
2,700.0	2,697.9	2,621.7	2,581.2	6.0	9.7	173.85	-53.8	-430.9	522.7	510.6	12.15	43.039		
2,800.0	2,797.8	2,717.6	2,674.7	6.2	10.2	174.36	-52.0	-452.6	550.5	537.9	12.61	43.649		
2,900.0	2,897.6	2,813.6	2,768.1	6.4	10.6	174.82	-50.2	-474.3	578.4	565.3	13.08	44.213		
3,000.0	2,997.5	2,909.5	2,861.5	6.7	11.1	175.24	-48.4	-496.0	606.3	592.7	13.55	44.737		
3,100.0	3,097.3	3,005.5	2,955.0	6.9	11.6	175.62	-46.5	-517.7	634.2	620.1	14.02	45.225		
3,200.0	3,197.1	3,101.4	3,048.4	7.2	12.0	175.97	-44.7	-539.5	662.1	647.6	14.49	45.681		
3,300.0	3,297.0	3,197.3	3,141.9	7.4	12.5	176.29	-42.9	-561.2	690.0	675.1	14.97	46.106		
3,400.0	3,396.8	3,293.3	3,235.3	7.6	13.0	176.59	-41.1	-582.9	718.0	702.5	15.44	46.504		
3,500.0	3,496.7	3,389.2	3,328.7	7.9	13.5	176.86	-39.2	-604.6	746.0	730.1	15.91	46.878		
3,600.0	3,596.5	3,485.2	3,422.2	8.1	13.9	177.11	-37.4	-626.3	774.0	757.6	16.39	47.229		
3,700.0	3,696.3	3,581.1	3,515.6	8.4	14.4	177.35	-35.6	-648.0	802.0	785.1	16.86	47.560		
3,800.0	3,796.2	3,677.1	3,609.1	8.6	14.9	177.57	-33.8	-669.7	830.0	812.7	17.34	47.871		
3,900.0	3,896.0	3,773.0	3,702.5	8.9	15.4	177.78	-31.9	-691.5	858.0	840.2	17.81	48.165		
4,000.0	3,995.8	3,869.0	3,795.9	9.1	15.8	177.97	-30.1	-713.2	886.1	867.8	18.29	48.443		
4,100.0	4,095.7	3,964.9	3,889.4	9.3	16.3	178.15	-28.3	-734.9	914.1	895.3	18.77	48.707		
4,200.0	4,195.5	4,060.9	3,982.8	9.6	16.8	178.32	-26.5	-756.6	942.2	922.9	19.24	48.956		
4,300.0	4,295.4	4,156.8	4,076.3	9.8	17.3	178.48	-24.6	-778.3	970.2	950.5	19.72	49.193		
4,400.0	4,395.2	4,252.8	4,169.7	10.1	17.7	178.64	-22.8	-800.0	998.3	978.1	20.20	49.418		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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 (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	23.63	25.5	11.2	27.8					
100.0	100.0	100.0	100.0	0.1	0.1	23.63	25.5	11.2	27.8	27.6	0.22	123.838		
200.0	200.0	200.0	200.0	0.3	0.3	23.63	25.5	11.2	27.8	27.2	0.67	41.279		
300.0	300.0	300.0	300.0	0.6	0.6	23.63	25.5	11.2	27.8	26.7	1.12	24.768		
400.0	400.0	400.0	400.0	0.8	0.8	23.63	25.5	11.2	27.8	26.3	1.57	17.691		
500.0	500.0	500.0	500.0	1.0	1.0	23.63	25.5	11.2	27.8	25.8	2.02	13.760		
600.0	600.0	600.0	600.0	1.2	1.2	23.63	25.5	11.2	27.8	25.4	2.47	11.258		
700.0	700.0	700.0	700.0	1.5	1.5	23.63	25.5	11.2	27.8	24.9	2.92	9.526		
800.0	800.0	800.0	800.0	1.7	1.7	23.63	25.5	11.2	27.8	24.5	3.37	8.256		
900.0	900.0	900.0	900.0	1.9	1.9	23.63	25.5	11.2	27.8	24.0	3.82	7.285		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	23.63	25.5	11.2	27.8	23.6	4.27	6.518 CC		
1,100.0	1,100.0	1,099.9	1,099.9	2.4	2.3	25.40	25.3	12.0	28.0	23.3	4.70	5.947 ES		
1,200.0	1,200.0	1,199.8	1,199.7	2.6	2.5	30.58	24.5	14.5	28.5	23.4	5.12	5.568		
1,300.0	1,300.0	1,299.6	1,299.4	2.8	2.7	-52.66	23.4	18.7	29.4	23.8	5.53	5.308		
1,400.0	1,400.0	1,399.3	1,399.0	3.0	3.0	-45.84	21.7	24.5	30.2	24.3	5.94	5.088		
1,500.0	1,499.9	1,498.9	1,498.3	3.2	3.2	-38.91	19.6	32.0	31.1	24.8	6.36	4.895		
1,524.9	1,524.8	1,523.8	1,523.1	3.3	3.2	-37.15	18.9	34.2	31.4	24.9	6.47	4.852		
1,600.0	1,599.7	1,598.5	1,597.4	3.4	3.4	-31.36	16.9	41.2	32.6	25.8	6.79	4.800		
1,700.0	1,699.5	1,697.9	1,696.1	3.6	3.7	-22.82	13.9	52.0	35.8	28.6	7.22	4.964		
1,800.0	1,799.4	1,797.0	1,794.5	3.9	3.9	-14.57	10.3	64.4	41.2	33.6	7.64	5.391		
1,900.0	1,899.2	1,896.5	1,892.9	4.1	4.2	-7.73	6.5	77.9	48.3	40.2	8.07	5.985		
2,000.0	1,999.1	1,996.1	1,991.5	4.3	4.5	-2.68	2.6	91.5	56.0	47.5	8.50	6.582		
2,100.0	2,098.9	2,095.7	2,090.1	4.5	4.8	1.13	-1.3	105.1	64.0	55.0	8.94	7.154		
2,200.0	2,198.7	2,195.3	2,188.7	4.8	5.1	4.09	-5.1	118.7	72.2	62.8	9.38	7.694		
2,300.0	2,298.6	2,294.9	2,287.3	5.0	5.4	6.45	-9.0	132.3	80.5	70.7	9.82	8.198		
2,400.0	2,398.4	2,394.5	2,385.9	5.2	5.7	8.35	-12.9	145.9	89.0	78.7	10.27	8.667		
2,500.0	2,498.3	2,494.1	2,484.5	5.5	6.1	9.93	-16.8	159.5	97.5	86.8	10.71	9.102		
2,600.0	2,598.1	2,593.7	2,583.1	5.7	6.4	11.25	-20.6	173.1	106.1	94.9	11.16	9.505		
2,700.0	2,697.9	2,693.3	2,681.7	6.0	6.7	12.37	-24.5	186.8	114.8	103.1	11.62	9.880		
2,800.0	2,797.8	2,792.9	2,780.3	6.2	7.1	13.34	-28.4	200.4	123.5	111.4	12.07	10.227		
2,900.0	2,897.6	2,892.5	2,878.9	6.4	7.4	14.17	-32.2	214.0	132.2	119.6	12.53	10.551		
3,000.0	2,997.5	2,992.1	2,977.4	6.7	7.7	14.91	-36.1	227.6	140.9	127.9	12.99	10.852		
3,100.0	3,097.3	3,091.7	3,076.0	6.9	8.1	15.56	-40.0	241.2	149.7	136.2	13.44	11.133		
3,200.0	3,197.1	3,191.3	3,174.6	7.2	8.4	16.13	-43.9	254.8	158.5	144.6	13.91	11.396		
3,300.0	3,297.0	3,290.9	3,273.2	7.4	8.7	16.65	-47.7	268.4	167.3	152.9	14.37	11.642		
3,400.0	3,396.8	3,390.5	3,371.8	7.6	9.1	17.11	-51.6	282.0	176.1	161.2	14.83	11.872		
3,500.0	3,496.7	3,490.1	3,470.4	7.9	9.4	17.53	-55.5	295.6	184.9	169.6	15.29	12.089		
3,600.0	3,596.5	3,589.7	3,569.0	8.1	9.7	17.92	-59.4	309.2	193.7	177.9	15.76	12.292		
3,700.0	3,696.3	3,689.3	3,667.6	8.4	10.1	18.26	-63.2	322.8	202.5	186.3	16.22	12.484		
3,800.0	3,796.2	3,788.9	3,766.2	8.6	10.4	18.58	-67.1	336.4	211.4	194.7	16.69	12.665		
3,900.0	3,896.0	3,888.5	3,864.8	8.9	10.8	18.88	-71.0	350.0	220.2	203.1	17.16	12.837		
4,000.0	3,995.8	3,988.1	3,963.4	9.1	11.1	19.15	-74.8	363.6	229.1	211.5	17.62	12.998		
4,100.0	4,095.7	4,087.7	4,062.0	9.3	11.5	19.40	-78.7	377.2	237.9	219.8	18.09	13.152		
4,200.0	4,195.5	4,187.3	4,160.6	9.6	11.8	19.63	-82.6	390.8	246.8	228.2	18.56	13.297		
4,300.0	4,295.4	4,286.9	4,259.2	9.8	12.2	19.85	-86.5	404.4	255.7	236.6	19.03	13.435		
4,400.0	4,395.2	4,386.5	4,357.7	10.1	12.5	20.05	-90.3	418.0	264.5	245.0	19.50	13.567		
4,500.0	4,495.0	4,486.1	4,456.3	10.3	12.8	20.24	-94.2	431.6	273.4	253.4	19.97	13.692		
4,600.0	4,594.9	4,585.7	4,554.9	10.6	13.2	20.42	-98.1	445.2	282.3	261.8	20.44	13.811		
4,700.0	4,694.7	4,685.4	4,653.5	10.8	13.5	20.58	-102.0	458.8	291.2	270.2	20.91	13.925		
4,800.0	4,794.6	4,785.0	4,752.1	11.1	13.9	20.74	-105.8	472.4	300.0	278.7	21.38	14.034		
4,900.0	4,894.4	4,884.6	4,850.7	11.3	14.2	20.89	-109.7	486.0	308.9	287.1	21.85	14.137		

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 13W-243
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 13W-243	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													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
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		
5,000.0	4,994.2	4,984.2	4,949.3	11.5	14.6	21.03	-113.6	499.6	317.8	295.5	22.32	14.237		
5,100.0	5,094.1	5,092.2	5,056.4	11.8	14.9	21.19	-117.4	513.1	325.5	302.7	22.77	14.293		
5,200.0	5,193.9	5,201.4	5,165.1	12.0	15.1	21.40	-120.5	523.8	330.4	307.2	23.22	14.229		
5,289.7	5,283.5	5,299.6	5,263.0	12.3	15.3	21.63	-122.5	530.9	332.3	308.7	23.61	14.073		
5,300.0	5,293.8	5,310.9	5,274.2	12.3	15.3	21.66	-122.7	531.5	332.4	308.8	23.66	14.053		
5,400.0	5,393.7	5,420.3	5,383.6	12.5	15.5	21.86	-124.0	536.2	333.1	309.1	24.03	13.862		
5,506.3	5,500.0	5,536.8	5,500.0	12.7	15.7	111.93	-124.5	538.0	333.3	308.9	24.41	13.656		
5,600.0	5,593.7	5,630.4	5,593.7	12.8	15.8	111.93	-124.5	538.0	333.3	308.5	24.78	13.454		
5,700.0	5,693.7	5,730.4	5,693.7	13.0	16.0	111.93	-124.5	538.0	333.3	308.1	25.18	13.240		
5,800.0	5,793.7	5,830.4	5,793.7	13.2	16.2	111.93	-124.5	538.0	333.3	307.7	25.58	13.033		
5,900.0	5,893.7	5,930.4	5,893.7	13.4	16.3	111.93	-124.5	538.0	333.3	307.3	25.98	12.831		
6,000.0	5,993.7	6,030.4	5,993.7	13.6	16.5	111.93	-124.5	538.0	333.3	306.9	26.38	12.634		
6,100.0	6,093.7	6,130.4	6,093.7	13.8	16.7	111.93	-124.5	538.0	333.3	306.5	26.79	12.443		
6,200.0	6,193.7	6,230.4	6,193.7	14.0	16.8	111.93	-124.5	538.0	333.3	306.1	27.20	12.257		
6,288.9	6,282.6	6,319.4	6,282.6	14.2	17.0	111.93	-124.5	538.0	333.3	305.8	27.56	12.095		
6,300.0	6,293.7	6,330.4	6,293.7	14.2	17.0	-68.08	-124.5	538.0	333.3	305.7	27.61	12.072		
6,350.0	6,343.6	6,380.4	6,343.6	14.3	17.1	-68.52	-124.5	538.0	332.4	304.6	27.82	11.950		
6,400.0	6,393.3	6,430.0	6,393.3	14.4	17.2	-69.56	-124.5	538.0	330.4	302.4	28.00	11.800		
6,450.0	6,442.5	6,479.2	6,442.5	14.5	17.2	-71.21	-124.5	538.0	327.4	299.2	28.17	11.622		
6,500.0	6,491.0	6,526.8	6,490.1	14.6	17.3	-73.40	-124.5	538.0	323.6	295.3	28.34	11.420		
6,550.0	6,538.6	6,570.0	6,533.1	14.7	17.4	-75.66	-126.2	538.0	319.9	291.4	28.52	11.218		
6,600.0	6,585.1	6,613.6	6,576.6	14.8	17.5	-78.02	-130.3	538.0	316.7	287.9	28.73	11.021		
6,650.0	6,630.4	6,658.0	6,620.5	15.0	17.6	-80.47	-137.0	538.0	313.9	285.0	28.99	10.829		
6,700.0	6,674.1	6,703.0	6,664.5	15.1	17.7	-83.00	-146.4	538.0	311.8	282.5	29.30	10.642		
6,750.0	6,716.2	6,748.8	6,708.6	15.3	17.8	-85.60	-158.6	538.0	310.3	280.6	29.66	10.463		
6,800.0	6,756.4	6,795.4	6,752.6	15.4	17.9	-88.26	-173.7	538.1	309.5	279.4	30.06	10.295		
6,828.9	6,778.7	6,822.6	6,778.0	15.5	18.0	-89.80	-183.8	538.1	309.4	279.0	30.32	10.202		
6,850.0	6,794.6	6,842.8	6,796.5	15.6	18.1	-90.94	-191.9	538.1	309.4	278.9	30.51	10.141		
6,900.0	6,830.5	6,891.2	6,839.9	15.8	18.2	-93.63	-213.1	538.2	310.1	279.1	30.99	10.007		
6,950.0	6,864.2	6,940.5	6,882.8	16.1	18.4	-96.32	-237.5	538.3	311.6	280.1	31.49	9.895		
7,000.0	6,895.3	6,990.9	6,924.8	16.4	18.6	-98.99	-265.3	538.3	313.9	281.9	32.00	9.809		
7,050.0	6,923.9	7,042.4	6,965.8	16.7	18.8	-101.60	-296.5	538.4	316.8	284.3	32.50	9.749		
7,100.0	6,949.6	7,095.2	7,005.5	17.1	19.1	-104.16	-331.3	538.5	320.5	287.5	32.99	9.715		
7,150.0	6,972.6	7,149.1	7,043.5	17.5	19.4	-106.64	-369.5	538.6	324.8	291.3	33.46	9.707		
7,200.0	6,992.5	7,204.4	7,079.6	18.0	19.8	-109.02	-411.5	538.7	329.6	295.7	33.91	9.720		
7,250.0	7,009.5	7,261.1	7,113.3	18.5	20.2	-111.30	-457.0	538.9	334.8	300.5	34.33	9.752		
7,300.0	7,023.3	7,319.3	7,144.3	19.0	20.6	-113.46	-506.2	539.0	340.4	305.7	34.75	9.798		
7,350.0	7,033.9	7,378.9	7,172.0	19.6	21.2	-115.48	-558.9	539.1	346.3	311.1	35.15	9.851		
7,400.0	7,041.3	7,440.0	7,196.2	20.2	21.7	-117.37	-615.0	539.3	352.2	316.6	35.55	9.906		
7,450.0	7,045.5	7,502.6	7,216.2	20.8	22.4	-119.11	-674.4	539.5	358.1	322.1	35.97	9.956		
7,493.6	7,046.5	7,558.5	7,229.8	21.4	23.0	-120.50	-728.5	539.6	363.1	326.8	36.35	9.989		
7,500.0	7,046.5	7,566.8	7,231.5	21.5	23.1	-120.73	-736.7	539.6	363.8	327.4	36.44	9.984		
7,600.0	7,045.9	7,700.2	7,246.5	22.8	24.8	-122.81	-869.1	540.0	370.4	332.0	38.39	9.649		
7,700.0	7,045.2	7,805.0	7,246.9	24.2	26.2	-122.91	-973.9	540.3	371.1	330.3	40.84	9.088		
7,800.0	7,044.6	7,905.0	7,247.1	25.7	27.6	-122.99	-1,073.8	540.6	371.8	328.4	43.36	8.575		
7,900.0	7,044.0	8,005.0	7,247.2	27.3	29.1	-123.07	-1,173.8	540.8	372.4	326.4	45.97	8.101		
8,000.0	7,043.4	8,105.0	7,247.4	28.9	30.6	-123.14	-1,273.8	541.1	373.1	324.4	48.66	7.667		
8,100.0	7,042.8	8,205.0	7,247.5	30.5	32.1	-123.22	-1,373.8	541.4	373.7	322.3	51.41	7.268		
8,200.0	7,042.2	8,305.0	7,247.7	32.2	33.7	-123.29	-1,473.8	541.7	374.4	320.1	54.22	6.904		
8,300.0	7,041.6	8,405.0	7,247.8	33.9	35.4	-123.37	-1,573.8	541.9	375.0	317.9	57.08	6.570		

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 13W-243
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 13W-243	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-MWDD										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	7,041.0	8,505.0	7,248.0	35.6	37.0	-123.44	-1,673.8	542.2	375.7	315.7	59.97	6.264			
8,500.0	7,040.4	8,605.0	7,248.2	37.3	38.7	-123.52	-1,773.8	542.5	376.3	313.4	62.90	5.983			
8,600.0	7,039.7	8,705.0	7,248.3	39.1	40.4	-123.59	-1,873.8	542.8	377.0	311.1	65.85	5.724			
8,700.0	7,039.1	8,805.0	7,248.5	40.8	42.1	-123.67	-1,973.8	543.0	377.6	308.8	68.83	5.486			
8,800.0	7,038.5	8,905.0	7,248.6	42.6	43.9	-123.74	-2,073.8	543.3	378.3	306.4	71.82	5.267			
8,900.0	7,037.9	9,005.0	7,248.8	44.4	45.6	-123.81	-2,173.8	543.6	378.9	304.1	74.83	5.063			
9,000.0	7,037.3	9,105.0	7,248.9	46.2	47.4	-123.89	-2,273.8	543.9	379.6	301.7	77.86	4.875			
9,100.0	7,036.7	9,205.0	7,249.1	48.0	49.2	-123.96	-2,373.8	544.1	380.2	299.3	80.90	4.700			
9,200.0	7,036.1	9,305.0	7,249.3	49.8	51.0	-124.03	-2,473.8	544.4	380.9	296.9	83.95	4.537			
9,300.0	7,035.5	9,405.0	7,249.4	51.7	52.8	-124.10	-2,573.8	544.7	381.6	294.5	87.01	4.385			
9,400.0	7,034.9	9,505.0	7,249.6	53.5	54.6	-124.18	-2,673.8	545.0	382.2	292.1	90.07	4.243			
9,500.0	7,034.2	9,605.0	7,249.7	55.3	56.4	-124.25	-2,773.8	545.2	382.9	289.7	93.14	4.111			
9,600.0	7,033.6	9,704.9	7,249.9	57.2	58.2	-124.32	-2,873.8	545.5	383.5	287.3	96.22	3.986			
9,700.0	7,033.0	9,804.9	7,250.0	59.0	60.0	-124.39	-2,973.8	545.8	384.2	284.9	99.30	3.869			
9,800.0	7,032.4	9,904.9	7,250.2	60.9	61.9	-124.46	-3,073.8	546.1	384.8	282.5	102.38	3.759			
9,900.0	7,031.8	10,004.9	7,250.4	62.7	63.7	-124.53	-3,173.8	546.3	385.5	280.0	105.47	3.655			
10,000.0	7,031.2	10,104.9	7,250.5	64.6	65.5	-124.61	-3,273.8	546.6	386.2	277.6	108.56	3.557			
10,100.0	7,030.6	10,204.9	7,250.7	66.5	67.4	-124.68	-3,373.8	546.9	386.8	275.2	111.65	3.465			
10,200.0	7,030.0	10,304.9	7,250.8	68.3	69.2	-124.75	-3,473.8	547.1	387.5	272.8	114.74	3.377			
10,300.0	7,029.4	10,404.9	7,251.0	70.2	71.1	-124.82	-3,573.8	547.4	388.2	270.3	117.84	3.294			
10,400.0	7,028.7	10,504.9	7,251.1	72.1	72.9	-124.89	-3,673.7	547.7	388.8	267.9	120.93	3.215			
10,500.0	7,028.1	10,604.9	7,251.3	74.0	74.8	-124.96	-3,773.7	548.0	389.5	265.5	124.02	3.140			
10,600.0	7,027.5	10,704.9	7,251.5	75.8	76.7	-125.02	-3,873.7	548.2	390.2	263.0	127.12	3.069			
10,700.0	7,026.9	10,804.9	7,251.6	77.7	78.5	-125.09	-3,973.7	548.5	390.8	260.6	130.21	3.001			
10,800.0	7,026.3	10,904.9	7,251.8	79.6	80.4	-125.16	-4,073.7	548.8	391.5	258.2	133.30	2.937			
10,900.0	7,025.7	11,004.9	7,251.9	81.5	82.3	-125.23	-4,173.7	549.1	392.2	255.8	136.39	2.875			
11,000.0	7,025.1	11,104.9	7,252.1	83.4	84.1	-125.30	-4,273.7	549.3	392.8	253.3	139.48	2.816			
11,100.0	7,024.5	11,204.9	7,252.2	85.2	86.0	-125.37	-4,373.7	549.6	393.5	250.9	142.57	2.760			
11,200.0	7,023.9	11,304.9	7,252.4	87.1	87.9	-125.44	-4,473.7	549.9	394.2	248.5	145.65	2.706			
11,300.0	7,023.3	11,404.9	7,252.6	89.0	89.8	-125.50	-4,573.7	550.2	394.8	246.1	148.74	2.654			
11,400.0	7,022.6	11,504.9	7,252.7	90.9	91.7	-125.57	-4,673.7	550.4	395.5	243.7	151.82	2.605			
11,500.0	7,022.0	11,604.9	7,252.9	92.8	93.5	-125.64	-4,773.7	550.7	396.2	241.3	154.90	2.558			
11,600.0	7,021.4	11,704.9	7,253.0	94.7	95.4	-125.71	-4,873.7	551.0	396.8	238.9	157.98	2.512			
11,700.0	7,020.8	11,804.9	7,253.2	96.6	97.3	-125.77	-4,973.7	551.3	397.5	236.5	161.06	2.468			
11,800.0	7,020.2	11,904.9	7,253.3	98.5	99.2	-125.84	-5,073.7	551.5	398.2	234.0	164.13	2.426			
11,900.0	7,019.6	12,004.9	7,253.5	100.4	101.1	-125.90	-5,173.7	551.8	398.9	231.7	167.20	2.385			
12,000.0	7,019.0	12,104.9	7,253.7	102.3	103.0	-125.97	-5,273.7	552.1	399.5	229.3	170.27	2.346			
12,100.0	7,018.4	12,204.9	7,253.8	104.2	104.9	-126.04	-5,373.7	552.4	400.2	226.9	173.34	2.309			
12,200.0	7,017.8	12,304.9	7,254.0	106.1	106.8	-126.10	-5,473.7	552.6	400.9	224.5	176.40	2.272			
12,300.0	7,017.1	12,404.9	7,254.1	108.0	108.6	-126.17	-5,573.7	552.9	401.5	222.1	179.47	2.237			
12,400.0	7,016.5	12,504.9	7,254.3	109.9	110.5	-126.23	-5,673.7	553.2	402.2	219.7	182.52	2.204			
12,500.0	7,015.9	12,604.9	7,254.4	111.8	112.4	-126.30	-5,773.7	553.5	402.9	217.3	185.58	2.171			
12,600.0	7,015.3	12,704.8	7,254.6	113.7	114.3	-126.36	-5,873.7	553.7	403.6	214.9	188.63	2.139			
12,700.0	7,014.7	12,804.8	7,254.8	115.6	116.2	-126.43	-5,973.7	554.0	404.3	212.6	191.68	2.109			
12,800.0	7,014.1	12,904.8	7,254.9	117.5	118.1	-126.49	-6,073.7	554.3	404.9	210.2	194.73	2.079			
12,900.0	7,013.5	13,004.8	7,255.1	119.4	120.0	-126.56	-6,173.7	554.6	405.6	207.8	197.77	2.051			
13,000.0	7,012.9	13,104.8	7,255.2	121.3	121.9	-126.62	-6,273.6	554.8	406.3	205.5	200.82	2.023			
13,100.0	7,012.3	13,204.8	7,255.4	123.2	123.8	-126.68	-6,373.6	555.1	407.0	203.1	203.85	1.996			
13,200.0	7,011.6	13,304.8	7,255.5	125.1	125.7	-126.75	-6,473.6	555.4	407.6	200.8	206.89	1.970			
13,300.0	7,011.0	13,404.8	7,255.7	127.0	127.6	-126.81	-6,573.6	555.7	408.3	198.4	209.92	1.945			
13,400.0	7,010.4	13,504.8	7,255.9	128.9	129.5	-126.87	-6,673.6	555.9	409.0	196.1	212.95	1.921			

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 13W-243
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 13W-243	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)						
13,500.0	7,009.8	13,604.8	7,256.0	130.8	131.4	-126.94	-6,773.6	556.2	409.7	193.7	215.97	1.897					
13,600.0	7,009.2	13,704.8	7,256.2	132.7	133.3	-127.00	-6,873.6	556.5	410.4	191.4	219.00	1.874					
13,700.0	7,008.6	13,804.8	7,256.3	134.6	135.2	-127.06	-6,973.6	556.8	411.0	189.0	222.02	1.851					
13,800.0	7,008.0	13,904.8	7,256.5	136.5	137.1	-127.12	-7,073.6	557.0	411.7	186.7	225.03	1.830					
13,900.0	7,007.4	14,004.8	7,256.6	138.4	139.0	-127.19	-7,173.6	557.3	412.4	184.4	228.05	1.808					
14,000.0	7,006.8	14,104.8	7,256.8	140.3	140.9	-127.25	-7,273.6	557.6	413.1	182.0	231.06	1.788					
14,100.0	7,006.1	14,204.8	7,257.0	142.2	142.8	-127.31	-7,373.6	557.9	413.8	179.7	234.06	1.768					
14,124.1	7,006.0	14,228.9	7,257.0	142.7	143.3	-127.32	-7,397.7	557.9	413.9	179.2	234.79	1.763 SF					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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 - Bouge 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 (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		
0.0	0.0	0.0	0.0	0.0	0.0	170.73	-666.7	108.8	676.4						
100.0	100.0	62.0	62.0	0.1	0.1	170.74	-666.8	108.7	675.6	675.4	0.19	3,467.682			
200.0	200.0	159.8	159.8	0.3	0.3	170.76	-667.5	108.6	676.3	675.7	0.62	1,083.200			
300.0	300.0	259.9	259.9	0.6	0.5	170.77	-668.3	108.7	677.1	676.0	1.11	609.966			
400.0	400.0	359.5	359.4	0.8	0.8	170.78	-669.1	108.6	677.8	676.2	1.60	424.969			
500.0	500.0	457.8	457.7	1.0	1.1	170.83	-670.1	108.1	678.8	676.7	2.08	326.993			
600.0	600.0	557.7	557.7	1.2	1.3	170.90	-671.3	107.6	679.9	677.3	2.56	265.413			
700.0	700.0	657.7	657.7	1.5	1.6	170.95	-672.4	107.1	680.9	677.9	3.05	223.357			
800.0	800.0	757.1	757.1	1.7	1.8	171.02	-673.7	106.4	682.1	678.5	3.53	192.974			
900.0	900.0	857.9	857.8	1.9	2.1	171.07	-674.9	106.0	683.2	679.2	4.03	169.717			
1,000.0	1,000.0	958.2	958.2	2.1	2.4	171.13	-676.0	105.5	684.2	679.7	4.51	151.545			
1,100.0	1,100.0	1,058.7	1,058.6	2.4	2.6	171.19	-677.1	104.9	685.2	680.2	5.00	136.943			
1,200.0	1,200.0	1,159.7	1,159.6	2.6	2.9	171.25	-678.0	104.4	686.0	680.5	5.49	124.934			
1,300.0	1,300.0	1,260.5	1,260.4	2.8	3.2	81.39	-678.9	103.6	686.6	680.7	5.96	115.193			
1,400.0	1,400.0	1,362.0	1,361.9	3.0	3.4	81.66	-679.6	103.1	686.8	680.4	6.42	106.908			
1,500.0	1,499.9	1,463.5	1,463.4	3.2	3.7	82.06	-679.9	102.8	686.5	679.6	6.89	99.679			
1,524.9	1,524.8	1,488.8	1,488.7	3.3	3.7	82.18	-680.0	102.7	686.4	679.4	7.00	98.020			
1,600.0	1,599.7	1,562.3	1,562.2	3.4	3.9	82.55	-680.2	102.4	686.0	678.6	7.35	93.383			
1,700.0	1,699.5	1,661.3	1,661.2	3.6	4.2	83.03	-680.7	102.3	685.8	678.0	7.80	87.969			
1,800.0	1,799.4	1,762.3	1,762.2	3.9	4.4	83.49	-681.1	102.5	685.5	677.3	8.24	83.230			
1,900.0	1,899.2	1,862.6	1,862.5	4.1	4.6	83.96	-681.3	102.6	685.1	676.5	8.67	79.047			
2,000.0	1,999.1	1,964.0	1,963.9	4.3	4.7	84.41	-681.5	102.9	684.7	675.7	9.03	75.816			
2,100.0	2,098.9	2,065.4	2,065.3	4.5	4.8	84.87	-681.3	103.1	684.1	674.8	9.31	73.503			
2,200.0	2,198.7	2,164.6	2,164.5	4.8	4.8	85.34	-681.1	103.1	683.4	673.9	9.56	71.519			
2,300.0	2,298.6	2,265.4	2,265.3	5.0	4.8	85.81	-681.0	103.2	682.9	673.0	9.81	69.588			
2,400.0	2,398.4	2,366.7	2,366.6	5.2	4.8	86.29	-680.6	103.2	682.1	672.0	10.08	67.634			
2,500.0	2,498.3	2,465.9	2,465.8	5.5	4.9	86.77	-680.2	103.0	681.3	670.9	10.40	65.535			
2,600.0	2,598.1	2,565.7	2,565.6	5.7	5.0	87.28	-679.9	102.7	680.6	669.9	10.74	63.392			
2,700.0	2,697.9	2,667.9	2,667.8	6.0	5.1	87.80	-679.4	102.3	679.9	668.8	11.09	61.304			
2,800.0	2,797.8	2,767.2	2,767.1	6.2	5.3	88.34	-678.6	101.4	678.9	667.5	11.46	59.220			
2,900.0	2,897.6	2,868.1	2,868.0	6.4	5.4	88.91	-678.0	100.4	678.2	666.3	11.86	57.164			
3,000.0	2,997.5	2,969.0	2,968.9	6.7	5.6	89.51	-677.1	99.0	677.2	664.9	12.27	55.176			
3,100.0	3,097.3	3,069.6	3,069.5	6.9	5.8	90.12	-676.1	97.5	676.2	663.5	12.68	53.307			
3,200.0	3,197.1	3,167.6	3,167.5	7.2	5.9	90.69	-675.1	96.3	675.2	662.1	13.10	51.553			
3,300.0	3,297.0	3,263.4	3,263.2	7.4	6.1	91.27	-674.6	95.0	674.8	661.3	13.53	49.870			
3,308.3	3,305.3	3,271.3	3,271.1	7.4	6.2	91.32	-674.6	94.8	674.8	661.2	13.57	49.735			
3,400.0	3,396.8	3,360.0	3,359.8	7.6	6.4	91.86	-674.7	93.4	675.0	661.1	13.99	48.252			
3,500.0	3,496.7	3,456.9	3,456.7	7.9	6.6	92.49	-675.1	91.5	675.8	661.3	14.46	46.726			
3,600.0	3,596.5	3,554.4	3,554.2	8.1	6.8	93.12	-675.9	89.5	677.0	662.0	14.94	45.308			
3,700.0	3,696.3	3,653.5	3,653.3	8.4	7.1	93.76	-676.9	87.5	678.5	663.0	15.43	43.976			
3,800.0	3,796.2	3,753.7	3,753.4	8.6	7.3	94.39	-678.0	85.6	680.1	664.1	15.92	42.719			
3,900.0	3,896.0	3,854.2	3,853.9	8.9	7.6	95.02	-678.9	83.7	681.6	665.2	16.41	41.530			
4,000.0	3,995.8	3,954.2	3,953.9	9.1	7.8	95.67	-679.7	81.5	683.2	666.2	16.91	40.411			
4,100.0	4,095.7	4,052.8	4,052.4	9.3	8.1	96.30	-680.6	79.4	684.8	667.4	17.40	39.368			
4,200.0	4,195.5	4,152.8	4,152.4	9.6	8.3	96.93	-681.6	77.4	686.7	668.9	17.89	38.387			
4,300.0	4,295.4	4,252.6	4,252.2	9.8	8.6	97.57	-682.4	75.2	688.6	670.2	18.39	37.452			
4,400.0	4,395.2	4,352.1	4,351.6	10.1	8.8	98.23	-683.4	72.7	690.6	671.7	18.88	36.579			
4,500.0	4,495.0	4,450.5	4,450.1	10.3	9.1	98.89	-684.2	70.0	692.7	673.4	19.37	35.757			
4,600.0	4,594.9	4,548.5	4,548.0	10.6	9.3	99.58	-685.3	67.0	695.3	675.4	19.86	35.000			
4,700.0	4,694.7	4,648.6	4,647.9	10.8	9.6	100.34	-686.4	63.1	698.0	677.6	20.36	34.278			
4,800.0	4,794.6	4,748.5	4,747.8	11.1	9.8	101.12	-687.3	58.9	700.7	679.8	20.86	33.594			

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 13W-243
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 13W-243	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 - Bouge 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		
4,900.0	4,894.4	4,848.5	4,847.8	11.3	10.1	101.89	-688.1	54.7	703.5	682.2	21.35	32.945		
5,000.0	4,994.2	4,950.0	4,949.2	11.5	10.3	102.63	-689.0	51.0	706.3	684.4	21.85	32.317		
5,100.0	5,094.1	5,051.9	5,051.0	11.8	10.6	103.32	-689.6	47.8	708.8	686.5	22.36	31.706		
5,200.0	5,193.9	5,152.4	5,151.4	12.0	10.8	103.98	-690.0	45.1	711.3	688.4	22.85	31.121		
5,289.7	5,283.5	5,241.4	5,240.4	12.3	11.1	104.54	-690.4	42.8	713.5	690.2	23.30	30.623		
5,300.0	5,293.8	5,251.5	5,250.5	12.3	11.1	104.60	-690.5	42.6	713.7	690.4	23.35	30.571		
5,400.0	5,393.7	5,350.9	5,349.9	12.5	11.3	105.10	-691.2	40.5	716.0	692.2	23.79	30.102		
5,506.3	5,500.0	5,455.8	5,454.8	12.7	11.6	-164.66	-692.1	38.8	717.7	693.5	24.25	29.604		
5,600.0	5,593.7	5,550.3	5,549.3	12.8	11.9	-164.58	-693.2	37.6	719.1	694.5	24.66	29.158		
5,700.0	5,693.7	5,652.9	5,651.8	13.0	12.1	-164.52	-694.0	36.5	720.2	695.1	25.12	28.666		
5,800.0	5,793.7	5,754.0	5,752.9	13.2	12.4	-164.45	-694.7	35.5	721.1	695.5	25.58	28.185		
5,900.0	5,893.7	5,856.4	5,855.3	13.4	12.6	-164.39	-695.1	34.6	721.7	695.7	26.05	27.709		
6,000.0	5,993.7	5,959.2	5,958.2	13.6	12.9	-164.34	-695.2	33.8	722.0	695.5	26.50	27.244		
6,100.0	6,093.7	6,061.1	6,060.0	13.8	13.1	-164.29	-694.9	33.3	721.9	695.0	26.93	26.811		
6,200.0	6,193.7	6,161.4	6,160.4	14.0	13.3	-164.23	-694.5	32.7	721.7	694.3	27.34	26.399		
6,288.9	6,282.6	6,249.8	6,248.7	14.2	13.5	-164.17	-694.1	31.9	721.5	693.8	27.71	26.040		
6,300.0	6,293.7	6,260.8	6,259.7	14.2	13.5	15.84	-694.1	31.8	721.4	693.6	27.75	25.996		
6,350.0	6,343.6	6,310.3	6,309.2	14.3	13.6	15.98	-693.9	31.4	719.1	691.2	27.88	25.787		
6,400.0	6,393.3	6,359.4	6,358.4	14.4	13.8	16.25	-693.7	31.0	713.6	685.7	27.93	25.552		
6,450.0	6,442.5	6,408.4	6,407.3	14.5	13.9	16.68	-693.6	30.5	705.1	677.3	27.88	25.292		
6,500.0	6,491.0	6,458.3	6,457.2	14.6	14.0	17.28	-693.4	30.0	693.5	665.8	27.74	25.003		
6,550.0	6,538.6	6,507.1	6,506.0	14.7	14.1	18.06	-693.2	29.6	678.9	651.3	27.51	24.676		
6,600.0	6,585.1	6,554.1	6,553.0	14.8	14.2	19.05	-692.9	29.3	661.2	634.0	27.20	24.309		
6,650.0	6,630.4	6,599.7	6,598.6	15.0	14.3	20.30	-692.5	28.8	640.7	613.9	26.83	23.882		
6,700.0	6,674.1	6,642.1	6,641.0	15.1	14.4	21.81	-692.2	28.4	617.6	591.2	26.42	23.377		
6,750.0	6,716.2	6,682.9	6,681.8	15.3	14.5	23.66	-691.9	28.0	592.0	566.0	26.00	22.770		
6,800.0	6,756.4	6,722.5	6,721.4	15.4	14.5	25.95	-691.8	27.5	564.2	538.6	25.62	22.022		
6,850.0	6,794.6	6,760.6	6,759.5	15.6	14.6	28.77	-691.6	27.1	534.2	508.8	25.33	21.087		
6,900.0	6,830.5	6,796.5	6,795.4	15.8	14.7	32.22	-691.5	26.8	502.2	477.0	25.21	19.919		
6,950.0	6,864.2	6,829.7	6,828.6	16.1	14.8	36.38	-691.4	26.5	468.6	443.3	25.36	18.482		
7,000.0	6,895.3	6,860.5	6,859.4	16.4	14.9	41.39	-691.3	26.2	433.7	407.9	25.85	16.776		
7,050.0	6,923.9	6,888.7	6,887.6	16.7	14.9	47.29	-691.2	26.0	398.0	371.2	26.77	14.869		
7,100.0	6,949.6	6,914.6	6,913.4	17.1	15.0	54.08	-691.2	25.7	361.9	333.8	28.07	12.892		
7,150.0	6,972.6	6,937.8	6,936.7	17.5	15.1	61.51	-691.1	25.6	326.1	296.5	29.62	11.012		
7,200.0	6,992.5	6,958.0	6,956.8	18.0	15.1	69.04	-691.1	25.4	291.7	260.6	31.16	9.364		
7,250.0	7,009.5	6,975.0	6,973.9	18.5	15.1	76.07	-691.0	25.3	260.1	227.6	32.49	8.008		
7,300.0	7,023.3	6,988.8	6,987.7	19.0	15.2	82.04	-691.0	25.2	233.3	199.8	33.52	6.959		
7,350.0	7,033.9	6,999.4	6,998.3	19.6	15.2	86.51	-690.9	25.2	213.7	179.4	34.32	6.227		
7,400.0	7,041.3	7,006.6	7,005.5	20.2	15.2	89.26	-690.9	25.2	204.2	169.2	35.00	5.835		
7,415.7	7,043.0	7,008.2	7,007.1	20.4	15.2	89.75	-690.9	25.2	203.6	168.4	35.20	5.783 CC, ES, SF		
7,450.0	7,045.5	7,010.6	7,009.5	20.8	15.2	90.20	-690.9	25.1	206.5	170.8	35.65	5.792		
7,493.6	7,046.5	7,011.4	7,010.3	21.4	15.2	89.53	-690.9	25.1	217.9	181.7	36.22	6.018		
7,500.0	7,046.5	7,011.4	7,010.2	21.5	15.2	89.51	-690.9	25.1	220.3	184.0	36.30	6.069		
7,600.0	7,045.9	7,010.3	7,009.2	22.8	15.2	89.23	-690.9	25.1	274.5	236.9	37.67	7.287		
7,700.0	7,045.2	7,009.3	7,008.2	24.2	15.2	88.94	-690.9	25.1	349.6	310.4	39.12	8.935		
7,800.0	7,044.6	7,008.3	7,007.2	25.7	15.2	88.66	-690.9	25.2	434.8	394.1	40.63	10.701		
7,900.0	7,044.0	7,007.3	7,006.2	27.3	15.2	88.37	-690.9	25.2	525.2	483.0	42.18	12.450		
8,000.0	7,043.4	7,006.3	7,005.2	28.9	15.2	88.09	-690.9	25.2	618.6	574.8	43.78	14.129		
8,100.0	7,042.8	7,005.3	7,004.2	30.5	15.2	87.80	-690.9	25.2	713.8	668.4	45.42	15.716		
8,200.0	7,042.2	7,004.3	7,003.1	32.2	15.2	87.52	-690.9	25.2	810.1	763.0	47.08	17.208		

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 13W-243
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 13W-243	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 - Bouge 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		
8,300.0	7,041.6	7,003.2	7,002.1	33.9	15.2	87.23	-690.9	25.2	907.2	858.5	48.76	18.604		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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 43-24 (Exist) - Wellbore #1 - Wellbore #1														Offset Site Error: 0.0 ft
Survey Program: 100-UNKNOWN														Offset Well Error: 0.0 ft
Reference	Offset	Semi Major Axis		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		
11,800.0	7,020.2	6,993.3	6,992.3	98.5	138.2	-93.34	-5,993.9	310.2	922.5	686.2	236.32	3.904		
11,900.0	7,019.6	6,992.8	6,991.8	100.4	138.2	-93.00	-5,993.9	310.2	822.9	584.7	238.27	3.454		
12,000.0	7,019.0	6,992.3	6,991.4	102.3	138.2	-92.65	-5,993.9	310.2	723.5	483.3	240.20	3.012		
12,100.0	7,018.4	6,991.8	6,990.9	104.2	138.2	-92.31	-5,993.9	310.2	624.2	382.1	242.13	2.578		
12,200.0	7,017.8	6,991.3	6,990.4	106.1	138.2	-91.97	-5,993.8	310.2	525.3	281.2	244.06	2.152		
12,300.0	7,017.1	6,990.8	6,989.9	108.0	138.1	-91.62	-5,993.8	310.2	426.8	180.8	245.97	1.735		
12,400.0	7,016.5	6,990.4	6,989.4	109.9	138.1	-91.28	-5,993.8	310.2	329.1	81.3	247.88	1.328 Level 3		
12,500.0	7,015.9	6,989.9	6,988.9	111.8	138.1	-90.93	-5,993.8	310.2	233.6	-16.2	249.78	0.935 Level 1		
12,600.0	7,015.3	6,989.4	6,988.4	113.7	138.1	-90.59	-5,993.8	310.2	144.1	-107.6	251.68	0.573 Level 1		
12,700.0	7,014.7	6,988.9	6,987.9	115.6	138.1	-90.24	-5,993.8	310.2	83.6	-170.0	253.56	0.330 Level 1		
12,718.9	7,014.6	6,988.8	6,987.8	115.9	138.1	-90.18	-5,993.8	310.2	81.4	-172.5	253.92	0.321 Level 1, CC, ES, SF		
12,800.0	7,014.1	6,988.4	6,987.4	117.5	138.1	-89.90	-5,993.8	310.2	114.9	-140.5	255.44	0.450 Level 1		
12,900.0	7,013.5	6,987.9	6,986.9	119.4	138.1	-89.55	-5,993.8	310.2	198.5	-58.8	257.31	0.772 Level 1		
13,000.0	7,012.9	6,987.4	6,986.5	121.3	138.1	-89.20	-5,993.8	310.2	292.6	33.5	259.18	1.129 Level 2		
13,100.0	7,012.3	6,986.9	6,986.0	123.2	138.0	-88.86	-5,993.8	310.2	389.7	128.7	261.03	1.493 Level 3		
13,200.0	7,011.6	6,986.4	6,985.5	125.1	138.0	-88.51	-5,993.8	310.2	487.9	225.0	262.87	1.856		
13,300.0	7,011.0	6,985.9	6,985.0	127.0	138.0	-88.17	-5,993.8	310.2	586.8	322.0	264.71	2.217		
13,400.0	7,010.4	6,985.4	6,984.5	128.9	138.0	-87.82	-5,993.8	310.2	685.9	419.4	266.54	2.573		
13,500.0	7,009.8	6,984.9	6,984.0	130.8	138.0	-87.47	-5,993.8	310.2	785.3	517.0	268.35	2.926		
13,600.0	7,009.2	6,984.4	6,983.5	132.7	138.0	-87.13	-5,993.8	310.2	884.8	614.7	270.16	3.275		
13,700.0	7,008.6	6,984.0	6,983.0	134.6	138.0	-86.78	-5,993.8	310.2	984.4	712.5	271.96	3.620		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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 44-24 (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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
12,900.0	7,013.5	6,995.2	6,994.3	119.4	13.5	92.14	-7,046.7	-95.1	930.0	797.2	132.74	7.006		
13,000.0	7,012.9	6,993.8	6,992.9	121.3	13.5	91.90	-7,046.7	-95.1	837.0	702.3	134.65	6.216		
13,100.0	7,012.3	6,992.5	6,991.5	123.2	13.5	91.66	-7,046.7	-95.1	745.8	609.2	136.57	5.461		
13,200.0	7,011.6	6,991.1	6,990.2	125.1	13.5	91.42	-7,046.7	-95.1	657.1	518.7	138.48	4.745		
13,300.0	7,011.0	6,989.8	6,988.8	127.0	13.5	91.18	-7,046.7	-95.1	572.3	431.9	140.39	4.076		
13,400.0	7,010.4	6,988.4	6,987.5	128.9	13.5	90.94	-7,046.7	-95.1	493.1	350.8	142.30	3.465		
13,500.0	7,009.8	6,987.1	6,986.1	130.8	13.5	90.70	-7,046.7	-95.1	422.8	278.6	144.20	2.932		
13,600.0	7,009.2	6,985.7	6,984.8	132.7	13.5	90.46	-7,046.7	-95.1	366.6	220.5	146.11	2.509		
13,700.0	7,008.6	6,984.3	6,983.4	134.6	13.5	90.22	-7,046.7	-95.1	331.7	183.7	148.01	2.241		
13,771.8	7,008.2	6,983.4	6,982.4	136.0	13.4	90.05	-7,046.7	-95.1	323.9	174.5	149.38	2.168	CC, ES, SF	
13,800.0	7,008.0	6,983.0	6,982.1	136.5	13.4	89.98	-7,046.8	-95.1	325.1	175.2	149.91	2.169		
13,900.0	7,007.4	6,981.6	6,980.7	138.4	13.4	89.74	-7,046.8	-95.1	348.3	196.5	151.81	2.294		
14,000.0	7,006.8	6,980.3	6,979.3	140.3	13.4	89.50	-7,046.8	-95.1	396.2	242.4	153.71	2.577		
14,100.0	7,006.1	6,978.9	6,978.0	142.2	13.4	89.26	-7,046.8	-95.1	461.0	305.4	155.61	2.963		
14,124.1	7,006.0	6,978.6	6,977.7	142.7	13.4	89.20	-7,046.8	-95.1	478.5	322.5	156.06	3.066		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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 - Kristin 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		
9,100.0	7,036.7	7,007.8	7,006.9	48.0	15.1	93.03	-3,353.8	92.5	988.2	925.3	62.89	15.713		
9,200.0	7,036.1	7,007.0	7,006.1	49.8	15.1	92.68	-3,353.8	92.5	889.3	824.5	64.73	13.739		
9,300.0	7,035.5	7,006.1	7,005.3	51.7	15.1	92.34	-3,353.8	92.5	790.6	724.0	66.57	11.877		
9,400.0	7,034.9	7,005.3	7,004.5	53.5	15.1	92.01	-3,353.8	92.5	692.3	623.9	68.41	10.120		
9,500.0	7,034.2	7,004.5	7,003.7	55.3	15.1	91.67	-3,353.8	92.5	594.6	524.3	70.26	8.463		
9,600.0	7,033.6	7,003.7	7,002.9	57.2	15.1	91.34	-3,353.8	92.5	497.8	425.7	72.11	6.903		
9,700.0	7,033.0	7,003.0	7,002.1	59.0	15.1	91.01	-3,353.8	92.5	402.5	328.6	73.97	5.442		
9,800.0	7,032.4	7,002.2	7,001.3	60.9	15.1	90.68	-3,353.8	92.5	310.3	234.5	75.82	4.092		
9,900.0	7,031.8	7,001.4	7,000.5	62.7	15.1	90.35	-3,353.8	92.5	224.8	147.1	77.68	2.894		
10,000.0	7,031.2	7,000.6	6,999.8	64.6	15.1	90.02	-3,353.8	92.5	157.4	77.8	79.54	1.979		
10,078.8	7,030.7	7,000.0	6,999.2	66.1	15.1	89.77	-3,353.8	92.5	136.2	55.2	81.01	1.682	CC, ES, SF	
10,100.0	7,030.6	6,999.8	6,999.0	66.5	15.1	89.70	-3,353.8	92.5	137.9	56.5	81.41	1.694		
10,200.0	7,030.0	6,999.1	6,998.2	68.3	15.1	89.38	-3,353.8	92.5	182.3	99.1	83.27	2.190		
10,300.0	7,029.4	6,998.3	6,997.5	70.2	15.1	89.06	-3,353.8	92.5	259.8	174.7	85.13	3.052		
10,400.0	7,028.7	6,997.6	6,996.7	72.1	15.1	88.74	-3,353.8	92.5	348.9	261.9	86.99	4.011		
10,500.0	7,028.1	6,996.8	6,996.0	74.0	15.1	88.43	-3,353.8	92.5	442.7	353.8	88.85	4.982		
10,600.0	7,027.5	6,996.1	6,995.2	75.8	15.1	88.12	-3,353.8	92.5	538.7	448.0	90.72	5.938		
10,700.0	7,026.9	6,995.4	6,994.5	77.7	15.1	87.82	-3,353.8	92.5	635.9	543.4	92.58	6.869		
10,800.0	7,026.3	6,994.6	6,993.8	79.6	15.0	87.52	-3,353.8	92.5	733.9	639.5	94.44	7.772		
10,900.0	7,025.7	6,993.9	6,993.1	81.5	15.0	87.22	-3,353.8	92.5	832.4	736.1	96.29	8.644		
11,000.0	7,025.1	6,993.2	6,992.4	83.4	15.0	86.92	-3,353.8	92.5	931.2	833.0	98.15	9.487		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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 - Mesha 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 (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,900.0	7,044.0	7,028.5	7,026.5	27.3	14.3	96.79		-2,075.5	52.8	917.6	876.5	41.11	22.323	
8,000.0	7,043.4	7,025.9	7,023.9	28.9	14.3	95.97		-2,075.5	52.8	819.7	776.9	42.75	19.173	
8,100.0	7,042.8	7,023.4	7,021.3	30.5	14.3	95.14		-2,075.6	52.9	722.4	677.9	44.43	16.257	
8,200.0	7,042.2	7,020.8	7,018.8	32.2	14.3	94.31		-2,075.6	52.9	625.9	579.7	46.14	13.565	
8,300.0	7,041.6	7,018.2	7,016.2	33.9	14.3	93.49		-2,075.7	52.9	530.7	482.8	47.87	11.086	
8,400.0	7,041.0	7,015.7	7,013.7	35.6	14.3	92.66		-2,075.7	52.9	437.6	388.0	49.61	8.820	
8,500.0	7,040.4	7,013.1	7,011.1	37.3	14.3	91.81		-2,075.8	53.0	348.4	297.0	51.37	6.782	
8,600.0	7,039.7	7,010.5	7,008.5	39.1	14.3	90.98		-2,075.8	53.0	266.8	213.7	53.13	5.022	
8,700.0	7,039.1	7,008.0	7,006.0	40.8	14.3	90.16		-2,075.8	53.0	202.6	147.7	54.90	3.690	
8,800.0	7,038.5	7,005.5	7,003.5	42.6	14.3	89.35		-2,075.9	53.1	175.7	119.0	56.67	3.100	
8,800.9	7,038.5	7,005.5	7,003.5	42.6	14.3	89.34		-2,075.9	53.1	175.7	119.0	56.69	3.099 CC, ES, SF	
8,900.0	7,037.9	7,003.1	7,001.1	44.4	14.2	88.55		-2,075.9	53.1	201.7	143.3	58.45	3.451	
9,000.0	7,037.3	7,000.7	6,998.7	46.2	14.2	87.77		-2,076.0	53.1	265.5	205.3	60.22	4.409	
9,100.0	7,036.7	6,998.3	6,996.3	48.0	14.2	86.99		-2,076.0	53.1	346.8	284.8	61.99	5.595	
9,200.0	7,036.1	6,995.9	6,993.9	49.8	14.2	86.22		-2,076.1	53.2	435.9	372.2	63.76	6.838	
9,300.0	7,035.5	6,993.6	6,991.6	51.7	14.2	85.46		-2,076.1	53.2	529.0	463.5	65.52	8.074	
9,400.0	7,034.9	6,991.3	6,989.3	53.5	14.2	84.71		-2,076.2	53.2	624.2	556.9	67.27	9.278	
9,500.0	7,034.2	6,989.0	6,987.0	55.3	14.2	83.97		-2,076.2	53.3	720.6	651.6	69.02	10.441	
9,600.0	7,033.6	6,986.7	6,984.7	57.2	14.2	83.25		-2,076.2	53.3	818.0	747.2	70.76	11.559	
9,700.0	7,033.0	6,984.5	6,982.5	59.0	14.2	82.54		-2,076.3	53.3	915.8	843.3	72.50	12.633	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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 - Sarah 1 (Exist) - Wellbore #1 - Wellbore #1														Offset Site Error: 0.0 ft
Survey Program: 100-UNKNOWN														Offset Well Error: 0.0 ft
Reference	Offset	Semi Major Axis		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		
10,500.0	7,028.1	7,000.4	6,998.9	74.0	206.4	90.99	-4,660.8	-73.4	935.9	655.9	279.98	3.343		
10,600.0	7,027.5	6,999.7	6,998.2	75.8	206.4	90.85	-4,660.8	-73.4	841.9	560.0	281.86	2.987		
10,700.0	7,026.9	6,998.9	6,997.4	77.7	206.3	90.70	-4,660.8	-73.4	749.4	465.7	283.73	2.641		
10,800.0	7,026.3	6,998.1	6,996.7	79.6	206.3	90.56	-4,660.8	-73.4	659.1	373.5	285.60	2.308		
10,900.0	7,025.7	6,997.4	6,995.9	81.5	206.3	90.42	-4,660.8	-73.4	572.1	284.6	287.48	1.990		
11,000.0	7,025.1	6,996.7	6,995.2	83.4	206.3	90.28	-4,660.8	-73.4	490.0	200.7	289.35	1.694		
11,100.0	7,024.5	6,995.9	6,994.5	85.2	206.2	90.14	-4,660.8	-73.4	415.9	124.7	291.22	1.428	Level 3	
11,200.0	7,023.9	6,995.2	6,993.8	87.1	206.2	90.00	-4,660.8	-73.4	354.7	61.6	293.10	1.210	Level 2	
11,300.0	7,023.3	6,994.5	6,993.0	89.0	206.2	89.87	-4,660.8	-73.4	314.1	19.1	294.97	1.065	Level 2	
11,385.8	7,022.7	6,993.9	6,992.4	90.6	206.2	89.75	-4,660.8	-73.4	302.1	5.5	296.58	1.019	Level 2, CC, ES, SF	
11,400.0	7,022.6	6,993.8	6,992.3	90.9	206.2	89.74	-4,660.8	-73.4	302.5	5.6	296.85	1.019	Level 2	
11,500.0	7,022.0	6,993.1	6,991.6	92.8	206.1	89.60	-4,660.8	-73.4	323.0	24.3	298.72	1.081	Level 2	
11,600.0	7,021.4	6,992.4	6,990.9	94.7	206.1	89.47	-4,660.8	-73.4	370.3	69.7	300.59	1.232	Level 2	
11,700.0	7,020.8	6,991.7	6,990.3	96.6	206.1	89.34	-4,660.8	-73.4	435.9	133.4	302.46	1.441	Level 3	
11,800.0	7,020.2	6,991.1	6,989.6	98.5	206.1	89.21	-4,660.8	-73.4	512.7	208.3	304.34	1.685		
11,900.0	7,019.6	6,990.4	6,988.9	100.4	206.0	89.09	-4,660.8	-73.3	596.4	290.2	306.21	1.948		
12,000.0	7,019.0	6,989.7	6,988.3	102.3	206.0	88.96	-4,660.8	-73.3	684.5	376.4	308.08	2.222		
12,100.0	7,018.4	6,989.1	6,987.6	104.2	206.0	88.84	-4,660.8	-73.3	775.4	465.5	309.95	2.502		
12,200.0	7,017.8	6,988.4	6,986.9	106.1	206.0	88.71	-4,660.8	-73.3	868.4	556.6	311.82	2.785		
12,300.0	7,017.1	6,987.8	6,986.3	108.0	206.0	88.59	-4,660.8	-73.3	962.8	649.1	313.69	3.069		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Bernhardt Farms 13W-243
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 13W-243	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')

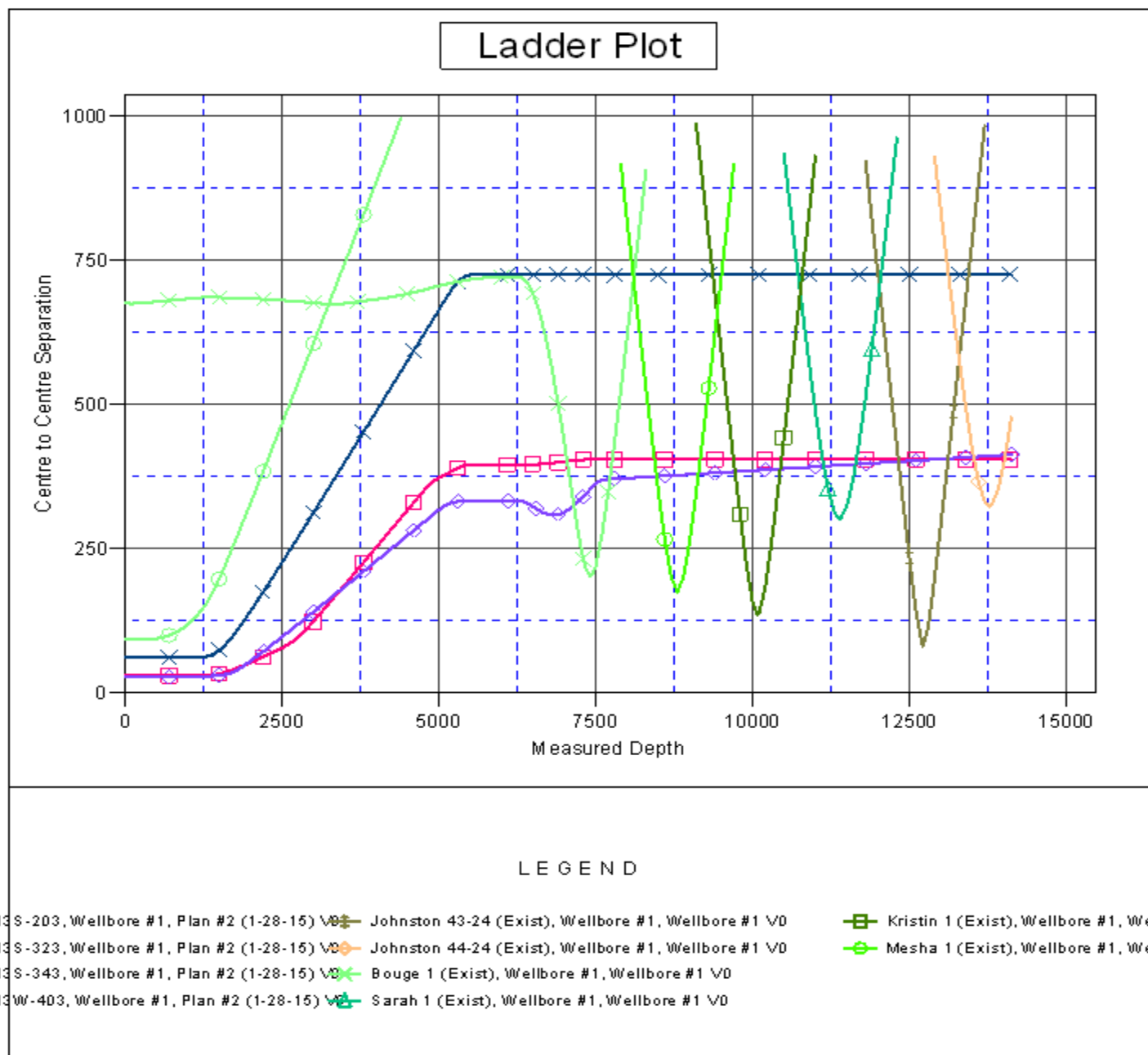
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Bernhardt Farms 13W-243

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 13W-243
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 13W-243	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 13W-243
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.43°

