PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Jacobucci 32K-443**

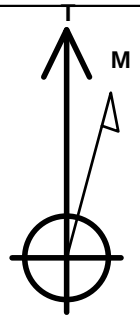
Surface Location: Jacobucci 1N67W32K Pad Sec.32-T1N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 5045.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1245938.81	3162440.36	40.007030	-104.920110	

Original Well Elev WELL @ 5060.0ft (Original Well Elev)

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2437'FSL & 1008'FWL, Sec.32	1.0	0.0	0.0	Point
BHL 500'FSL & 75'FWL, Sec. 5	7859.0	-7038.0	-470.8	Point



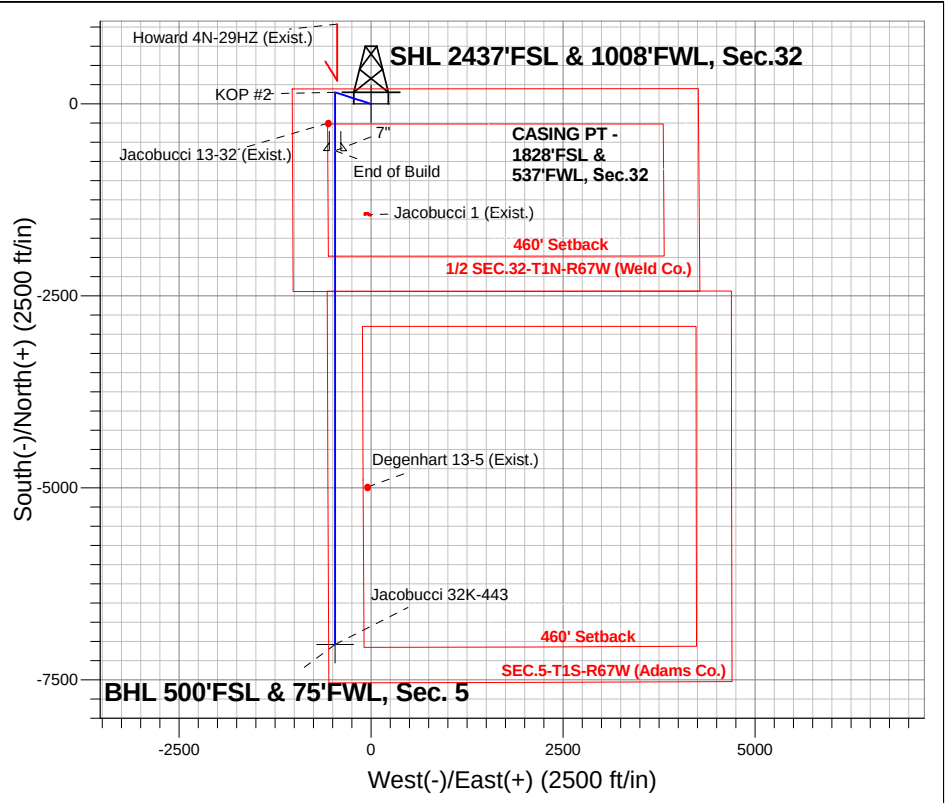
Azimuths to True North
Magnetic North: 8.49°

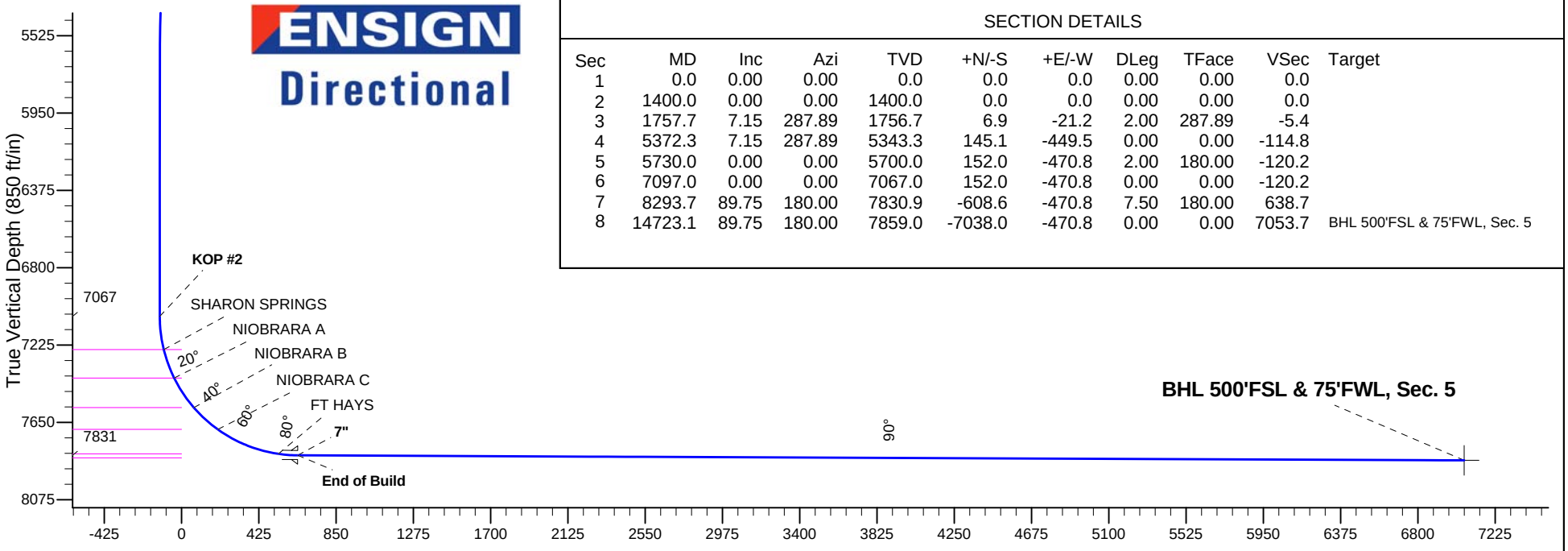
Magnetic Field
Strength: 52578.0snT
Dip Angle: 66.60°
Date: 7/28/2014
Model: IGRF2010

Jacobucci 1N67W32K Pad Sec.32-T1N-R67W
Jacobucci 32K-443
Plan #1 (7-25-14)

ANNOTATIONS

TVD	MD	Annotation
1400.0	1400.0	KOP
7067.0	7097.0	KOP #2
7830.9	8293.7	End of Build





SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1400.0	0.00	0.00	1400.0	0.0	0.0	0.00	0.00	0.0	
3	1757.7	7.15	287.89	1756.7	6.9	-21.2	2.00	287.89	-5.4	
4	5372.3	7.15	287.89	5343.3	145.1	-449.5	0.00	0.00	-114.8	
5	5730.0	0.00	0.00	5700.0	152.0	-470.8	2.00	180.00	-120.2	
6	7097.0	0.00	0.00	7067.0	152.0	-470.8	0.00	0.00	-120.2	
7	8293.7	89.75	180.00	7830.9	-608.6	-470.8	7.50	180.00	638.7	
8	14723.1	89.75	180.00	7859.0	-7038.0	-470.8	0.00	0.00	7053.7	BHL 500'FSL & 75'FWL, Sec. 5

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.32-T1N-R67W
Jacobucci 1N67W32K Pad Sec.32-T1N-R67W
Jacobucci 32K-443

Wellbore #1

Plan: Plan #1 (7-25-14)

Standard Planning Report

01 August, 2014

PDC ENERGY
Growing E&P Value

Database:	landmark	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Project:	SEC.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**North Reference:**	True
Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

Project SEC.32-T1N-R67W, Weld County, CO

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site Jacobucci 1N67W32K Pad Sec.32-T1N-R67W

Site Position:		**Northing:**	1,245,939.37 ft	**Latitude:**	40.007030
From:	Lat/Long	**Easting:**	3,162,524.40 ft	**Longitude:**	-104.919810
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.37 °

Well Jacobucci 32K-443

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,245,938.81 ft	**Latitude:**	40.007030
	+E/-W	-84.0 ft	**Easting:**	3,162,440.36 ft	**Longitude:**	-104.920110
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	5,045.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/28/2014	8.49	66.60	52,578

Design Plan #1 (7-25-14)

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	183.83

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	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,757.7	7.15	287.89	1,756.7	6.9	-21.2	2.00	2.00	0.00	287.89	
5,372.3	7.15	287.89	5,343.3	145.1	-449.5	0.00	0.00	0.00	0.00	
5,730.0	0.00	0.00	5,700.0	152.0	-470.8	2.00	-2.00	0.00	180.00	
7,097.0	0.00	0.00	7,067.0	152.0	-470.8	0.00	0.00	0.00	0.00	
8,293.7	89.75	180.00	7,830.9	-608.6	-470.8	7.50	7.50	0.00	180.00	
14,723.1	89.75	180.00	7,859.0	-7,038.0	-470.8	0.00	0.00	0.00	0.00	BHL 500'FSL & 75'I

Database:	landmark	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Project:	SEC.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**North Reference:**	True
Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP									
1,500.0	2.00	287.89	1,500.0	0.5	-1.7	-0.4	2.00	2.00	0.00
1,600.0	4.00	287.89	1,599.8	2.1	-6.6	-1.7	2.00	2.00	0.00
1,700.0	6.00	287.89	1,699.5	4.8	-14.9	-3.8	2.00	2.00	0.00
1,757.7	7.15	287.89	1,756.7	6.9	-21.2	-5.4	2.00	2.00	0.00
1,800.0	7.15	287.89	1,798.7	8.5	-26.2	-6.7	0.00	0.00	0.00
1,900.0	7.15	287.89	1,898.0	12.3	-38.1	-9.7	0.00	0.00	0.00
2,000.0	7.15	287.89	1,997.2	16.1	-49.9	-12.8	0.00	0.00	0.00
2,100.0	7.15	287.89	2,096.4	19.9	-61.8	-15.8	0.00	0.00	0.00
2,200.0	7.15	287.89	2,195.6	23.8	-73.6	-18.8	0.00	0.00	0.00
2,300.0	7.15	287.89	2,294.9	27.6	-85.5	-21.8	0.00	0.00	0.00
2,400.0	7.15	287.89	2,394.1	31.4	-97.3	-24.9	0.00	0.00	0.00
2,500.0	7.15	287.89	2,493.3	35.3	-109.2	-27.9	0.00	0.00	0.00
2,600.0	7.15	287.89	2,592.5	39.1	-121.0	-30.9	0.00	0.00	0.00
2,700.0	7.15	287.89	2,691.7	42.9	-132.9	-33.9	0.00	0.00	0.00
2,800.0	7.15	287.89	2,791.0	46.7	-144.7	-37.0	0.00	0.00	0.00
2,900.0	7.15	287.89	2,890.2	50.6	-156.6	-40.0	0.00	0.00	0.00
3,000.0	7.15	287.89	2,989.4	54.4	-168.4	-43.0	0.00	0.00	0.00
3,100.0	7.15	287.89	3,088.6	58.2	-180.3	-46.0	0.00	0.00	0.00
3,200.0	7.15	287.89	3,187.8	62.0	-192.1	-49.1	0.00	0.00	0.00
3,300.0	7.15	287.89	3,287.1	65.9	-204.0	-52.1	0.00	0.00	0.00
3,400.0	7.15	287.89	3,386.3	69.7	-215.8	-55.1	0.00	0.00	0.00
3,500.0	7.15	287.89	3,485.5	73.5	-227.7	-58.2	0.00	0.00	0.00
3,600.0	7.15	287.89	3,584.7	77.3	-239.5	-61.2	0.00	0.00	0.00
3,700.0	7.15	287.89	3,684.0	81.2	-251.4	-64.2	0.00	0.00	0.00
3,800.0	7.15	287.89	3,783.2	85.0	-263.2	-67.2	0.00	0.00	0.00
3,900.0	7.15	287.89	3,882.4	88.8	-275.1	-70.3	0.00	0.00	0.00
4,000.0	7.15	287.89	3,981.6	92.6	-286.9	-73.3	0.00	0.00	0.00
4,100.0	7.15	287.89	4,080.8	96.5	-298.8	-76.3	0.00	0.00	0.00
4,200.0	7.15	287.89	4,180.1	100.3	-310.6	-79.3	0.00	0.00	0.00
4,300.0	7.15	287.89	4,279.3	104.1	-322.5	-82.4	0.00	0.00	0.00
4,400.0	7.15	287.89	4,378.5	107.9	-334.3	-85.4	0.00	0.00	0.00
4,500.0	7.15	287.89	4,477.7	111.8	-346.2	-88.4	0.00	0.00	0.00
4,522.4	7.15	287.89	4,500.0	112.6	-348.8	-89.1	0.00	0.00	0.00
PARKMAN									
4,600.0	7.15	287.89	4,577.0	115.6	-358.0	-91.4	0.00	0.00	0.00
4,700.0	7.15	287.89	4,676.2	119.4	-369.9	-94.5	0.00	0.00	0.00

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Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**North Reference:**	True
Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,800.0	7.15	287.89	4,775.4	123.3	-381.7	-97.5	0.00	0.00	0.00
4,900.0	7.15	287.89	4,874.6	127.1	-393.6	-100.5	0.00	0.00	0.00
4,925.6	7.15	287.89	4,900.0	128.1	-396.6	-101.3	0.00	0.00	0.00
SUSSEX									
5,000.0	7.15	287.89	4,973.8	130.9	-405.4	-103.6	0.00	0.00	0.00
5,100.0	7.15	287.89	5,073.1	134.7	-417.3	-106.6	0.00	0.00	0.00
5,200.0	7.15	287.89	5,172.3	138.6	-429.1	-109.6	0.00	0.00	0.00
5,300.0	7.15	287.89	5,271.5	142.4	-441.0	-112.6	0.00	0.00	0.00
5,372.3	7.15	287.89	5,343.3	145.1	-449.5	-114.8	0.00	0.00	0.00
5,379.1	7.02	287.89	5,350.0	145.4	-450.3	-115.0	2.00	-2.00	0.00
SHANNON									
5,400.0	6.60	287.89	5,370.7	146.2	-452.7	-115.6	2.00	-2.00	0.00
5,500.0	4.60	287.89	5,470.3	149.2	-462.0	-118.0	2.00	-2.00	0.00
5,600.0	2.60	287.89	5,570.1	151.1	-468.0	-119.5	2.00	-2.00	0.00
5,700.0	0.60	287.89	5,670.0	152.0	-470.6	-120.2	2.00	-2.00	0.00
5,730.0	0.00	0.00	5,700.0	152.0	-470.8	-120.2	2.00	-2.00	0.00
5,800.0	0.00	0.00	5,770.0	152.0	-470.8	-120.2	0.00	0.00	0.00
5,900.0	0.00	0.00	5,870.0	152.0	-470.8	-120.2	0.00	0.00	0.00
6,000.0	0.00	0.00	5,970.0	152.0	-470.8	-120.2	0.00	0.00	0.00
6,100.0	0.00	0.00	6,070.0	152.0	-470.8	-120.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,170.0	152.0	-470.8	-120.2	0.00	0.00	0.00
6,300.0	0.00	0.00	6,270.0	152.0	-470.8	-120.2	0.00	0.00	0.00
6,400.0	0.00	0.00	6,370.0	152.0	-470.8	-120.2	0.00	0.00	0.00
6,500.0	0.00	0.00	6,470.0	152.0	-470.8	-120.2	0.00	0.00	0.00
6,600.0	0.00	0.00	6,570.0	152.0	-470.8	-120.2	0.00	0.00	0.00
6,700.0	0.00	0.00	6,670.0	152.0	-470.8	-120.2	0.00	0.00	0.00
6,800.0	0.00	0.00	6,770.0	152.0	-470.8	-120.2	0.00	0.00	0.00
6,900.0	0.00	0.00	6,870.0	152.0	-470.8	-120.2	0.00	0.00	0.00
7,000.0	0.00	0.00	6,970.0	152.0	-470.8	-120.2	0.00	0.00	0.00
7,097.0	0.00	0.00	7,067.0	152.0	-470.8	-120.2	0.00	0.00	0.00
KOP #2									
7,100.0	0.23	180.00	7,070.0	152.0	-470.8	-120.2	7.51	7.51	0.00
7,200.0	7.73	180.00	7,169.7	145.1	-470.8	-113.3	7.50	7.50	0.00
7,281.8	13.86	180.00	7,250.0	129.8	-470.8	-98.1	7.50	7.50	0.00
SHARON SPRINGS									
7,300.0	15.23	180.00	7,267.6	125.2	-470.8	-93.5	7.50	7.50	0.00
7,400.0	22.73	180.00	7,362.1	92.7	-470.8	-61.1	7.50	7.50	0.00
7,448.2	26.34	180.00	7,406.0	72.7	-470.8	-41.1	7.50	7.50	0.00
NIOBRARA A									
7,500.0	30.23	180.00	7,451.6	48.1	-470.8	-16.6	7.50	7.50	0.00
7,600.0	37.73	180.00	7,534.4	-7.7	-470.8	39.1	7.50	7.50	0.00
7,644.7	41.08	180.00	7,569.0	-36.1	-470.8	67.4	7.50	7.50	0.00
NIOBRARA B									
7,700.0	45.23	180.00	7,609.3	-73.9	-470.8	105.1	7.50	7.50	0.00
7,800.0	52.73	180.00	7,674.9	-149.3	-470.8	180.4	7.50	7.50	0.00
7,823.8	54.51	180.00	7,689.0	-168.4	-470.8	199.4	7.50	7.50	0.00
NIOBRARA C									
7,900.0	60.23	180.00	7,730.1	-232.6	-470.8	263.5	7.50	7.50	0.00
8,000.0	67.73	180.00	7,773.9	-322.4	-470.8	353.1	7.50	7.50	0.00
8,100.0	75.23	180.00	7,805.7	-417.1	-470.8	447.6	7.50	7.50	0.00
8,186.7	81.73	180.00	7,823.0	-502.0	-470.8	532.3	7.50	7.50	0.00
FT HAYS									

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Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**North Reference:**	True
Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,200.0	82.73	180.00	7,824.8	-515.2	-470.8	545.5	7.50	7.50	0.00
8,293.7	89.75	180.00	7,830.9	-608.6	-470.8	638.7	7.50	7.50	0.00
End of Build - 7"									
8,300.0	89.75	180.00	7,831.0	-614.9	-470.8	645.0	0.00	0.00	0.00
8,400.0	89.75	180.00	7,831.4	-714.9	-470.8	744.8	0.00	0.00	0.00
8,500.0	89.75	180.00	7,831.8	-814.9	-470.8	844.5	0.00	0.00	0.00
8,600.0	89.75	180.00	7,832.3	-914.9	-470.8	944.3	0.00	0.00	0.00
8,700.0	89.75	180.00	7,832.7	-1,014.9	-470.8	1,044.1	0.00	0.00	0.00
8,800.0	89.75	180.00	7,833.2	-1,114.9	-470.8	1,143.9	0.00	0.00	0.00
8,900.0	89.75	180.00	7,833.6	-1,214.9	-470.8	1,243.6	0.00	0.00	0.00
9,000.0	89.75	180.00	7,834.0	-1,314.9	-470.8	1,343.4	0.00	0.00	0.00
9,100.0	89.75	180.00	7,834.5	-1,414.9	-470.8	1,443.2	0.00	0.00	0.00
9,200.0	89.75	180.00	7,834.9	-1,514.9	-470.8	1,543.0	0.00	0.00	0.00
9,300.0	89.75	180.00	7,835.3	-1,614.9	-470.8	1,642.8	0.00	0.00	0.00
9,400.0	89.75	180.00	7,835.8	-1,714.9	-470.8	1,742.5	0.00	0.00	0.00
9,500.0	89.75	180.00	7,836.2	-1,814.9	-470.8	1,842.3	0.00	0.00	0.00
9,600.0	89.75	180.00	7,836.6	-1,914.9	-470.8	1,942.1	0.00	0.00	0.00
9,700.0	89.75	180.00	7,837.1	-2,014.9	-470.8	2,041.9	0.00	0.00	0.00
9,800.0	89.75	180.00	7,837.5	-2,114.9	-470.8	2,141.6	0.00	0.00	0.00
9,900.0	89.75	180.00	7,838.0	-2,214.9	-470.8	2,241.4	0.00	0.00	0.00
10,000.0	89.75	180.00	7,838.4	-2,314.9	-470.8	2,341.2	0.00	0.00	0.00
10,100.0	89.75	180.00	7,838.8	-2,414.9	-470.8	2,441.0	0.00	0.00	0.00
10,200.0	89.75	180.00	7,839.3	-2,514.9	-470.8	2,540.7	0.00	0.00	0.00
10,300.0	89.75	180.00	7,839.7	-2,614.9	-470.8	2,640.5	0.00	0.00	0.00
10,400.0	89.75	180.00	7,840.1	-2,714.9	-470.8	2,740.3	0.00	0.00	0.00
10,500.0	89.75	180.00	7,840.6	-2,814.9	-470.8	2,840.1	0.00	0.00	0.00
10,600.0	89.75	180.00	7,841.0	-2,914.9	-470.8	2,939.8	0.00	0.00	0.00
10,700.0	89.75	180.00	7,841.4	-3,014.9	-470.8	3,039.6	0.00	0.00	0.00
10,800.0	89.75	180.00	7,841.9	-3,114.9	-470.8	3,139.4	0.00	0.00	0.00
10,900.0	89.75	180.00	7,842.3	-3,214.9	-470.8	3,239.2	0.00	0.00	0.00
11,000.0	89.75	180.00	7,842.8	-3,314.9	-470.8	3,338.9	0.00	0.00	0.00
11,100.0	89.75	180.00	7,843.2	-3,414.9	-470.8	3,438.7	0.00	0.00	0.00
11,200.0	89.75	180.00	7,843.6	-3,514.9	-470.8	3,538.5	0.00	0.00	0.00
11,300.0	89.75	180.00	7,844.1	-3,614.9	-470.8	3,638.3	0.00	0.00	0.00
11,400.0	89.75	180.00	7,844.5	-3,714.9	-470.8	3,738.1	0.00	0.00	0.00
11,500.0	89.75	180.00	7,844.9	-3,814.9	-470.8	3,837.8	0.00	0.00	0.00
11,514.5	89.75	180.00	7,845.0	-3,829.5	-470.8	3,852.3	0.00	0.00	0.00
CODELL									
11,600.0	89.75	180.00	7,845.4	-3,914.9	-470.8	3,937.6	0.00	0.00	0.00
11,700.0	89.75	180.00	7,845.8	-4,014.9	-470.8	4,037.4	0.00	0.00	0.00
11,800.0	89.75	180.00	7,846.2	-4,114.9	-470.8	4,137.2	0.00	0.00	0.00
11,900.0	89.75	180.00	7,846.7	-4,214.9	-470.8	4,236.9	0.00	0.00	0.00
12,000.0	89.75	180.00	7,847.1	-4,314.9	-470.8	4,336.7	0.00	0.00	0.00
12,100.0	89.75	180.00	7,847.6	-4,414.9	-470.8	4,436.5	0.00	0.00	0.00
12,200.0	89.75	180.00	7,848.0	-4,514.9	-470.8	4,536.3	0.00	0.00	0.00
12,300.0	89.75	180.00	7,848.4	-4,614.9	-470.8	4,636.0	0.00	0.00	0.00
12,400.0	89.75	180.00	7,848.9	-4,714.9	-470.8	4,735.8	0.00	0.00	0.00
12,500.0	89.75	180.00	7,849.3	-4,814.9	-470.8	4,835.6	0.00	0.00	0.00
12,600.0	89.75	180.00	7,849.7	-4,914.9	-470.8	4,935.4	0.00	0.00	0.00
12,700.0	89.75	180.00	7,850.2	-5,014.9	-470.8	5,035.1	0.00	0.00	0.00
12,800.0	89.75	180.00	7,850.6	-5,114.9	-470.8	5,134.9	0.00	0.00	0.00
12,900.0	89.75	180.00	7,851.0	-5,214.9	-470.8	5,234.7	0.00	0.00	0.00

Database:	landmark	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Project:	SEC.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**North Reference:**	True
Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
13,000.0	89.75	180.00	7,851.5	-5,314.9	-470.8	5,334.5	0.00	0.00	0.00
13,100.0	89.75	180.00	7,851.9	-5,414.9	-470.8	5,434.2	0.00	0.00	0.00
13,200.0	89.75	180.00	7,852.4	-5,514.9	-470.8	5,534.0	0.00	0.00	0.00
13,300.0	89.75	180.00	7,852.8	-5,614.9	-470.8	5,633.8	0.00	0.00	0.00
13,400.0	89.75	180.00	7,853.2	-5,714.9	-470.8	5,733.6	0.00	0.00	0.00
13,500.0	89.75	180.00	7,853.7	-5,814.9	-470.8	5,833.3	0.00	0.00	0.00
13,600.0	89.75	180.00	7,854.1	-5,914.9	-470.8	5,933.1	0.00	0.00	0.00
13,700.0	89.75	180.00	7,854.5	-6,014.9	-470.8	6,032.9	0.00	0.00	0.00
13,800.0	89.75	180.00	7,855.0	-6,114.9	-470.8	6,132.7	0.00	0.00	0.00
13,900.0	89.75	180.00	7,855.4	-6,214.9	-470.8	6,232.5	0.00	0.00	0.00
14,000.0	89.75	180.00	7,855.8	-6,314.9	-470.8	6,332.2	0.00	0.00	0.00
14,100.0	89.75	180.00	7,856.3	-6,414.9	-470.8	6,432.0	0.00	0.00	0.00
14,200.0	89.75	180.00	7,856.7	-6,514.9	-470.8	6,531.8	0.00	0.00	0.00
14,300.0	89.75	180.00	7,857.2	-6,614.9	-470.8	6,631.6	0.00	0.00	0.00
14,400.0	89.75	180.00	7,857.6	-6,714.9	-470.8	6,731.3	0.00	0.00	0.00
14,500.0	89.75	180.00	7,858.0	-6,814.9	-470.8	6,831.1	0.00	0.00	0.00
14,600.0	89.75	180.00	7,858.5	-6,914.9	-470.8	6,930.9	0.00	0.00	0.00
14,700.0	89.75	180.00	7,858.9	-7,014.9	-470.8	7,030.7	0.00	0.00	0.00
14,723.1	89.75	180.00	7,859.0	-7,038.0	-470.8	7,053.7	0.00	0.00	0.00

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
8,293.7	7,830.9	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,522.4	4,500.0	PARKMAN		0.00	
4,925.6	4,900.0	SUSSEX		0.00	
5,379.1	5,350.0	SHANNON		0.00	
7,281.8	7,250.0	SHARON SPRINGS		0.00	
7,448.2	7,406.0	NIOBRARA A		0.00	
7,644.7	7,569.0	NIOBRARA B		0.00	
7,823.8	7,689.0	NIOBRARA C		0.00	
8,186.7	7,823.0	FT HAYS		0.00	
11,514.5	7,845.0	CODELL		0.00	

Database:	landmark	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Project:	SEC.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**North Reference:**	True
Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,400.0	1,400.0	0.0	0.0	KOP
7,097.0	7,067.0	6.9	-21.2	KOP #2
8,293.7	7,830.9	145.1	-449.5	End of Build

ENSIGN Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.32-T1N-R67W
Jacobucci 1N67W32K Pad Sec.32-T1N-R67W
Jacobucci 32K-443

Wellbore #1
Plan #1 (7-25-14)

Anticollision Report

01 August, 2014

PDC ENERGY
Growing E&P Value

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Reference Plan #1 (7-25-14)

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	**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** 8/1/2014

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	14,723.1	Plan #1 (7-25-14) (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Existings Sec.32-T1N-R67W						
Degenhart 13-5 (Exist.) - Wellbore #1 - Wellbore #1	12,674.7	7,910.1	423.7	168.2	1.658	CC, ES
Degenhart 13-5 (Exist.) - Wellbore #1 - Wellbore #1	12,700.0	7,910.2	424.4	168.5	1.658	SF
Howard 4N-29HZ (Exist.) - Wellbore #1 - Wellbore #1	5,752.5	5,716.8	155.1	52.1	1.506	CC
Howard 4N-29HZ (Exist.) - Wellbore #1 - Wellbore #1	7,100.0	7,059.0	155.5	2.4	1.015	Level 2, ES, SF
Jacobucci 1 (Exist.) - Wellbore #1 - Wellbore #1	9,122.3	7,801.6	392.2	342.1	7.838	CC, ES
Jacobucci 1 (Exist.) - Wellbore #1 - Wellbore #1	9,200.0	7,802.3	399.8	348.5	7.791	SF
Jacobucci 13-32 (Exist.) - Wellbore #1 - Wellbore #1	7,919.4	7,712.5	88.1	-83.7	0.513	Level 1, CC, ES, SF
Jacobucci 1N67W32K Pad Sec.32-T1N-R67W						
Jacobucci 32K-243 - Wellbore #1 - Plan #1 (7-25-14)	1,400.0	1,400.0	22.4	16.3	3.693	CC, ES
Jacobucci 32K-243 - Wellbore #1 - Plan #1 (7-25-14)	14,723.1	14,484.1	371.4	162.6	1.779	SF
Jacobucci 32K-323 - Wellbore #1 - Plan #1 (7-24-14)	964.9	969.9	84.0	79.9	20.378	CC
Jacobucci 32K-323 - Wellbore #1 - Plan #1 (7-24-14)	1,000.0	1,004.9	84.0	79.8	19.632	ES
Jacobucci 32K-323 - Wellbore #1 - Plan #1 (7-24-14)	1,200.0	1,200.0	90.9	85.7	17.646	SF
Jacobucci 32K-403 - Wellbore #1 - Plan #1 (7-25-14)	1,400.0	1,403.0	53.2	47.2	8.761	CC, ES
Jacobucci 32K-403 - Wellbore #1 - Plan #1 (7-25-14)	14,723.1	14,700.0	610.9	339.2	2.248	SF

Offset Design Existings Sec.32-T1N-R67W - Degenhart 13-5 (Exist.) - Wellbore #1 - Wellbore #1

Survey Program: 8644-UNKNOWN

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
11,800.0	7,846.2	7,906.2	7,906.2	81.2	158.1	-89.48	-4,989.6	-47.1	971.9	733.0	238.97	4.067	
11,900.0	7,846.7	7,906.7	7,906.7	83.1	158.1	-89.54	-4,989.6	-47.1	883.0	642.2	240.85	3.666	
12,000.0	7,847.1	7,907.1	7,907.1	84.9	158.1	-89.60	-4,989.6	-47.1	796.7	554.0	242.74	3.282	
12,100.0	7,847.6	7,907.6	7,907.6	86.8	158.2	-89.66	-4,989.6	-47.1	714.0	469.4	244.63	2.919	
12,200.0	7,848.0	7,908.0	7,908.0	88.7	158.2	-89.72	-4,989.6	-47.1	636.3	389.8	246.52	2.581	
12,300.0	7,848.4	7,908.4	7,908.4	90.5	158.2	-89.78	-4,989.6	-47.1	565.6	317.2	248.41	2.277	
12,400.0	7,848.9	7,908.9	7,908.9	92.4	158.2	-89.84	-4,989.6	-47.1	505.0	254.7	250.30	2.017	
12,500.0	7,849.3	7,909.3	7,909.3	94.3	158.2	-89.90	-4,989.6	-47.1	458.3	206.1	252.20	1.817	
12,600.0	7,849.7	7,909.7	7,909.7	96.2	158.2	-89.96	-4,989.6	-47.1	430.2	176.1	254.09	1.693	
12,674.7	7,850.1	7,910.1	7,910.1	97.6	158.2	-90.00	-4,989.6	-47.1	423.7	168.2	255.51	1.658	CC, ES
12,700.0	7,850.2	7,910.2	7,910.2	98.1	158.2	-90.01	-4,989.6	-47.1	424.4	168.5	255.99	1.658	SF

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Existings Sec.32-T1N-R67W - Degenhart 13-5 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 8644-UNKNOWN

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,800.0	7,850.6	7,910.6	7,910.6	99.9	158.2	-90.07	-4,989.6	-47.1	441.8	183.9	257.88	1.713	
12,900.0	7,851.0	7,911.0	7,911.0	101.8	158.2	-90.13	-4,989.6	-47.1	479.8	220.1	259.78	1.847	
13,000.0	7,851.5	7,911.5	7,911.5	103.7	158.2	-90.19	-4,989.6	-47.1	534.1	272.5	261.68	2.041	
13,100.0	7,851.9	7,911.9	7,911.9	105.6	158.2	-90.25	-4,989.6	-47.1	600.3	336.7	263.58	2.277	
13,200.0	7,852.4	7,912.4	7,912.4	107.5	158.2	-90.31	-4,989.6	-47.1	674.8	409.4	265.48	2.542	
13,300.0	7,852.8	7,912.8	7,912.8	109.4	158.3	-90.37	-4,989.6	-47.1	755.3	487.9	267.38	2.825	
13,400.0	7,853.2	7,913.2	7,913.2	111.3	158.3	-90.43	-4,989.6	-47.1	839.9	570.7	269.28	3.119	
13,500.0	7,853.7	7,913.7	7,913.7	113.1	158.3	-90.49	-4,989.6	-47.1	927.7	656.5	271.18	3.421	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Existings Sec.32-T1N-R67W - Howard 4N-29HZ (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-UNKNOWN

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-47.19	554.5	-598.6	816.5				
100.0	100.0	71.0	71.0	0.1	1.4	-47.19	554.5	-598.6	816.0	814.4	1.53	532.456	
200.0	200.0	171.0	171.0	0.3	4.8	-47.19	554.5	-598.6	816.0	810.8	5.18	157.607	
300.0	300.0	271.0	271.0	0.6	8.8	-47.19	554.5	-598.6	816.0	806.6	9.40	86.786	
400.0	400.0	371.0	371.0	0.8	12.8	-47.19	554.5	-598.6	816.0	802.3	13.63	59.879	
500.0	500.0	471.0	471.0	1.0	16.8	-47.19	554.5	-598.6	816.0	798.1	17.85	45.708	
600.0	600.0	571.0	571.0	1.2	20.8	-47.19	554.5	-598.6	816.0	793.9	22.08	36.961	
700.0	700.0	671.0	671.0	1.5	24.8	-47.19	554.5	-598.6	816.0	789.7	26.30	31.024	
800.0	800.0	771.0	771.0	1.7	28.8	-47.19	554.5	-598.6	816.0	785.4	30.53	26.730	
900.0	900.0	871.0	871.0	1.9	32.8	-47.19	554.5	-598.6	816.0	781.2	34.75	23.480	
1,000.0	1,000.0	971.0	971.0	2.1	36.8	-47.19	554.5	-598.6	816.0	777.0	38.98	20.935	
1,100.0	1,100.0	1,071.0	1,071.0	2.4	40.8	-47.19	554.5	-598.6	816.0	772.8	43.20	18.888	
1,200.0	1,200.0	1,171.0	1,171.0	2.6	44.8	-47.19	554.5	-598.6	816.0	768.5	47.42	17.205	
1,300.0	1,300.0	1,271.0	1,271.0	2.8	48.8	-47.19	554.5	-598.6	816.0	764.3	51.65	15.798	
1,400.0	1,400.0	1,371.0	1,371.0	3.0	52.8	-47.19	554.5	-598.6	816.0	760.1	55.87	14.603	
1,500.0	1,500.0	1,497.8	1,497.8	3.3	54.3	24.97	553.0	-597.8	813.2	755.7	57.53	14.135	
1,600.0	1,599.8	1,634.5	1,634.2	3.5	49.9	25.13	546.3	-593.6	802.9	749.6	53.29	15.067	
1,700.0	1,699.5	1,768.8	1,767.8	3.7	45.8	25.38	534.4	-586.1	784.9	735.7	49.24	15.940	
1,800.0	1,798.7	1,899.6	1,897.1	3.9	42.1	25.63	517.6	-575.6	759.8	714.1	45.62	16.653	
1,900.0	1,898.0	1,995.8	1,991.8	4.2	39.8	25.70	503.4	-566.7	732.0	688.7	43.31	16.901	
2,000.0	1,997.2	2,091.9	2,086.4	4.4	37.7	25.78	489.3	-557.9	704.2	663.0	41.21	17.090	
2,100.0	2,096.4	2,187.9	2,181.0	4.7	36.1	25.86	475.2	-549.1	676.4	637.1	39.35	17.191	
2,200.0	2,195.6	2,284.0	2,275.6	5.0	34.9	25.95	461.0	-540.2	648.7	610.9	37.78	17.169	
2,300.0	2,294.9	2,380.0	2,370.2	5.3	34.2	26.05	446.9	-531.4	620.9	584.3	36.55	16.986	
2,400.0	2,394.1	2,476.1	2,464.8	5.5	34.0	26.16	432.7	-522.5	593.1	557.4	35.71	16.610	
2,500.0	2,493.3	2,572.2	2,559.4	5.8	34.3	26.28	418.6	-513.7	565.3	530.1	35.29	16.020	
2,600.0	2,592.5	2,668.2	2,654.0	6.1	35.1	26.41	404.4	-504.9	537.6	502.3	35.33	15.218	
2,700.0	2,691.7	2,764.3	2,748.6	6.4	36.4	26.56	390.3	-496.0	509.8	474.0	35.82	14.232	
2,800.0	2,791.0	2,860.3	2,843.2	6.7	38.1	26.72	376.1	-487.2	482.1	445.3	36.77	13.110	
2,900.0	2,890.2	2,956.4	2,937.8	7.0	40.2	26.91	362.0	-478.3	454.3	416.2	38.14	11.913	
3,000.0	2,989.4	3,052.5	3,032.4	7.3	42.6	27.11	347.9	-469.5	426.6	386.7	39.87	10.698	
3,100.0	3,088.6	3,142.3	3,121.0	7.6	45.0	27.35	334.9	-461.4	399.2	357.4	41.85	9.540	
3,200.0	3,187.8	3,227.9	3,205.7	7.9	47.4	27.68	324.5	-454.9	374.4	330.4	43.94	8.521	
3,300.0	3,287.1	3,314.7	3,291.9	8.2	49.8	28.15	316.2	-449.7	352.4	306.2	46.27	7.617	
3,400.0	3,386.3	3,400.0	3,376.9	8.6	52.2	28.76	310.2	-445.9	333.4	284.7	48.74	6.841	
3,500.0	3,485.5	3,491.2	3,468.0	8.9	54.7	29.58	306.1	-443.4	317.4	265.9	51.56	6.156	
3,600.0	3,584.7	3,580.6	3,557.4	9.2	55.6	30.56	304.5	-442.4	304.6	251.8	52.81	5.768	
3,700.0	3,684.0	3,678.2	3,655.0	9.5	55.1	31.77	304.5	-442.4	293.8	241.3	52.51	5.595	
3,800.0	3,783.2	3,777.4	3,754.2	9.8	54.5	33.09	304.5	-442.4	283.3	231.1	52.23	5.424	
3,900.0	3,882.4	3,876.6	3,853.4	10.1	54.2	34.51	304.5	-442.4	272.9	220.6	52.33	5.216	
4,000.0	3,981.6	3,975.9	3,952.6	10.4	54.2	36.05	304.5	-442.4	262.7	210.0	52.78	4.978	
4,100.0	4,080.8	4,075.1	4,051.8	10.7	54.5	37.70	304.5	-442.4	252.8	199.1	53.67	4.710	
4,200.0	4,180.1	4,174.3	4,151.1	11.1	55.1	39.49	304.5	-442.4	243.0	188.1	54.91	4.425	
4,300.0	4,279.3	4,273.5	4,250.3	11.4	55.9	41.43	304.5	-442.4	233.5	177.0	56.52	4.131	
4,400.0	4,378.5	4,372.8	4,349.5	11.7	57.0	43.53	304.5	-442.4	224.3	165.8	58.47	3.835	
4,500.0	4,477.7	4,472.0	4,448.7	12.0	58.4	45.80	304.5	-442.4	215.4	154.6	60.73	3.546	
4,600.0	4,577.0	4,571.2	4,548.0	12.3	60.0	48.26	304.5	-442.4	206.8	143.6	63.28	3.269	
4,700.0	4,676.2	4,670.4	4,647.2	12.6	61.8	50.93	304.5	-442.4	198.7	132.7	66.09	3.007	
4,800.0	4,775.4	4,769.6	4,746.4	13.0	63.8	53.82	304.5	-442.4	191.1	122.0	69.12	2.765	
4,900.0	4,874.6	4,868.9	4,845.6	13.3	66.0	56.93	304.5	-442.4	184.0	111.6	72.36	2.543	
5,000.0	4,973.8	4,968.1	4,944.8	13.6	68.3	60.28	304.5	-442.4	177.5	101.7	75.77	2.342	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Existings Sec.32-T1N-R67W - Howard 4N-29HZ (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-UNKNOWN

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,073.1	5,067.3	5,044.1	13.9	70.8	63.87	304.5	-442.4	171.6	92.3	79.33	2.163	
5,200.0	5,172.3	5,166.5	5,143.3	14.2	73.5	67.70	304.5	-442.4	166.4	83.4	83.01	2.005	
5,300.0	5,271.5	5,265.7	5,242.5	14.6	76.2	71.75	304.5	-442.4	162.1	75.3	86.78	1.868	
5,400.0	5,370.7	5,365.0	5,341.7	14.9	79.0	75.93	304.5	-442.4	158.6	68.1	90.57	1.752	
5,500.0	5,470.3	5,464.5	5,441.3	15.1	82.0	79.34	304.5	-442.4	156.5	62.4	94.18	1.662	
5,600.0	5,570.1	5,564.3	5,541.1	15.3	85.0	81.59	304.5	-442.4	155.5	57.8	97.72	1.591	
5,700.0	5,670.0	5,664.3	5,641.0	15.5	88.1	82.60	304.5	-442.4	155.1	53.9	101.17	1.533	
5,752.5	5,722.5	5,716.8	5,693.5	15.5	89.8	82.75	304.5	-442.4	155.1	52.1	102.98	1.506	CC
5,800.0	5,770.0	5,764.3	5,741.0	15.6	91.3	10.55	304.5	-442.4	155.1	50.5	104.62	1.482	Level 3
5,900.0	5,870.0	5,864.3	5,841.0	15.8	94.6	10.55	304.5	-442.4	155.1	46.9	108.16	1.434	Level 3
6,000.0	5,970.0	5,964.3	5,941.0	16.0	97.9	10.55	304.5	-442.4	155.1	43.4	111.74	1.388	Level 3
6,100.0	6,070.0	6,064.3	6,041.0	16.1	101.2	10.55	304.5	-442.4	155.1	39.7	115.37	1.344	Level 3
6,200.0	6,170.0	6,164.3	6,141.0	16.3	104.6	10.55	304.5	-442.4	155.1	36.1	119.04	1.303	Level 3
6,300.0	6,270.0	6,264.3	6,241.0	16.5	108.1	10.55	304.5	-442.4	155.1	32.3	122.75	1.263	Level 3
6,400.0	6,370.0	6,364.3	6,341.0	16.7	111.6	10.55	304.5	-442.4	155.1	28.6	126.49	1.226	Level 2
6,500.0	6,470.0	6,464.3	6,441.0	16.9	115.1	10.55	304.5	-442.4	155.1	24.8	130.26	1.191	Level 2
6,600.0	6,570.0	6,564.3	6,541.0	17.0	118.6	10.55	304.5	-442.4	155.1	21.0	134.06	1.157	Level 2
6,700.0	6,670.0	6,664.3	6,641.0	17.2	122.2	10.55	304.5	-442.4	155.1	17.2	137.89	1.125	Level 2
6,800.0	6,770.0	6,764.3	6,741.0	17.4	125.8	10.55	304.5	-442.4	155.1	13.4	141.74	1.094	Level 2
6,900.0	6,870.0	6,864.3	6,841.0	17.6	129.4	10.55	304.5	-442.4	155.1	9.5	145.60	1.065	Level 2
7,000.0	6,970.0	6,964.3	6,941.0	17.8	133.0	10.55	304.5	-442.4	155.1	5.6	149.49	1.037	Level 2
7,051.3	7,021.3	7,015.6	6,992.3	17.9	134.9	-169.45	304.5	-442.4	155.1	3.7	151.47	1.024	Level 2
7,100.0	7,070.0	7,059.0	7,035.8	18.0	136.5	-169.47	304.8	-442.4	155.5	2.4	153.15	1.015	Level 2, ES, SF
7,200.0	7,169.7	7,135.9	7,112.2	18.1	139.2	-170.07	312.6	-442.4	172.3	19.1	153.20	1.125	Level 2
7,300.0	7,267.6	7,200.0	7,174.7	18.2	141.3	-170.93	326.9	-442.4	213.5	63.5	149.98	1.423	Level 3
7,400.0	7,362.1	7,259.3	7,230.7	18.3	143.1	-171.68	346.2	-442.4	274.9	131.2	143.67	1.913	
7,500.0	7,451.6	7,300.0	7,267.9	18.4	144.3	-171.67	362.8	-442.4	351.8	217.6	134.18	2.621	
7,600.0	7,534.4	7,328.7	7,293.3	18.5	145.1	-170.72	376.0	-442.4	439.4	317.2	122.18	3.596	
7,700.0	7,609.3	7,350.0	7,311.7	18.7	145.8	-168.01	386.7	-442.4	533.9	425.0	108.93	4.901	
7,800.0	7,674.9	7,350.0	7,311.7	18.8	145.8	-154.18	386.7	-442.4	632.2	526.2	106.03	5.963	
7,900.0	7,730.1	7,350.0	7,311.7	19.1	145.8	-43.01	386.7	-442.4	732.0	607.1	124.93	5.860	
8,000.0	7,773.9	7,350.0	7,311.7	19.6	145.8	-12.13	386.7	-442.4	831.4	766.6	64.74	12.841	
8,100.0	7,805.7	7,350.0	7,311.7	20.2	145.8	-6.62	386.7	-442.4	929.0	887.4	41.64	22.309	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Existings Sec.32-T1N-R67W - Jacobucci 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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,300.0	7,831.0	7,793.6	7,792.9	22.0	17.4	-89.17	-1,437.2	-78.6	911.0	872.8	38.24	23.821	
8,400.0	7,831.4	7,794.6	7,793.9	23.1	17.4	-89.31	-1,437.2	-78.6	821.9	782.5	39.41	20.854	
8,500.0	7,831.8	7,795.6	7,794.8	24.3	17.5	-89.45	-1,437.2	-78.6	735.5	694.9	40.68	18.082	
8,600.0	7,832.3	7,796.5	7,795.8	25.6	17.5	-89.60	-1,437.2	-78.6	653.1	611.1	42.03	15.539	
8,700.0	7,832.7	7,797.5	7,796.8	27.0	17.5	-89.74	-1,437.2	-78.6	576.3	532.8	43.45	13.262	
8,800.0	7,833.2	7,798.5	7,797.7	28.4	17.5	-89.88	-1,437.2	-78.6	507.6	462.7	44.94	11.295	
8,900.0	7,833.6	7,799.4	7,798.7	29.9	17.5	-90.02	-1,437.2	-78.6	450.8	404.3	46.47	9.700	
9,000.0	7,834.0	7,800.4	7,799.7	31.4	17.5	-90.16	-1,437.2	-78.6	410.8	362.7	48.05	8.549	
9,100.0	7,834.5	7,801.4	7,800.6	33.0	17.5	-90.30	-1,437.2	-78.6	392.8	343.1	49.67	7.908	
9,122.3	7,834.6	7,801.6	7,800.8	33.3	17.5	-90.33	-1,437.2	-78.6	392.2	342.1	50.04	7.838	CC, ES
9,200.0	7,834.9	7,802.3	7,801.6	34.6	17.5	-90.44	-1,437.2	-78.6	399.8	348.5	51.31	7.791	SF
9,300.0	7,835.3	7,803.3	7,802.6	36.2	17.5	-90.58	-1,437.2	-78.6	430.5	377.6	52.99	8.125	
9,400.0	7,835.8	7,804.3	7,803.5	37.9	17.5	-90.72	-1,437.2	-78.6	480.5	425.8	54.69	8.787	
9,500.0	7,836.2	7,805.2	7,804.5	39.6	17.5	-90.87	-1,437.3	-78.6	544.5	488.1	56.40	9.653	
9,600.0	7,836.6	7,806.2	7,805.5	41.3	17.5	-91.01	-1,437.3	-78.6	618.0	559.9	58.14	10.630	
9,700.0	7,837.1	7,807.2	7,806.4	43.0	17.5	-91.15	-1,437.3	-78.6	698.2	638.3	59.89	11.658	
9,800.0	7,837.5	7,808.1	7,807.4	44.7	17.5	-91.29	-1,437.3	-78.6	783.0	721.3	61.65	12.699	
9,900.0	7,838.0	7,809.1	7,808.3	46.5	17.5	-91.43	-1,437.3	-78.6	870.9	807.5	63.43	13.731	
10,000.0	7,838.4	7,810.1	7,809.3	48.3	17.5	-91.57	-1,437.3	-78.7	961.3	896.1	65.22	14.740	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Existings Sec.32-T1N-R67W - Jacobucci 13-32 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 8529-UNKNOWN

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-114.06	-249.5	-558.9	612.6				
100.0	100.0	73.0	73.0	0.1	1.5	-114.06	-249.5	-558.9	612.0	610.5	1.57	389.200	
200.0	200.0	173.0	173.0	0.3	3.5	-114.06	-249.5	-558.9	612.0	608.3	3.80	161.178	
300.0	300.0	273.0	273.0	0.6	5.5	-114.06	-249.5	-558.9	612.0	606.0	6.02	101.634	
400.0	400.0	373.0	373.0	0.8	7.5	-114.06	-249.5	-558.9	612.0	603.8	8.25	74.216	
500.0	500.0	473.0	473.0	1.0	9.5	-114.06	-249.5	-558.9	612.0	601.6	10.47	58.448	
600.0	600.0	573.0	573.0	1.2	11.5	-114.06	-249.5	-558.9	612.0	599.4	12.70	48.207	
700.0	700.0	673.0	673.0	1.5	13.5	-114.06	-249.5	-558.9	612.0	597.1	14.92	41.019	
800.0	800.0	773.0	773.0	1.7	15.5	-114.06	-249.5	-558.9	612.0	594.9	17.15	35.696	
900.0	900.0	873.0	873.0	1.9	17.5	-114.06	-249.5	-558.9	612.0	592.7	19.37	31.597	
1,000.0	1,000.0	973.0	973.0	2.1	19.5	-114.06	-249.5	-558.9	612.0	590.5	21.60	28.342	
1,100.0	1,100.0	1,073.0	1,073.0	2.4	21.5	-114.06	-249.5	-558.9	612.0	588.2	23.82	25.695	
1,200.0	1,200.0	1,173.0	1,173.0	2.6	23.5	-114.06	-249.5	-558.9	612.0	586.0	26.04	23.500	
1,300.0	1,300.0	1,273.0	1,273.0	2.8	25.5	-114.06	-249.5	-558.9	612.0	583.8	28.27	21.650	
1,400.0	1,400.0	1,373.0	1,373.0	3.0	27.5	-114.06	-249.5	-558.9	612.0	581.6	30.49	20.071	
1,500.0	1,500.0	1,473.0	1,473.0	3.3	29.5	-42.08	-249.5	-558.9	610.8	578.1	32.70	18.678	
1,600.0	1,599.8	1,572.8	1,572.8	3.5	31.5	-42.46	-249.5	-558.9	606.9	572.0	34.87	17.404	
1,700.0	1,699.5	1,672.5	1,672.5	3.7	33.4	-43.11	-249.5	-558.9	600.5	563.5	37.01	16.222	
1,800.0	1,798.7	1,771.7	1,771.7	3.9	35.4	-43.96	-249.5	-558.9	591.8	552.7	39.17	15.108	
1,900.0	1,898.0	1,871.0	1,871.0	4.2	37.4	-44.81	-249.5	-558.9	582.9	541.5	41.39	14.084	
2,000.0	1,997.2	1,970.2	1,970.2	4.4	39.4	-45.68	-249.5	-558.9	574.1	530.5	43.61	13.166	
2,100.0	2,096.4	2,069.4	2,069.4	4.7	41.4	-46.58	-249.5	-558.9	565.4	519.6	45.83	12.337	
2,200.0	2,195.6	2,168.6	2,168.6	5.0	43.4	-47.51	-249.5	-558.9	556.9	508.8	48.07	11.586	
2,300.0	2,294.9	2,267.9	2,267.9	5.3	45.4	-48.46	-249.5	-558.9	548.5	498.2	50.31	10.904	
2,400.0	2,394.1	2,367.1	2,367.1	5.5	47.3	-49.45	-249.5	-558.9	540.3	487.8	52.56	10.281	
2,500.0	2,493.3	2,466.3	2,466.3	5.8	49.3	-50.46	-249.5	-558.9	532.3	477.5	54.81	9.712	
2,600.0	2,592.5	2,565.5	2,565.5	6.1	51.3	-51.50	-249.5	-558.9	524.4	467.3	57.07	9.189	
2,700.0	2,691.7	2,664.7	2,664.7	6.4	53.3	-52.58	-249.5	-558.9	516.7	457.4	59.33	8.709	
2,800.0	2,791.0	2,764.0	2,764.0	6.7	55.3	-53.69	-249.5	-558.9	509.2	447.6	61.60	8.266	
2,900.0	2,890.2	2,863.2	2,863.2	7.0	57.3	-54.83	-249.5	-558.9	501.9	438.0	63.88	7.857	
3,000.0	2,989.4	2,962.4	2,962.4	7.3	59.2	-56.00	-249.5	-558.9	494.8	428.6	66.16	7.479	
3,100.0	3,088.6	3,061.6	3,061.6	7.6	61.2	-57.20	-249.5	-558.9	487.9	419.4	68.44	7.128	
3,200.0	3,187.8	3,160.8	3,160.8	7.9	63.2	-58.44	-249.5	-558.9	481.2	410.5	70.74	6.803	
3,300.0	3,287.1	3,260.1	3,260.1	8.2	65.2	-59.72	-249.5	-558.9	474.8	401.8	73.03	6.501	
3,400.0	3,386.3	3,359.3	3,359.3	8.6	67.2	-61.02	-249.5	-558.9	468.6	393.3	75.33	6.220	
3,500.0	3,485.5	3,458.5	3,458.5	8.9	69.2	-62.36	-249.5	-558.9	462.7	385.0	77.64	5.959	
3,600.0	3,584.7	3,557.7	3,557.7	9.2	71.2	-63.74	-249.5	-558.9	457.0	377.0	79.95	5.716	
3,700.0	3,684.0	3,657.0	3,657.0	9.5	73.1	-65.15	-249.5	-558.9	451.6	369.3	82.26	5.489	
3,800.0	3,783.2	3,756.2	3,756.2	9.8	75.1	-66.59	-249.5	-558.9	446.4	361.9	84.58	5.278	
3,900.0	3,882.4	3,855.4	3,855.4	10.1	77.1	-68.06	-249.5	-558.9	441.6	354.7	86.90	5.082	
4,000.0	3,981.6	3,954.6	3,954.6	10.4	79.1	-69.56	-249.5	-558.9	437.1	347.9	89.22	4.899	
4,100.0	4,080.8	4,053.8	4,053.8	10.7	81.1	-71.10	-249.5	-558.9	432.9	341.3	91.55	4.728	
4,200.0	4,180.1	4,153.1	4,153.1	11.1	83.1	-72.66	-249.5	-558.9	429.0	335.1	93.88	4.569	
4,300.0	4,279.3	4,252.3	4,252.3	11.4	85.0	-74.25	-249.5	-558.9	425.4	329.2	96.21	4.421	
4,400.0	4,378.5	4,351.5	4,351.5	11.7	87.0	-75.87	-249.5	-558.9	422.1	323.6	98.54	4.284	
4,500.0	4,477.7	4,450.7	4,450.7	12.0	89.0	-77.50	-249.5	-558.9	419.3	318.4	100.87	4.156	
4,600.0	4,577.0	4,550.0	4,550.0	12.3	91.0	-79.16	-249.5	-558.9	416.7	313.5	103.20	4.038	
4,700.0	4,676.2	4,649.2	4,649.2	12.6	93.0	-80.84	-249.5	-558.9	414.5	309.0	105.53	3.928	
4,800.0	4,775.4	4,748.4	4,748.4	13.0	95.0	-82.53	-249.5	-558.9	412.7	304.9	107.86	3.827	
4,900.0	4,874.6	4,847.6	4,847.6	13.3	97.0	-84.24	-249.5	-558.9	411.3	301.1	110.19	3.733	
5,000.0	4,973.8	4,946.8	4,946.8	13.6	98.9	-85.96	-249.5	-558.9	410.2	297.7	112.51	3.646	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Existings Sec.32-T1N-R67W - Jacobucci 13-32 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 8529-UNKNOWN

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,073.1	5,046.1	5,046.1	13.9	100.9	-87.68	-249.5	-558.9	409.5	294.7	114.83	3.566	
5,200.0	5,172.3	5,145.3	5,145.3	14.2	102.9	-89.41	-249.5	-558.9	409.2	292.1	117.14	3.493	
5,234.0	5,206.0	5,179.0	5,179.0	14.4	103.6	-90.00	-249.5	-558.9	409.2	291.2	117.93	3.470	
5,300.0	5,271.5	5,244.5	5,244.5	14.6	104.9	-91.14	-249.5	-558.9	409.3	289.8	119.45	3.426	
5,400.0	5,370.7	5,343.7	5,343.7	14.9	106.9	-92.85	-249.5	-558.9	409.7	287.9	121.75	3.365	
5,500.0	5,470.3	5,443.3	5,443.3	15.1	108.9	-94.22	-249.5	-558.9	410.3	286.3	123.96	3.310	
5,600.0	5,570.1	5,543.1	5,543.1	15.3	110.9	-95.10	-249.5	-558.9	410.8	284.7	126.14	3.257	
5,700.0	5,670.0	5,643.0	5,643.0	15.5	112.9	-95.49	-249.5	-558.9	411.1	282.8	128.31	3.204	
5,800.0	5,770.0	5,743.0	5,743.0	15.6	114.9	-167.62	-249.5	-558.9	411.1	280.6	130.46	3.151	
5,900.0	5,870.0	5,843.0	5,843.0	15.8	116.9	-167.62	-249.5	-558.9	411.1	278.4	132.64	3.099	
6,000.0	5,970.0	5,943.0	5,943.0	16.0	118.9	-167.62	-249.5	-558.9	411.1	276.3	134.82	3.049	
6,100.0	6,070.0	6,043.0	6,043.0	16.1	120.9	-167.62	-249.5	-558.9	411.1	274.1	136.99	3.001	
6,200.0	6,170.0	6,143.0	6,143.0	16.3	122.9	-167.62	-249.5	-558.9	411.1	271.9	139.17	2.954	
6,300.0	6,270.0	6,243.0	6,243.0	16.5	124.9	-167.62	-249.5	-558.9	411.1	269.7	141.35	2.908	
6,400.0	6,370.0	6,343.0	6,343.0	16.7	126.9	-167.62	-249.5	-558.9	411.1	267.5	143.54	2.864	
6,500.0	6,470.0	6,443.0	6,443.0	16.9	128.9	-167.62	-249.5	-558.9	411.1	265.4	145.72	2.821	
6,600.0	6,570.0	6,543.0	6,543.0	17.0	130.9	-167.62	-249.5	-558.9	411.1	263.2	147.90	2.779	
6,700.0	6,670.0	6,643.0	6,643.0	17.2	132.9	-167.62	-249.5	-558.9	411.1	261.0	150.09	2.739	
6,800.0	6,770.0	6,743.0	6,743.0	17.4	134.9	-167.62	-249.5	-558.9	411.1	258.8	152.27	2.700	
6,900.0	6,870.0	6,843.0	6,843.0	17.6	136.9	-167.62	-249.5	-558.9	411.1	256.6	154.46	2.661	
7,000.0	6,970.0	6,943.0	6,943.0	17.8	138.9	-167.62	-249.5	-558.9	411.1	254.4	156.65	2.624	
7,100.0	7,070.0	7,043.0	7,043.0	18.0	140.9	12.38	-249.5	-558.9	411.1	252.2	158.83	2.588	
7,200.0	7,169.7	7,142.7	7,142.7	18.1	142.9	12.70	-249.5	-558.9	404.3	244.7	159.59	2.533	
7,300.0	7,267.6	7,240.6	7,240.6	18.2	144.8	13.70	-249.5	-558.9	384.9	227.2	157.74	2.440	
7,400.0	7,362.1	7,335.1	7,335.1	18.3	146.7	15.60	-249.5	-558.9	353.4	200.0	153.41	2.303	
7,500.0	7,451.6	7,424.6	7,424.6	18.4	148.5	18.91	-249.5	-558.9	310.4	163.3	147.15	2.110	
7,600.0	7,534.4	7,507.4	7,507.4	18.5	150.1	24.73	-249.5	-558.9	257.4	116.7	140.69	1.829	
7,700.0	7,609.3	7,582.3	7,582.3	18.7	151.6	35.46	-249.5	-558.9	196.5	57.4	139.15	1.412	Level 3
7,800.0	7,674.9	7,647.9	7,647.9	18.8	153.0	55.43	-249.5	-558.9	133.5	-19.0	152.52	0.875	Level 1
7,900.0	7,730.1	7,703.1	7,703.1	19.1	154.1	84.54	-249.5	-558.9	89.7	-81.3	170.99	0.525	Level 1
7,919.4	7,739.5	7,712.5	7,712.5	19.2	154.3	90.00	-249.5	-558.9	88.1	-83.7	171.84	0.513	Level 1, CC, ES, SF
8,000.0	7,773.9	7,746.9	7,746.9	19.6	154.9	107.40	-249.5	-558.9	114.3	-52.0	166.37	0.687	Level 1
8,100.0	7,805.7	7,778.7	7,778.7	20.2	155.6	115.88	-249.5	-558.9	189.3	31.0	158.37	1.196	Level 2
8,200.0	7,824.8	7,797.8	7,797.8	21.0	156.0	110.90	-249.5	-558.9	279.9	115.5	164.36	1.703	
8,300.0	7,831.0	7,804.0	7,804.0	22.0	156.1	91.04	-249.5	-558.9	375.9	199.0	176.86	2.125	
8,400.0	7,831.4	7,804.4	7,804.4	23.1	156.1	91.32	-249.5	-558.9	473.7	295.7	178.00	2.661	
8,500.0	7,831.8	7,804.8	7,804.8	24.3	156.1	91.60	-249.5	-558.9	572.2	393.0	179.24	3.193	
8,600.0	7,832.3	7,805.3	7,805.3	25.6	156.1	91.89	-249.5	-558.9	671.2	490.7	180.56	3.717	
8,700.0	7,832.7	7,805.7	7,805.7	27.0	156.1	92.17	-249.5	-558.9	770.5	588.5	181.95	4.235	
8,800.0	7,833.2	7,806.2	7,806.2	28.4	156.1	92.45	-249.5	-558.9	869.9	686.5	183.39	4.743	
8,900.0	7,833.6	7,806.6	7,806.6	29.9	156.1	92.74	-249.5	-558.9	969.4	784.5	184.88	5.244	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Jacobucci 1N67W32K Pad Sec.32-T1N-R67W - Jacobucci 32K-243 - Wellbore #1 - Plan #1 (7-25-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	22.4	22.4				
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	22.4	22.4	22.2	0.22	99.707	
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	22.4	22.4	21.7	0.67	33.236	
300.0	300.0	300.0	300.0	0.6	0.6	90.01	0.0	22.4	22.4	21.3	1.12	19.941	
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	22.4	22.4	20.8	1.57	14.244	
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	22.4	22.4	20.4	2.02	11.079	
600.0	600.0	600.0	600.0	1.2	1.2	90.01	0.0	22.4	22.4	19.9	2.47	9.064	
700.0	700.0	700.0	700.0	1.5	1.5	90.01	0.0	22.4	22.4	19.5	2.92	7.670	
800.0	800.0	800.0	800.0	1.7	1.7	90.01	0.0	22.4	22.4	19.0	3.37	6.647	
900.0	900.0	900.0	900.0	1.9	1.9	90.01	0.0	22.4	22.4	18.6	3.82	5.865	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.01	0.0	22.4	22.4	18.1	4.27	5.248	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	90.01	0.0	22.4	22.4	17.7	4.72	4.748	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	90.01	0.0	22.4	22.4	17.2	5.17	4.335	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	90.01	0.0	22.4	22.4	16.8	5.62	3.988	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	90.01	0.0	22.4	22.4	16.3	6.07	3.693	CC, ES
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	163.38	0.0	22.4	24.1	17.6	6.51	3.701	
1,600.0	1,599.8	1,599.8	1,599.8	3.5	3.5	166.30	0.0	22.4	29.1	22.2	6.93	4.204	
1,700.0	1,699.5	1,699.5	1,699.5	3.7	3.7	169.41	0.0	22.4	37.7	30.3	7.35	5.125	
1,800.0	1,798.7	1,798.7	1,798.7	3.9	3.9	171.93	0.0	22.4	49.4	41.6	7.77	6.356	
1,900.0	1,898.0	1,899.9	1,899.9	4.2	4.2	172.93	1.0	21.0	60.2	52.0	8.20	7.336	
2,000.0	1,997.2	2,001.7	2,001.5	4.4	4.4	172.46	4.0	16.5	67.7	59.1	8.63	7.844	
2,100.0	2,096.4	2,103.9	2,103.3	4.7	4.6	170.90	9.0	9.1	72.0	63.0	9.07	7.942	
2,200.0	2,195.6	2,205.1	2,203.8	5.0	4.8	168.40	15.9	-1.0	73.5	64.0	9.52	7.728	
2,300.0	2,294.9	2,305.0	2,303.0	5.3	5.1	165.82	22.9	-11.4	74.7	64.7	9.97	7.493	
2,400.0	2,394.1	2,405.0	2,402.1	5.5	5.3	163.32	29.9	-21.8	76.0	65.6	10.43	7.285	
2,500.0	2,493.3	2,504.9	2,501.2	5.8	5.6	160.91	37.0	-32.2	77.5	66.5	10.91	7.100	
2,600.0	2,592.5	2,604.9	2,600.4	6.1	5.9	158.60	44.0	-42.5	79.0	67.6	11.40	6.935	
2,700.0	2,691.7	2,704.8	2,699.5	6.4	6.1	156.38	51.1	-52.9	80.7	68.8	11.90	6.787	
2,800.0	2,791.0	2,804.7	2,798.7	6.7	6.4	154.25	58.1	-63.3	82.6	70.1	12.41	6.654	
2,900.0	2,890.2	2,904.7	2,897.8	7.0	6.7	152.22	65.2	-73.7	84.5	71.6	12.93	6.534	
3,000.0	2,989.4	3,004.6	2,997.0	7.3	7.0	150.28	72.2	-84.1	86.5	73.0	13.46	6.426	
3,100.0	3,088.6	3,104.5	3,096.1	7.6	7.3	148.43	79.3	-94.5	88.6	74.6	14.01	6.328	
3,200.0	3,187.8	3,204.5	3,195.3	7.9	7.6	146.66	86.3	-104.9	90.8	76.3	14.56	6.239	
3,300.0	3,287.1	3,304.4	3,294.4	8.2	7.9	144.99	93.4	-115.3	93.1	78.0	15.13	6.158	
3,400.0	3,386.3	3,404.4	3,393.6	8.6	8.2	143.39	100.4	-125.7	95.5	79.8	15.70	6.084	
3,500.0	3,485.5	3,504.3	3,492.7	8.9	8.5	141.88	107.5	-136.1	98.0	81.7	16.28	6.017	
3,600.0	3,584.7	3,604.2	3,591.8	9.2	8.8	140.44	114.5	-146.5	100.5	83.6	16.87	5.956	
3,700.0	3,684.0	3,704.2	3,691.0	9.5	9.1	139.07	121.6	-156.9	103.0	85.6	17.46	5.900	
3,800.0	3,783.2	3,804.1	3,790.1	9.8	9.4	137.76	128.6	-167.3	105.6	87.6	18.06	5.849	
3,900.0	3,882.4	3,904.0	3,889.3	10.1	9.7	136.52	135.6	-177.6	108.3	89.7	18.67	5.803	
4,000.0	3,981.6	4,003.1	3,987.6	10.4	10.0	135.54	142.4	-187.6	111.2	92.0	19.25	5.779	
4,100.0	4,080.8	4,101.1	4,085.1	10.7	10.2	135.88	147.5	-195.1	115.6	95.9	19.72	5.864	
4,200.0	4,180.1	4,198.8	4,182.7	11.1	10.4	137.56	150.6	-199.8	121.8	101.7	20.11	6.056	
4,300.0	4,279.3	4,295.9	4,279.8	11.4	10.5	140.30	152.0	-201.7	129.9	109.5	20.42	6.361	
4,400.0	4,378.5	4,394.6	4,378.5	11.7	10.7	143.51	152.0	-201.8	139.7	119.0	20.71	6.745	
4,500.0	4,477.7	4,493.9	4,477.7	12.0	10.9	146.34	152.0	-201.8	149.9	128.9	21.03	7.128	
4,600.0	4,577.0	4,593.1	4,577.0	12.3	11.1	148.80	152.0	-201.8	160.4	139.1	21.37	7.507	
4,700.0	4,676.2	4,692.3	4,676.2	12.6	11.3	150.95	152.0	-201.8	171.2	149.5	21.73	7.881	
4,800.0	4,775.4	4,791.5	4,775.4	13.0	11.5	152.85	152.0	-201.8	182.2	160.1	22.10	8.247	
4,900.0	4,874.6	4,890.7	4,874.6	13.3	11.7	154.53	152.0	-201.8	193.4	170.9	22.48	8.605	
5,000.0	4,973.8	4,990.0	4,973.8	13.6	11.9	156.03	152.0	-201.8	204.8	181.9	22.87	8.954	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Jacobucci 1N67W32K Pad Sec.32-T1N-R67W - Jacobucci 32K-243 - Wellbore #1 - Plan #1 (7-25-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,073.1	5,089.2	5,073.1	13.9	12.1	157.37	152.0	-201.8	216.2	192.9	23.26	9.294	
5,200.0	5,172.3	5,188.4	5,172.3	14.2	12.3	158.57	152.0	-201.8	227.8	204.1	23.67	9.623	
5,300.0	5,271.5	5,287.6	5,271.5	14.6	12.5	159.66	152.0	-201.8	239.4	215.3	24.08	9.943	
5,400.0	5,370.7	5,386.9	5,370.7	14.9	12.7	160.66	152.0	-201.8	251.0	226.5	24.50	10.247	
5,500.0	5,470.3	5,486.4	5,470.3	15.1	12.9	161.43	152.0	-201.8	260.2	235.3	24.89	10.455	
5,600.0	5,570.1	5,586.2	5,570.1	15.3	13.1	161.89	152.0	-201.8	266.2	240.9	25.27	10.534	
5,700.0	5,670.0	5,686.1	5,670.0	15.5	13.3	162.10	152.0	-201.8	268.8	243.2	25.63	10.489	
5,800.0	5,770.0	5,786.1	5,770.0	15.6	13.5	90.00	152.0	-201.8	269.0	243.0	26.02	10.338	
5,900.0	5,870.0	5,886.1	5,870.0	15.8	13.7	90.00	152.0	-201.8	269.0	242.6	26.44	10.175	
6,000.0	5,970.0	5,986.1	5,970.0	16.0	13.9	90.00	152.0	-201.8	269.0	242.1	26.86	10.016	
6,100.0	6,070.0	6,086.1	6,070.0	16.1	14.2	90.00	152.0	-201.8	269.0	241.7	27.28	9.862	
6,200.0	6,170.0	6,186.1	6,170.0	16.3	14.4	90.00	152.0	-201.8	269.0	241.3	27.70	9.712	
6,300.0	6,270.0	6,286.1	6,270.0	16.5	14.6	90.00	152.0	-201.8	269.0	240.9	28.12	9.566	
6,400.0	6,370.0	6,386.1	6,370.0	16.7	14.8	90.00	152.0	-201.8	269.0	240.5	28.54	9.424	
6,500.0	6,470.0	6,486.1	6,470.0	16.9	15.0	90.00	152.0	-201.8	269.0	240.0	28.97	9.286	
6,600.0	6,570.0	6,586.1	6,570.0	17.0	15.2	90.00	152.0	-201.8	269.0	239.6	29.39	9.152	
6,700.0	6,670.0	6,686.1	6,670.0	17.2	15.4	90.00	152.0	-201.8	269.0	239.2	29.82	9.022	
6,800.0	6,770.0	6,786.1	6,770.0	17.4	15.6	90.00	152.0	-201.8	269.0	238.8	30.24	8.895	
6,861.8	6,831.8	6,847.9	6,831.8	17.5	15.8	90.00	152.0	-201.8	269.0	238.5	30.51	8.818	
6,900.0	6,870.0	6,886.1	6,870.0	17.6	15.8	90.09	151.6	-201.8	269.0	238.3	30.66	8.774	
7,000.0	6,970.0	6,985.0	6,968.4	17.8	16.0	92.15	141.9	-201.8	269.2	238.2	30.94	8.699	
7,100.0	7,070.0	7,079.9	7,060.8	18.0	16.1	-83.37	120.8	-201.8	271.0	239.8	31.15	8.699	
7,200.0	7,169.7	7,170.6	7,146.1	18.1	16.2	-77.89	90.0	-201.8	275.6	244.3	31.30	8.806	
7,300.0	7,267.6	7,258.8	7,224.9	18.2	16.3	-72.83	50.7	-201.8	282.4	250.9	31.44	8.981	
7,400.0	7,362.1	7,344.7	7,296.8	18.3	16.4	-68.27	3.8	-201.8	290.7	259.2	31.56	9.212	
7,500.0	7,451.6	7,428.7	7,361.7	18.4	16.5	-64.26	-49.6	-201.8	300.0	268.4	31.60	9.493	
7,600.0	7,534.4	7,511.2	7,419.3	18.5	16.6	-60.82	-108.6	-201.8	309.5	277.9	31.56	9.807	
7,700.0	7,609.3	7,592.3	7,469.4	18.7	16.8	-57.92	-172.3	-201.8	318.8	287.3	31.44	10.140	
7,800.0	7,674.9	7,672.4	7,512.0	18.8	17.1	-55.53	-240.1	-201.8	327.3	296.1	31.28	10.464	
7,900.0	7,730.1	7,750.0	7,546.3	19.1	17.6	-53.66	-309.7	-201.8	334.8	303.7	31.16	10.744	
8,000.0	7,773.9	7,830.0	7,574.0	19.6	18.2	-52.20	-384.7	-201.8	340.9	309.7	31.19	10.930	
8,100.0	7,805.7	7,908.0	7,593.4	20.2	18.9	-51.20	-460.2	-201.8	345.4	314.0	31.43	10.988	
8,200.0	7,824.8	7,985.6	7,604.9	21.0	19.7	-50.61	-536.9	-201.8	348.1	316.1	31.97	10.889	
8,300.0	7,831.0	8,063.6	7,608.6	22.0	20.5	-50.42	-614.8	-201.8	349.0	316.1	32.88	10.614	
8,400.0	7,831.4	8,163.6	7,608.5	23.1	21.7	-50.35	-714.7	-201.8	349.3	314.7	34.69	10.071	
8,500.0	7,831.8	8,263.6	7,608.4	24.3	23.0	-50.29	-814.7	-201.8	349.7	313.0	36.65	9.540	
8,600.0	7,832.3	8,363.6	7,608.3	25.6	24.3	-50.22	-914.7	-201.8	350.0	311.3	38.76	9.031	
8,700.0	7,832.7	8,463.6	7,608.3	27.0	25.8	-50.16	-1,014.7	-201.8	350.4	309.4	40.98	8.549	
8,800.0	7,833.2	8,563.6	7,608.2	28.4	27.2	-50.09	-1,114.7	-201.8	350.7	307.4	43.31	8.098	
8,900.0	7,833.6	8,663.6	7,608.1	29.9	28.8	-50.03	-1,214.7	-201.8	351.0	305.3	45.71	7.679	
9,000.0	7,834.0	8,763.6	7,608.0	31.4	30.4	-49.96	-1,314.7	-201.8	351.4	303.2	48.19	7.291	
9,100.0	7,834.5	8,863.6	7,607.9	33.0	32.0	-49.90	-1,414.7	-201.8	351.7	301.0	50.73	6.933	
9,200.0	7,834.9	8,963.6	7,607.8	34.6	33.6	-49.83	-1,514.7	-201.8	352.0	298.7	53.32	6.603	
9,300.0	7,835.3	9,063.6	7,607.7	36.2	35.3	-49.76	-1,614.7	-201.8	352.4	296.4	55.94	6.299	
9,400.0	7,835.8	9,163.6	7,607.6	37.9	37.0	-49.70	-1,714.7	-201.8	352.7	294.1	58.61	6.018	
9,500.0	7,836.2	9,263.6	7,607.6	39.6	38.7	-49.64	-1,814.7	-201.8	353.0	291.7	61.30	5.759	
9,600.0	7,836.6	9,363.6	7,607.5	41.3	40.5	-49.57	-1,914.7	-201.8	353.4	289.4	64.02	5.520	
9,700.0	7,837.1	9,463.6	7,607.4	43.0	42.2	-49.51	-2,014.7	-201.8	353.7	287.0	66.77	5.298	
9,800.0	7,837.5	9,563.6	7,607.3	44.7	44.0	-49.44	-2,114.7	-201.8	354.1	284.5	69.53	5.092	
9,900.0	7,838.0	9,663.6	7,607.2	46.5	45.8	-49.38	-2,214.7	-201.8	354.4	282.1	72.31	4.901	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Jacobucci 1N67W32K Pad Sec.32-T1N-R67W - Jacobucci 32K-243 - Wellbore #1 - Plan #1 (7-25-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	7,838.4	9,763.6	7,607.1	48.3	47.6	-49.31	-2,314.7	-201.8	354.8	279.7	75.10	4.724	
10,100.0	7,838.8	9,863.6	7,607.0	50.0	49.4	-49.25	-2,414.7	-201.8	355.1	277.2	77.90	4.558	
10,200.0	7,839.3	9,963.6	7,606.9	51.8	51.2	-49.18	-2,514.7	-201.8	355.4	274.7	80.72	4.403	
10,300.0	7,839.7	10,063.6	7,606.9	53.6	53.0	-49.12	-2,614.7	-201.8	355.8	272.2	83.54	4.259	
10,400.0	7,840.1	10,163.6	7,606.8	55.4	54.8	-49.06	-2,714.7	-201.8	356.1	269.7	86.37	4.123	
10,500.0	7,840.6	10,263.6	7,606.7	57.2	56.6	-48.99	-2,814.7	-201.8	356.5	267.3	89.21	3.996	
10,600.0	7,841.0	10,363.6	7,606.6	59.0	58.5	-48.93	-2,914.7	-201.8	356.8	264.8	92.05	3.876	
10,700.0	7,841.4	10,463.6	7,606.5	60.9	60.3	-48.87	-3,014.7	-201.8	357.2	262.3	94.89	3.764	
10,800.0	7,841.9	10,563.6	7,606.4	62.7	62.1	-48.80	-3,114.7	-201.8	357.5	259.8	97.74	3.657	
10,900.0	7,842.3	10,663.6	7,606.3	64.5	64.0	-48.74	-3,214.7	-201.8	357.8	257.2	100.60	3.557	
11,000.0	7,842.8	10,763.6	7,606.2	66.4	65.8	-48.68	-3,314.7	-201.8	358.2	254.7	103.45	3.462	
11,100.0	7,843.2	10,863.6	7,606.2	68.2	67.7	-48.62	-3,414.7	-201.8	358.5	252.2	106.31	3.373	
11,200.0	7,843.6	10,963.5	7,606.1	70.1	69.5	-48.55	-3,514.7	-201.8	358.9	249.7	109.16	3.288	
11,300.0	7,844.1	11,063.5	7,606.0	71.9	71.4	-48.49	-3,614.7	-201.8	359.2	247.2	112.02	3.207	
11,400.0	7,844.5	11,163.5	7,605.9	73.8	73.3	-48.43	-3,714.7	-201.8	359.6	244.7	114.88	3.130	
11,500.0	7,844.9	11,263.5	7,605.8	75.6	75.1	-48.36	-3,814.7	-201.8	359.9	242.2	117.74	3.057	
11,600.0	7,845.4	11,363.5	7,605.7	77.5	77.0	-48.30	-3,914.7	-201.8	360.3	239.7	120.60	2.987	
11,700.0	7,845.8	11,463.5	7,605.6	79.3	78.9	-48.24	-4,014.7	-201.8	360.6	237.2	123.46	2.921	
11,800.0	7,846.2	11,563.5	7,605.5	81.2	80.7	-48.18	-4,114.7	-201.8	361.0	234.7	126.31	2.858	
11,900.0	7,846.7	11,663.5	7,605.5	83.1	82.6	-48.12	-4,214.7	-201.8	361.3	232.1	129.17	2.797	
12,000.0	7,847.1	11,763.5	7,605.4	84.9	84.5	-48.05	-4,314.7	-201.8	361.7	229.6	132.02	2.739	
12,100.0	7,847.6	11,863.5	7,605.3	86.8	86.4	-47.99	-4,414.7	-201.8	362.0	227.1	134.88	2.684	
12,200.0	7,848.0	11,963.5	7,605.2	88.7	88.3	-47.93	-4,514.7	-201.8	362.4	224.6	137.73	2.631	
12,300.0	7,848.4	12,063.5	7,605.1	90.5	90.1	-47.87	-4,614.7	-201.8	362.7	222.1	140.58	2.580	
12,400.0	7,848.9	12,163.5	7,605.0	92.4	92.0	-47.81	-4,714.7	-201.8	363.1	219.6	143.43	2.531	
12,500.0	7,849.3	12,263.5	7,604.9	94.3	93.9	-47.75	-4,814.7	-201.8	363.4	217.1	146.27	2.485	
12,600.0	7,849.7	12,363.5	7,604.8	96.2	95.8	-47.69	-4,914.7	-201.8	363.8	214.7	149.11	2.440	
12,700.0	7,850.2	12,463.5	7,604.8	98.1	97.7	-47.63	-5,014.7	-201.8	364.1	212.2	151.96	2.396	
12,800.0	7,850.6	12,563.5	7,604.7	99.9	99.6	-47.57	-5,114.7	-201.8	364.5	209.7	154.79	2.355	
12,900.0	7,851.0	12,663.5	7,604.6	101.8	101.5	-47.50	-5,214.7	-201.8	364.8	207.2	157.63	2.314	
13,000.0	7,851.5	12,763.5	7,604.5	103.7	103.3	-47.44	-5,314.7	-201.8	365.2	204.7	160.46	2.276	
13,100.0	7,851.9	12,863.5	7,604.4	105.6	105.2	-47.38	-5,414.7	-201.8	365.5	202.2	163.29	2.239	
13,200.0	7,852.4	12,963.5	7,604.3	107.5	107.1	-47.32	-5,514.7	-201.8	365.9	199.8	166.12	2.203	
13,300.0	7,852.8	13,063.5	7,604.2	109.4	109.0	-47.26	-5,614.7	-201.8	366.2	197.3	168.95	2.168	
13,400.0	7,853.2	13,163.5	7,604.2	111.3	110.9	-47.20	-5,714.7	-201.8	366.6	194.8	171.77	2.134	
13,500.0	7,853.7	13,263.5	7,604.1	113.1	112.8	-47.14	-5,814.7	-201.8	367.0	192.4	174.59	2.102	
13,600.0	7,854.1	13,363.5	7,604.0	115.0	114.7	-47.08	-5,914.7	-201.8	367.3	189.9	177.41	2.070	
13,700.0	7,854.5	13,463.5	7,603.9	116.9	116.6	-47.02	-6,014.7	-201.8	367.7	187.5	180.22	2.040	
13,800.0	7,855.0	13,563.5	7,603.8	118.8	118.5	-46.96	-6,114.7	-201.8	368.0	185.0	183.03	2.011	
13,900.0	7,855.4	13,663.5	7,603.7	120.7	120.4	-46.90	-6,214.7	-201.8	368.4	182.6	185.84	1.982	
14,000.0	7,855.8	13,763.5	7,603.6	122.6	122.3	-46.84	-6,314.7	-201.8	368.7	180.1	188.64	1.955	
14,100.0	7,856.3	13,863.5	7,603.5	124.5	124.2	-46.79	-6,414.7	-201.8	369.1	177.7	191.44	1.928	
14,200.0	7,856.7	13,963.5	7,603.5	126.4	126.1	-46.73	-6,514.7	-201.8	369.5	175.2	194.24	1.902	
14,300.0	7,857.2	14,063.5	7,603.4	128.3	128.0	-46.67	-6,614.7	-201.8	369.8	172.8	197.03	1.877	
14,400.0	7,857.6	14,163.5	7,603.3	130.2	129.9	-46.61	-6,714.7	-201.8	370.2	170.4	199.82	1.853	
14,500.0	7,858.0	14,263.5	7,603.2	132.1	131.8	-46.55	-6,814.7	-201.8	370.5	167.9	202.61	1.829	
14,600.0	7,858.5	14,363.5	7,603.1	134.0	133.7	-46.49	-6,914.7	-201.8	370.9	165.5	205.39	1.806	
14,700.0	7,858.9	14,463.5	7,603.0	135.9	135.6	-46.43	-7,014.7	-201.8	371.3	163.1	208.17	1.783	
14,723.1	7,859.0	14,484.1	7,603.0	136.3	136.0	-46.42	-7,035.2	-201.8	371.4	162.6	208.78	1.779 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Jacobucci 1N67W32K Pad Sec.32-T1N-R67W - Jacobucci 32K-323 - Wellbore #1 - Plan #1 (7-24-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	5.0	5.0	0.0	0.0	90.00	0.0	84.0	84.0	84.0	0.01	N/A	
100.0	100.0	105.0	105.0	0.1	0.1	90.00	0.0	84.0	84.0	83.8	0.24	356.097	
200.0	200.0	205.0	205.0	0.3	0.3	90.00	0.0	84.0	84.0	83.4	0.69	122.591	
300.0	300.0	305.0	305.0	0.6	0.6	90.00	0.0	84.0	84.0	82.9	1.14	74.040	
400.0	400.0	405.0	405.0	0.8	0.8	90.00	0.0	84.0	84.0	82.5	1.58	53.036	
500.0	500.0	505.0	505.0	1.0	1.0	90.00	0.0	84.0	84.0	82.0	2.03	41.315	
600.0	600.0	605.0	605.0	1.2	1.2	90.00	0.0	84.0	84.0	81.6	2.48	33.837	
700.0	700.0	705.0	705.0	1.5	1.5	90.00	0.0	84.0	84.0	81.1	2.93	28.651	
800.0	800.0	805.0	805.0	1.7	1.7	90.00	0.0	84.0	84.0	80.7	3.38	24.844	
900.0	900.0	905.0	905.0	1.9	1.9	90.00	0.0	84.0	84.0	80.2	3.83	21.930	
964.9	964.9	969.9	969.9	2.1	2.1	90.00	0.0	84.0	84.0	79.9	4.12	20.378	CC
1,000.0	1,000.0	1,004.9	1,004.9	2.1	2.1	90.00	0.0	84.0	84.0	79.8	4.28	19.632	ES
1,100.0	1,100.0	1,102.1	1,102.1	2.4	2.4	89.62	0.6	85.8	85.8	81.1	4.72	18.199	
1,200.0	1,200.0	1,200.0	1,199.8	2.6	2.6	88.64	2.2	90.7	90.9	85.7	5.15	17.646	SF
1,300.0	1,300.0	1,295.7	1,295.1	2.8	2.8	87.26	4.7	98.5	99.1	93.6	5.59	17.743	
1,400.0	1,400.0	1,391.7	1,390.5	3.0	3.0	85.68	8.3	109.5	110.7	104.7	6.04	18.319	
1,500.0	1,500.0	1,490.6	1,488.4	3.3	3.3	156.52	12.4	122.2	125.5	119.0	6.45	19.458	
1,600.0	1,599.8	1,588.9	1,585.9	3.5	3.5	156.05	16.5	134.8	143.4	136.5	6.87	20.882	
1,700.0	1,699.5	1,686.7	1,682.8	3.7	3.8	156.13	20.6	147.3	164.5	157.2	7.28	22.584	
1,800.0	1,798.7	1,783.8	1,779.0	3.9	4.1	156.61	24.6	159.8	188.4	180.7	7.70	24.457	
1,900.0	1,898.0	1,880.7	1,875.0	4.2	4.4	157.13	28.7	172.3	212.8	204.7	8.14	26.150	
2,000.0	1,997.2	1,977.7	1,971.1	4.4	4.7	157.55	32.7	184.7	237.3	228.7	8.58	27.658	
2,100.0	2,096.4	2,074.6	2,067.1	4.7	5.0	157.88	36.7	197.1	261.7	252.7	9.02	29.003	
2,200.0	2,195.6	2,171.6	2,163.2	5.0	5.3	158.16	40.8	209.6	286.2	276.7	9.47	30.209	
2,300.0	2,294.9	2,268.5	2,259.3	5.3	5.6	158.40	44.8	222.0	310.7	300.7	9.93	31.295	
2,400.0	2,394.1	2,365.5	2,355.3	5.5	5.9	158.60	48.9	234.5	335.1	324.8	10.38	32.277	
2,500.0	2,493.3	2,462.4	2,451.4	5.8	6.2	158.78	52.9	246.9	359.6	348.8	10.84	33.168	
2,600.0	2,592.5	2,559.4	2,547.5	6.1	6.5	158.93	57.0	259.4	384.1	372.8	11.30	33.980	
2,700.0	2,691.7	2,656.3	2,643.5	6.4	6.8	159.06	61.0	271.8	408.6	396.8	11.77	34.723	
2,800.0	2,791.0	2,753.3	2,739.6	6.7	7.2	159.18	65.0	284.3	433.1	420.9	12.23	35.403	
2,900.0	2,890.2	2,850.2	2,835.7	7.0	7.5	159.29	69.1	296.7	457.6	444.9	12.70	36.030	
3,000.0	2,989.4	2,947.2	2,931.7	7.3	7.8	159.38	73.1	309.2	482.1	468.9	13.17	36.608	
3,100.0	3,088.6	3,044.1	3,027.8	7.6	8.1	159.47	77.2	321.6	506.6	492.9	13.64	37.142	
3,200.0	3,187.8	3,141.1	3,123.9	7.9	8.4	159.54	81.2	334.1	531.0	516.9	14.11	37.638	
3,300.0	3,287.1	3,238.0	3,219.9	8.2	8.7	159.62	85.3	346.5	555.5	541.0	14.58	38.099	
3,400.0	3,386.3	3,335.0	3,316.0	8.6	9.1	159.68	89.3	359.0	580.0	565.0	15.05	38.529	
3,500.0	3,485.5	3,431.9	3,412.1	8.9	9.4	159.74	93.3	371.4	604.5	589.0	15.53	38.930	
3,600.0	3,584.7	3,528.9	3,508.1	9.2	9.7	159.80	97.4	383.9	629.0	613.0	16.00	39.305	
3,700.0	3,684.0	3,625.8	3,604.2	9.5	10.0	159.85	101.4	396.3	653.5	637.0	16.48	39.657	
3,800.0	3,783.2	3,722.8	3,700.2	9.8	10.3	159.89	105.5	408.8	678.0	661.1	16.96	39.988	
3,900.0	3,882.4	3,819.8	3,796.3	10.1	10.7	159.94	109.5	421.2	702.5	685.1	17.43	40.299	
4,000.0	3,981.6	3,916.7	3,892.4	10.4	11.0	159.98	113.6	433.6	727.0	709.1	17.91	40.592	
4,100.0	4,080.8	4,013.7	3,988.4	10.7	11.3	160.02	117.6	446.1	751.5	733.1	18.39	40.869	
4,200.0	4,180.1	4,110.6	4,084.5	11.1	11.6	160.05	121.6	458.5	776.0	757.1	18.87	41.130	
4,300.0	4,279.3	4,207.6	4,180.6	11.4	12.0	160.09	125.7	471.0	800.5	781.2	19.35	41.378	
4,400.0	4,378.5	4,304.5	4,276.6	11.7	12.3	160.12	129.7	483.4	825.0	805.2	19.83	41.612	
4,500.0	4,477.7	4,401.5	4,372.7	12.0	12.6	160.15	133.8	495.9	849.5	829.2	20.31	41.835	
4,600.0	4,577.0	4,498.4	4,468.8	12.3	12.9	160.18	137.8	508.3	874.0	853.2	20.79	42.047	
4,700.0	4,676.2	4,595.4	4,564.8	12.6	13.3	160.20	141.9	520.8	898.5	877.2	21.27	42.248	
4,800.0	4,775.4	4,713.8	4,682.3	13.0	13.6	160.25	146.5	535.2	922.4	900.7	21.78	42.354	
4,900.0	4,874.6	4,856.2	4,824.2	13.3	13.9	160.41	150.3	546.9	942.4	920.1	22.29	42.275	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Jacobucci 1N67W32K Pad Sec.32-T1N-R67W - Jacobucci 32K-323 - Wellbore #1 - Plan #1 (7-24-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,973.8	5,001.0	4,968.9	13.6	14.2	160.68	152.0	551.8	957.5	934.7	22.79	42.012	
5,100.0	5,073.1	5,110.2	5,078.1	13.9	14.3	160.95	152.0	552.0	969.4	946.2	23.24	41.716	
5,200.0	5,172.3	5,209.5	5,177.3	14.2	14.5	161.18	152.0	552.0	981.2	957.5	23.68	41.434	
5,300.0	5,271.5	5,308.7	5,276.5	14.6	14.7	161.42	152.0	552.0	993.0	968.9	24.13	41.161	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Jacobucci 1N67W32K Pad Sec.32-T1N-R67W - Jacobucci 32K-403 - Wellbore #1 - Plan #1 (7-25-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	90.00	0.0	53.2	53.2	53.2	0.00	N/A	
100.0	100.0	103.0	103.0	0.1	0.1	90.00	0.0	53.2	53.2	53.0	0.23	229.907	
200.0	200.0	203.0	203.0	0.3	0.3	90.00	0.0	53.2	53.2	52.5	0.68	78.153	
300.0	300.0	303.0	303.0	0.6	0.6	90.00	0.0	53.2	53.2	52.1	1.13	47.078	
400.0	400.0	403.0	403.0	0.8	0.8	90.00	0.0	53.2	53.2	51.6	1.58	33.685	
500.0	500.0	503.0	503.0	1.0	1.0	90.00	0.0	53.2	53.2	51.2	2.03	26.224	
600.0	600.0	603.0	603.0	1.2	1.2	90.00	0.0	53.2	53.2	50.7	2.48	21.469	
700.0	700.0	703.0	703.0	1.5	1.5	90.00	0.0	53.2	53.2	50.3	2.93	18.174	
800.0	800.0	803.0	803.0	1.7	1.7	90.00	0.0	53.2	53.2	49.8	3.38	15.755	
900.0	900.0	903.0	903.0	1.9	1.9	90.00	0.0	53.2	53.2	49.4	3.83	13.905	
1,000.0	1,000.0	1,003.0	1,003.0	2.1	2.1	90.00	0.0	53.2	53.2	48.9	4.28	12.444	
1,100.0	1,100.0	1,103.0	1,103.0	2.4	2.4	90.00	0.0	53.2	53.2	48.5	4.73	11.260	
1,200.0	1,200.0	1,203.0	1,203.0	2.6	2.6	90.00	0.0	53.2	53.2	48.0	5.18	10.282	
1,300.0	1,300.0	1,303.0	1,303.0	2.8	2.8	90.00	0.0	53.2	53.2	47.6	5.63	9.461	
1,400.0	1,400.0	1,403.0	1,403.0	3.0	3.0	90.00	0.0	53.2	53.2	47.2	6.08	8.761	CC, ES
1,500.0	1,500.0	1,503.0	1,503.0	3.3	3.3	162.66	0.0	53.2	54.9	48.4	6.51	8.428	
1,600.0	1,599.8	1,602.8	1,602.8	3.5	3.5	164.12	0.0	53.2	59.9	53.0	6.94	8.636	
1,700.0	1,699.5	1,702.5	1,702.5	3.7	3.7	166.08	0.0	53.2	68.3	61.0	7.35	9.291	
1,800.0	1,798.7	1,801.7	1,801.7	3.9	3.9	168.10	0.0	53.2	79.9	72.1	7.78	10.276	
1,900.0	1,898.0	1,901.0	1,901.0	4.2	4.2	169.70	0.0	53.2	92.1	83.9	8.21	11.218	
2,000.0	1,997.2	2,000.2	2,000.2	4.4	4.4	170.92	0.0	53.2	104.4	95.8	8.65	12.068	
2,100.0	2,096.4	2,099.4	2,099.4	4.7	4.6	171.88	0.0	53.2	116.7	107.6	9.09	12.836	
2,200.0	2,195.6	2,198.6	2,198.6	5.0	4.8	172.66	0.0	53.2	129.1	119.5	9.54	13.533	
2,300.0	2,294.9	2,297.9	2,297.9	5.3	5.1	173.31	0.0	53.2	141.4	131.4	9.98	14.167	
2,400.0	2,394.1	2,397.1	2,397.1	5.5	5.3	173.85	0.0	53.2	153.8	143.4	10.43	14.746	
2,500.0	2,493.3	2,496.3	2,496.3	5.8	5.5	174.31	0.0	53.2	166.2	155.3	10.88	15.277	
2,600.0	2,592.5	2,593.8	2,593.7	6.1	5.7	174.22	1.3	54.0	179.1	167.7	11.32	15.814	
2,700.0	2,691.7	2,690.8	2,690.6	6.4	5.9	173.21	5.5	56.4	193.0	181.2	11.77	16.401	
2,800.0	2,791.0	2,787.2	2,786.7	6.7	6.1	171.48	12.5	60.4	208.1	195.8	12.21	17.039	
2,900.0	2,890.2	2,883.0	2,881.8	7.0	6.4	169.22	22.2	65.9	224.6	211.9	12.66	17.733	
3,000.0	2,989.4	2,981.0	2,979.0	7.3	6.6	166.91	33.4	72.3	242.0	228.9	13.13	18.429	
3,100.0	3,088.6	3,079.0	3,076.2	7.6	6.8	164.91	44.5	78.7	259.8	246.2	13.61	19.090	
3,200.0	3,187.8	3,177.0	3,173.4	7.9	7.1	163.16	55.7	85.1	277.8	263.7	14.09	19.715	
3,300.0	3,287.1	3,275.1	3,270.5	8.2	7.3	161.63	66.9	91.4	296.1	281.5	14.58	20.307	
3,400.0	3,386.3	3,373.1	3,367.7	8.6	7.6	160.27	78.0	97.8	314.5	299.4	15.07	20.865	
3,500.0	3,485.5	3,471.1	3,464.9	8.9	7.8	159.07	89.2	104.2	333.1	317.5	15.57	21.391	
3,600.0	3,584.7	3,569.2	3,562.1	9.2	8.1	157.99	100.4	110.6	351.8	335.7	16.07	21.887	
3,700.0	3,684.0	3,667.2	3,659.3	9.5	8.4	157.02	111.5	117.0	370.6	354.1	16.58	22.355	
3,800.0	3,783.2	3,765.2	3,756.4	9.8	8.7	156.15	122.7	123.4	389.6	372.5	17.09	22.797	
3,900.0	3,882.4	3,866.0	3,856.4	10.1	8.9	155.35	134.0	129.8	408.5	390.9	17.60	23.212	
4,000.0	3,981.6	3,973.8	3,963.6	10.4	9.2	154.91	143.5	135.2	425.7	407.7	18.08	23.553	
4,100.0	4,080.8	4,082.5	4,072.1	10.7	9.4	154.94	149.5	138.7	440.8	422.3	18.53	23.786	
4,200.0	4,180.1	4,191.8	4,181.3	11.1	9.6	155.39	151.9	140.1	453.6	434.7	18.97	23.912	
4,300.0	4,279.3	4,292.7	4,282.3	11.4	9.8	156.03	152.0	140.1	465.0	445.6	19.40	23.970	
4,400.0	4,378.5	4,392.0	4,381.5	11.7	10.0	156.64	152.0	140.1	476.5	456.6	19.85	24.002	
4,500.0	4,477.7	4,491.2	4,480.7	12.0	10.2	157.22	152.0	140.1	487.9	467.6	20.30	24.034	
4,600.0	4,577.0	4,590.4	4,580.0	12.3	10.4	157.77	152.0	140.1	499.4	478.7	20.75	24.065	
4,700.0	4,676.2	4,689.6	4,679.2	12.6	10.6	158.30	152.0	140.1	511.0	489.8	21.21	24.098	
4,800.0	4,775.4	4,788.8	4,778.4	13.0	10.8	158.80	152.0	140.1	522.6	500.9	21.66	24.131	
4,900.0	4,874.6	4,888.1	4,877.6	13.3	11.0	159.28	152.0	140.1	534.2	512.1	22.11	24.164	
5,000.0	4,973.8	4,987.3	4,976.8	13.6	11.3	159.75	152.0	140.1	545.9	523.4	22.56	24.197	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Jacobucci 1N67W32K Pad Sec.32-T1N-R67W - Jacobucci 32K-403 - Wellbore #1 - Plan #1 (7-25-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,073.1	5,086.5	5,076.1	13.9	11.5	160.19	152.0	140.1	557.6	534.6	23.01	24.231	
5,200.0	5,172.3	5,185.7	5,175.3	14.2	11.7	160.61	152.0	140.1	569.4	545.9	23.47	24.264	
5,300.0	5,271.5	5,285.0	5,274.5	14.6	11.9	161.02	152.0	140.1	581.1	557.2	23.92	24.297	
5,400.0	5,370.7	5,384.2	5,373.7	14.9	12.1	161.43	152.0	140.1	592.8	568.4	24.38	24.317	
5,500.0	5,470.3	5,483.7	5,473.3	15.1	12.3	161.78	152.0	140.1	602.1	577.3	24.82	24.256	
5,600.0	5,570.1	5,583.5	5,573.1	15.3	12.5	162.00	152.0	140.1	608.0	582.8	25.24	24.093	
5,700.0	5,670.0	5,683.5	5,673.0	15.5	12.8	162.10	152.0	140.1	610.7	585.1	25.63	23.832	
5,800.0	5,770.0	5,783.5	5,773.0	15.6	13.0	90.00	152.0	140.1	610.9	584.8	26.02	23.474	
5,900.0	5,870.0	5,883.5	5,873.0	15.8	13.2	90.00	152.0	140.1	610.9	584.4	26.44	23.100	
6,000.0	5,970.0	5,983.5	5,973.0	16.0	13.4	90.00	152.0	140.1	610.9	584.0	26.87	22.737	
6,100.0	6,070.0	6,083.5	6,073.0	16.1	13.6	90.00	152.0	140.1	610.9	583.6	27.29	22.385	
6,200.0	6,170.0	6,183.5	6,173.0	16.3	13.8	90.00	152.0	140.1	610.9	583.1	27.71	22.042	
6,300.0	6,270.0	6,283.5	6,273.0	16.5	14.1	90.00	152.0	140.1	610.9	582.7	28.14	21.710	
6,400.0	6,370.0	6,383.5	6,373.0	16.7	14.3	90.00	152.0	140.1	610.9	582.3	28.56	21.386	
6,500.0	6,470.0	6,483.5	6,473.0	16.9	14.5	90.00	152.0	140.1	610.9	581.9	28.99	21.072	
6,600.0	6,570.0	6,583.5	6,573.0	17.0	14.7	90.00	152.0	140.1	610.9	581.4	29.42	20.766	
6,700.0	6,670.0	6,683.5	6,673.0	17.2	14.9	90.00	152.0	140.1	610.9	581.0	29.84	20.469	
6,800.0	6,770.0	6,783.5	6,773.0	17.4	15.2	90.00	152.0	140.1	610.9	580.6	30.27	20.179	
6,900.0	6,870.0	6,883.5	6,873.0	17.6	15.4	90.00	152.0	140.1	610.9	580.2	30.70	19.898	
7,000.0	6,970.0	6,983.5	6,973.0	17.8	15.6	90.00	152.0	140.1	610.9	579.7	31.13	19.623	
7,065.1	7,035.1	7,048.6	7,038.1	17.9	15.7	-90.01	152.0	140.1	610.9	579.4	31.41	19.449	
7,100.0	7,070.0	7,083.5	7,073.0	18.0	15.8	-90.00	152.0	140.1	610.9	579.3	31.56	19.357	
7,200.0	7,169.7	7,183.4	7,172.6	18.1	16.0	-89.96	144.7	140.1	610.9	579.0	31.86	19.171	
7,300.0	7,267.6	7,283.4	7,270.4	18.2	16.1	-89.93	124.4	140.1	610.9	578.8	32.10	19.031	
7,400.0	7,362.1	7,383.2	7,364.7	18.3	16.2	-89.89	91.6	140.1	610.9	578.6	32.29	18.916	
7,500.0	7,451.6	7,483.0	7,453.8	18.4	16.3	-89.86	46.8	140.1	610.9	578.4	32.50	18.794	
7,600.0	7,534.4	7,582.8	7,536.3	18.5	16.4	-89.83	-9.1	140.1	610.9	578.1	32.79	18.631	
7,700.0	7,609.3	7,682.6	7,610.8	18.7	16.6	-89.80	-75.4	140.1	610.9	577.6	33.22	18.388	
7,800.0	7,674.9	7,782.3	7,676.0	18.8	16.9	-89.78	-150.7	140.1	610.9	577.0	33.87	18.035	
7,900.0	7,730.1	7,882.0	7,730.8	19.1	17.4	-89.76	-233.9	140.1	610.9	576.1	34.79	17.557	
8,000.0	7,773.9	7,981.6	7,774.4	19.6	18.0	-89.74	-323.4	140.1	610.9	574.8	36.02	16.957	
8,100.0	7,805.7	8,081.2	7,805.9	20.2	18.7	-89.73	-417.9	140.1	610.9	573.3	37.57	16.259	
8,200.0	7,824.8	8,180.9	7,824.9	21.0	19.7	-89.72	-515.6	140.1	610.9	571.4	39.42	15.498	
8,300.0	7,831.0	8,280.5	7,831.0	22.0	20.7	-89.72	-615.0	140.1	610.9	569.3	41.51	14.716	
8,400.0	7,831.4	8,380.5	7,831.4	23.1	21.9	-89.72	-715.0	140.1	610.9	567.0	43.84	13.933	
8,500.0	7,831.8	8,480.5	7,831.9	24.3	23.1	-89.72	-815.0	140.1	610.9	564.5	46.37	13.175	
8,600.0	7,832.3	8,580.5	7,832.3	25.6	24.5	-89.72	-915.0	140.1	610.9	561.8	49.06	12.451	
8,700.0	7,832.7	8,680.5	7,832.7	27.0	25.9	-89.72	-1,015.0	140.1	610.9	559.0	51.90	11.771	
8,800.0	7,833.2	8,780.5	7,833.2	28.4	27.4	-89.72	-1,115.0	140.1	610.9	556.0	54.85	11.136	
8,900.0	7,833.6	8,880.5	7,833.6	29.9	28.9	-89.72	-1,215.0	140.1	610.9	552.9	57.92	10.547	
9,000.0	7,834.0	8,980.5	7,834.0	31.4	30.5	-89.72	-1,315.0	140.1	610.9	549.8	61.06	10.004	
9,100.0	7,834.5	9,080.5	7,834.5	33.0	32.1	-89.72	-1,415.0	140.1	610.9	546.6	64.28	9.503	
9,200.0	7,834.9	9,180.5	7,834.9	34.6	33.8	-89.72	-1,514.9	140.1	610.9	543.3	67.57	9.040	
9,300.0	7,835.3	9,280.5	7,835.4	36.2	35.4	-89.72	-1,614.9	140.1	610.9	539.9	70.91	8.615	
9,400.0	7,835.8	9,380.5	7,835.8	37.9	37.1	-89.72	-1,714.9	140.1	610.9	536.6	74.30	8.222	
9,500.0	7,836.2	9,480.5	7,836.2	39.6	38.8	-89.72	-1,814.9	140.1	610.9	533.1	77.73	7.859	
9,600.0	7,836.6	9,580.5	7,836.7	41.3	40.6	-89.72	-1,914.9	140.1	610.9	529.7	81.19	7.524	
9,700.0	7,837.1	9,680.5	7,837.1	43.0	42.3	-89.72	-2,014.9	140.1	610.9	526.2	84.69	7.213	
9,800.0	7,837.5	9,780.5	7,837.5	44.7	44.1	-89.72	-2,114.9	140.1	610.9	522.6	88.21	6.925	
9,900.0	7,838.0	9,880.5	7,838.0	46.5	45.8	-89.72	-2,214.9	140.1	610.9	519.1	91.76	6.657	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Jacobucci 1N67W32K Pad Sec.32-T1N-R67W - Jacobucci 32K-403 - Wellbore #1 - Plan #1 (7-25-14)

Offset Site Error: 0.0 ft

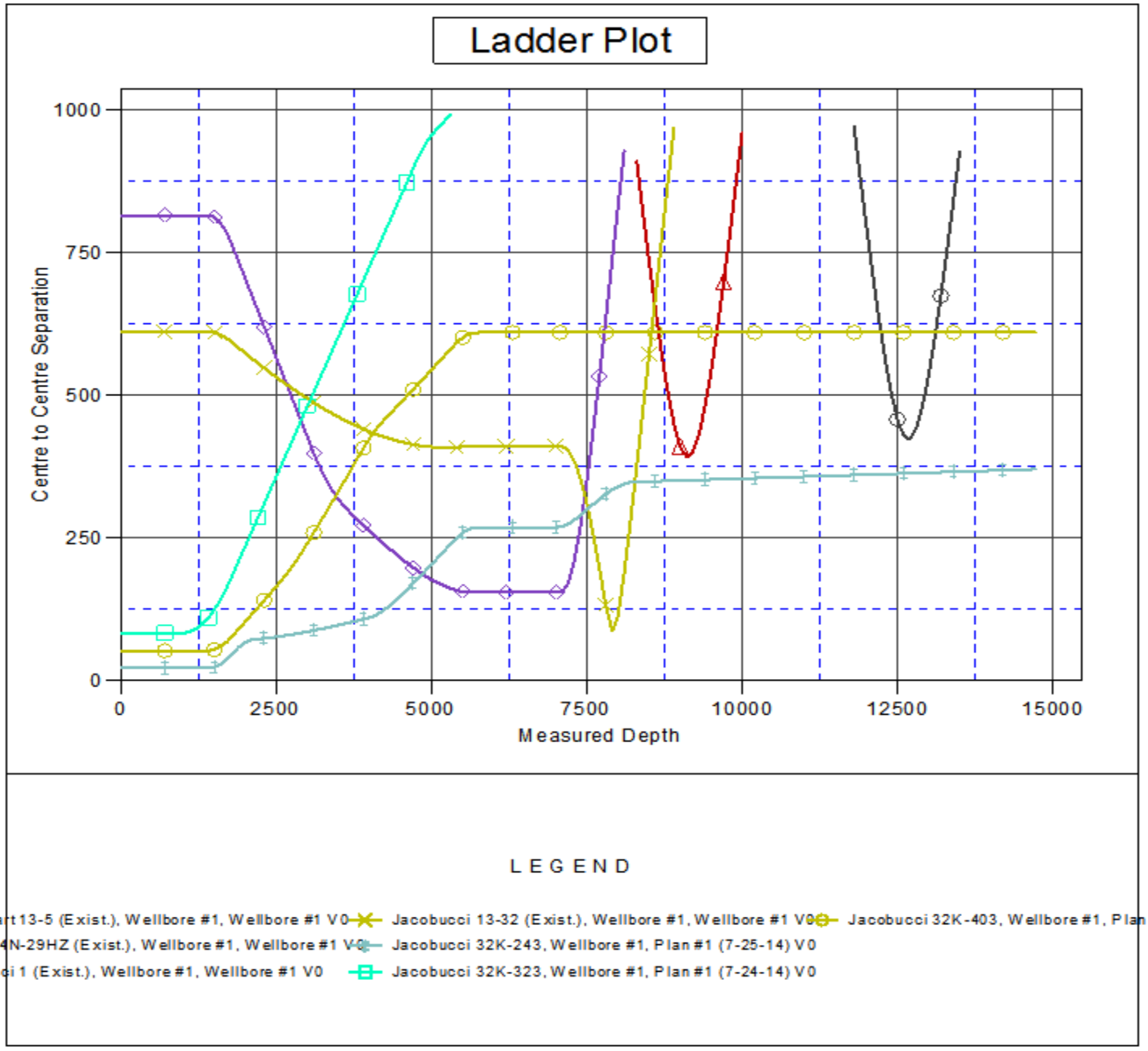
Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	7,838.4	9,980.5	7,838.4	48.3	47.6	-89.72	-2,314.9	140.1	610.9	515.5	95.33	6.408	
10,100.0	7,838.8	10,080.5	7,838.8	50.0	49.4	-89.72	-2,414.9	140.1	610.9	511.9	98.92	6.175	
10,200.0	7,839.3	10,180.5	7,839.3	51.8	51.2	-89.72	-2,514.9	140.1	610.9	508.3	102.53	5.958	
10,300.0	7,839.7	10,280.5	7,839.7	53.6	53.0	-89.72	-2,614.9	140.1	610.9	504.7	106.15	5.755	
10,400.0	7,840.1	10,380.5	7,840.2	55.4	54.9	-89.72	-2,714.9	140.1	610.9	501.1	109.79	5.564	
10,500.0	7,840.6	10,480.5	7,840.6	57.2	56.7	-89.72	-2,814.9	140.1	610.9	497.4	113.44	5.385	
10,600.0	7,841.0	10,580.5	7,841.0	59.0	58.5	-89.72	-2,914.9	140.1	610.9	493.8	117.10	5.217	
10,700.0	7,841.4	10,680.5	7,841.5	60.9	60.4	-89.72	-3,014.9	140.1	610.9	490.1	120.77	5.058	
10,800.0	7,841.9	10,780.5	7,841.9	62.7	62.2	-89.72	-3,114.9	140.1	610.9	486.4	124.45	4.908	
10,900.0	7,842.3	10,880.5	7,842.3	64.5	64.0	-89.72	-3,214.9	140.1	610.9	482.7	128.14	4.767	
11,000.0	7,842.8	10,980.5	7,842.8	66.4	65.9	-89.72	-3,314.9	140.1	610.9	479.0	131.84	4.633	
11,100.0	7,843.2	11,080.5	7,843.2	68.2	67.7	-89.72	-3,414.9	140.1	610.9	475.3	135.54	4.507	
11,200.0	7,843.6	11,180.5	7,843.6	70.1	69.6	-89.72	-3,514.9	140.1	610.9	471.6	139.26	4.387	
11,300.0	7,844.1	11,280.5	7,844.1	71.9	71.5	-89.72	-3,614.9	140.1	610.9	467.9	142.97	4.273	
11,400.0	7,844.5	11,380.5	7,844.5	73.8	73.3	-89.72	-3,714.9	140.1	610.9	464.2	146.70	4.164	
11,500.0	7,844.9	11,480.5	7,845.0	75.6	75.2	-89.72	-3,814.9	140.1	610.9	460.4	150.43	4.061	
11,600.0	7,845.4	11,580.5	7,845.4	77.5	77.1	-89.72	-3,914.9	140.1	610.9	456.7	154.16	3.962	
11,700.0	7,845.8	11,680.5	7,845.8	79.3	78.9	-89.72	-4,014.9	140.1	610.9	453.0	157.90	3.869	
11,800.0	7,846.2	11,780.5	7,846.3	81.2	80.8	-89.72	-4,114.9	140.1	610.9	449.2	161.65	3.779	
11,900.0	7,846.7	11,880.5	7,846.7	83.1	82.7	-89.72	-4,214.9	140.1	610.9	445.5	165.39	3.693	
12,000.0	7,847.1	11,980.5	7,847.1	84.9	84.5	-89.72	-4,314.9	140.1	610.9	441.7	169.14	3.611	
12,100.0	7,847.6	12,080.5	7,847.6	86.8	86.4	-89.72	-4,414.9	140.1	610.9	438.0	172.90	3.533	
12,200.0	7,848.0	12,180.5	7,848.0	88.7	88.3	-89.72	-4,514.9	140.1	610.9	434.2	176.66	3.458	
12,300.0	7,848.4	12,280.5	7,848.4	90.5	90.2	-89.72	-4,614.9	140.1	610.9	430.4	180.42	3.386	
12,400.0	7,848.9	12,380.5	7,848.9	92.4	92.1	-89.72	-4,714.9	140.1	610.9	426.7	184.18	3.317	
12,500.0	7,849.3	12,480.5	7,849.3	94.3	93.9	-89.72	-4,814.9	140.1	610.9	422.9	187.95	3.250	
12,600.0	7,849.7	12,580.5	7,849.8	96.2	95.8	-89.72	-4,914.9	140.1	610.9	419.1	191.72	3.186	
12,700.0	7,850.2	12,680.5	7,850.2	98.1	97.7	-89.72	-5,014.9	140.1	610.9	415.4	195.49	3.125	
12,800.0	7,850.6	12,780.5	7,850.6	99.9	99.6	-89.72	-5,114.9	140.1	610.9	411.6	199.26	3.066	
12,900.0	7,851.0	12,880.5	7,851.1	101.8	101.5	-89.72	-5,214.9	140.1	610.9	407.8	203.04	3.009	
13,000.0	7,851.5	12,980.5	7,851.5	103.7	103.4	-89.72	-5,314.9	140.1	610.9	404.0	206.82	2.954	
13,100.0	7,851.9	13,080.5	7,851.9	105.6	105.3	-89.72	-5,414.9	140.1	610.9	400.3	210.60	2.901	
13,200.0	7,852.4	13,180.5	7,852.4	107.5	107.2	-89.72	-5,514.9	140.1	610.9	396.5	214.38	2.849	
13,300.0	7,852.8	13,280.5	7,852.8	109.4	109.1	-89.72	-5,614.9	140.1	610.9	392.7	218.16	2.800	
13,400.0	7,853.2	13,380.5	7,853.2	111.3	110.9	-89.72	-5,714.9	140.1	610.9	388.9	221.95	2.752	
13,500.0	7,853.7	13,480.5	7,853.7	113.1	112.8	-89.72	-5,814.9	140.1	610.9	385.1	225.73	2.706	
13,600.0	7,854.1	13,580.5	7,854.1	115.0	114.7	-89.72	-5,914.9	140.1	610.9	381.3	229.52	2.661	
13,700.0	7,854.5	13,680.5	7,854.6	116.9	116.6	-89.72	-6,014.9	140.1	610.9	377.6	233.31	2.618	
13,800.0	7,855.0	13,780.5	7,855.0	118.8	118.5	-89.72	-6,114.9	140.1	610.9	373.8	237.10	2.576	
13,900.0	7,855.4	13,880.5	7,855.4	120.7	120.4	-89.72	-6,214.9	140.1	610.9	370.0	240.89	2.536	
14,000.0	7,855.8	13,980.5	7,855.9	122.6	122.3	-89.72	-6,314.9	140.1	610.9	366.2	244.68	2.497	
14,100.0	7,856.3	14,080.5	7,856.3	124.5	124.2	-89.72	-6,414.9	140.1	610.9	362.4	248.48	2.458	
14,200.0	7,856.7	14,180.5	7,856.7	126.4	126.1	-89.72	-6,514.9	140.1	610.9	358.6	252.27	2.421	
14,300.0	7,857.2	14,280.5	7,857.2	128.3	128.0	-89.72	-6,614.9	140.1	610.9	354.8	256.07	2.386	
14,400.0	7,857.6	14,380.5	7,857.6	130.2	129.9	-89.72	-6,714.9	140.1	610.9	351.0	259.87	2.351	
14,500.0	7,858.0	14,480.5	7,858.0	132.1	131.8	-89.72	-6,814.9	140.1	610.9	347.2	263.67	2.317	
14,600.0	7,858.5	14,580.5	7,858.5	134.0	133.7	-89.72	-6,914.9	140.1	610.9	343.4	267.47	2.284	
14,700.0	7,858.9	14,680.5	7,858.9	135.9	135.3	-89.72	-7,014.9	140.1	610.9	339.9	270.98	2.254	
14,708.4	7,858.9	14,688.9	7,859.0	136.0	135.5	-89.72	-7,023.3	140.1	610.9	339.6	271.27	2.252	
14,723.1	7,859.0	14,700.0	7,859.0	136.3	135.6	-89.72	-7,034.4	140.1	610.9	339.2	271.72	2.248 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Jacobucci 32K-443
Project:	SEC.32-T1N-R67W	**TVD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Reference Site:	Jacobucci 1N67W32K Pad Sec.32-T1N-R67W	**MD Reference:**	WELL @ 5060.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Jacobucci 32K-443	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #1 (7-25-14)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 5060.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinates are relative to: Jacobucci 32K-443
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.37°



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