PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Chesnut 27G-301**

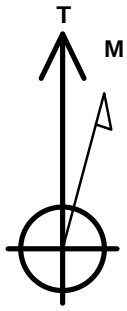
Surface Location: Chesnut 27GK-HZ Pad Sec.27-T5N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4613.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1379557.12	3267188.07	40.371320	-104.541040	

Ensign 123 RKB - 15' WELL @ 4628.0ft (RKB 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2250'FNL & 1149'FWL, Sec.27	1.0	0.0	0.0	Point
BHL 500'FNL & 130'FWL, Sec.22	6711.0	7071.3	-1100.3	Point



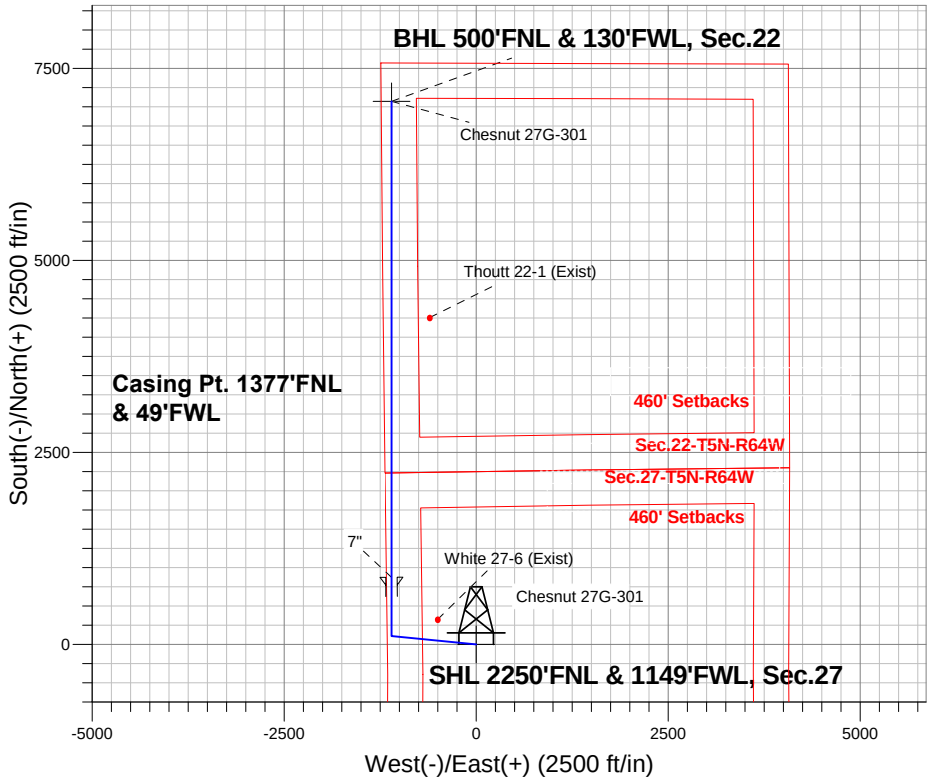
Azimuths to True North
Magnetic North: 8.34°

Magnetic Field
Strength: 52827.8snT
Dip Angle: 66.96°
Date: 6/6/2014
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
400.0	400.0	KOP #1
5939.5	6061.0	KOP #2
6703.4	7260.0	End of Build

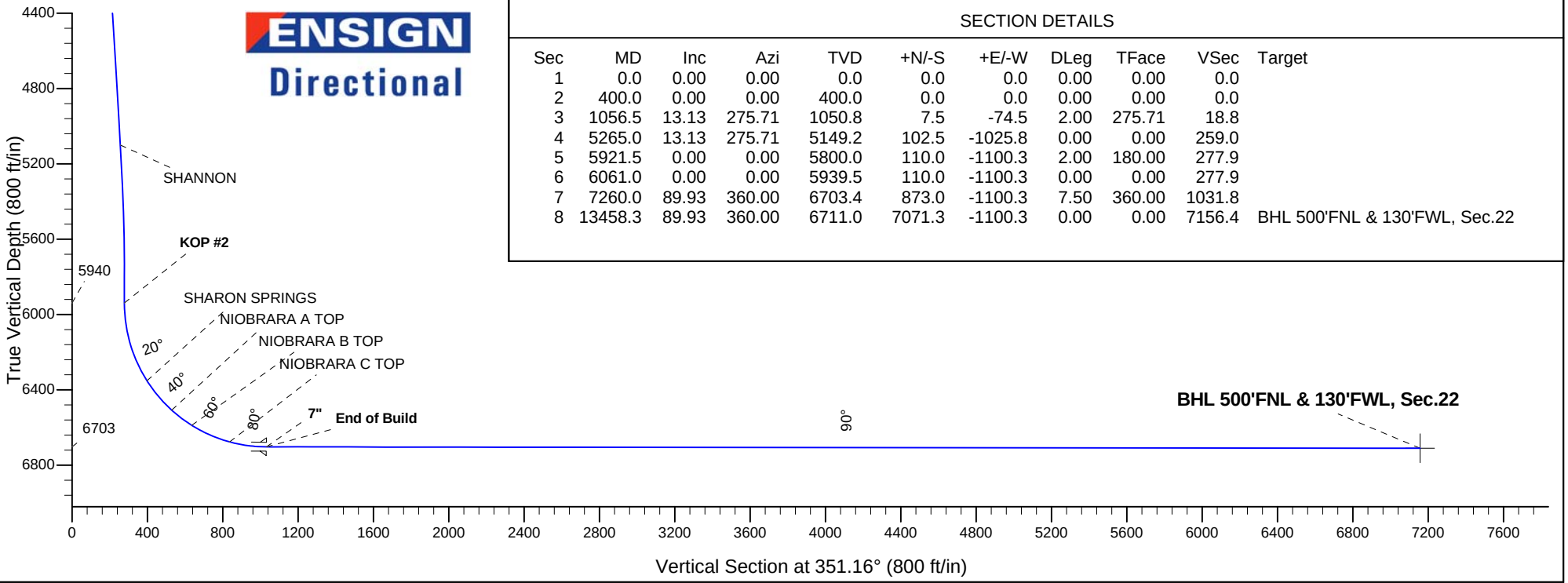
Chesnut 27GK-HZ Pad Sec.27-T5N-R64W
Chesnut 27G-301
Plan #2 (7-09-14)
13:15, July 09 2014



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	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	1056.5	13.13	275.71	1050.8	7.5	-74.5	2.00	275.71	18.8	
4	5265.0	13.13	275.71	5149.2	102.5	-1025.8	0.00	0.00	259.0	
5	5921.5	0.00	0.00	5800.0	110.0	-1100.3	2.00	180.00	277.9	
6	6061.0	0.00	0.00	5939.5	110.0	-1100.3	0.00	0.00	277.9	
7	7260.0	89.93	360.00	6703.4	873.0	-1100.3	7.50	360.00	1031.8	
8	13458.3	89.93	360.00	6711.0	7071.3	-1100.3	0.00	0.00	7156.4	BHL 500'FNL & 130'FWL, Sec.22



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.27-T5N-R64W
Chesnut 27GK-HZ Pad Sec.27-T5N-R64W
Chesnut 27G-301

Wellbore #1

Plan: Plan #2 7-09-14)

Standard Planning Report

09 July, 2014

Database:	landmark	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Project:	SEC.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**North Reference:**	True
Well:	Chesnut 27G-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 7-09-14)		

Project SEC.27-T5N-R64W, 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 Chesnut 27GK-HZ Pad Sec.27-T5N-R64W

Site Position:		**Northing:**	1,379,023.49 ft	**Latitude:**	40.369860
From:	Lat/Long	**Easting:**	3,267,026.65 ft	**Longitude:**	-104.541640
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.62 °

Well Chesnut 27G-301

Well Position	**+N/-S**	531.9 ft	**Northing:**	1,379,557.12 ft	**Latitude:**	40.371320
	+E/-W	167.2 ft	**Easting:**	3,267,188.07 ft	**Longitude:**	-104.541040
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,613.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/8/2014	8.33	66.96	52,819

Design Plan #2 7-09-14)

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	351.16

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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,056.5	13.13	275.71	1,050.8	7.5	-74.5	2.00	2.00	0.00	275.71	
5,265.0	13.13	275.71	5,149.2	102.5	-1,025.8	0.00	0.00	0.00	0.00	
5,921.5	0.00	0.00	5,800.0	110.0	-1,100.3	2.00	-2.00	0.00	180.00	
6,061.0	0.00	0.00	5,939.5	110.0	-1,100.3	0.00	0.00	0.00	0.00	
7,260.0	89.93	360.00	6,703.4	873.0	-1,100.3	7.50	7.50	0.00	360.00	
13,458.3	89.93	360.00	6,711.0	7,071.3	-1,100.3	0.00	0.00	0.00	0.00	BHL 500'FNL & 13(

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Project:	SEC.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
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Well:	Chesnut 27G-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 7-09-14)		

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
KOP #1									
500.0	2.00	275.71	500.0	0.2	-1.7	0.4	2.00	2.00	0.00
600.0	4.00	275.71	599.8	0.7	-6.9	1.8	2.00	2.00	0.00
700.0	6.00	275.71	699.5	1.6	-15.6	3.9	2.00	2.00	0.00
800.0	8.00	275.71	798.7	2.8	-27.7	7.0	2.00	2.00	0.00
900.0	10.00	275.71	897.5	4.3	-43.3	10.9	2.00	2.00	0.00
1,000.0	12.00	275.71	995.6	6.2	-62.3	15.7	2.00	2.00	0.00
1,056.5	13.13	275.71	1,050.8	7.5	-74.5	18.8	2.00	2.00	0.00
1,100.0	13.13	275.71	1,093.1	8.4	-84.4	21.3	0.00	0.00	0.00
1,200.0	13.13	275.71	1,190.5	10.7	-107.0	27.0	0.00	0.00	0.00
1,300.0	13.13	275.71	1,287.9	13.0	-129.6	32.7	0.00	0.00	0.00
1,400.0	13.13	275.71	1,385.3	15.2	-152.2	38.4	0.00	0.00	0.00
1,500.0	13.13	275.71	1,482.7	17.5	-174.8	44.1	0.00	0.00	0.00
1,600.0	13.13	275.71	1,580.1	19.7	-197.4	49.8	0.00	0.00	0.00
1,700.0	13.13	275.71	1,677.4	22.0	-220.0	55.6	0.00	0.00	0.00
1,800.0	13.13	275.71	1,774.8	24.3	-242.6	61.3	0.00	0.00	0.00
1,900.0	13.13	275.71	1,872.2	26.5	-265.2	67.0	0.00	0.00	0.00
2,000.0	13.13	275.71	1,969.6	28.8	-287.8	72.7	0.00	0.00	0.00
2,100.0	13.13	275.71	2,067.0	31.0	-310.4	78.4	0.00	0.00	0.00
2,200.0	13.13	275.71	2,164.4	33.3	-333.0	84.1	0.00	0.00	0.00
2,300.0	13.13	275.71	2,261.8	35.5	-355.6	89.8	0.00	0.00	0.00
2,400.0	13.13	275.71	2,359.1	37.8	-378.2	95.5	0.00	0.00	0.00
2,500.0	13.13	275.71	2,456.5	40.1	-400.8	101.2	0.00	0.00	0.00
2,600.0	13.13	275.71	2,553.9	42.3	-423.4	106.9	0.00	0.00	0.00
2,700.0	13.13	275.71	2,651.3	44.6	-446.0	112.6	0.00	0.00	0.00
2,800.0	13.13	275.71	2,748.7	46.8	-468.6	118.3	0.00	0.00	0.00
2,900.0	13.13	275.71	2,846.1	49.1	-491.2	124.0	0.00	0.00	0.00
3,000.0	13.13	275.71	2,943.5	51.4	-513.8	129.8	0.00	0.00	0.00
3,100.0	13.13	275.71	3,040.8	53.6	-536.4	135.5	0.00	0.00	0.00
3,200.0	13.13	275.71	3,138.2	55.9	-559.0	141.2	0.00	0.00	0.00
3,300.0	13.13	275.71	3,235.6	58.1	-581.6	146.9	0.00	0.00	0.00
3,400.0	13.13	275.71	3,333.0	60.4	-604.2	152.6	0.00	0.00	0.00
3,499.6	13.13	275.71	3,430.0	62.7	-626.7	158.3	0.00	0.00	0.00
PARKMAN									
3,500.0	13.13	275.71	3,430.4	62.7	-626.8	158.3	0.00	0.00	0.00
3,600.0	13.13	275.71	3,527.8	64.9	-649.4	164.0	0.00	0.00	0.00
3,700.0	13.13	275.71	3,625.2	67.2	-672.0	169.7	0.00	0.00	0.00
3,800.0	13.13	275.71	3,722.5	69.4	-694.6	175.4	0.00	0.00	0.00
3,900.0	13.13	275.71	3,819.9	71.7	-717.2	181.1	0.00	0.00	0.00
4,000.0	13.13	275.71	3,917.3	74.0	-739.9	186.8	0.00	0.00	0.00
4,100.0	13.13	275.71	4,014.7	76.2	-762.5	192.5	0.00	0.00	0.00
4,200.0	13.13	275.71	4,112.1	78.5	-785.1	198.3	0.00	0.00	0.00
4,238.9	13.13	275.71	4,150.0	79.4	-793.9	200.5	0.00	0.00	0.00
SUSSEX									
4,300.0	13.13	275.71	4,209.5	80.7	-807.7	204.0	0.00	0.00	0.00
4,400.0	13.13	275.71	4,306.9	83.0	-830.3	209.7	0.00	0.00	0.00
4,500.0	13.13	275.71	4,404.2	85.3	-852.9	215.4	0.00	0.00	0.00
4,600.0	13.13	275.71	4,501.6	87.5	-875.5	221.1	0.00	0.00	0.00

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Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**North Reference:**	True
Well:	Chesnut 27G-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 7-09-14)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,700.0	13.13	275.71	4,599.0	89.8	-898.1	226.8	0.00	0.00	0.00
4,800.0	13.13	275.71	4,696.4	92.0	-920.7	232.5	0.00	0.00	0.00
4,900.0	13.13	275.71	4,793.8	94.3	-943.3	238.2	0.00	0.00	0.00
5,000.0	13.13	275.71	4,891.2	96.6	-965.9	243.9	0.00	0.00	0.00
5,100.0	13.13	275.71	4,988.6	98.8	-988.5	249.6	0.00	0.00	0.00
5,200.0	13.13	275.71	5,085.9	101.1	-1,011.1	255.3	0.00	0.00	0.00
5,214.4	13.13	275.71	5,100.0	101.4	-1,014.4	256.2	0.00	0.00	0.00
SHANNON									
5,265.0	13.13	275.71	5,149.2	102.5	-1,025.8	259.0	0.00	0.00	0.00
5,300.0	12.43	275.71	5,183.4	103.3	-1,033.5	261.0	2.00	-2.00	0.00
5,400.0	10.43	275.71	5,281.4	105.3	-1,053.2	266.0	2.00	-2.00	0.00
5,500.0	8.43	275.71	5,380.0	106.9	-1,069.5	270.1	2.00	-2.00	0.00
5,600.0	6.43	275.71	5,479.2	108.2	-1,082.4	273.3	2.00	-2.00	0.00
5,700.0	4.43	275.71	5,578.7	109.1	-1,091.8	275.7	2.00	-2.00	0.00
5,800.0	2.43	275.71	5,678.6	109.7	-1,097.7	277.2	2.00	-2.00	0.00
5,900.0	0.43	275.71	5,778.5	110.0	-1,100.2	277.8	2.00	-2.00	0.00
5,921.5	0.00	0.00	5,800.0	110.0	-1,100.3	277.9	2.00	-2.00	0.00
6,000.0	0.00	0.00	5,878.5	110.0	-1,100.3	277.9	0.00	0.00	0.00
6,061.0	0.00	0.00	5,939.5	110.0	-1,100.3	277.9	0.00	0.00	0.00
KOP #2									
6,100.0	2.93	360.00	5,978.5	111.0	-1,100.3	278.9	7.51	7.51	0.00
6,200.0	10.43	360.00	6,077.8	122.6	-1,100.3	290.3	7.50	7.50	0.00
6,300.0	17.93	360.00	6,174.6	147.1	-1,100.3	314.5	7.50	7.50	0.00
6,400.0	25.43	360.00	6,267.5	184.0	-1,100.3	351.0	7.50	7.50	0.00
6,496.7	32.68	360.00	6,352.0	231.0	-1,100.3	397.4	7.50	7.50	0.00
SHARON SPRINGS									
6,500.0	32.93	360.00	6,354.7	232.7	-1,100.3	399.1	7.50	7.50	0.00
6,600.0	40.43	360.00	6,434.9	292.4	-1,100.3	458.1	7.50	7.50	0.00
6,700.0	47.93	360.00	6,506.6	362.0	-1,100.3	526.9	7.50	7.50	0.00
6,702.2	48.09	360.00	6,508.0	363.7	-1,100.3	528.5	7.50	7.50	0.00
NIOBRARA A TOP									
6,800.0	55.43	360.00	6,568.5	440.4	-1,100.3	604.4	7.50	7.50	0.00
6,837.4	58.24	360.00	6,589.0	471.8	-1,100.3	635.3	7.50	7.50	0.00
NIOBRARA B TOP									
6,900.0	62.93	360.00	6,619.7	526.3	-1,100.3	689.2	7.50	7.50	0.00
7,000.0	70.43	360.00	6,659.3	618.0	-1,100.3	779.8	7.50	7.50	0.00
7,059.4	74.89	360.00	6,677.0	674.7	-1,100.3	835.9	7.50	7.50	0.00
NIOBRARA C TOP									
7,100.0	77.93	360.00	6,686.5	714.2	-1,100.3	874.8	7.50	7.50	0.00
7,200.0	85.43	360.00	6,701.0	813.0	-1,100.3	972.5	7.50	7.50	0.00
7,260.0	89.93	360.00	6,703.4	873.0	-1,100.3	1,031.8	7.50	7.50	0.00
End of Build - 7"									
7,300.0	89.93	360.00	6,703.5	913.0	-1,100.3	1,071.3	0.01	0.01	0.00
7,400.0	89.93	360.00	6,703.6	1,013.0	-1,100.3	1,170.1	0.00	0.00	0.00
7,500.0	89.93	360.00	6,703.7	1,113.0	-1,100.3	1,268.9	0.00	0.00	0.00
7,600.0	89.93	360.00	6,703.8	1,213.0	-1,100.3	1,367.7	0.00	0.00	0.00
7,700.0	89.93	360.00	6,704.0	1,313.0	-1,100.3	1,466.5	0.00	0.00	0.00
7,800.0	89.93	360.00	6,704.1	1,413.0	-1,100.3	1,565.4	0.00	0.00	0.00
7,900.0	89.93	360.00	6,704.2	1,513.0	-1,100.3	1,664.2	0.00	0.00	0.00
8,000.0	89.93	360.00	6,704.3	1,613.0	-1,100.3	1,763.0	0.00	0.00	0.00
8,100.0	89.93	360.00	6,704.5	1,713.0	-1,100.3	1,861.8	0.00	0.00	0.00
8,200.0	89.93	360.00	6,704.6	1,813.0	-1,100.3	1,960.6	0.00	0.00	0.00

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Well:	Chesnut 27G-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 7-09-14)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,300.0	89.93	360.00	6,704.7	1,913.0	-1,100.3	2,059.4	0.00	0.00	0.00
8,400.0	89.93	360.00	6,704.8	2,013.0	-1,100.3	2,158.2	0.00	0.00	0.00
8,500.0	89.93	360.00	6,704.9	2,113.0	-1,100.3	2,257.0	0.00	0.00	0.00
8,600.0	89.93	360.00	6,705.1	2,213.0	-1,100.3	2,355.8	0.00	0.00	0.00
8,700.0	89.93	360.00	6,705.2	2,313.0	-1,100.3	2,454.6	0.00	0.00	0.00
8,800.0	89.93	360.00	6,705.3	2,413.0	-1,100.3	2,553.5	0.00	0.00	0.00
8,900.0	89.93	360.00	6,705.4	2,513.0	-1,100.3	2,652.3	0.00	0.00	0.00
9,000.0	89.93	360.00	6,705.6	2,613.0	-1,100.3	2,751.1	0.00	0.00	0.00
9,100.0	89.93	360.00	6,705.7	2,713.0	-1,100.3	2,849.9	0.00	0.00	0.00
9,200.0	89.93	360.00	6,705.8	2,813.0	-1,100.3	2,948.7	0.00	0.00	0.00
9,300.0	89.93	360.00	6,705.9	2,913.0	-1,100.3	3,047.5	0.00	0.00	0.00
9,400.0	89.93	360.00	6,706.0	3,013.0	-1,100.3	3,146.3	0.00	0.00	0.00
9,500.0	89.93	360.00	6,706.2	3,113.0	-1,100.3	3,245.1	0.00	0.00	0.00
9,600.0	89.93	360.00	6,706.3	3,213.0	-1,100.3	3,343.9	0.00	0.00	0.00
9,700.0	89.93	360.00	6,706.4	3,313.0	-1,100.3	3,442.8	0.00	0.00	0.00
9,800.0	89.93	360.00	6,706.5	3,413.0	-1,100.3	3,541.6	0.00	0.00	0.00
9,900.0	89.93	360.00	6,706.7	3,513.0	-1,100.3	3,640.4	0.00	0.00	0.00
10,000.0	89.93	360.00	6,706.8	3,613.0	-1,100.3	3,739.2	0.00	0.00	0.00
10,100.0	89.93	360.00	6,706.9	3,713.0	-1,100.3	3,838.0	0.00	0.00	0.00
10,200.0	89.93	360.00	6,707.0	3,813.0	-1,100.3	3,936.8	0.00	0.00	0.00
10,300.0	89.93	360.00	6,707.1	3,913.0	-1,100.3	4,035.6	0.00	0.00	0.00
10,400.0	89.93	360.00	6,707.3	4,013.0	-1,100.3	4,134.4	0.00	0.00	0.00
10,500.0	89.93	360.00	6,707.4	4,113.0	-1,100.3	4,233.2	0.00	0.00	0.00
10,600.0	89.93	360.00	6,707.5	4,213.0	-1,100.3	4,332.1	0.00	0.00	0.00
10,700.0	89.93	360.00	6,707.6	4,313.0	-1,100.3	4,430.9	0.00	0.00	0.00
10,800.0	89.93	360.00	6,707.8	4,413.0	-1,100.3	4,529.7	0.00	0.00	0.00
10,900.0	89.93	360.00	6,707.9	4,513.0	-1,100.3	4,628.5	0.00	0.00	0.00
11,000.0	89.93	360.00	6,708.0	4,613.0	-1,100.3	4,727.3	0.00	0.00	0.00
11,100.0	89.93	360.00	6,708.1	4,713.0	-1,100.3	4,826.1	0.00	0.00	0.00
11,200.0	89.93	360.00	6,708.2	4,813.0	-1,100.3	4,924.9	0.00	0.00	0.00
11,300.0	89.93	360.00	6,708.4	4,913.0	-1,100.3	5,023.7	0.00	0.00	0.00
11,400.0	89.93	360.00	6,708.5	5,013.0	-1,100.3	5,122.5	0.00	0.00	0.00
11,500.0	89.93	360.00	6,708.6	5,113.0	-1,100.3	5,221.4	0.00	0.00	0.00
11,600.0	89.93	360.00	6,708.7	5,213.0	-1,100.3	5,320.2	0.00	0.00	0.00
11,700.0	89.93	360.00	6,708.9	5,313.0	-1,100.3	5,419.0	0.00	0.00	0.00
11,800.0	89.93	360.00	6,709.0	5,413.0	-1,100.3	5,517.8	0.00	0.00	0.00
11,900.0	89.93	360.00	6,709.1	5,513.0	-1,100.3	5,616.6	0.00	0.00	0.00
12,000.0	89.93	360.00	6,709.2	5,613.0	-1,100.3	5,715.4	0.00	0.00	0.00
12,100.0	89.93	360.00	6,709.3	5,713.0	-1,100.3	5,814.2	0.00	0.00	0.00
12,200.0	89.93	360.00	6,709.5	5,813.0	-1,100.3	5,913.0	0.00	0.00	0.00
12,300.0	89.93	360.00	6,709.6	5,913.0	-1,100.3	6,011.8	0.00	0.00	0.00
12,400.0	89.93	360.00	6,709.7	6,013.0	-1,100.3	6,110.7	0.00	0.00	0.00
12,500.0	89.93	360.00	6,709.8	6,113.0	-1,100.3	6,209.5	0.00	0.00	0.00
12,600.0	89.93	360.00	6,710.0	6,213.0	-1,100.3	6,308.3	0.00	0.00	0.00
12,700.0	89.93	360.00	6,710.1	6,313.0	-1,100.3	6,407.1	0.00	0.00	0.00
12,800.0	89.93	360.00	6,710.2	6,413.0	-1,100.3	6,505.9	0.00	0.00	0.00
12,900.0	89.93	360.00	6,710.3	6,513.0	-1,100.3	6,604.7	0.00	0.00	0.00
13,000.0	89.93	360.00	6,710.4	6,613.0	-1,100.3	6,703.5	0.00	0.00	0.00
13,100.0	89.93	360.00	6,710.6	6,713.0	-1,100.3	6,802.3	0.00	0.00	0.00
13,200.0	89.93	360.00	6,710.7	6,813.0	-1,100.3	6,901.1	0.00	0.00	0.00
13,300.0	89.93	360.00	6,710.8	6,913.0	-1,100.3	7,000.0	0.00	0.00	0.00
13,400.0	89.93	360.00	6,710.9	7,013.0	-1,100.3	7,098.8	0.00	0.00	0.00
13,458.3	89.93	360.00	6,711.0	7,071.3	-1,100.3	7,156.4	0.00	0.00	0.00

Database:	landmark	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Project:	SEC.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**North Reference:**	True
Well:	Chesnut 27G-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 7-09-14)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,260.0	6,703.4	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,499.6	3,430.0	PARKMAN		0.00	
4,238.9	4,150.0	SUSSEX		0.00	
5,214.4	5,100.0	SHANNON		0.00	
6,496.7	6,352.0	SHARON SPRINGS		0.00	
6,702.2	6,508.0	NIOBRARA A TOP		0.00	
6,837.4	6,589.0	NIOBRARA B TOP		0.00	
7,059.4	6,677.0	NIOBRARA C TOP		0.00	
	6,764.0	FT HAYS		0.00	
	6,787.0	CODELL		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
400.0	400.0	0.0	0.0	KOP #1
6,061.0	5,939.5	110.0	-1,100.3	KOP #2
7,260.0	6,703.4	873.0	-1,100.3	End of Build

ENSIGN Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.27-T5N-R64W
Chesnut 27GK-HZ Pad Sec.27-T5N-R64W
Chesnut 27G-301

Wellbore #1
Plan #2 7-09-14)

Anticollision Report

09 July, 2014

PDC ENERGY
Growing E&P Value

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Reference Plan #2 7-09-14)

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** 7/9/2014

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	13,458.3	Plan #2 7-09-14) (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
Chesnut 27G-HZ Pad Sec.27-T5N-R64W						
Chesnut 27G-203 - Wellbore #1 - Plan #2 (7-08-14)	3,934.6	3,835.9	322.0	298.7	13.828	CC
Chesnut 27G-203 - Wellbore #1 - Plan #2 (7-08-14)	4,000.0	3,900.4	322.2	298.3	13.460	ES
Chesnut 27G-203 - Wellbore #1 - Plan #2 (7-08-14)	6,000.0	5,900.0	387.5	349.3	10.134	SF
Chesnut 27G-423 - Wellbore #1 - Plan #2 (7-08-14)	3,404.6	3,333.1	180.3	159.9	8.860	CC, ES
Chesnut 27G-423 - Wellbore #1 - Plan #2 (7-08-14)	3,600.0	3,520.8	188.3	166.0	8.429	SF
Chesnut 27K-203 - Wellbore #1 - Plan #2 (7-08-14)	2,710.2	2,682.1	173.1	155.1	9.644	CC, ES
Chesnut 27K-203 - Wellbore #1 - Plan #2 (7-08-14)	2,800.0	2,764.9	176.5	157.9	9.486	SF
Chesnut 27K-343 - Wellbore #1 - Plan #2 (7-08-14)	2,954.7	2,908.0	188.5	169.8	10.066	CC, ES
Chesnut 27K-343 - Wellbore #1 - Plan #2 (7-08-14)	3,100.0	3,044.7	194.9	175.0	9.830	SF
Chesnut 27GK-HZ Pad Sec.27-T5N-R64W						
Chesnut 27G-221 - Wellbore #1 - Plan #1 (4-23-14)	709.9	713.3	56.6	53.6	19.029	CC, ES
Chesnut 27G-221 - Wellbore #1 - Plan #1 (4-23-14)	13,458.3	13,323.0	359.5	92.9	1.348	Level 3, SF
Chesnut 27K-201 - Wellbore #1 - Plan #1 (4-23-14)	870.5	872.4	146.6	142.8	38.622	CC
Chesnut 27K-201 - Wellbore #1 - Plan #1 (4-23-14)	900.0	901.5	146.7	142.8	37.096	ES
Chesnut 27K-201 - Wellbore #1 - Plan #1 (4-23-14)	1,400.0	1,389.3	186.0	179.1	27.063	SF
Chesnut 27K-341 - Wellbore #1 - Plan #1 (4-23-14)	817.4	819.9	116.5	113.0	33.176	CC, ES
Chesnut 27K-341 - Wellbore #1 - Plan #1 (4-23-14)	13,458.3	13,362.5	660.2	386.0	2.407	SF
Chesnut 27K-401 - Wellbore #1 - Plan #2 (7-09-14)	904.6	906.0	172.8	168.9	43.408	CC, ES
Chesnut 27K-401 - Wellbore #1 - Plan #2 (7-09-14)	13,458.3	13,409.2	995.6	721.0	3.625	SF
Chesnut 27K-421 - Wellbore #1 - Plan #2 (7-09-14)	756.6	758.7	86.4	83.2	26.987	CC
Chesnut 27K-421 - Wellbore #1 - Plan #2 (7-09-14)	800.0	801.7	86.6	83.2	25.346	ES
Chesnut 27K-421 - Wellbore #1 - Plan #2 (7-09-14)	1,100.0	1,096.1	106.7	101.7	21.160	SF
Chesnut 27O-201 - Wellbore #1 - Pan #1 (4-23-14)	165.6	168.6	30.3	29.8	57.588	CC
Chesnut 27O-201 - Wellbore #1 - Pan #1 (4-23-14)	200.0	203.0	30.3	29.6	44.544	ES
Chesnut 27O-201 - Wellbore #1 - Pan #1 (4-23-14)	500.0	500.6	39.7	37.7	19.537	SF
Chesnut 27O-341 - Wellbore #1 - Plan #2 (7-09-14)	616.7	617.5	30.1	27.6	11.888	CC, ES
Chesnut 27O-341 - Wellbore #1 - Plan #2 (7-09-14)	800.0	799.7	36.0	32.6	10.591	SF
Chesnut 28U-HZ Pad Sec.28-T5N-R64W						
Chesnut 28U-403 - Wellbore #1 - Plan #1 (2-13-14)	8,165.9	6,932.8	248.0	195.0	4.679	CC, ES
Chesnut 28U-403 - Wellbore #1 - Plan #1 (2-13-14)	8,200.0	6,902.8	248.5	195.0	4.646	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

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
Chesnut Existing Pad Sec.27-T5N-R64W						
Thoutt 22-1 (Exist) - Wellbore #1 - Wellbore #1	10,642.2	6,685.6	495.8	279.2	2.289	CC, ES, SF
White 27-6 (Exist) - Wellbore #1 - Wellbore #1	3,055.1	2,979.2	276.6	204.8	3.848	CC
White 27-6 (Exist) - Wellbore #1 - Wellbore #1	3,200.0	3,120.2	278.6	203.3	3.698	ES
White 27-6 (Exist) - Wellbore #1 - Wellbore #1	3,500.0	3,412.4	294.5	212.6	3.593	SF

Offset Design Chesnut 27G-HZ Pad Sec.27-T5N-R64W - Chesnut 27G-203 - Wellbore #1 - Plan #2 (7-08-14)

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	4.5	4.5	0.0	0.0	-89.71	3.7	-713.3	713.3				
100.0	100.0	104.5	104.5	0.1	0.1	-89.71	3.7	-713.3	713.3	713.1	0.23	3,036.983	
200.0	200.0	204.5	204.5	0.3	0.3	-89.71	3.7	-713.3	713.3	712.6	0.68	1,042.249	
300.0	300.0	304.5	304.5	0.6	0.6	-89.71	3.7	-713.3	713.3	712.2	1.13	629.068	
400.0	400.0	404.5	404.5	0.8	0.8	-89.71	3.7	-713.3	713.3	711.7	1.58	450.482	
500.0	500.0	504.5	504.5	1.0	1.0	-5.43	3.7	-713.3	711.6	709.6	2.02	351.460	
600.0	599.8	604.3	604.3	1.2	1.2	-5.48	3.7	-713.3	706.4	703.9	2.46	286.849	
700.0	699.5	704.0	704.0	1.5	1.5	-5.57	3.7	-713.3	697.7	694.8	2.90	240.179	
800.0	798.7	803.2	803.2	1.7	1.7	-5.69	3.7	-713.3	685.6	682.2	3.35	204.664	
900.0	897.5	902.0	902.0	2.0	1.9	-5.85	3.7	-713.3	670.0	666.2	3.80	176.490	
1,000.0	995.6	1,000.1	1,000.1	2.4	2.1	-6.07	3.7	-713.3	651.0	646.8	4.24	153.379	
1,100.0	1,093.1	1,097.6	1,097.6	2.8	2.4	-6.31	3.7	-713.3	629.0	624.3	4.70	133.861	
1,200.0	1,190.5	1,195.0	1,195.0	3.3	2.6	-6.54	3.7	-713.3	606.4	601.2	5.16	117.432	
1,300.0	1,287.9	1,292.4	1,292.4	3.7	2.8	-6.80	3.7	-713.3	583.8	578.2	5.63	103.618	
1,400.0	1,385.3	1,389.8	1,389.8	4.2	3.0	-7.07	3.7	-713.3	561.3	555.2	6.11	91.869	
1,500.0	1,482.7	1,476.3	1,476.3	4.7	3.2	-7.41	3.0	-714.1	539.6	533.1	6.54	82.451	
1,600.0	1,580.1	1,562.2	1,562.1	5.2	3.4	-7.95	0.6	-716.7	520.2	513.2	6.97	74.674	
1,700.0	1,677.4	1,648.6	1,648.3	5.6	3.5	-8.72	-3.6	-721.3	503.1	495.7	7.39	68.043	
1,800.0	1,774.8	1,735.3	1,734.5	6.1	3.7	-9.74	-9.6	-727.8	488.4	480.6	7.83	62.342	
1,900.0	1,872.2	1,831.7	1,830.2	6.6	3.9	-11.08	-17.5	-736.5	475.6	467.3	8.32	57.167	
2,000.0	1,969.6	1,930.2	1,928.0	7.1	4.1	-12.52	-25.6	-745.4	463.1	454.3	8.83	52.460	
2,100.0	2,067.0	2,028.7	2,025.7	7.6	4.4	-14.04	-33.7	-754.2	450.9	441.5	9.35	48.209	
2,200.0	2,164.4	2,127.2	2,123.5	8.1	4.6	-15.64	-41.9	-763.1	439.0	429.1	9.90	44.367	
2,300.0	2,261.8	2,225.7	2,221.3	8.6	4.9	-17.33	-50.0	-772.0	427.5	417.1	10.45	40.891	
2,400.0	2,359.1	2,324.2	2,319.0	9.1	5.2	-19.11	-58.1	-780.9	416.4	405.4	11.03	37.735	
2,500.0	2,456.5	2,422.7	2,416.8	9.6	5.4	-20.98	-66.2	-789.8	405.7	394.1	11.64	34.868	
2,600.0	2,553.9	2,521.2	2,514.6	10.1	5.7	-22.95	-74.4	-798.7	395.5	383.2	12.26	32.261	
2,700.0	2,651.3	2,619.7	2,612.3	10.5	6.0	-25.02	-82.5	-807.6	385.7	372.8	12.91	29.888	
2,800.0	2,748.7	2,718.3	2,710.1	11.0	6.3	-27.19	-90.6	-816.5	376.5	363.0	13.58	27.728	
2,900.0	2,846.1	2,816.8	2,807.9	11.5	6.6	-29.47	-98.7	-825.4	367.9	353.6	14.28	25.761	
3,000.0	2,943.5	2,915.3	2,905.7	12.0	6.9	-31.85	-106.9	-834.3	359.9	344.9	15.01	23.972	
3,100.0	3,040.8	3,013.8	3,003.4	12.5	7.2	-34.32	-115.0	-843.2	352.6	336.8	15.78	22.347	
3,200.0	3,138.2	3,112.3	3,101.2	13.0	7.5	-36.90	-123.1	-852.1	345.9	329.3	16.57	20.875	
3,300.0	3,235.6	3,210.8	3,199.0	13.5	7.8	-39.57	-131.3	-861.0	340.0	322.6	17.40	19.543	
3,400.0	3,333.0	3,309.3	3,296.7	14.0	8.1	-42.32	-139.4	-869.9	334.9	316.6	18.26	18.344	
3,500.0	3,430.4	3,407.8	3,394.5	14.5	8.4	-45.15	-147.5	-878.8	330.6	311.4	19.14	17.268	
3,600.0	3,527.8	3,506.3	3,492.3	15.0	8.7	-48.05	-155.6	-887.7	327.1	307.0	20.06	16.307	
3,700.0	3,625.2	3,604.8	3,590.0	15.5	9.0	-51.00	-163.8	-896.6	324.5	303.5	21.00	15.453	

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 Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27G-HZ Pad Sec.27-T5N-R64W - Chesnut 27G-203 - Wellbore #1 - Plan #2 (7-08-14)

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
3,800.0	3,722.5	3,703.3	3,687.8	16.0	9.3	-53.99	-171.9	-905.4	322.8	300.9	21.96	14.699	
3,900.0	3,819.9	3,801.9	3,785.6	16.5	9.6	-56.99	-180.0	-914.3	322.1	299.1	22.94	14.037	
3,934.6	3,853.6	3,835.9	3,819.4	16.7	9.7	-58.04	-182.8	-917.4	322.0	298.7	23.29	13.828	CC
4,000.0	3,917.3	3,900.4	3,883.3	17.0	9.9	-60.01	-188.1	-923.2	322.2	298.3	23.94	13.460	ES
4,100.0	4,014.7	3,998.9	3,981.1	17.5	10.2	-63.01	-196.3	-932.1	323.3	298.3	24.94	12.963	
4,200.0	4,112.1	4,097.4	4,078.9	18.0	10.5	-65.99	-204.4	-941.0	325.2	299.3	25.94	12.537	
4,300.0	4,209.5	4,195.9	4,176.7	18.5	10.8	-68.92	-212.5	-949.9	328.1	301.1	26.94	12.177	
4,400.0	4,306.9	4,294.4	4,274.4	19.0	11.2	-71.80	-220.6	-958.8	331.8	303.9	27.94	11.876	
4,500.0	4,404.2	4,392.9	4,372.2	19.5	11.5	-74.61	-228.8	-967.7	336.4	307.4	28.92	11.629	
4,600.0	4,501.6	4,491.4	4,470.0	20.0	11.8	-77.34	-236.9	-976.6	341.7	311.8	29.90	11.431	
4,700.0	4,599.0	4,589.9	4,567.7	20.5	12.1	-79.98	-245.0	-985.5	347.9	317.0	30.85	11.276	
4,800.0	4,696.4	4,690.2	4,667.3	21.0	12.4	-82.58	-253.3	-994.5	354.7	322.9	31.80	11.156	
4,900.0	4,793.8	4,799.6	4,776.1	21.5	12.7	-85.55	-260.4	-1,002.4	360.3	327.6	32.72	11.012	
5,000.0	4,891.2	4,908.3	4,884.6	22.0	12.9	-88.83	-264.8	-1,007.1	363.8	330.2	33.61	10.827	
5,100.0	4,988.6	5,016.1	4,992.4	22.5	13.1	-92.43	-266.3	-1,008.8	365.7	331.3	34.44	10.619	
5,200.0	5,085.9	5,114.1	5,090.4	23.0	13.2	-95.91	-266.3	-1,008.8	367.4	332.2	35.19	10.442	
5,300.0	5,183.4	5,211.6	5,187.9	23.4	13.4	-99.31	-266.3	-1,008.8	370.5	334.6	35.85	10.334	
5,400.0	5,281.4	5,309.6	5,285.9	23.8	13.5	-102.32	-266.3	-1,008.8	374.3	337.9	36.33	10.303	
5,500.0	5,380.0	5,408.2	5,384.5	24.1	13.7	-104.79	-266.3	-1,008.8	378.2	341.4	36.73	10.296	
5,600.0	5,479.2	5,507.4	5,483.7	24.3	13.9	-106.72	-266.3	-1,008.8	381.7	344.6	37.08	10.294	
5,700.0	5,578.7	5,606.9	5,583.2	24.5	14.0	-108.12	-266.3	-1,008.8	384.5	347.2	37.40	10.283	
5,800.0	5,678.6	5,706.7	5,683.1	24.7	14.2	-109.00	-266.3	-1,008.8	386.5	348.8	37.69	10.254	
5,900.0	5,778.5	5,806.7	5,783.0	24.8	14.4	-109.36	-266.3	-1,008.8	387.3	349.3	37.97	10.201	
5,953.2	5,831.7	5,859.9	5,836.2	24.9	14.5	-109.40	-266.3	-1,008.8	387.4	349.3	38.12	10.163	
6,000.0	5,878.5	5,900.0	5,876.3	24.9	14.6	166.34	-266.5	-1,008.8	387.5	349.3	38.24	10.134	SF
6,100.0	5,978.5	5,966.3	5,942.4	25.0	14.7	166.43	-270.6	-1,008.8	394.5	356.1	38.46	10.258	
6,200.0	6,077.8	6,029.8	6,005.2	25.1	14.9	166.53	-279.9	-1,008.8	419.9	381.7	38.24	10.982	
6,300.0	6,174.6	6,086.6	6,060.6	25.3	15.1	166.53	-292.7	-1,008.8	464.6	427.1	37.43	12.410	
6,400.0	6,267.5	6,134.3	6,106.3	25.5	15.2	166.18	-306.5	-1,008.8	525.8	489.8	36.06	14.583	
6,500.0	6,354.7	6,172.1	6,141.7	25.7	15.4	165.16	-319.5	-1,008.8	600.5	566.4	34.17	17.577	
6,600.0	6,434.9	6,200.0	6,167.5	25.9	15.5	162.91	-330.2	-1,008.8	685.5	653.6	31.89	21.497	
6,700.0	6,506.6	6,218.8	6,184.6	26.2	15.6	158.03	-337.9	-1,008.8	777.8	748.2	29.55	26.324	
6,800.0	6,568.5	6,229.5	6,194.3	26.6	15.6	145.38	-342.6	-1,008.8	874.6	846.2	28.40	30.792	
6,900.0	6,619.7	6,233.4	6,197.8	27.1	15.7	100.20	-344.2	-1,008.8	973.6	940.4	33.27	29.263	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27G-HZ Pad Sec.27-T5N-R64W - Chesnut 27G-423 - Wellbore #1 - Plan #2 (7-08-14)

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	4.5	4.5	0.0	0.0	-87.37	32.8	-713.3	714.1				
100.0	100.0	104.5	104.5	0.1	0.1	-87.37	32.8	-713.3	714.1	713.8	0.23	3,040.148	
200.0	200.0	204.5	204.5	0.3	0.3	-87.37	32.8	-713.3	714.1	713.4	0.68	1,043.335	
300.0	300.0	304.5	304.5	0.6	0.6	-87.37	32.8	-713.3	714.1	712.9	1.13	629.723	
400.0	400.0	404.5	404.5	0.8	0.8	-87.37	32.8	-713.3	714.1	712.5	1.58	450.952	
500.0	500.0	504.5	504.5	1.0	1.0	-3.09	32.8	-713.3	712.3	710.3	2.02	351.821	
600.0	599.8	604.3	604.3	1.2	1.2	-3.11	32.8	-713.3	707.1	704.6	2.46	287.135	
700.0	699.5	704.0	704.0	1.5	1.5	-3.16	32.8	-713.3	698.4	695.5	2.91	240.412	
800.0	798.7	803.2	803.2	1.7	1.7	-3.23	32.8	-713.3	686.2	682.9	3.35	204.863	
900.0	897.5	902.0	902.0	2.0	1.9	-3.33	32.8	-713.3	670.6	666.8	3.80	176.666	
1,000.0	995.6	1,000.1	1,000.1	2.4	2.1	-3.45	32.8	-713.3	651.6	647.3	4.24	153.546	
1,100.0	1,093.1	1,097.6	1,097.6	2.8	2.4	-3.58	32.8	-713.3	629.4	624.7	4.70	134.026	
1,200.0	1,190.5	1,195.0	1,195.0	3.3	2.6	-3.72	32.8	-713.3	606.8	601.6	5.16	117.597	
1,300.0	1,287.9	1,292.4	1,292.4	3.7	2.8	-3.86	32.8	-713.3	584.1	578.5	5.63	103.781	
1,400.0	1,385.3	1,389.8	1,389.8	4.2	3.0	-4.02	32.8	-713.3	561.4	555.3	6.10	92.031	
1,500.0	1,482.7	1,487.2	1,487.2	4.7	3.2	-4.19	32.8	-713.3	538.8	532.2	6.58	81.931	
1,600.0	1,580.1	1,584.6	1,584.6	5.2	3.4	-4.37	32.8	-713.3	516.1	509.1	7.05	73.167	
1,700.0	1,677.4	1,681.9	1,681.9	5.6	3.7	-4.57	32.8	-713.3	493.5	485.9	7.53	65.498	
1,800.0	1,774.8	1,779.3	1,779.3	6.1	3.9	-4.79	32.8	-713.3	470.8	462.8	8.02	58.735	
1,900.0	1,872.2	1,876.7	1,876.7	6.6	4.1	-5.04	32.8	-713.3	448.2	439.7	8.50	52.729	
2,000.0	1,969.6	1,974.1	1,974.1	7.1	4.3	-5.30	32.8	-713.3	425.6	416.6	8.99	47.362	
2,100.0	2,067.0	2,073.3	2,073.3	7.6	4.5	-5.74	31.9	-713.2	402.8	393.3	9.46	42.592	
2,200.0	2,164.4	2,172.6	2,172.5	8.1	4.7	-6.75	27.7	-712.4	379.5	369.6	9.91	38.288	
2,300.0	2,261.8	2,271.1	2,270.7	8.6	4.9	-8.43	20.2	-711.1	355.9	345.5	10.38	34.289	
2,400.0	2,359.1	2,368.0	2,367.1	9.1	5.1	-10.84	9.9	-709.3	332.3	321.4	10.88	30.541	
2,500.0	2,456.5	2,464.1	2,462.5	9.6	5.2	-13.67	-0.8	-707.4	309.3	297.9	11.43	27.069	
2,600.0	2,553.9	2,560.2	2,558.0	10.1	5.4	-16.93	-11.5	-705.5	287.2	275.1	12.03	23.868	
2,700.0	2,651.3	2,656.2	2,653.4	10.5	5.7	-20.71	-22.2	-703.6	266.1	253.4	12.71	20.931	
2,800.0	2,748.7	2,752.3	2,748.9	11.0	5.9	-25.09	-33.0	-701.7	246.4	232.9	13.49	18.264	
2,900.0	2,846.1	2,848.4	2,844.3	11.5	6.1	-30.16	-43.7	-699.8	228.4	214.0	14.39	15.876	
3,000.0	2,943.5	2,944.4	2,939.8	12.0	6.3	-36.00	-54.4	-697.9	212.5	197.1	15.41	13.791	
3,100.0	3,040.8	3,040.5	3,035.2	12.5	6.6	-42.65	-65.1	-696.0	199.2	182.6	16.55	12.033	
3,200.0	3,138.2	3,136.6	3,130.6	13.0	6.8	-50.07	-75.8	-694.1	189.0	171.2	17.79	10.625	
3,300.0	3,235.6	3,232.6	3,226.1	13.5	7.1	-58.12	-86.5	-692.2	182.6	163.6	19.07	9.578	
3,400.0	3,333.0	3,328.7	3,321.5	14.0	7.3	-66.53	-97.2	-690.4	180.3	160.0	20.30	8.884	
3,404.6	3,337.5	3,333.1	3,325.9	14.0	7.3	-66.92	-97.7	-690.3	180.3	159.9	20.35	8.860	CC, ES
3,500.0	3,430.4	3,424.7	3,417.0	14.5	7.6	-74.95	-107.9	-688.5	182.2	160.8	21.40	8.515	
3,600.0	3,527.8	3,520.8	3,512.4	15.0	7.8	-83.05	-118.6	-686.6	188.3	166.0	22.34	8.429	SF
3,700.0	3,625.2	3,616.9	3,607.9	15.5	8.1	-90.53	-129.3	-684.7	198.1	175.0	23.10	8.575	
3,800.0	3,722.5	3,712.9	3,703.3	16.0	8.4	-97.26	-140.0	-682.8	211.1	187.4	23.72	8.901	
3,900.0	3,819.9	3,809.0	3,798.8	16.5	8.6	-103.17	-150.7	-680.9	226.8	202.6	24.23	9.362	
4,000.0	3,917.3	3,905.1	3,894.2	17.0	8.9	-108.31	-161.4	-679.0	244.7	220.0	24.67	9.917	
4,100.0	4,014.7	4,001.1	3,989.7	17.5	9.2	-112.75	-172.1	-677.1	264.3	239.2	25.08	10.537	
4,200.0	4,112.1	4,097.2	4,085.1	18.0	9.4	-116.57	-182.8	-675.2	285.2	259.7	25.47	11.198	
4,300.0	4,209.5	4,193.2	4,180.6	18.5	9.7	-119.88	-193.5	-673.3	307.2	281.4	25.85	11.883	
4,400.0	4,306.9	4,289.3	4,276.0	19.0	10.0	-122.75	-204.2	-671.4	330.1	303.9	26.25	12.578	
4,500.0	4,404.2	4,385.4	4,371.4	19.5	10.3	-125.25	-214.9	-669.6	353.7	327.1	26.65	13.273	
4,600.0	4,501.6	4,481.4	4,466.9	20.0	10.5	-127.44	-225.6	-667.7	377.9	350.8	27.06	13.963	
4,700.0	4,599.0	4,577.5	4,562.3	20.5	10.8	-129.37	-236.4	-665.8	402.5	375.0	27.49	14.643	
4,800.0	4,696.4	4,673.6	4,657.8	21.0	11.1	-131.08	-247.1	-663.9	427.5	399.6	27.93	15.308	
4,900.0	4,793.8	4,782.2	4,765.8	21.5	11.4	-132.88	-257.8	-662.0	451.8	423.5	28.35	15.935	

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 Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27G-HZ Pad Sec.27-T5N-R64W - Chesnut 27G-423 - Wellbore #1 - Plan #2 (7-08-14)

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	4,891.2	4,894.9	4,878.3	22.0	11.6	-134.79	-264.7	-660.8	473.2	444.4	28.74	16.461	
5,100.0	4,988.6	5,008.5	4,991.9	22.5	11.8	-136.81	-267.2	-660.3	491.6	462.5	29.09	16.898	
5,200.0	5,085.9	5,107.0	5,090.4	23.0	12.0	-138.56	-267.2	-660.3	508.6	479.2	29.43	17.282	
5,300.0	5,183.4	5,204.5	5,187.9	23.4	12.2	-140.25	-267.2	-660.3	525.9	496.1	29.76	17.672	
5,400.0	5,281.4	5,302.5	5,285.9	23.8	12.4	-141.77	-267.2	-660.3	541.4	511.4	30.03	18.028	
5,500.0	5,380.0	5,401.1	5,384.5	24.1	12.6	-142.97	-267.2	-660.3	554.4	524.1	30.31	18.291	
5,600.0	5,479.2	5,500.3	5,483.7	24.3	12.7	-143.88	-267.2	-660.3	564.9	534.3	30.60	18.462	
5,700.0	5,578.7	5,599.8	5,583.2	24.5	12.9	-144.53	-267.2	-660.3	572.5	541.7	30.88	18.542	
5,800.0	5,678.6	5,699.7	5,683.1	24.7	13.1	-144.93	-267.2	-660.3	577.4	546.3	31.16	18.531	
5,900.0	5,778.5	5,799.6	5,783.0	24.8	13.3	-145.10	-267.2	-660.3	579.5	548.0	31.44	18.432	
6,000.0	5,878.5	5,899.6	5,883.0	24.9	13.5	130.61	-267.2	-660.3	579.5	547.8	31.76	18.248	
6,039.8	5,918.3	5,939.4	5,922.8	24.9	13.6	130.63	-267.2	-660.3	579.8	547.9	31.91	18.170	
6,100.0	5,978.5	5,999.6	5,983.0	25.0	13.7	130.64	-267.2	-660.3	580.2	548.1	32.12	18.062	
6,200.0	6,077.8	6,074.1	6,057.5	25.1	13.8	130.85	-268.7	-660.3	589.4	557.1	32.25	18.272	
6,300.0	6,174.6	6,135.2	6,118.3	25.3	14.0	131.03	-275.0	-660.3	612.8	580.7	32.05	19.118	
6,400.0	6,267.5	6,188.5	6,170.7	25.5	14.2	130.79	-284.5	-660.3	650.6	619.1	31.52	20.639	
6,500.0	6,354.7	6,232.2	6,213.1	25.7	14.3	129.56	-294.9	-660.3	702.4	671.6	30.76	22.831	
6,600.0	6,434.9	6,265.9	6,245.4	25.9	14.5	126.76	-304.6	-660.3	766.6	736.6	30.04	25.519	
6,700.0	6,506.6	6,300.0	6,277.6	26.2	14.6	122.56	-315.9	-660.3	841.2	811.4	29.83	28.205	
6,800.0	6,568.5	6,300.0	6,277.6	26.6	14.6	112.90	-315.9	-660.3	923.5	892.7	30.80	29.982	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27G-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-203 - Wellbore #1 - Plan #2 (7-08-14)

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	4.5	4.5	0.0	0.0	-94.38	-54.6	-713.3	715.4				
100.0	100.0	104.5	104.5	0.1	0.1	-94.38	-54.6	-713.3	715.4	715.2	0.23	3,045.846	
200.0	200.0	204.5	204.5	0.3	0.3	-94.38	-54.6	-713.3	715.4	714.7	0.68	1,045.290	
300.0	300.0	304.5	304.5	0.6	0.6	-94.38	-54.6	-713.3	715.4	714.3	1.13	630.904	
400.0	400.0	404.5	404.5	0.8	0.8	-94.38	-54.6	-713.3	715.4	713.8	1.58	451.797	
500.0	500.0	504.5	504.5	1.0	1.0	-10.12	-54.6	-713.3	713.7	711.7	2.02	352.508	
600.0	599.8	604.3	604.3	1.2	1.2	-10.21	-54.6	-713.3	708.5	706.1	2.46	287.739	
700.0	699.5	704.0	704.0	1.5	1.5	-10.37	-54.6	-713.3	700.0	697.1	2.91	240.949	
800.0	798.7	803.2	803.2	1.7	1.7	-10.60	-54.6	-713.3	688.0	684.6	3.35	205.327	
900.0	897.5	902.0	902.0	2.0	1.9	-10.90	-54.6	-713.3	672.6	668.8	3.80	177.046	
1,000.0	995.6	1,000.2	1,000.2	2.4	2.1	-11.29	-54.6	-713.3	653.9	649.6	4.25	153.821	
1,100.0	1,093.1	1,122.5	1,122.5	2.8	2.4	-11.94	-55.4	-710.8	630.2	625.4	4.75	132.641	
1,200.0	1,190.5	1,242.0	1,241.7	3.3	2.6	-12.79	-57.6	-703.5	602.3	597.0	5.26	114.571	
1,300.0	1,287.9	1,358.3	1,357.4	3.7	2.9	-13.92	-61.1	-691.9	570.9	565.1	5.77	98.871	
1,400.0	1,385.3	1,471.3	1,469.2	4.2	3.2	-15.40	-65.8	-676.3	536.3	530.0	6.31	85.010	
1,500.0	1,482.7	1,566.4	1,562.9	4.7	3.5	-16.97	-70.5	-660.9	499.8	493.0	6.82	73.265	
1,600.0	1,580.1	1,658.6	1,653.8	5.2	3.7	-18.73	-75.0	-645.9	463.6	456.3	7.35	63.112	
1,700.0	1,677.4	1,750.8	1,744.6	5.6	4.0	-20.77	-79.6	-630.9	427.9	420.0	7.91	54.133	
1,800.0	1,774.8	1,843.0	1,835.5	6.1	4.4	-23.18	-84.1	-616.0	392.8	384.3	8.51	46.169	
1,900.0	1,872.2	1,935.2	1,926.3	6.6	4.7	-26.03	-88.6	-601.0	358.5	349.3	9.17	39.095	
2,000.0	1,969.6	2,027.4	2,017.2	7.1	5.0	-29.45	-93.2	-586.0	325.1	315.2	9.90	32.830	
2,100.0	2,067.0	2,119.6	2,108.0	7.6	5.3	-33.60	-97.7	-571.0	293.0	282.3	10.73	27.305	
2,200.0	2,164.4	2,211.7	2,198.9	8.1	5.7	-38.67	-102.2	-556.1	262.7	251.0	11.68	22.490	
2,300.0	2,261.8	2,303.9	2,289.7	8.6	6.0	-44.90	-106.8	-541.1	235.0	222.2	12.78	18.385	
2,400.0	2,359.1	2,396.1	2,380.6	9.1	6.3	-52.52	-111.3	-526.1	210.7	196.7	14.03	15.018	
2,500.0	2,456.5	2,488.3	2,471.4	9.6	6.7	-61.69	-115.8	-511.1	191.3	175.9	15.39	12.431	
2,600.0	2,553.9	2,580.5	2,562.3	10.1	7.0	-72.33	-120.3	-496.2	178.2	161.5	16.72	10.659	
2,700.0	2,651.3	2,672.7	2,653.1	10.5	7.4	-83.94	-124.9	-481.2	173.1	155.3	17.85	9.698	
2,710.2	2,661.3	2,682.1	2,662.5	10.6	7.4	-85.15	-125.3	-479.7	173.1	155.1	17.94	9.644	CC, ES
2,800.0	2,748.7	2,764.9	2,744.0	11.0	7.7	-95.65	-129.4	-466.2	176.5	157.9	18.61	9.486	SF
2,900.0	2,846.1	2,857.1	2,834.9	11.5	8.1	-106.54	-133.9	-451.2	188.0	169.0	18.98	9.905	
3,000.0	2,943.5	2,949.3	2,925.7	12.0	8.4	-116.03	-138.5	-436.3	206.3	187.2	19.09	10.807	
3,100.0	3,040.8	3,041.5	3,016.6	12.5	8.8	-123.96	-143.0	-421.3	229.7	210.6	19.07	12.043	
3,200.0	3,138.2	3,133.6	3,107.4	13.0	9.1	-130.46	-147.5	-406.3	256.8	237.8	19.04	13.489	
3,300.0	3,235.6	3,225.8	3,198.3	13.5	9.5	-135.75	-152.1	-391.3	286.6	267.6	19.05	15.049	
3,400.0	3,333.0	3,318.0	3,289.1	14.0	9.9	-140.06	-156.6	-376.4	318.4	299.3	19.11	16.657	
3,500.0	3,430.4	3,410.2	3,380.0	14.5	10.2	-143.62	-161.1	-361.4	351.5	332.3	19.24	18.269	
3,600.0	3,527.8	3,502.4	3,470.8	15.0	10.6	-146.58	-165.7	-346.4	385.7	366.3	19.43	19.855	
3,700.0	3,625.2	3,594.6	3,561.7	15.5	10.9	-149.07	-170.2	-331.4	420.7	401.0	19.66	21.399	
3,800.0	3,722.5	3,686.8	3,652.5	16.0	11.3	-151.18	-174.7	-316.5	456.3	436.4	19.93	22.890	
3,900.0	3,819.9	3,779.0	3,743.4	16.5	11.6	-152.99	-179.3	-301.5	492.4	472.1	20.24	24.325	
4,000.0	3,917.3	3,871.2	3,834.2	17.0	12.0	-154.56	-183.8	-286.5	528.8	508.2	20.58	25.701	
4,100.0	4,014.7	3,963.4	3,925.1	17.5	12.4	-155.93	-188.3	-271.5	565.6	544.6	20.93	27.018	
4,200.0	4,112.1	4,055.5	4,015.9	18.0	12.7	-157.13	-192.9	-256.5	602.6	581.2	21.31	28.277	
4,300.0	4,209.5	4,147.7	4,106.8	18.5	13.1	-158.20	-197.4	-241.6	639.8	618.1	21.70	29.481	
4,400.0	4,306.9	4,239.9	4,197.6	19.0	13.4	-159.15	-201.9	-226.6	677.1	655.0	22.11	30.632	
4,500.0	4,404.2	4,332.1	4,288.5	19.5	13.8	-160.00	-206.4	-211.6	714.7	692.1	22.52	31.732	
4,600.0	4,501.6	4,424.3	4,379.3	20.0	14.2	-160.77	-211.0	-196.6	752.3	729.4	22.95	32.783	
4,700.0	4,599.0	4,516.5	4,470.2	20.5	14.5	-161.47	-215.5	-181.7	790.1	766.7	23.38	33.789	
4,800.0	4,696.4	4,608.7	4,561.1	21.0	14.9	-162.10	-220.0	-166.7	827.9	804.1	23.82	34.752	
4,900.0	4,793.8	4,700.9	4,651.9	21.5	15.3	-162.67	-224.6	-151.7	865.8	841.6	24.27	35.675	

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 Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27G-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-203 - Wellbore #1 - Plan #2 (7-08-14)

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	4,891.2	4,793.1	4,742.8	22.0	15.6	-163.20	-229.1	-136.7	903.8	879.1	24.72	36.559	
5,100.0	4,988.6	4,885.3	4,833.6	22.5	16.0	-163.69	-233.6	-121.8	941.9	916.7	25.18	37.406	
5,200.0	5,085.9	4,977.4	4,924.5	23.0	16.3	-164.14	-238.2	-106.8	980.0	954.4	25.64	38.220	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27G-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-343 - Wellbore #1 - Plan #2 (7-08-14)

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	4.5	4.5	0.0	0.0	-92.05	-25.5	-713.3	713.8				
100.0	100.0	104.5	104.5	0.1	0.1	-92.05	-25.5	-713.3	713.8	713.5	0.23	3,038.885	
200.0	200.0	204.5	204.5	0.3	0.3	-92.05	-25.5	-713.3	713.8	713.1	0.68	1,042.901	
300.0	300.0	304.5	304.5	0.6	0.6	-92.05	-25.5	-713.3	713.8	712.6	1.13	629.462	
400.0	400.0	404.5	404.5	0.8	0.8	-92.05	-25.5	-713.3	713.8	712.2	1.58	450.764	
500.0	500.0	504.5	504.5	1.0	1.0	-7.78	-25.5	-713.3	712.0	710.0	2.02	351.689	
600.0	599.8	604.3	604.3	1.2	1.2	-7.85	-25.5	-713.3	706.9	704.4	2.46	287.051	
700.0	699.5	704.0	704.0	1.5	1.5	-7.97	-25.5	-713.3	698.2	695.3	2.90	240.358	
800.0	798.7	803.2	803.2	1.7	1.7	-8.15	-25.5	-713.3	686.2	682.8	3.35	204.819	
900.0	897.5	902.0	902.0	2.0	1.9	-8.38	-25.5	-713.3	670.7	666.9	3.80	176.616	
1,000.0	995.6	1,000.1	1,000.1	2.4	2.1	-8.69	-25.5	-713.3	651.8	647.6	4.25	153.471	
1,100.0	1,093.1	1,097.6	1,097.6	2.8	2.4	-9.03	-25.5	-713.3	629.9	625.2	4.70	133.914	
1,200.0	1,190.5	1,195.0	1,195.0	3.3	2.6	-9.36	-25.5	-713.3	607.4	602.3	5.17	117.454	
1,300.0	1,287.9	1,310.3	1,310.2	3.7	2.8	-9.93	-26.7	-711.6	583.6	577.9	5.67	102.990	
1,400.0	1,385.3	1,424.3	1,424.0	4.2	3.0	-10.84	-30.3	-706.0	556.8	550.6	6.16	90.438	
1,500.0	1,482.7	1,535.7	1,534.9	4.7	3.3	-12.15	-36.3	-696.9	527.1	520.4	6.66	79.131	
1,600.0	1,580.1	1,633.3	1,631.7	5.2	3.5	-13.66	-43.0	-686.8	495.7	488.6	7.16	69.279	
1,700.0	1,677.4	1,727.4	1,725.1	5.6	3.7	-15.31	-49.6	-677.0	464.6	456.9	7.66	60.664	
1,800.0	1,774.8	1,821.5	1,818.5	6.1	4.0	-17.19	-56.1	-667.2	433.9	425.7	8.19	52.978	
1,900.0	1,872.2	1,915.6	1,911.8	6.6	4.2	-19.36	-62.6	-657.3	403.7	394.9	8.75	46.110	
2,000.0	1,969.6	2,009.7	2,005.2	7.1	4.5	-21.85	-69.1	-647.5	374.1	364.7	9.36	39.953	
2,100.0	2,067.0	2,103.8	2,098.5	7.6	4.7	-24.76	-75.6	-637.7	345.3	335.2	10.02	34.450	
2,200.0	2,164.4	2,197.9	2,191.9	8.1	5.0	-28.16	-82.1	-627.8	317.5	306.7	10.75	29.536	
2,300.0	2,261.8	2,292.0	2,285.2	8.6	5.3	-32.17	-88.6	-618.0	290.9	279.4	11.56	25.175	
2,400.0	2,359.1	2,386.1	2,378.6	9.1	5.6	-36.92	-95.2	-608.2	266.1	253.6	12.46	21.347	
2,500.0	2,456.5	2,480.2	2,471.9	9.6	5.8	-42.53	-101.7	-598.3	243.4	229.9	13.48	18.051	
2,600.0	2,553.9	2,574.3	2,565.3	10.1	6.1	-49.12	-108.2	-588.5	223.5	208.9	14.61	15.297	
2,700.0	2,651.3	2,668.4	2,658.7	10.5	6.4	-56.77	-114.7	-578.7	207.3	191.5	15.82	13.102	
2,800.0	2,748.7	2,762.5	2,752.0	11.0	6.7	-65.41	-121.2	-568.8	195.7	178.6	17.05	11.477	
2,900.0	2,846.1	2,856.5	2,845.4	11.5	7.0	-74.77	-127.7	-559.0	189.4	171.3	18.19	10.418	
2,954.7	2,899.3	2,908.0	2,896.4	11.8	7.2	-80.05	-131.3	-553.6	188.5	169.8	18.73	10.066	CC, ES
3,000.0	2,943.5	2,950.6	2,938.7	12.0	7.3	-84.43	-134.2	-549.2	189.2	170.0	19.13	9.889	
3,100.0	3,040.8	3,044.7	3,032.1	12.5	7.6	-93.84	-140.8	-539.3	194.9	175.0	19.82	9.830	SF
3,200.0	3,138.2	3,138.8	3,125.4	13.0	7.9	-102.56	-147.3	-529.5	206.0	185.7	20.28	10.160	
3,300.0	3,235.6	3,232.9	3,218.8	13.5	8.2	-110.30	-153.8	-519.7	221.8	201.3	20.56	10.790	
3,400.0	3,333.0	3,327.0	3,312.2	14.0	8.5	-117.00	-160.3	-509.8	241.4	220.6	20.74	11.637	
3,500.0	3,430.4	3,421.1	3,405.5	14.5	8.8	-122.70	-166.8	-500.0	263.8	243.0	20.89	12.631	
3,600.0	3,527.8	3,515.2	3,498.9	15.0	9.1	-127.52	-173.3	-490.2	288.5	267.5	21.04	13.716	
3,700.0	3,625.2	3,609.3	3,592.2	15.5	9.4	-131.59	-179.8	-480.3	314.9	293.7	21.21	14.851	
3,800.0	3,722.5	3,703.4	3,685.6	16.0	9.7	-135.04	-186.4	-470.5	342.6	321.2	21.41	16.005	
3,900.0	3,819.9	3,797.5	3,778.9	16.5	10.0	-137.99	-192.9	-460.7	371.4	349.7	21.64	17.158	
4,000.0	3,917.3	3,891.6	3,872.3	17.0	10.3	-140.52	-199.4	-450.8	400.9	379.0	21.91	18.296	
4,100.0	4,014.7	3,985.7	3,965.7	17.5	10.6	-142.71	-205.9	-441.0	431.0	408.8	22.21	19.411	
4,200.0	4,112.1	4,079.8	4,059.0	18.0	10.9	-144.62	-212.4	-431.2	461.7	439.2	22.53	20.495	
4,300.0	4,209.5	4,173.9	4,152.4	18.5	11.2	-146.30	-218.9	-421.3	492.8	469.9	22.87	21.545	
4,400.0	4,306.9	4,268.0	4,245.7	19.0	11.5	-147.77	-225.4	-411.5	524.2	501.0	23.24	22.560	
4,500.0	4,404.2	4,362.1	4,339.1	19.5	11.8	-149.09	-232.0	-401.6	555.9	532.3	23.62	23.539	
4,600.0	4,501.6	4,456.2	4,432.4	20.0	12.1	-150.26	-238.5	-391.8	587.9	563.9	24.01	24.483	
4,700.0	4,599.0	4,550.3	4,525.8	20.5	12.4	-151.31	-245.0	-382.0	620.0	595.6	24.42	25.391	
4,800.0	4,696.4	4,644.4	4,619.2	21.0	12.7	-152.26	-251.5	-372.1	652.4	627.5	24.84	26.264	
4,900.0	4,793.8	4,761.2	4,735.1	21.5	13.0	-153.32	-258.7	-361.2	683.6	658.4	25.26	27.066	

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 Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27G-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-343 - Wellbore #1 - Plan #2 (7-08-14)

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	4,891.2	4,887.6	4,861.3	22.0	13.3	-154.37	-263.6	-353.8	711.0	685.3	25.67	27.693	
5,100.0	4,988.6	5,017.1	4,990.7	22.5	13.5	-155.37	-265.5	-351.0	734.2	708.1	26.09	28.137	
5,200.0	5,085.9	5,116.8	5,090.4	23.0	13.7	-156.11	-265.5	-351.0	755.0	728.5	26.51	28.483	
5,300.0	5,183.4	5,214.3	5,187.9	23.4	13.8	-156.83	-265.5	-351.0	775.7	748.8	26.93	28.803	
5,400.0	5,281.4	5,312.3	5,285.9	23.8	14.0	-157.54	-265.5	-351.0	794.1	766.7	27.33	29.050	
5,500.0	5,380.0	5,410.9	5,384.5	24.1	14.1	-158.10	-265.5	-351.0	809.3	781.5	27.72	29.192	
5,600.0	5,479.2	5,510.1	5,483.7	24.3	14.3	-158.52	-265.5	-351.0	821.3	793.2	28.09	29.236	
5,700.0	5,578.7	5,609.6	5,583.2	24.5	14.5	-158.82	-265.5	-351.0	830.1	801.7	28.44	29.186	
5,800.0	5,678.6	5,709.5	5,683.1	24.7	14.7	-159.01	-265.5	-351.0	835.7	806.9	28.77	29.048	
5,900.0	5,778.5	5,809.4	5,783.0	24.8	14.8	-159.09	-265.5	-351.0	838.0	809.0	29.07	28.826	
6,000.0	5,878.5	5,909.4	5,883.0	24.9	15.0	116.62	-265.5	-351.0	838.1	808.7	29.41	28.496	
6,033.6	5,912.1	5,943.0	5,916.6	24.9	15.1	116.63	-265.5	-351.0	838.2	808.7	29.54	28.376	
6,100.0	5,978.5	6,000.0	5,973.6	25.0	15.2	116.66	-266.1	-351.0	838.9	809.1	29.77	28.178	
6,200.0	6,077.8	6,061.3	6,034.7	25.1	15.3	116.80	-271.0	-351.0	847.7	817.7	29.98	28.273	
6,300.0	6,174.6	6,120.8	6,093.4	25.3	15.4	116.91	-280.4	-351.0	866.9	836.9	30.02	28.880	
6,400.0	6,267.5	6,171.7	6,143.0	25.5	15.6	116.56	-292.1	-351.0	897.1	867.2	29.88	30.022	
6,500.0	6,354.7	6,212.8	6,182.3	25.7	15.7	115.30	-303.9	-351.0	938.4	908.8	29.69	31.609	
6,600.0	6,434.9	6,250.0	6,217.3	25.9	15.9	113.09	-316.4	-351.0	990.6	960.9	29.70	33.353	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27G-221 - Wellbore #1 - Plan #1 (4-23-14)

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	4.0	4.0	0.0	0.0	-157.81	-54.6	-22.3	59.0	59.0	0.00	N/A	
100.0	100.0	104.0	104.0	0.1	0.1	-157.81	-54.6	-22.3	59.0	58.8	0.23	252.461	
200.0	200.0	204.0	204.0	0.3	0.3	-157.81	-54.6	-22.3	59.0	58.3	0.68	86.368	
300.0	300.0	304.0	304.0	0.6	0.6	-157.81	-54.6	-22.3	59.0	57.9	1.13	52.095	
400.0	400.0	404.0	404.0	0.8	0.8	-157.81	-54.6	-22.3	59.0	57.4	1.58	37.295	
500.0	500.0	504.0	504.0	1.0	1.0	-75.16	-54.6	-22.3	58.5	56.5	2.02	28.959	
600.0	599.8	603.8	603.8	1.2	1.2	-80.23	-54.6	-22.3	57.4	55.0	2.46	23.326	
700.0	699.5	703.5	703.5	1.5	1.5	-88.94	-54.6	-22.3	56.6	53.7	2.92	19.351	
709.9	709.3	713.3	713.3	1.5	1.5	-90.00	-54.6	-22.3	56.6	53.6	2.97	19.029	CC, ES
800.0	798.7	802.7	802.7	1.7	1.7	-101.03	-54.6	-22.3	57.7	54.3	3.42	16.871	
900.0	897.5	901.5	901.5	2.0	1.9	-114.99	-54.6	-22.3	62.6	58.7	3.93	15.914	
1,000.0	995.6	999.6	999.6	2.4	2.1	-128.40	-54.6	-22.3	72.8	68.4	4.44	16.392	
1,100.0	1,093.1	1,099.7	1,099.7	2.8	2.3	-139.14	-54.2	-24.0	87.1	82.1	4.92	17.682	
1,200.0	1,190.5	1,201.0	1,200.9	3.3	2.6	-146.15	-53.0	-29.2	100.8	95.4	5.39	18.706	
1,300.0	1,287.9	1,303.5	1,302.9	3.7	2.8	-150.79	-51.0	-37.9	112.3	106.4	5.86	19.162	
1,400.0	1,385.3	1,406.9	1,405.5	4.2	3.1	-154.02	-48.1	-50.4	120.9	114.6	6.34	19.063	
1,500.0	1,482.7	1,510.9	1,508.2	4.7	3.3	-156.35	-44.3	-66.5	126.5	119.6	6.84	18.477	
1,600.0	1,580.1	1,611.7	1,607.3	5.2	3.7	-158.14	-40.1	-84.6	129.7	122.4	7.35	17.653	
1,700.0	1,677.4	1,711.6	1,705.4	5.6	4.0	-159.81	-35.9	-102.6	133.0	125.2	7.85	16.946	
1,800.0	1,774.8	1,811.5	1,803.6	6.1	4.3	-161.40	-31.7	-120.6	136.4	128.1	8.35	16.340	
1,900.0	1,872.2	1,911.3	1,901.7	6.6	4.7	-162.91	-27.4	-138.6	139.9	131.1	8.85	15.822	
2,000.0	1,969.6	2,011.2	1,999.9	7.1	5.1	-164.35	-23.2	-156.6	143.5	134.2	9.34	15.369	
2,100.0	2,067.0	2,111.1	2,098.0	7.6	5.4	-165.72	-19.0	-174.6	147.2	137.4	9.83	14.973	
2,200.0	2,164.4	2,211.0	2,196.2	8.1	5.8	-167.01	-14.8	-192.6	151.0	140.7	10.33	14.622	
2,300.0	2,261.8	2,310.8	2,294.3	8.6	6.2	-168.25	-10.6	-210.6	154.8	144.0	10.82	14.311	
2,400.0	2,359.1	2,410.7	2,392.5	9.1	6.6	-169.43	-6.4	-228.6	158.8	147.4	11.31	14.031	
2,500.0	2,456.5	2,510.6	2,490.6	9.6	7.0	-170.54	-2.2	-246.6	162.7	150.9	11.81	13.778	
2,600.0	2,553.9	2,610.4	2,588.8	10.1	7.4	-171.61	2.0	-264.6	166.8	154.5	12.31	13.549	
2,700.0	2,651.3	2,710.3	2,686.9	10.5	7.8	-172.62	6.2	-282.6	170.8	158.0	12.81	13.339	
2,800.0	2,748.7	2,810.2	2,785.1	11.0	8.2	-173.59	10.4	-300.5	175.0	161.7	13.31	13.145	
2,900.0	2,846.1	2,910.1	2,883.2	11.5	8.6	-174.51	14.6	-318.5	179.2	165.4	13.82	12.966	
3,000.0	2,943.5	3,009.9	2,981.4	12.0	9.0	-175.39	18.8	-336.5	183.4	169.1	14.33	12.800	
3,100.0	3,040.8	3,109.8	3,079.5	12.5	9.4	-176.23	23.0	-354.5	187.7	172.8	14.84	12.645	
3,200.0	3,138.2	3,209.7	3,177.7	13.0	9.8	-177.03	27.3	-372.5	192.0	176.6	15.36	12.500	
3,300.0	3,235.6	3,309.5	3,275.8	13.5	10.2	-177.80	31.5	-390.5	196.3	180.4	15.88	12.364	
3,400.0	3,333.0	3,409.4	3,373.9	14.0	10.7	-178.53	35.7	-408.5	200.7	184.3	16.40	12.235	
3,500.0	3,430.4	3,509.3	3,472.1	14.5	11.1	-179.23	39.9	-426.5	205.1	188.2	16.93	12.113	
3,600.0	3,527.8	3,609.2	3,570.2	15.0	11.5	-179.90	44.1	-444.5	209.6	192.1	17.47	11.998	
3,700.0	3,625.2	3,709.0	3,668.4	15.5	11.9	179.45	48.3	-462.5	214.0	196.0	18.00	11.889	
3,800.0	3,722.5	3,808.9	3,766.5	16.0	12.3	178.83	52.5	-480.5	218.5	200.0	18.54	11.785	
3,900.0	3,819.9	3,908.8	3,864.7	16.5	12.7	178.24	56.7	-498.5	223.0	203.9	19.09	11.686	
4,000.0	3,917.3	4,008.6	3,962.8	17.0	13.1	177.67	60.9	-516.5	227.6	207.9	19.63	11.591	
4,100.0	4,014.7	4,108.5	4,061.0	17.5	13.5	177.12	65.1	-534.5	232.1	211.9	20.18	11.501	
4,200.0	4,112.1	4,208.4	4,159.1	18.0	14.0	176.60	69.3	-552.5	236.7	216.0	20.74	11.414	
4,300.0	4,209.5	4,308.3	4,257.3	18.5	14.4	176.09	73.5	-570.5	241.3	220.0	21.30	11.332	
4,400.0	4,306.9	4,408.1	4,355.4	19.0	14.8	175.61	77.7	-588.5	245.9	224.1	21.86	11.252	
4,500.0	4,404.2	4,508.0	4,453.6	19.5	15.2	175.14	82.0	-606.5	250.6	228.1	22.42	11.176	
4,600.0	4,501.6	4,607.9	4,551.7	20.0	15.6	174.68	86.2	-624.4	255.2	232.2	22.99	11.103	
4,700.0	4,599.0	4,707.8	4,649.9	20.5	16.0	174.25	90.4	-642.4	259.9	236.3	23.56	11.032	
4,800.0	4,696.4	4,807.6	4,748.0	21.0	16.5	173.83	94.6	-660.4	264.6	240.4	24.13	10.964	
4,900.0	4,793.8	4,907.5	4,846.2	21.5	16.9	173.42	98.8	-678.4	269.3	244.6	24.71	10.899	

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 Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27G-221 - Wellbore #1 - Plan #1 (4-23-14)

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	4,891.2	5,007.4	4,944.3	22.0	17.3	173.03	103.0	-696.4	274.0	248.7	25.28	10.836	
5,100.0	4,988.6	5,100.0	5,035.5	22.5	17.6	172.72	106.7	-712.4	279.5	253.7	25.82	10.826	
5,200.0	5,085.9	5,191.8	5,126.3	23.0	17.9	172.57	109.8	-725.5	288.1	261.8	26.31	10.949	
5,300.0	5,183.4	5,282.2	5,216.1	23.4	18.1	172.58	112.1	-735.6	299.4	272.7	26.78	11.183	
5,400.0	5,281.4	5,372.2	5,305.8	23.8	18.3	172.68	113.9	-742.9	311.1	283.9	27.19	11.444	
5,500.0	5,380.0	5,462.0	5,395.4	24.1	18.4	172.83	114.9	-747.4	322.4	294.8	27.54	11.707	
5,600.0	5,479.2	5,551.5	5,484.9	24.3	18.6	173.02	115.3	-749.3	333.2	305.4	27.84	11.970	
5,700.0	5,578.7	5,649.3	5,582.7	24.5	18.7	173.23	115.4	-749.3	342.6	314.4	28.12	12.183	
5,800.0	5,678.6	5,749.1	5,682.6	24.7	18.8	173.36	115.4	-749.3	348.5	320.1	28.37	12.282	
5,900.0	5,778.5	5,849.1	5,782.5	24.8	19.0	173.41	115.4	-749.3	351.0	322.4	28.60	12.272	
6,000.0	5,878.5	5,949.0	5,882.4	24.9	19.1	89.09	115.6	-749.3	351.1	322.1	28.93	12.135	
6,100.0	5,978.5	6,047.5	5,980.5	25.0	19.3	87.83	124.2	-749.3	351.3	321.8	29.44	11.930	
6,200.0	6,077.8	6,144.7	6,075.3	25.1	19.5	86.21	145.0	-749.3	351.8	321.7	30.07	11.698	
6,300.0	6,174.6	6,240.7	6,165.7	25.3	19.7	84.68	177.3	-749.3	352.5	321.7	30.80	11.445	
6,400.0	6,267.5	6,335.6	6,250.4	25.5	20.0	83.24	220.0	-749.3	353.5	321.8	31.65	11.170	
6,500.0	6,354.7	6,429.7	6,328.4	25.7	20.4	81.92	272.4	-749.3	354.5	321.9	32.61	10.874	
6,600.0	6,434.9	6,522.8	6,398.8	25.9	20.8	80.75	333.4	-749.3	355.7	322.0	33.68	10.560	
6,700.0	6,506.6	6,615.3	6,460.8	26.2	21.2	79.73	401.9	-749.3	356.7	321.9	34.87	10.232	
6,800.0	6,568.5	6,707.1	6,513.8	26.6	21.8	78.87	476.9	-749.3	357.8	321.6	36.17	9.892	
6,900.0	6,619.7	6,800.0	6,557.8	27.1	22.5	78.18	558.6	-749.3	358.6	321.0	37.60	9.537	
7,000.0	6,659.3	6,889.5	6,590.5	27.7	23.3	77.70	641.8	-749.3	359.3	320.1	39.13	9.181	
7,100.0	6,686.5	6,980.3	6,613.5	28.4	24.3	77.39	729.6	-749.3	359.7	318.9	40.81	8.814	
7,200.0	6,701.0	7,070.9	6,626.0	29.3	25.3	77.28	819.3	-749.3	359.8	317.2	42.63	8.442	
7,300.0	6,703.5	7,164.8	6,628.4	30.2	26.5	77.30	913.1	-749.3	359.8	314.9	44.88	8.017	
7,400.0	6,703.6	7,264.8	6,628.5	31.3	27.8	77.31	1,013.1	-749.3	359.8	312.1	47.73	7.539	
7,500.0	6,703.7	7,364.8	6,628.7	32.4	29.1	77.31	1,113.1	-749.3	359.8	309.1	50.69	7.098	
7,600.0	6,703.8	7,464.8	6,628.8	33.6	30.6	77.31	1,213.1	-749.3	359.8	306.0	53.75	6.694	
7,700.0	6,704.0	7,564.8	6,629.0	34.9	32.1	77.32	1,313.1	-749.3	359.8	302.9	56.89	6.324	
7,800.0	6,704.1	7,664.8	6,629.1	36.3	33.6	77.32	1,413.1	-749.3	359.8	299.7	60.11	5.985	
7,900.0	6,704.2	7,764.8	6,629.2	37.7	35.2	77.32	1,513.1	-749.3	359.8	296.4	63.39	5.676	
8,000.0	6,704.3	7,864.8	6,629.4	39.1	36.8	77.32	1,613.1	-749.3	359.8	293.1	66.72	5.392	
8,100.0	6,704.5	7,964.8	6,629.5	40.6	38.5	77.33	1,713.1	-749.3	359.8	289.7	70.09	5.133	
8,200.0	6,704.6	8,064.8	6,629.7	42.2	40.1	77.33	1,813.1	-749.3	359.8	286.3	73.50	4.895	
8,300.0	6,704.7	8,164.8	6,629.8	43.7	41.8	77.33	1,913.1	-749.3	359.8	282.8	76.94	4.676	
8,400.0	6,704.8	8,264.8	6,629.9	45.3	43.5	77.33	2,013.1	-749.3	359.8	279.3	80.42	4.474	
8,500.0	6,704.9	8,364.8	6,630.1	46.9	45.3	77.34	2,113.1	-749.3	359.8	275.8	83.91	4.287	
8,600.0	6,705.1	8,464.8	6,630.2	48.6	47.0	77.34	2,213.1	-749.3	359.7	272.3	87.43	4.114	
8,700.0	6,705.2	8,564.8	6,630.4	50.2	48.8	77.34	2,313.1	-749.3	359.7	268.8	90.97	3.954	
8,800.0	6,705.3	8,664.8	6,630.5	51.9	50.5	77.34	2,413.1	-749.3	359.7	265.2	94.53	3.806	
8,900.0	6,705.4	8,764.8	6,630.6	53.6	52.3	77.35	2,513.1	-749.3	359.7	261.6	98.10	3.667	
9,000.0	6,705.6	8,864.8	6,630.8	55.3	54.1	77.35	2,613.1	-749.3	359.7	258.0	101.69	3.538	
9,100.0	6,705.7	8,964.8	6,630.9	57.1	55.9	77.35	2,713.1	-749.3	359.7	254.4	105.29	3.417	
9,200.0	6,705.8	9,064.8	6,631.1	58.8	57.7	77.36	2,813.1	-749.3	359.7	250.8	108.90	3.303	
9,300.0	6,705.9	9,164.8	6,631.2	60.6	59.5	77.36	2,913.1	-749.3	359.7	247.2	112.52	3.197	
9,400.0	6,706.0	9,264.8	6,631.3	62.3	61.3	77.36	3,013.1	-749.3	359.7	243.6	116.14	3.097	
9,500.0	6,706.2	9,364.8	6,631.5	64.1	63.2	77.36	3,113.1	-749.3	359.7	239.9	119.78	3.003	
9,600.0	6,706.3	9,464.8	6,631.6	65.9	65.0	77.37	3,213.1	-749.3	359.7	236.3	123.43	2.914	
9,700.0	6,706.4	9,564.8	6,631.8	67.7	66.8	77.37	3,313.1	-749.3	359.7	232.6	127.08	2.831	
9,800.0	6,706.5	9,664.8	6,631.9	69.5	68.7	77.37	3,413.1	-749.3	359.7	229.0	130.74	2.751	
9,900.0	6,706.7	9,764.8	6,632.0	71.3	70.5	77.37	3,513.1	-749.3	359.7	225.3	134.40	2.676	
10,000.0	6,706.8	9,864.8	6,632.2	73.1	72.4	77.38	3,613.1	-749.3	359.7	221.6	138.07	2.605	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27G-221 - Wellbore #1 - Plan #1 (4-23-14)

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
10,100.0	6,706.9	9,964.8	6,632.3	74.9	74.2	77.38	3,713.1	-749.3	359.7	217.9	141.75	2.538	
10,200.0	6,707.0	10,064.8	6,632.5	76.7	76.1	77.38	3,813.1	-749.3	359.7	214.3	145.43	2.473	
10,300.0	6,707.1	10,164.8	6,632.6	78.5	77.9	77.39	3,913.1	-749.3	359.7	210.6	149.11	2.412	
10,400.0	6,707.3	10,264.8	6,632.7	80.4	79.8	77.39	4,013.1	-749.3	359.7	206.9	152.80	2.354	
10,500.0	6,707.4	10,364.8	6,632.9	82.2	81.7	77.39	4,113.1	-749.3	359.7	203.2	156.49	2.298	
10,600.0	6,707.5	10,464.8	6,633.0	84.0	83.5	77.39	4,213.1	-749.3	359.7	199.5	160.18	2.245	
10,700.0	6,707.6	10,564.8	6,633.1	85.9	85.4	77.40	4,313.1	-749.3	359.7	195.8	163.88	2.195	
10,800.0	6,707.8	10,664.8	6,633.3	87.7	87.3	77.40	4,413.1	-749.3	359.7	192.1	167.58	2.146	
10,900.0	6,707.9	10,764.8	6,633.4	89.6	89.2	77.40	4,513.1	-749.3	359.6	188.4	171.29	2.100	
11,000.0	6,708.0	10,864.8	6,633.6	91.4	91.0	77.40	4,613.1	-749.3	359.6	184.7	174.99	2.055	
11,100.0	6,708.1	10,964.8	6,633.7	93.3	92.9	77.41	4,713.1	-749.3	359.6	180.9	178.70	2.013	
11,200.0	6,708.2	11,064.8	6,633.8	95.1	94.8	77.41	4,813.1	-749.3	359.6	177.2	182.41	1.972	
11,300.0	6,708.4	11,164.8	6,634.0	97.0	96.7	77.41	4,913.1	-749.3	359.6	173.5	186.13	1.932	
11,400.0	6,708.5	11,264.8	6,634.1	98.8	98.6	77.41	5,013.1	-749.3	359.6	169.8	189.84	1.894	
11,500.0	6,708.6	11,364.8	6,634.3	100.7	100.4	77.42	5,113.1	-749.3	359.6	166.1	193.56	1.858	
11,600.0	6,708.7	11,464.8	6,634.4	102.6	102.3	77.42	5,213.1	-749.3	359.6	162.3	197.28	1.823	
11,700.0	6,708.9	11,564.8	6,634.5	104.4	104.2	77.42	5,313.1	-749.3	359.6	158.6	201.00	1.789	
11,800.0	6,709.0	11,664.8	6,634.7	106.3	106.1	77.43	5,413.1	-749.3	359.6	154.9	204.73	1.757	
11,900.0	6,709.1	11,764.8	6,634.8	108.2	108.0	77.43	5,513.1	-749.3	359.6	151.2	208.45	1.725	
12,000.0	6,709.2	11,864.8	6,635.0	110.0	109.9	77.43	5,613.1	-749.3	359.6	147.4	212.18	1.695	
12,100.0	6,709.3	11,964.8	6,635.1	111.9	111.8	77.43	5,713.1	-749.3	359.6	143.7	215.90	1.666	
12,200.0	6,709.5	12,064.8	6,635.2	113.8	113.7	77.44	5,813.1	-749.3	359.6	140.0	219.63	1.637	
12,300.0	6,709.6	12,164.8	6,635.4	115.7	115.6	77.44	5,913.1	-749.3	359.6	136.2	223.36	1.610	
12,400.0	6,709.7	12,264.8	6,635.5	117.5	117.4	77.44	6,013.1	-749.3	359.6	132.5	227.10	1.583	
12,500.0	6,709.8	12,364.8	6,635.7	119.4	119.3	77.44	6,113.1	-749.3	359.6	128.8	230.83	1.558	
12,600.0	6,710.0	12,464.8	6,635.8	121.3	121.2	77.45	6,213.1	-749.3	359.6	125.0	234.56	1.533	
12,700.0	6,710.1	12,564.8	6,635.9	123.2	123.1	77.45	6,313.1	-749.3	359.6	121.3	238.30	1.509	
12,800.0	6,710.2	12,664.8	6,636.1	125.1	125.0	77.45	6,413.1	-749.3	359.6	117.5	242.03	1.486	Level 3
12,900.0	6,710.3	12,764.8	6,636.2	127.0	126.9	77.46	6,513.1	-749.3	359.6	113.8	245.77	1.463	Level 3
13,000.0	6,710.4	12,864.8	6,636.4	128.8	128.8	77.46	6,613.1	-749.3	359.6	110.1	249.51	1.441	Level 3
13,100.0	6,710.6	12,964.8	6,636.5	130.7	130.7	77.46	6,713.1	-749.3	359.6	106.3	253.25	1.420	Level 3
13,200.0	6,710.7	13,064.8	6,636.6	132.6	132.6	77.46	6,813.1	-749.3	359.6	102.6	256.99	1.399	Level 3
13,300.0	6,710.8	13,164.8	6,636.8	134.5	134.5	77.47	6,913.1	-749.3	359.5	98.8	260.73	1.379	Level 3
13,400.0	6,710.9	13,264.8	6,636.9	136.4	136.4	77.47	7,013.1	-749.3	359.5	95.1	264.47	1.360	Level 3
13,442.1	6,711.0	13,306.9	6,637.0	137.2	137.2	77.47	7,055.2	-749.3	359.5	93.5	266.04	1.351	Level 3
13,458.3	6,711.0	13,323.0	6,637.0	137.5	137.5	77.47	7,071.3	-749.3	359.5	92.9	266.65	1.348	Level 3, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-201 - Wellbore #1 - Plan #1 (4-23-14)

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	4.0	4.0	0.0	0.0	-159.56	-142.1	-52.9	151.6	151.6	0.00	N/A	
100.0	100.0	104.0	104.0	0.1	0.1	-159.56	-142.1	-52.9	151.6	151.4	0.23	648.624	
200.0	200.0	204.0	204.0	0.3	0.3	-159.56	-142.1	-52.9	151.6	150.9	0.68	221.898	
300.0	300.0	304.0	304.0	0.6	0.6	-159.56	-142.1	-52.9	151.6	150.5	1.13	133.843	
400.0	400.0	404.0	404.0	0.8	0.8	-159.56	-142.1	-52.9	151.6	150.0	1.58	95.819	
500.0	500.0	504.0	504.0	1.0	1.0	-75.92	-142.1	-52.9	151.2	149.2	2.02	74.786	
600.0	599.8	603.8	603.8	1.2	1.2	-77.88	-142.1	-52.9	150.0	147.5	2.46	60.931	
700.0	699.5	703.5	703.5	1.5	1.5	-81.19	-142.1	-52.9	148.4	145.5	2.92	50.760	
800.0	798.7	802.7	802.7	1.7	1.7	-85.88	-142.1	-52.9	147.0	143.6	3.42	43.014	
870.5	868.4	872.4	872.4	1.9	1.8	-90.00	-142.1	-52.9	146.6	142.8	3.80	38.622	CC
900.0	897.5	901.5	901.5	2.0	1.9	-91.91	-142.1	-52.9	146.7	142.8	3.96	37.096	ES
1,000.0	995.6	999.6	999.6	2.4	2.1	-99.12	-142.1	-52.9	148.6	144.1	4.54	32.749	
1,100.0	1,093.1	1,097.1	1,097.1	2.8	2.4	-107.07	-142.1	-52.9	153.8	148.6	5.15	29.847	
1,200.0	1,190.5	1,194.5	1,194.5	3.3	2.6	-114.60	-142.1	-52.9	162.0	156.3	5.75	28.163	
1,300.0	1,287.9	1,291.9	1,291.9	3.7	2.8	-121.33	-142.1	-52.9	172.9	166.6	6.33	27.330	
1,400.0	1,385.3	1,389.3	1,389.3	4.2	3.0	-127.22	-142.1	-52.9	186.0	179.1	6.87	27.063	SF
1,500.0	1,482.7	1,486.7	1,486.7	4.7	3.2	-132.32	-142.1	-52.9	200.7	193.4	7.39	27.161	
1,600.0	1,580.1	1,584.1	1,584.1	5.2	3.4	-136.70	-142.1	-52.9	216.9	209.0	7.89	27.488	
1,700.0	1,677.4	1,681.2	1,681.2	5.6	3.7	-140.75	-141.3	-52.1	234.2	225.8	8.36	28.000	
1,800.0	1,774.8	1,777.2	1,777.1	6.1	3.9	-144.93	-138.3	-49.0	252.8	244.0	8.80	28.735	
1,900.0	1,872.2	1,871.8	1,871.4	6.6	4.1	-149.14	-133.2	-43.6	273.2	264.0	9.20	29.682	
2,000.0	1,969.6	1,964.9	1,963.9	7.1	4.3	-153.31	-126.1	-36.1	295.6	286.0	9.59	30.829	
2,100.0	2,067.0	2,059.6	2,057.8	7.6	4.5	-157.23	-117.7	-27.4	320.0	310.0	9.98	32.069	
2,200.0	2,164.4	2,154.3	2,151.8	8.1	4.8	-160.61	-109.4	-18.7	345.6	335.2	10.38	33.295	
2,300.0	2,261.8	2,249.0	2,245.7	8.6	5.0	-163.53	-101.1	-9.9	372.3	361.5	10.80	34.478	
2,400.0	2,359.1	2,343.7	2,339.6	9.1	5.3	-166.07	-92.8	-1.2	399.7	388.5	11.23	35.597	
2,500.0	2,456.5	2,438.4	2,433.6	9.6	5.5	-168.29	-84.4	7.6	427.8	416.1	11.67	36.655	
2,600.0	2,553.9	2,533.1	2,527.5	10.1	5.8	-170.24	-76.1	16.3	456.4	444.3	12.12	37.643	
2,700.0	2,651.3	2,627.8	2,621.4	10.5	6.1	-171.96	-67.8	25.1	485.5	472.9	12.59	38.565	
2,800.0	2,748.7	2,722.5	2,715.4	11.0	6.3	-173.48	-59.5	33.8	514.9	501.8	13.06	39.423	
2,900.0	2,846.1	2,817.2	2,809.3	11.5	6.6	-174.85	-51.1	42.5	544.6	531.1	13.54	40.222	
3,000.0	2,943.5	2,911.9	2,903.2	12.0	6.9	-176.08	-42.8	51.3	574.6	560.6	14.03	40.966	
3,100.0	3,040.8	3,006.6	2,997.1	12.5	7.2	-177.18	-34.5	60.0	604.8	590.3	14.52	41.659	
3,200.0	3,138.2	3,101.3	3,091.1	13.0	7.4	-178.18	-26.2	68.8	635.2	620.2	15.01	42.305	
3,300.0	3,235.6	3,196.0	3,185.0	13.5	7.7	-179.09	-17.8	77.5	665.7	650.2	15.52	42.908	
3,400.0	3,333.0	3,290.7	3,278.9	14.0	8.0	-179.92	-9.5	86.3	696.4	680.4	16.02	43.472	
3,500.0	3,430.4	3,385.4	3,372.9	14.5	8.3	179.32	-1.2	95.0	727.3	710.7	16.53	44.001	
3,600.0	3,527.8	3,480.1	3,466.8	15.0	8.6	178.62	7.1	103.7	758.2	741.1	17.04	44.496	
3,700.0	3,625.2	3,574.9	3,560.7	15.5	8.9	177.97	15.5	112.5	789.2	771.6	17.55	44.962	
3,800.0	3,722.5	3,669.6	3,654.7	16.0	9.2	177.37	23.8	121.2	820.3	802.2	18.07	45.400	
3,900.0	3,819.9	3,764.3	3,748.6	16.5	9.5	176.82	32.1	130.0	851.5	832.9	18.59	45.813	
4,000.0	3,917.3	3,859.0	3,842.5	17.0	9.8	176.30	40.4	138.7	882.7	863.6	19.11	46.203	
4,100.0	4,014.7	3,953.7	3,936.5	17.5	10.1	175.82	48.8	147.4	914.0	894.4	19.63	46.571	
4,200.0	4,112.1	4,048.4	4,030.4	18.0	10.4	175.38	57.1	156.2	945.4	925.2	20.15	46.919	
4,300.0	4,209.5	4,143.1	4,124.3	18.5	10.6	174.96	65.4	164.9	976.8	956.1	20.67	47.249	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-341 - Wellbore #1 - Plan #1 (4-23-14)

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	4.0	4.0	0.0	0.0	-159.69	-112.9	-41.8	120.4	120.4	0.00	N/A	
100.0	100.0	104.0	104.0	0.1	0.1	-159.69	-112.9	-41.8	120.4	120.2	0.23	515.144	
200.0	200.0	204.0	204.0	0.3	0.3	-159.69	-112.9	-41.8	120.4	119.7	0.68	176.233	
300.0	300.0	304.0	304.0	0.6	0.6	-159.69	-112.9	-41.8	120.4	119.3	1.13	106.300	
400.0	400.0	404.0	404.0	0.8	0.8	-159.69	-112.9	-41.8	120.4	118.8	1.58	76.101	
500.0	500.0	504.0	504.0	1.0	1.0	-76.21	-112.9	-41.8	120.0	118.0	2.02	59.355	
600.0	599.8	603.8	603.8	1.2	1.2	-78.68	-112.9	-41.8	118.9	116.4	2.46	48.278	
700.0	699.5	703.5	703.5	1.5	1.5	-82.87	-112.9	-41.8	117.4	114.5	2.92	40.167	
800.0	798.7	802.7	802.7	1.7	1.7	-88.80	-112.9	-41.8	116.6	113.1	3.42	34.091	
817.4	815.9	819.9	819.9	1.8	1.7	-90.00	-112.9	-41.8	116.5	113.0	3.51	33.176	CC, ES
900.0	897.5	901.5	901.5	2.0	1.9	-96.35	-112.9	-41.8	117.3	113.3	3.95	29.653	
1,000.0	995.6	999.6	999.6	2.4	2.1	-105.15	-112.9	-41.8	120.9	116.4	4.53	26.703	
1,100.0	1,093.1	1,097.1	1,097.1	2.8	2.4	-114.46	-112.9	-41.8	128.6	123.5	5.12	25.138	
1,200.0	1,190.5	1,194.5	1,194.5	3.3	2.6	-122.81	-112.9	-41.8	139.7	134.1	5.68	24.604	
1,300.0	1,287.9	1,291.9	1,291.9	3.7	2.8	-129.84	-112.9	-41.8	153.5	147.2	6.21	24.707	
1,400.0	1,385.3	1,389.3	1,389.3	4.2	3.0	-135.69	-112.9	-41.8	169.1	162.4	6.72	25.181	
1,500.0	1,482.7	1,492.5	1,492.5	4.7	3.2	-140.67	-112.2	-43.1	184.9	177.7	7.20	25.669	
1,600.0	1,580.1	1,597.6	1,597.5	5.2	3.5	-144.70	-109.5	-47.7	198.2	190.5	7.68	25.821	
1,700.0	1,677.4	1,703.9	1,703.3	5.6	3.7	-148.08	-104.9	-55.7	208.7	200.5	8.15	25.603	
1,800.0	1,774.8	1,811.0	1,809.6	6.1	4.0	-151.04	-98.2	-67.3	216.0	207.4	8.62	25.053	
1,900.0	1,872.2	1,910.3	1,907.9	6.6	4.2	-153.58	-91.1	-79.6	222.0	212.9	9.09	24.437	
2,000.0	1,969.6	2,009.7	2,006.2	7.1	4.5	-155.99	-84.0	-91.8	228.4	218.9	9.54	23.938	
2,100.0	2,067.0	2,109.0	2,104.5	7.6	4.8	-158.26	-76.9	-104.1	235.2	225.2	10.00	23.533	
2,200.0	2,164.4	2,208.3	2,202.9	8.1	5.1	-160.40	-69.8	-116.4	242.4	231.9	10.45	23.201	
2,300.0	2,261.8	2,307.7	2,301.2	8.6	5.4	-162.42	-62.8	-128.7	249.8	238.9	10.90	22.923	
2,400.0	2,359.1	2,407.0	2,399.5	9.1	5.7	-164.32	-55.7	-141.0	257.6	246.2	11.35	22.689	
2,500.0	2,456.5	2,506.4	2,497.8	9.6	6.0	-166.10	-48.6	-153.2	265.6	253.8	11.81	22.488	
2,600.0	2,553.9	2,605.7	2,596.2	10.1	6.3	-167.78	-41.5	-165.5	273.8	261.6	12.27	22.313	
2,700.0	2,651.3	2,705.1	2,694.5	10.5	6.6	-169.37	-34.4	-177.8	282.3	269.6	12.74	22.157	
2,800.0	2,748.7	2,804.4	2,792.8	11.0	6.9	-170.85	-27.3	-190.1	291.0	277.8	13.22	22.017	
2,900.0	2,846.1	2,903.8	2,891.2	11.5	7.2	-172.26	-20.2	-202.4	299.9	286.2	13.70	21.888	
3,000.0	2,943.5	3,003.1	2,989.5	12.0	7.6	-173.58	-13.1	-214.7	308.9	294.7	14.19	21.769	
3,100.0	3,040.8	3,102.4	3,087.8	12.5	7.9	-174.82	-6.0	-226.9	318.1	303.4	14.69	21.657	
3,200.0	3,138.2	3,201.8	3,186.1	13.0	8.2	-176.00	1.1	-239.2	327.4	312.2	15.19	21.551	
3,300.0	3,235.6	3,301.1	3,284.5	13.5	8.5	-177.11	8.2	-251.5	336.9	321.2	15.71	21.450	
3,400.0	3,333.0	3,400.5	3,382.8	14.0	8.9	-178.16	15.3	-263.8	346.5	330.2	16.23	21.353	
3,500.0	3,430.4	3,499.8	3,481.1	14.5	9.2	-179.15	22.3	-276.1	356.2	339.4	16.75	21.260	
3,600.0	3,527.8	3,599.2	3,579.4	15.0	9.5	179.90	29.4	-288.3	366.0	348.7	17.29	21.170	
3,700.0	3,625.2	3,698.5	3,677.8	15.5	9.9	179.01	36.5	-300.6	375.8	358.0	17.83	21.083	
3,800.0	3,722.5	3,797.8	3,776.1	16.0	10.2	178.17	43.6	-312.9	385.8	367.4	18.37	20.998	
3,900.0	3,819.9	3,897.2	3,874.4	16.5	10.5	177.36	50.7	-325.2	395.9	376.9	18.93	20.916	
4,000.0	3,917.3	3,996.5	3,972.7	17.0	10.9	176.60	57.8	-337.5	406.0	386.5	19.48	20.837	
4,100.0	4,014.7	4,095.9	4,071.1	17.5	11.2	175.87	64.9	-349.7	416.2	396.1	20.05	20.760	
4,200.0	4,112.1	4,195.2	4,169.4	18.0	11.6	175.18	72.0	-362.0	426.4	405.8	20.62	20.685	
4,300.0	4,209.5	4,294.6	4,267.7	18.5	11.9	174.52	79.1	-374.3	436.7	415.6	21.19	20.612	
4,400.0	4,306.9	4,393.9	4,366.0	19.0	12.2	173.90	86.2	-386.6	447.1	425.3	21.77	20.542	
4,500.0	4,404.2	4,493.3	4,464.4	19.5	12.6	173.30	93.3	-398.9	457.5	435.2	22.35	20.473	
4,600.0	4,501.6	4,592.6	4,562.7	20.0	12.9	172.72	100.4	-411.1	468.0	445.1	22.93	20.407	
4,700.0	4,599.0	4,683.1	4,652.4	20.5	13.2	172.26	106.5	-421.8	479.2	455.7	23.47	20.413	
4,800.0	4,696.4	4,769.7	4,738.5	21.0	13.4	172.00	111.1	-429.7	492.8	468.8	23.96	20.568	
4,900.0	4,793.8	4,855.7	4,824.2	21.5	13.6	171.91	114.4	-435.4	508.9	484.5	24.41	20.846	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-341 - Wellbore #1 - Plan #1 (4-23-14)

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	4,891.2	4,940.9	4,909.3	22.0	13.7	171.98	116.4	-438.9	527.6	502.7	24.84	21.235	
5,100.0	4,988.6	5,025.2	4,993.6	22.5	13.9	172.19	117.1	-440.1	548.7	523.4	25.25	21.728	
5,200.0	5,085.9	5,121.5	5,089.9	23.0	14.0	172.49	117.1	-440.1	571.2	545.5	25.68	22.243	
5,300.0	5,183.4	5,219.0	5,187.4	23.4	14.2	172.80	117.1	-440.1	593.5	567.4	26.14	22.711	
5,400.0	5,281.4	5,317.0	5,285.4	23.8	14.4	173.08	117.1	-440.1	613.2	586.6	26.57	23.079	
5,500.0	5,380.0	5,415.6	5,384.0	24.1	14.5	173.30	117.1	-440.1	629.5	602.5	26.98	23.336	
5,600.0	5,479.2	5,514.8	5,483.2	24.3	14.7	173.46	117.1	-440.1	642.3	615.0	27.35	23.488	
5,700.0	5,578.7	5,614.3	5,582.7	24.5	14.9	173.58	117.1	-440.1	651.7	624.1	27.68	23.541	
5,800.0	5,678.6	5,714.1	5,682.6	24.7	15.1	173.65	117.1	-440.1	657.7	629.7	27.99	23.499	
5,900.0	5,778.5	5,814.1	5,782.5	24.8	15.3	173.68	117.1	-440.1	660.2	631.9	28.25	23.366	
6,000.0	5,878.5	5,914.1	5,882.5	24.9	15.4	89.39	117.1	-440.1	660.2	631.6	28.60	23.087	
6,100.0	5,978.5	6,013.7	5,982.1	25.0	15.6	89.37	118.2	-440.1	660.2	631.3	28.98	22.782	
6,200.0	6,077.8	6,112.8	6,080.4	25.1	15.9	89.35	130.0	-440.1	660.2	630.8	29.44	22.426	
6,300.0	6,174.6	6,211.8	6,176.3	25.3	16.2	89.34	154.3	-440.1	660.2	630.2	30.01	22.004	
6,400.0	6,267.5	6,310.8	6,268.2	25.5	16.5	89.34	190.9	-440.1	660.2	629.5	30.70	21.506	
6,500.0	6,354.7	6,409.8	6,354.7	25.7	17.0	89.35	239.0	-440.1	660.2	628.7	31.57	20.916	
6,600.0	6,434.9	6,508.9	6,434.2	25.9	17.5	89.37	298.0	-440.1	660.2	627.6	32.64	20.225	
6,700.0	6,506.6	6,607.9	6,505.5	26.2	18.2	89.40	366.7	-440.1	660.2	626.3	33.97	19.433	
6,800.0	6,568.5	6,707.1	6,567.3	26.6	19.0	89.44	444.1	-440.1	660.2	624.6	35.58	18.554	
6,900.0	6,619.7	6,806.3	6,618.6	27.1	19.9	89.49	528.9	-440.1	660.2	622.7	37.49	17.612	
7,000.0	6,659.3	6,905.6	6,658.5	27.7	21.0	89.55	619.8	-440.1	660.2	620.5	39.67	16.641	
7,100.0	6,686.5	7,004.9	6,686.3	28.4	22.2	89.62	715.1	-440.1	660.2	618.1	42.12	15.675	
7,200.0	6,701.0	7,104.4	6,701.5	29.3	23.6	89.70	813.4	-440.1	660.2	615.4	44.78	14.744	
7,300.0	6,703.5	7,204.1	6,704.6	30.2	25.0	89.75	913.0	-440.1	660.2	612.6	47.60	13.870	
7,400.0	6,703.6	7,304.1	6,704.7	31.3	26.5	89.74	1,013.0	-440.1	660.2	609.6	50.56	13.059	
7,500.0	6,703.7	7,404.1	6,704.8	32.4	28.0	89.74	1,113.0	-440.1	660.2	606.6	53.63	12.311	
7,600.0	6,703.8	7,504.1	6,704.9	33.6	29.6	89.74	1,213.0	-440.1	660.2	603.4	56.79	11.625	
7,700.0	6,704.0	7,604.1	6,705.0	34.9	31.2	89.74	1,313.0	-440.1	660.2	600.2	60.03	10.997	
7,800.0	6,704.1	7,704.1	6,705.1	36.3	32.8	89.74	1,413.0	-440.1	660.2	596.9	63.34	10.423	
7,900.0	6,704.2	7,804.1	6,705.2	37.7	34.5	89.74	1,513.0	-440.1	660.2	593.5	66.71	9.896	
8,000.0	6,704.3	7,904.1	6,705.3	39.1	36.2	89.74	1,613.0	-440.1	660.2	590.1	70.13	9.414	
8,100.0	6,704.5	8,004.1	6,705.4	40.6	37.9	89.73	1,713.0	-440.1	660.2	586.6	73.58	8.972	
8,200.0	6,704.6	8,104.1	6,705.5	42.2	39.7	89.73	1,813.0	-440.1	660.2	583.1	77.08	8.565	
8,300.0	6,704.7	8,204.1	6,705.6	43.7	41.4	89.73	1,913.0	-440.1	660.2	579.6	80.60	8.191	
8,400.0	6,704.8	8,304.1	6,705.7	45.3	43.2	89.73	2,013.0	-440.1	660.2	576.0	84.16	7.845	
8,500.0	6,704.9	8,404.1	6,705.8	46.9	45.0	89.73	2,113.0	-440.1	660.2	572.5	87.74	7.525	
8,600.0	6,705.1	8,504.1	6,705.9	48.6	46.8	89.73	2,213.0	-440.1	660.2	568.9	91.34	7.228	
8,700.0	6,705.2	8,604.1	6,706.0	50.2	48.6	89.72	2,313.0	-440.1	660.2	565.2	94.95	6.953	
8,800.0	6,705.3	8,704.1	6,706.1	51.9	50.4	89.72	2,413.0	-440.1	660.2	561.6	98.59	6.697	
8,900.0	6,705.4	8,804.1	6,706.2	53.6	52.2	89.72	2,513.0	-440.1	660.2	558.0	102.24	6.457	
9,000.0	6,705.6	8,904.1	6,706.3	55.3	54.0	89.72	2,613.0	-440.1	660.2	554.3	105.90	6.234	
9,100.0	6,705.7	9,004.1	6,706.4	57.1	55.9	89.72	2,713.0	-440.1	660.2	550.6	109.58	6.025	
9,200.0	6,705.8	9,104.1	6,706.5	58.8	57.7	89.72	2,813.0	-440.1	660.2	546.9	113.26	5.829	
9,300.0	6,705.9	9,204.1	6,706.6	60.6	59.6	89.72	2,913.0	-440.1	660.2	543.2	116.96	5.645	
9,400.0	6,706.0	9,304.1	6,706.8	62.3	61.4	89.71	3,013.0	-440.1	660.2	539.5	120.67	5.471	
9,500.0	6,706.2	9,404.1	6,706.9	64.1	63.3	89.71	3,113.0	-440.1	660.2	535.8	124.38	5.308	
9,600.0	6,706.3	9,504.1	6,707.0	65.9	65.1	89.71	3,213.0	-440.1	660.2	532.1	128.10	5.154	
9,700.0	6,706.4	9,604.1	6,707.1	67.7	67.0	89.71	3,313.0	-440.1	660.2	528.4	131.83	5.008	
9,800.0	6,706.5	9,704.1	6,707.2	69.5	68.9	89.71	3,413.0	-440.1	660.2	524.6	135.57	4.870	
9,900.0	6,706.7	9,804.1	6,707.3	71.3	70.7	89.71	3,513.0	-440.1	660.2	520.9	139.31	4.739	
10,000.0	6,706.8	9,904.1	6,707.4	73.1	72.6	89.71	3,613.0	-440.1	660.2	517.1	143.05	4.615	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-341 - Wellbore #1 - Plan #1 (4-23-14)

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
10,100.0	6,706.9	10,004.1	6,707.5	74.9	74.5	89.70	3,713.0	-440.1	660.2	513.4	146.80	4.497	
10,200.0	6,707.0	10,104.1	6,707.6	76.7	76.3	89.70	3,813.0	-440.1	660.2	509.6	150.56	4.385	
10,300.0	6,707.1	10,204.1	6,707.7	78.5	78.2	89.70	3,913.0	-440.1	660.2	505.9	154.32	4.278	
10,400.0	6,707.3	10,304.1	6,707.8	80.4	80.1	89.70	4,013.0	-440.1	660.2	502.1	158.08	4.176	
10,500.0	6,707.4	10,404.1	6,707.9	82.2	82.0	89.70	4,113.0	-440.1	660.2	498.3	161.85	4.079	
10,600.0	6,707.5	10,504.1	6,708.0	84.0	83.9	89.70	4,213.0	-440.1	660.2	494.6	165.62	3.986	
10,700.0	6,707.6	10,604.1	6,708.1	85.9	85.7	89.69	4,313.0	-440.1	660.2	490.8	169.39	3.897	
10,800.0	6,707.8	10,704.1	6,708.2	87.7	87.6	89.69	4,413.0	-440.1	660.2	487.0	173.17	3.812	
10,900.0	6,707.9	10,804.1	6,708.3	89.6	89.5	89.69	4,513.0	-440.1	660.2	483.2	176.95	3.731	
11,000.0	6,708.0	10,904.1	6,708.4	91.4	91.4	89.69	4,613.0	-440.1	660.2	479.5	180.73	3.653	
11,100.0	6,708.1	11,004.1	6,708.5	93.3	93.3	89.69	4,713.0	-440.1	660.2	475.7	184.52	3.578	
11,200.0	6,708.2	11,104.1	6,708.6	95.1	95.2	89.69	4,813.0	-440.1	660.2	471.9	188.30	3.506	
11,300.0	6,708.4	11,204.1	6,708.7	97.0	97.1	89.69	4,913.0	-440.1	660.2	468.1	192.09	3.437	
11,400.0	6,708.5	11,304.1	6,708.8	98.8	99.0	89.68	5,013.0	-440.1	660.2	464.3	195.88	3.370	
11,500.0	6,708.6	11,404.1	6,708.9	100.7	100.9	89.68	5,113.0	-440.1	660.2	460.5	199.68	3.306	
11,600.0	6,708.7	11,504.1	6,709.1	102.6	102.8	89.68	5,213.0	-440.1	660.2	456.7	203.47	3.245	
11,700.0	6,708.9	11,604.1	6,709.2	104.4	104.7	89.68	5,313.0	-440.1	660.2	452.9	207.27	3.185	
11,800.0	6,709.0	11,704.1	6,709.3	106.3	106.6	89.68	5,413.0	-440.1	660.2	449.1	211.07	3.128	
11,900.0	6,709.1	11,804.1	6,709.4	108.2	108.5	89.68	5,513.0	-440.1	660.2	445.3	214.87	3.073	
12,000.0	6,709.2	11,904.1	6,709.5	110.0	110.4	89.67	5,613.0	-440.1	660.2	441.5	218.67	3.019	
12,100.0	6,709.3	12,004.1	6,709.6	111.9	112.3	89.67	5,713.0	-440.1	660.2	437.7	222.47	2.968	
12,200.0	6,709.5	12,104.1	6,709.7	113.8	114.2	89.67	5,813.0	-440.1	660.2	433.9	226.27	2.918	
12,300.0	6,709.6	12,204.1	6,709.8	115.7	116.1	89.67	5,913.0	-440.1	660.2	430.1	230.08	2.869	
12,400.0	6,709.7	12,304.1	6,709.9	117.5	118.0	89.67	6,013.0	-440.1	660.2	426.3	233.88	2.823	
12,500.0	6,709.8	12,404.1	6,710.0	119.4	119.9	89.67	6,113.0	-440.1	660.2	422.5	237.69	2.778	
12,600.0	6,710.0	12,504.1	6,710.1	121.3	121.8	89.67	6,213.0	-440.1	660.2	418.7	241.50	2.734	
12,700.0	6,710.1	12,604.1	6,710.2	123.2	123.7	89.66	6,313.0	-440.1	660.2	414.9	245.31	2.691	
12,800.0	6,710.2	12,704.1	6,710.3	125.1	125.6	89.66	6,413.0	-440.1	660.2	411.1	249.12	2.650	
12,900.0	6,710.3	12,804.1	6,710.4	127.0	127.5	89.66	6,513.0	-440.1	660.2	407.3	252.93	2.610	
13,000.0	6,710.4	12,904.1	6,710.5	128.8	129.4	89.66	6,613.0	-440.1	660.2	403.4	256.74	2.571	
13,100.0	6,710.6	13,004.1	6,710.6	130.7	131.3	89.66	6,713.0	-440.1	660.2	399.6	260.56	2.534	
13,200.0	6,710.7	13,104.1	6,710.7	132.6	133.2	89.66	6,813.0	-440.1	660.2	395.8	264.37	2.497	
13,300.0	6,710.8	13,204.1	6,710.8	134.5	135.1	89.66	6,913.0	-440.1	660.2	392.0	268.18	2.462	
13,400.0	6,710.9	13,304.1	6,710.9	136.4	137.0	89.65	7,013.0	-440.1	660.2	388.2	272.00	2.427	
13,440.7	6,711.0	13,344.9	6,711.0	137.2	137.8	89.65	7,053.7	-440.1	660.2	386.6	273.55	2.413	
13,458.3	6,711.0	13,362.5	6,711.0	137.5	138.1	89.65	7,071.3	-440.1	660.2	386.0	274.23	2.407	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-401 - Wellbore #1 - Plan #2 (7-09-14)

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	4.0	4.0	0.0	0.0	-159.91	-167.6	-61.3	178.4	178.4	0.00	N/A	
100.0	100.0	104.0	104.0	0.1	0.1	-159.91	-167.6	-61.3	178.4	178.2	0.23	763.353	
200.0	200.0	204.0	204.0	0.3	0.3	-159.91	-167.6	-61.3	178.4	177.8	0.68	261.147	
300.0	300.0	304.0	304.0	0.6	0.6	-159.91	-167.6	-61.3	178.4	177.3	1.13	157.517	
400.0	400.0	404.0	404.0	0.8	0.8	-159.91	-167.6	-61.3	178.4	176.9	1.58	112.768	
500.0	500.0	504.0	504.0	1.0	1.0	-76.17	-167.6	-61.3	178.0	176.0	2.02	88.057	
600.0	599.8	603.8	603.8	1.2	1.2	-77.84	-167.6	-61.3	176.8	174.4	2.46	71.832	
700.0	699.5	703.5	703.5	1.5	1.5	-80.64	-167.6	-61.3	175.2	172.3	2.92	59.926	
800.0	798.7	802.7	802.7	1.7	1.7	-84.62	-167.6	-61.3	173.6	170.2	3.42	50.803	
900.0	897.5	901.5	901.5	2.0	1.9	-89.74	-167.6	-61.3	172.8	168.9	3.95	43.706	
904.6	902.0	906.0	906.0	2.1	1.9	-90.00	-167.6	-61.3	172.8	168.9	3.98	43.408	CC, ES
1,000.0	995.6	999.6	999.6	2.4	2.1	-95.90	-167.6	-61.3	173.8	169.3	4.54	38.282	
1,100.0	1,093.1	1,097.1	1,097.1	2.8	2.4	-102.84	-167.6	-61.3	177.5	172.3	5.17	34.365	
1,200.0	1,190.5	1,194.5	1,194.5	3.3	2.6	-109.59	-167.6	-61.3	184.0	178.2	5.79	31.788	
1,300.0	1,287.9	1,291.9	1,291.9	3.7	2.8	-115.82	-167.6	-61.3	193.0	186.6	6.39	30.197	
1,400.0	1,385.3	1,389.3	1,389.3	4.2	3.0	-121.46	-167.6	-61.3	204.1	197.2	6.97	29.301	
1,500.0	1,482.7	1,486.7	1,486.7	4.7	3.2	-126.50	-167.6	-61.3	217.1	209.6	7.52	28.883	
1,600.0	1,580.1	1,584.1	1,584.1	5.2	3.4	-130.95	-167.6	-61.3	231.5	223.5	8.04	28.793	
1,700.0	1,677.4	1,681.4	1,681.4	5.6	3.7	-134.88	-167.6	-61.3	247.2	238.7	8.55	28.922	
1,800.0	1,774.8	1,778.8	1,778.8	6.1	3.9	-138.34	-167.6	-61.3	263.9	254.9	9.04	29.195	
1,900.0	1,872.2	1,876.2	1,876.2	6.6	4.1	-141.38	-167.6	-61.3	281.5	272.0	9.52	29.562	
2,000.0	1,969.6	1,973.6	1,973.6	7.1	4.3	-144.07	-167.6	-61.3	299.7	289.7	10.00	29.984	
2,100.0	2,067.0	2,075.7	2,075.7	7.6	4.6	-146.64	-166.8	-61.4	318.1	307.6	10.47	30.388	
2,200.0	2,164.4	2,179.6	2,179.6	8.1	4.8	-149.30	-163.4	-62.0	335.1	324.1	10.92	30.694	
2,300.0	2,261.8	2,283.7	2,283.4	8.6	5.0	-152.02	-157.2	-63.0	350.8	339.5	11.35	30.917	
2,400.0	2,359.1	2,387.7	2,387.0	9.1	5.3	-154.83	-148.2	-64.5	365.5	353.7	11.76	31.077	
2,500.0	2,456.5	2,488.1	2,486.8	9.6	5.5	-157.61	-137.2	-66.3	379.5	367.3	12.16	31.203	
2,600.0	2,553.9	2,585.5	2,583.6	10.1	5.7	-160.14	-126.2	-68.1	394.1	381.6	12.57	31.359	
2,700.0	2,651.3	2,682.9	2,680.3	10.5	6.0	-162.49	-115.3	-69.8	409.5	396.5	12.98	31.539	
2,800.0	2,748.7	2,780.3	2,777.1	11.0	6.2	-164.67	-104.4	-71.6	425.5	412.1	13.41	31.732	
2,900.0	2,846.1	2,877.7	2,873.9	11.5	6.5	-166.70	-93.4	-73.4	442.1	428.2	13.85	31.927	
3,000.0	2,943.5	2,975.2	2,970.7	12.0	6.7	-168.58	-82.5	-75.2	459.2	444.9	14.29	32.120	
3,100.0	3,040.8	3,072.6	3,067.5	12.5	7.0	-170.33	-71.5	-77.0	476.7	461.9	14.76	32.306	
3,200.0	3,138.2	3,170.0	3,164.3	13.0	7.2	-171.95	-60.6	-78.8	494.6	479.4	15.23	32.483	
3,300.0	3,235.6	3,267.4	3,261.1	13.5	7.5	-173.46	-49.6	-80.6	512.9	497.2	15.71	32.649	
3,400.0	3,333.0	3,364.8	3,357.9	14.0	7.8	-174.87	-38.7	-82.4	531.6	515.4	16.21	32.803	
3,500.0	3,430.4	3,462.3	3,454.6	14.5	8.0	-176.19	-27.7	-84.2	550.5	533.8	16.71	32.947	
3,600.0	3,527.8	3,559.7	3,551.4	15.0	8.3	-177.41	-16.8	-86.0	569.7	552.5	17.22	33.079	
3,700.0	3,625.2	3,657.1	3,648.2	15.5	8.6	-178.56	-5.8	-87.7	589.1	571.4	17.75	33.200	
3,800.0	3,722.5	3,754.5	3,745.0	16.0	8.8	-179.64	5.1	-89.5	608.8	590.5	18.28	33.312	
3,900.0	3,819.9	3,852.0	3,841.8	16.5	9.1	179.36	16.1	-91.3	628.6	609.8	18.81	33.414	
4,000.0	3,917.3	3,949.4	3,938.6	17.0	9.4	178.41	27.0	-93.1	648.7	629.3	19.36	33.508	
4,100.0	4,014.7	4,046.8	4,035.4	17.5	9.7	177.52	38.0	-94.9	668.9	648.9	19.91	33.595	
4,200.0	4,112.1	4,144.2	4,132.2	18.0	9.9	176.68	48.9	-96.7	689.2	668.7	20.47	33.675	
4,300.0	4,209.5	4,241.6	4,228.9	18.5	10.2	175.89	59.9	-98.5	709.7	688.6	21.03	33.748	
4,400.0	4,306.9	4,339.1	4,325.7	19.0	10.5	175.14	70.8	-100.3	730.2	708.7	21.59	33.816	
4,500.0	4,404.2	4,436.5	4,422.5	19.5	10.8	174.44	81.8	-102.1	751.0	728.8	22.17	33.879	
4,600.0	4,501.6	4,533.9	4,519.3	20.0	11.1	173.77	92.7	-103.8	771.8	749.0	22.74	33.937	
4,700.0	4,599.0	4,629.8	4,614.6	20.5	11.3	173.17	103.2	-105.6	792.7	769.4	23.29	34.039	
4,800.0	4,696.4	4,724.5	4,709.0	21.0	11.5	172.75	111.5	-106.9	814.0	790.3	23.79	34.223	
4,900.0	4,793.8	4,819.3	4,803.6	21.5	11.7	172.52	117.4	-107.9	835.7	811.5	24.26	34.444	

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 Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-401 - Wellbore #1 - Plan #2 (7-09-14)

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	4,891.2	4,914.0	4,898.2	22.0	11.9	172.46	121.1	-108.5	857.8	833.0	24.72	34.699	
5,100.0	4,988.6	5,008.6	4,992.8	22.5	12.1	172.56	122.4	-108.7	880.1	854.9	25.15	34.989	
5,200.0	5,085.9	5,105.8	5,089.9	23.0	12.2	172.75	122.4	-108.7	902.6	877.0	25.60	35.264	
5,300.0	5,183.4	5,203.2	5,187.4	23.4	12.4	172.94	122.4	-108.7	925.0	898.9	26.08	35.468	
5,400.0	5,281.4	5,301.2	5,285.4	23.8	12.6	173.14	122.4	-108.7	944.7	918.1	26.56	35.570	
5,500.0	5,380.0	5,399.9	5,384.0	24.1	12.8	173.29	122.4	-108.7	960.9	933.9	27.00	35.589	
5,600.0	5,479.2	5,499.0	5,483.2	24.3	13.0	173.41	122.4	-108.7	973.8	946.4	27.41	35.529	
5,700.0	5,578.7	5,598.6	5,582.7	24.5	13.2	173.50	122.4	-108.7	983.2	955.4	27.78	35.394	
5,800.0	5,678.6	5,698.4	5,682.6	24.7	13.4	173.55	122.4	-108.7	989.1	961.0	28.11	35.188	
5,900.0	5,778.5	5,798.4	5,782.5	24.8	13.6	173.57	122.4	-108.7	991.6	963.2	28.40	34.912	
6,000.0	5,878.5	5,898.4	5,882.5	24.9	13.8	89.28	122.4	-108.7	991.7	962.9	28.76	34.487	
6,100.0	5,978.5	5,998.3	5,982.5	25.0	14.0	89.34	122.4	-108.7	991.7	962.5	29.13	34.041	
6,200.0	6,077.8	6,097.4	6,081.4	25.1	14.3	89.81	125.9	-108.7	991.6	962.1	29.54	33.571	
6,237.7	6,114.6	6,134.9	6,118.6	25.2	14.4	90.00	130.4	-108.7	991.6	961.9	29.73	33.357	
6,300.0	6,174.6	6,197.1	6,179.8	25.3	14.6	90.31	141.8	-108.7	991.6	961.5	30.06	32.983	
6,400.0	6,267.5	6,298.1	6,276.4	25.5	15.0	90.81	170.9	-108.7	991.7	961.0	30.74	32.266	
6,500.0	6,354.7	6,400.1	6,369.4	25.7	15.5	91.29	212.9	-108.7	991.9	960.3	31.59	31.402	
6,600.0	6,434.9	6,503.4	6,456.8	25.9	16.1	91.76	267.6	-108.7	992.1	959.4	32.66	30.374	
6,700.0	6,506.6	6,607.8	6,537.0	26.2	16.9	92.20	334.5	-108.7	992.3	958.3	34.01	29.175	
6,800.0	6,568.5	6,713.3	6,607.9	26.6	17.9	92.60	412.4	-108.7	992.6	956.9	35.68	27.822	
6,900.0	6,619.7	6,819.9	6,668.0	27.1	19.0	92.96	500.3	-108.7	992.9	955.2	37.68	26.349	
7,000.0	6,659.3	6,927.3	6,715.6	27.7	20.3	93.26	596.6	-108.7	993.2	953.2	40.03	24.813	
7,100.0	6,686.5	7,035.6	6,749.4	28.4	21.8	93.50	699.3	-108.7	993.5	950.8	42.68	23.275	
7,200.0	6,701.0	7,144.4	6,768.5	29.3	23.3	93.68	806.3	-108.7	993.7	948.1	45.60	21.791	
7,300.0	6,703.5	7,250.9	6,772.8	30.2	24.9	93.77	912.6	-108.7	993.8	945.1	48.62	20.439	
7,400.0	6,703.6	7,350.9	6,773.3	31.3	26.5	93.79	1,012.6	-108.7	993.8	942.2	51.61	19.257	
7,500.0	6,703.7	7,450.9	6,773.8	32.4	28.1	93.81	1,112.6	-108.7	993.8	939.1	54.69	18.170	
7,600.0	6,703.8	7,550.9	6,774.3	33.6	29.7	93.84	1,212.6	-108.7	993.8	936.0	57.87	17.173	
7,700.0	6,704.0	7,650.9	6,774.9	34.9	31.4	93.86	1,312.6	-108.7	993.9	932.7	61.13	16.259	
7,800.0	6,704.1	7,750.9	6,775.4	36.3	33.1	93.88	1,412.6	-108.7	993.9	929.4	64.44	15.423	
7,900.0	6,704.2	7,850.9	6,775.9	37.7	34.8	93.90	1,512.6	-108.7	993.9	926.1	67.82	14.656	
8,000.0	6,704.3	7,950.9	6,776.4	39.1	36.6	93.93	1,612.6	-108.7	993.9	922.7	71.23	13.953	
8,100.0	6,704.5	8,050.8	6,776.9	40.6	38.3	93.95	1,712.6	-108.7	994.0	919.3	74.69	13.307	
8,200.0	6,704.6	8,150.8	6,777.4	42.2	40.1	93.97	1,812.6	-108.7	994.0	915.8	78.19	12.713	
8,300.0	6,704.7	8,250.8	6,777.9	43.7	41.9	93.99	1,912.6	-108.7	994.0	912.3	81.71	12.165	
8,400.0	6,704.8	8,350.8	6,778.4	45.3	43.7	94.01	2,012.6	-108.7	994.1	908.8	85.26	11.659	
8,500.0	6,704.9	8,450.8	6,778.9	46.9	45.5	94.04	2,112.6	-108.7	994.1	905.2	88.84	11.190	
8,600.0	6,705.1	8,550.8	6,779.4	48.6	47.3	94.06	2,212.6	-108.7	994.1	901.7	92.43	10.755	
8,700.0	6,705.2	8,650.8	6,779.9	50.2	49.2	94.08	2,312.6	-108.7	994.1	898.1	96.04	10.351	
8,800.0	6,705.3	8,750.8	6,780.4	51.9	51.0	94.10	2,412.6	-108.7	994.2	894.5	99.67	9.974	
8,900.0	6,705.4	8,850.8	6,780.9	53.6	52.8	94.12	2,512.6	-108.7	994.2	890.9	103.32	9.623	
9,000.0	6,705.6	8,950.8	6,781.4	55.3	54.7	94.15	2,612.6	-108.7	994.2	887.2	106.97	9.294	
9,100.0	6,705.7	9,050.8	6,781.9	57.1	56.5	94.17	2,712.6	-108.7	994.3	883.6	110.64	8.986	
9,200.0	6,705.8	9,150.8	6,782.4	58.8	58.4	94.19	2,812.6	-108.7	994.3	880.0	114.32	8.697	
9,300.0	6,705.9	9,250.8	6,783.0	60.6	60.2	94.21	2,912.6	-108.7	994.3	876.3	118.01	8.426	
9,400.0	6,706.0	9,350.8	6,783.5	62.3	62.1	94.23	3,012.6	-108.7	994.3	872.6	121.70	8.170	
9,500.0	6,706.2	9,450.8	6,784.0	64.1	64.0	94.26	3,112.6	-108.7	994.4	869.0	125.41	7.929	
9,600.0	6,706.3	9,550.8	6,784.5	65.9	65.8	94.28	3,212.6	-108.7	994.4	865.3	129.12	7.701	
9,700.0	6,706.4	9,650.8	6,785.0	67.7	67.7	94.30	3,312.6	-108.7	994.4	861.6	132.84	7.486	
9,800.0	6,706.5	9,750.8	6,785.5	69.5	69.6	94.32	3,412.6	-108.7	994.5	857.9	136.56	7.282	
9,900.0	6,706.7	9,850.8	6,786.0	71.3	71.5	94.34	3,512.6	-108.7	994.5	854.2	140.29	7.089	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-401 - Wellbore #1 - Plan #2 (7-09-14)

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	6,706.8	9,950.8	6,786.5	73.1	73.3	94.37	3,612.6	-108.7	994.5	850.5	144.03	6.905	
10,100.0	6,706.9	10,050.8	6,787.0	74.9	75.2	94.39	3,712.6	-108.7	994.5	846.8	147.77	6.730	
10,200.0	6,707.0	10,150.8	6,787.5	76.7	77.1	94.41	3,812.6	-108.7	994.6	843.1	151.51	6.564	
10,300.0	6,707.1	10,250.8	6,788.0	78.5	79.0	94.43	3,912.6	-108.7	994.6	839.3	155.26	6.406	
10,400.0	6,707.3	10,350.8	6,788.5	80.4	80.9	94.45	4,012.6	-108.7	994.6	835.6	159.01	6.255	
10,500.0	6,707.4	10,450.8	6,789.0	82.2	82.8	94.48	4,112.6	-108.7	994.7	831.9	162.76	6.111	
10,600.0	6,707.5	10,550.8	6,789.5	84.0	84.7	94.50	4,212.6	-108.7	994.7	828.2	166.52	5.973	
10,700.0	6,707.6	10,650.8	6,790.0	85.9	86.5	94.52	4,312.6	-108.7	994.7	824.4	170.28	5.842	
10,800.0	6,707.8	10,750.8	6,790.5	87.7	88.4	94.54	4,412.6	-108.7	994.8	820.7	174.05	5.715	
10,900.0	6,707.9	10,850.8	6,791.0	89.6	90.3	94.56	4,512.6	-108.7	994.8	817.0	177.81	5.595	
11,000.0	6,708.0	10,950.8	6,791.6	91.4	92.2	94.59	4,612.6	-108.7	994.8	813.2	181.58	5.479	
11,100.0	6,708.1	11,050.8	6,792.1	93.3	94.1	94.61	4,712.6	-108.7	994.9	809.5	185.35	5.367	
11,200.0	6,708.2	11,150.8	6,792.6	95.1	96.0	94.63	4,812.6	-108.7	994.9	805.8	189.12	5.260	
11,300.0	6,708.4	11,250.8	6,793.1	97.0	97.9	94.65	4,912.6	-108.7	994.9	802.0	192.90	5.158	
11,400.0	6,708.5	11,350.8	6,793.6	98.8	99.8	94.68	5,012.6	-108.7	995.0	798.3	196.67	5.059	
11,500.0	6,708.6	11,450.8	6,794.1	100.7	101.7	94.70	5,112.6	-108.7	995.0	794.5	200.45	4.964	
11,600.0	6,708.7	11,550.8	6,794.6	102.6	103.6	94.72	5,212.6	-108.7	995.0	790.8	204.23	4.872	
11,700.0	6,708.9	11,650.8	6,795.1	104.4	105.5	94.74	5,312.6	-108.7	995.0	787.0	208.01	4.784	
11,800.0	6,709.0	11,750.8	6,795.6	106.3	107.4	94.76	5,412.6	-108.7	995.1	783.3	211.80	4.698	
11,900.0	6,709.1	11,850.8	6,796.1	108.2	109.3	94.79	5,512.5	-108.7	995.1	779.5	215.58	4.616	
12,000.0	6,709.2	11,950.8	6,796.6	110.0	111.2	94.81	5,612.5	-108.7	995.1	775.8	219.36	4.537	
12,100.0	6,709.3	12,050.8	6,797.1	111.9	113.1	94.83	5,712.5	-108.7	995.2	772.0	223.15	4.460	
12,200.0	6,709.5	12,150.8	6,797.6	113.8	115.0	94.85	5,812.5	-108.7	995.2	768.3	226.94	4.385	
12,300.0	6,709.6	12,250.8	6,798.1	115.7	116.9	94.87	5,912.5	-108.7	995.2	764.5	230.72	4.314	
12,400.0	6,709.7	12,350.8	6,798.6	117.5	118.8	94.90	6,012.5	-108.7	995.3	760.8	234.51	4.244	
12,500.0	6,709.8	12,450.8	6,799.1	119.4	120.7	94.92	6,112.5	-108.7	995.3	757.0	238.30	4.177	
12,600.0	6,710.0	12,550.8	6,799.7	121.3	122.7	94.94	6,212.5	-108.7	995.3	753.3	242.09	4.111	
12,700.0	6,710.1	12,650.8	6,800.2	123.2	124.6	94.96	6,312.5	-108.7	995.4	749.5	245.89	4.048	
12,800.0	6,710.2	12,750.8	6,800.7	125.1	126.5	94.98	6,412.5	-108.7	995.4	745.7	249.68	3.987	
12,900.0	6,710.3	12,850.8	6,801.2	127.0	128.4	95.01	6,512.5	-108.7	995.4	742.0	253.47	3.927	
13,000.0	6,710.4	12,950.8	6,801.7	128.8	130.3	95.03	6,612.5	-108.7	995.5	738.2	257.26	3.870	
13,100.0	6,710.6	13,050.8	6,802.2	130.7	132.2	95.05	6,712.5	-108.7	995.5	734.5	261.06	3.813	
13,200.0	6,710.7	13,150.8	6,802.7	132.6	134.1	95.07	6,812.5	-108.7	995.6	730.7	264.85	3.759	
13,300.0	6,710.8	13,250.8	6,803.2	134.5	136.0	95.09	6,912.5	-108.7	995.6	726.9	268.65	3.706	
13,400.0	6,710.9	13,350.8	6,803.7	136.4	137.9	95.12	7,012.5	-108.7	995.6	723.2	272.44	3.654	
13,458.3	6,711.0	13,409.2	6,804.0	137.5	139.0	95.13	7,070.9	-108.7	995.6	721.0	274.66	3.625 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-421 - Wellbore #1 - Plan #2 (7-09-14)

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	-159.91	-83.8	-30.7	89.2	89.2	0.00	N/A	
100.0	100.0	103.0	103.0	0.1	0.1	-159.91	-83.8	-30.7	89.2	89.0	0.23	385.390	
200.0	200.0	203.0	203.0	0.3	0.3	-159.91	-83.8	-30.7	89.2	88.5	0.68	131.007	
300.0	300.0	303.0	303.0	0.6	0.6	-159.91	-83.8	-30.7	89.2	88.1	1.13	78.917	
400.0	400.0	403.0	403.0	0.8	0.8	-159.91	-83.8	-30.7	89.2	87.6	1.58	56.465	
500.0	500.0	503.0	503.0	1.0	1.0	-76.72	-83.8	-30.7	88.8	86.8	2.02	43.977	
600.0	599.8	602.8	602.8	1.2	1.2	-80.06	-83.8	-30.7	87.7	85.3	2.46	35.676	
700.0	699.5	702.5	702.5	1.5	1.5	-85.74	-83.8	-30.7	86.7	83.7	2.92	29.658	
756.6	755.7	758.7	758.7	1.6	1.6	-90.00	-83.8	-30.7	86.4	83.2	3.20	26.987	CC
800.0	798.7	801.7	801.7	1.7	1.7	-93.75	-83.8	-30.7	86.6	83.2	3.42	25.346	ES
900.0	897.5	900.5	900.5	2.0	1.9	-103.68	-83.8	-30.7	89.0	85.1	3.95	22.550	
1,000.0	995.6	998.6	998.6	2.4	2.1	-114.59	-83.8	-30.7	95.4	90.9	4.50	21.207	
1,100.0	1,093.1	1,096.1	1,096.1	2.8	2.4	-125.20	-83.8	-30.7	106.7	101.7	5.04	21.160	SF
1,200.0	1,190.5	1,193.5	1,193.5	3.3	2.6	-133.88	-83.8	-30.7	121.4	115.9	5.56	21.858	
1,300.0	1,287.9	1,289.0	1,289.0	3.7	2.8	-141.00	-83.3	-29.3	139.0	133.0	6.03	23.057	
1,400.0	1,385.3	1,382.9	1,382.7	4.2	3.0	-147.40	-81.8	-25.2	159.9	153.5	6.46	24.747	
1,500.0	1,482.7	1,475.0	1,474.6	4.7	3.2	-153.00	-79.4	-18.2	184.4	177.5	6.88	26.802	
1,600.0	1,580.1	1,565.4	1,564.4	5.2	3.4	-157.85	-76.0	-8.7	212.3	205.1	7.29	29.129	
1,700.0	1,677.4	1,653.8	1,651.9	5.6	3.6	-162.01	-71.7	3.1	243.7	236.0	7.70	31.635	
1,800.0	1,774.8	1,742.3	1,739.1	6.1	3.9	-165.62	-66.6	17.4	278.1	270.0	8.12	34.231	
1,900.0	1,872.2	1,834.4	1,829.8	6.6	4.1	-168.66	-61.1	32.9	314.0	305.4	8.56	36.694	
2,000.0	1,969.6	1,926.6	1,920.5	7.1	4.4	-171.09	-55.6	48.3	350.4	341.4	9.00	38.939	
2,100.0	2,067.0	2,018.8	2,011.2	7.6	4.7	-173.06	-50.1	63.8	387.3	377.9	9.45	40.970	
2,200.0	2,164.4	2,111.0	2,101.9	8.1	5.1	-174.69	-44.5	79.2	424.6	414.7	9.92	42.814	
2,300.0	2,261.8	2,203.1	2,192.6	8.6	5.4	-176.06	-39.0	94.7	462.1	451.7	10.39	44.492	
2,400.0	2,359.1	2,295.3	2,283.3	9.1	5.7	-177.23	-33.5	110.1	499.8	488.9	10.86	46.019	
2,500.0	2,456.5	2,387.5	2,374.0	9.6	6.0	-178.23	-28.0	125.6	537.6	526.3	11.34	47.413	
2,600.0	2,553.9	2,479.7	2,464.7	10.1	6.4	-179.10	-22.5	141.0	575.6	563.8	11.82	48.689	
2,700.0	2,651.3	2,571.8	2,555.4	10.5	6.7	-179.87	-16.9	156.5	613.7	601.4	12.31	49.860	
2,800.0	2,748.7	2,664.0	2,646.1	11.0	7.1	179.45	-11.4	172.0	651.8	639.0	12.80	50.938	
2,900.0	2,846.1	2,756.2	2,736.8	11.5	7.4	178.85	-5.9	187.4	690.0	676.8	13.29	51.933	
3,000.0	2,943.5	2,848.4	2,827.5	12.0	7.8	178.31	-0.4	202.9	728.3	714.5	13.78	52.853	
3,100.0	3,040.8	2,940.5	2,918.2	12.5	8.1	177.83	5.1	218.3	766.7	752.4	14.28	53.706	
3,200.0	3,138.2	3,032.7	3,008.9	13.0	8.5	177.39	10.7	233.8	805.0	790.3	14.77	54.499	
3,300.0	3,235.6	3,124.9	3,099.6	13.5	8.8	176.99	16.2	249.2	843.5	828.2	15.27	55.238	
3,400.0	3,333.0	3,217.1	3,190.3	14.0	9.2	176.62	21.7	264.7	881.9	866.1	15.77	55.927	
3,500.0	3,430.4	3,309.2	3,281.0	14.5	9.5	176.29	27.2	280.1	920.4	904.1	16.27	56.572	
3,600.0	3,527.8	3,401.4	3,371.7	15.0	9.9	175.98	32.7	295.6	958.9	942.1	16.77	57.176	
3,700.0	3,625.2	3,493.6	3,462.4	15.5	10.3	175.70	38.3	311.1	997.4	980.1	17.27	57.742	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27O-201 - Wellbore #1 - Pan #1 (4-23-14)

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	16.00	29.1	8.4	30.3	30.3	0.00	8,504.818	
100.0	100.0	103.0	103.0	0.1	0.1	16.00	29.1	8.4	30.3	30.1	0.23	130.983	
165.6	165.6	168.6	168.6	0.3	0.3	16.00	29.1	8.4	30.3	29.8	0.53	57.588	CC
200.0	200.0	203.0	203.0	0.3	0.3	16.00	29.1	8.4	30.3	29.6	0.68	44.544	ES
300.0	300.0	302.6	302.6	0.6	0.6	19.20	29.3	10.2	31.0	29.9	1.12	27.648	
400.0	400.0	401.9	401.8	0.8	0.8	27.56	29.6	15.5	33.4	31.9	1.57	21.324	
500.0	500.0	500.6	500.1	1.0	1.0	124.85	30.2	24.1	39.7	37.7	2.03	19.537	SF
600.0	599.8	597.9	596.6	1.2	1.3	138.64	31.0	35.9	52.8	50.3	2.51	21.078	
700.0	699.5	693.0	690.6	1.5	1.6	148.99	32.0	50.6	73.8	70.8	2.98	24.733	
800.0	798.7	785.6	781.5	1.7	2.0	155.82	33.1	67.9	102.3	98.9	3.46	29.588	
900.0	897.5	874.9	868.7	2.0	2.4	160.25	34.4	87.3	137.8	133.8	3.93	35.094	
1,000.0	995.6	964.0	955.1	2.4	2.8	163.27	35.8	108.9	179.1	174.7	4.39	40.825	
1,100.0	1,093.1	1,053.2	1,041.6	2.8	3.2	165.46	37.3	130.6	223.6	218.8	4.83	46.252	
1,200.0	1,190.5	1,142.2	1,127.9	3.3	3.7	167.06	38.7	152.3	268.9	263.6	5.28	50.880	
1,300.0	1,287.9	1,231.2	1,214.2	3.7	4.1	168.20	40.2	173.9	314.2	308.5	5.74	54.736	
1,400.0	1,385.3	1,320.1	1,300.5	4.2	4.6	169.05	41.6	195.6	359.7	353.5	6.21	57.909	
1,500.0	1,482.7	1,409.1	1,386.7	4.7	5.0	169.71	43.0	217.3	405.2	398.5	6.68	60.643	
1,600.0	1,580.1	1,498.1	1,473.0	5.2	5.5	170.24	44.5	239.0	450.7	443.5	7.16	62.976	
1,700.0	1,677.4	1,587.0	1,559.3	5.6	6.0	170.67	45.9	260.6	496.2	488.6	7.64	64.988	
1,800.0	1,774.8	1,676.0	1,645.6	6.1	6.4	171.03	47.4	282.3	541.8	533.7	8.12	66.739	
1,900.0	1,872.2	1,765.0	1,731.8	6.6	6.9	171.33	48.8	304.0	587.4	578.8	8.60	68.276	
2,000.0	1,969.6	1,853.9	1,818.1	7.1	7.4	171.59	50.2	325.7	633.0	623.9	9.09	69.634	
2,100.0	2,067.0	1,942.9	1,904.4	7.6	7.8	171.81	51.7	347.4	678.6	669.0	9.58	70.840	
2,200.0	2,164.4	2,031.9	1,990.7	8.1	8.3	172.01	53.1	369.0	724.2	714.1	10.07	71.918	
2,300.0	2,261.8	2,120.8	2,076.9	8.6	8.8	172.18	54.6	390.7	769.8	759.2	10.56	72.887	
2,400.0	2,359.1	2,209.8	2,163.2	9.1	9.2	172.34	56.0	412.4	815.4	804.4	11.05	73.762	
2,500.0	2,456.5	2,298.8	2,249.5	9.6	9.7	172.47	57.4	434.1	861.1	849.5	11.55	74.555	
2,600.0	2,553.9	2,387.7	2,335.8	10.1	10.2	172.60	58.9	455.7	906.7	894.6	12.04	75.276	
2,700.0	2,651.3	2,476.7	2,422.0	10.5	10.6	172.71	60.3	477.4	952.3	939.8	12.54	75.936	
2,800.0	2,748.7	2,565.7	2,508.3	11.0	11.1	172.81	61.8	499.1	997.9	984.9	13.04	76.541	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 27GK-HZ Pad Sec.27-T5N-R64W - Chesnut 27O-341 - Wellbore #1 - Plan #2 (7-09-14)

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	1.0	1.0	0.0	0.0	-159.07	-29.1	-11.1	31.2	31.2	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-159.07	-29.1	-11.1	31.2	31.0	0.23	137.451	
200.0	200.0	201.0	201.0	0.3	0.3	-159.07	-29.1	-11.1	31.2	30.5	0.68	46.121	
300.0	300.0	301.0	301.0	0.6	0.6	-159.07	-29.1	-11.1	31.2	30.1	1.13	27.710	
400.0	400.0	401.0	401.0	0.8	0.8	-159.07	-29.1	-11.1	31.2	29.6	1.58	19.804	
500.0	500.0	501.0	501.0	1.0	1.0	-77.92	-29.1	-11.1	30.8	28.8	2.01	15.282	
600.0	599.8	600.8	600.8	1.2	1.2	-87.70	-29.1	-11.1	30.1	27.7	2.46	12.273	
616.7	616.5	617.5	617.5	1.3	1.3	-90.00	-29.1	-11.1	30.1	27.6	2.53	11.888	CC, ES
700.0	699.5	700.5	700.5	1.5	1.5	-103.92	-29.1	-11.1	31.0	28.1	2.92	10.633	
800.0	798.7	799.7	799.7	1.7	1.7	-122.93	-29.1	-11.1	36.0	32.6	3.40	10.591	SF
900.0	897.5	897.5	897.5	2.0	1.9	-140.65	-28.9	-9.5	47.4	43.5	3.85	12.298	
1,000.0	995.6	993.3	993.1	2.4	2.1	-154.12	-28.1	-4.7	67.1	62.9	4.29	15.650	
1,100.0	1,093.1	1,086.5	1,086.0	2.8	2.3	-162.92	-26.9	3.0	94.6	89.9	4.73	20.014	
1,200.0	1,190.5	1,177.6	1,176.5	3.3	2.5	-168.46	-25.3	13.4	126.5	121.4	5.17	24.492	
1,300.0	1,287.9	1,266.6	1,264.5	3.7	2.8	-172.16	-23.3	26.3	161.9	156.3	5.61	28.852	
1,400.0	1,385.3	1,353.4	1,350.0	4.2	3.0	-174.80	-20.9	41.5	200.3	194.3	6.06	33.064	
1,500.0	1,482.7	1,440.4	1,435.1	4.7	3.3	-176.83	-18.1	59.1	241.5	235.0	6.51	37.090	
1,600.0	1,580.1	1,531.0	1,523.7	5.2	3.7	-178.37	-15.2	77.9	283.4	276.4	6.97	40.655	
1,700.0	1,677.4	1,621.5	1,612.2	5.6	4.0	-179.51	-12.2	96.8	325.4	318.0	7.43	43.801	
1,800.0	1,774.8	1,712.1	1,700.8	6.1	4.4	179.60	-9.2	115.6	367.5	359.6	7.90	46.547	
1,900.0	1,872.2	1,802.7	1,789.3	6.6	4.8	178.90	-6.3	134.4	409.7	401.3	8.36	48.974	
2,000.0	1,969.6	1,893.3	1,877.8	7.1	5.2	178.33	-3.3	153.3	451.9	443.0	8.84	51.122	
2,100.0	2,067.0	1,983.8	1,966.4	7.6	5.5	177.86	-0.4	172.1	494.1	484.8	9.32	53.037	
2,200.0	2,164.4	2,074.4	2,054.9	8.1	5.9	177.46	2.6	191.0	536.3	526.5	9.80	54.751	
2,300.0	2,261.8	2,165.0	2,143.5	8.6	6.3	177.11	5.6	209.8	578.6	568.3	10.28	56.294	
2,400.0	2,359.1	2,255.6	2,232.0	9.1	6.7	176.82	8.5	228.6	620.9	610.1	10.76	57.688	
2,500.0	2,456.5	2,346.2	2,320.6	9.6	7.1	176.56	11.5	247.5	663.2	651.9	11.25	58.953	
2,600.0	2,553.9	2,436.7	2,409.1	10.1	7.5	176.34	14.4	266.3	705.5	693.8	11.74	60.106	
2,700.0	2,651.3	2,527.3	2,497.7	10.5	7.9	176.14	17.4	285.1	747.8	735.6	12.23	61.160	
2,800.0	2,748.7	2,617.9	2,586.2	11.0	8.3	175.96	20.3	304.0	790.1	777.4	12.72	62.126	
2,900.0	2,846.1	2,708.5	2,674.8	11.5	8.8	175.79	23.3	322.8	832.5	819.3	13.21	63.016	
3,000.0	2,943.5	2,799.0	2,763.3	12.0	9.2	175.65	26.3	341.7	874.8	861.1	13.70	63.836	
3,100.0	3,040.8	2,889.6	2,851.9	12.5	9.6	175.52	29.2	360.5	917.1	902.9	14.20	64.596	
3,200.0	3,138.2	2,980.2	2,940.4	13.0	10.0	175.40	32.2	379.3	959.5	944.8	14.69	65.300	

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 Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut 28U-HZ Pad Sec.28-T5N-R64W - Chesnut 28U-403 - Wellbore #1 - Plan #1 (2-13-14)

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
6,000.0	5,878.5	8,617.1	6,794.4	24.9	39.5	-90.70	107.0	-1,348.3	943.1	889.8	53.36	17.675	
6,100.0	5,978.5	8,615.8	6,794.4	25.0	39.5	-100.07	108.3	-1,348.3	847.1	791.9	55.15	15.358	
6,200.0	6,077.8	8,603.8	6,794.5	25.1	39.3	-117.83	120.3	-1,348.3	752.8	695.7	57.04	13.197	
6,300.0	6,174.6	8,579.1	6,794.6	25.3	38.8	-127.59	145.1	-1,348.3	662.1	605.6	56.57	11.705	
6,400.0	6,267.5	8,541.8	6,794.7	25.5	38.2	-132.26	182.3	-1,348.3	577.2	521.9	55.29	10.439	
6,500.0	6,354.7	8,492.8	6,794.8	25.7	37.4	-133.72	231.3	-1,348.3	500.0	446.2	53.80	9.293	
6,600.0	6,434.9	8,432.9	6,795.0	25.9	36.4	-132.91	291.2	-1,348.3	432.4	380.1	52.29	8.269	
6,700.0	6,506.6	8,363.0	6,795.3	26.2	35.2	-130.32	361.1	-1,348.3	376.1	325.2	50.87	7.393	
6,800.0	6,568.5	8,284.4	6,795.5	26.6	33.9	-126.33	439.7	-1,348.3	332.2	282.6	49.65	6.690	
6,900.0	6,619.7	8,198.4	6,795.8	27.1	32.5	-121.45	525.7	-1,348.3	300.7	252.0	48.70	6.176	
7,000.0	6,659.3	8,106.5	6,796.1	27.7	31.1	-116.45	617.6	-1,348.3	280.4	232.5	47.96	5.847	
7,100.0	6,686.5	8,010.3	6,796.4	28.4	29.6	-112.29	713.8	-1,348.3	268.9	221.6	47.31	5.684	
7,200.0	6,701.0	7,911.4	6,796.8	29.3	28.1	-109.84	812.7	-1,348.3	263.8	217.2	46.58	5.662	
7,278.9	6,704.8	7,832.5	6,797.0	30.0	26.9	-109.16	891.6	-1,348.3	262.6	216.4	46.17	5.687	
7,300.0	6,703.5	7,811.4	6,797.1	30.2	26.6	-109.46	912.7	-1,348.3	263.0	217.1	45.95	5.724	
7,400.0	6,703.6	7,711.4	6,797.4	31.3	25.2	-109.50	1,012.7	-1,348.3	263.1	217.2	45.88	5.735	
7,500.0	6,703.7	7,611.4	6,797.8	32.4	23.9	-109.54	1,112.7	-1,348.3	263.2	217.3	45.93	5.730	
7,600.0	6,703.8	7,511.4	6,798.1	33.6	22.7	-109.59	1,212.7	-1,348.3	263.3	217.1	46.11	5.709	
7,700.0	6,704.0	7,411.4	6,798.4	34.9	21.6	-109.63	1,312.7	-1,348.3	263.3	216.9	46.43	5.672	
7,800.0	6,704.1	7,304.3	6,794.9	36.3	20.6	-108.87	1,419.7	-1,348.3	262.2	215.2	47.01	5.578	
7,900.0	6,704.2	7,202.7	6,784.6	37.7	19.8	-106.69	1,520.8	-1,348.3	259.1	210.9	48.14	5.381	
8,000.0	6,704.3	7,094.9	6,766.0	39.1	19.2	-102.65	1,626.8	-1,348.3	254.6	204.8	49.74	5.118	
8,100.0	6,704.5	6,994.1	6,735.3	40.6	18.9	-95.72	1,722.8	-1,348.3	249.5	197.7	51.79	4.817	
8,165.9	6,704.5	6,932.8	6,710.5	41.6	18.8	-90.00	1,778.9	-1,348.3	248.0	195.0	53.00	4.679	CC, ES
8,200.0	6,704.6	6,902.8	6,696.8	42.2	18.8	-86.82	1,805.5	-1,348.3	248.5	195.0	53.49	4.646	SF
8,300.0	6,704.7	6,821.9	6,654.6	43.7	18.7	-77.27	1,874.5	-1,348.3	257.2	202.9	54.23	4.742	
8,400.0	6,704.8	6,750.0	6,611.2	45.3	18.8	-68.14	1,931.8	-1,348.3	279.3	225.4	53.90	5.182	
8,500.0	6,704.9	6,690.1	6,571.1	46.9	18.8	-60.61	1,976.3	-1,348.3	315.9	262.8	53.03	5.956	
8,600.0	6,705.1	6,637.1	6,532.8	48.6	18.8	-54.33	2,012.8	-1,348.3	365.2	313.3	51.93	7.033	
8,700.0	6,705.2	6,591.4	6,497.7	50.2	18.8	-49.32	2,042.2	-1,348.3	424.7	373.8	50.90	8.344	
8,800.0	6,705.3	6,550.0	6,464.6	51.9	18.9	-45.20	2,066.9	-1,348.3	492.1	442.1	50.00	9.842	
8,900.0	6,705.4	6,517.0	6,437.2	53.6	18.9	-42.18	2,085.4	-1,348.3	565.3	515.8	49.50	11.420	
9,000.0	6,705.6	6,486.6	6,411.3	55.3	18.9	-39.62	2,101.2	-1,348.3	643.1	593.9	49.14	13.086	
9,100.0	6,705.7	6,450.0	6,379.3	57.1	18.9	-36.79	2,119.0	-1,348.3	724.4	676.0	48.45	14.952	
9,200.0	6,705.8	6,436.3	6,367.1	58.8	18.9	-35.80	2,125.3	-1,348.3	808.3	759.3	48.96	16.509	
9,300.0	6,705.9	6,415.2	6,348.1	60.6	19.0	-34.35	2,134.4	-1,348.3	894.4	845.3	49.08	18.223	
9,400.0	6,706.0	6,400.0	6,334.3	62.3	19.0	-33.36	2,140.8	-1,348.3	982.3	932.9	49.49	19.848	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut Existing Pad Sec.27-T5N-R64W - Thoutt 22-1 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 6885-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
9,800.0	6,706.5	6,684.5	6,684.5	69.5	133.7	89.88	4,255.2	-604.5	977.3	776.5	200.75	4.868	
9,900.0	6,706.7	6,684.7	6,684.7	71.3	133.7	89.90	4,255.2	-604.5	892.5	689.9	202.62	4.405	
10,000.0	6,706.8	6,684.8	6,684.8	73.1	133.7	89.91	4,255.2	-604.5	811.3	606.8	204.49	3.967	
10,100.0	6,706.9	6,684.9	6,684.9	74.9	133.7	89.92	4,255.2	-604.5	734.7	528.3	206.36	3.560	
10,200.0	6,707.0	6,685.0	6,685.0	76.7	133.7	89.94	4,255.2	-604.5	664.3	456.1	208.24	3.190	
10,300.0	6,707.1	6,685.1	6,685.1	78.5	133.7	89.95	4,255.2	-604.5	602.4	392.3	210.12	2.867	
10,400.0	6,707.3	6,685.3	6,685.3	80.4	133.7	89.97	4,255.2	-604.5	551.8	339.8	212.00	2.603	
10,500.0	6,707.4	6,685.4	6,685.4	82.2	133.7	89.98	4,255.2	-604.5	515.8	301.9	213.88	2.411	
10,600.0	6,707.5	6,685.5	6,685.5	84.0	133.7	89.99	4,255.2	-604.5	497.6	281.8	215.77	2.306	
10,642.2	6,707.6	6,685.6	6,685.6	84.8	133.7	90.00	4,255.2	-604.5	495.8	279.2	216.56	2.289	CC, ES, SF
10,700.0	6,707.6	6,685.6	6,685.6	85.9	133.7	90.01	4,255.2	-604.5	499.1	281.5	217.65	2.293	
10,800.0	6,707.8	6,685.8	6,685.8	87.7	133.7	90.02	4,255.2	-604.5	520.3	300.7	219.54	2.370	
10,900.0	6,707.9	6,685.9	6,685.9	89.6	133.7	90.04	4,255.2	-604.5	558.8	337.4	221.43	2.524	
11,000.0	6,708.0	6,686.0	6,686.0	91.4	133.7	90.05	4,255.2	-604.5	611.4	388.1	223.32	2.738	
11,100.0	6,708.1	6,686.1	6,686.1	93.3	133.7	90.06	4,255.2	-604.5	674.8	449.6	225.22	2.996	
11,200.0	6,708.2	6,686.2	6,686.2	95.1	133.7	90.08	4,255.2	-604.5	746.3	519.2	227.11	3.286	
11,300.0	6,708.4	6,686.4	6,686.4	97.0	133.7	90.09	4,255.2	-604.5	823.7	594.7	229.00	3.597	
11,400.0	6,708.5	6,686.5	6,686.5	98.8	133.7	90.11	4,255.2	-604.5	905.6	674.7	230.90	3.922	
11,500.0	6,708.6	6,686.6	6,686.6	100.7	133.7	90.12	4,255.2	-604.5	990.8	758.0	232.80	4.256	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut Existing Pad Sec.27-T5N-R64W - White 27-6 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 6900-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	-56.68	327.9	-498.8	597.2				
100.0	100.0	82.0	82.0	0.1	1.6	-56.68	327.9	-498.8	596.9	595.1	1.75	340.574	
200.0	200.0	182.0	182.0	0.3	3.6	-56.68	327.9	-498.8	596.9	592.9	3.98	150.071	
300.0	300.0	282.0	282.0	0.6	5.6	-56.68	327.9	-498.8	596.9	590.7	6.20	96.239	
400.0	400.0	382.0	382.0	0.8	7.6	-56.68	327.9	-498.8	596.9	588.5	8.43	70.831	
500.0	500.0	482.0	482.0	1.0	9.6	27.70	327.9	-498.8	595.3	584.7	10.64	55.974	
600.0	599.8	581.8	581.8	1.2	11.6	27.98	327.9	-498.8	590.7	577.9	12.83	46.053	
700.0	699.5	681.5	681.5	1.5	13.6	28.46	327.9	-498.8	583.0	568.0	15.00	38.856	
800.0	798.7	780.7	780.7	1.7	15.6	29.14	327.9	-498.8	572.3	555.2	17.17	33.341	
900.0	897.5	879.5	879.5	2.0	17.6	30.06	327.9	-498.8	558.7	539.4	19.31	28.932	
1,000.0	995.6	977.6	977.6	2.4	19.6	31.24	327.9	-498.8	542.2	520.7	21.44	25.290	
1,100.0	1,093.1	1,075.1	1,075.1	2.8	21.5	32.60	327.9	-498.8	523.2	499.6	23.62	22.157	
1,200.0	1,190.5	1,172.5	1,172.5	3.3	23.5	33.98	327.9	-498.8	504.1	478.2	25.88	19.479	
1,300.0	1,287.9	1,269.9	1,269.9	3.7	25.4	35.47	327.9	-498.8	485.3	457.1	28.17	17.229	
1,400.0	1,385.3	1,367.3	1,367.3	4.2	27.3	37.07	327.9	-498.8	466.8	436.3	30.48	15.316	
1,500.0	1,482.7	1,464.7	1,464.7	4.7	29.3	38.80	327.9	-498.8	448.7	415.9	32.81	13.675	
1,600.0	1,580.1	1,562.1	1,562.1	5.2	31.2	40.68	327.9	-498.8	431.0	395.9	35.17	12.255	
1,700.0	1,677.4	1,659.4	1,659.4	5.6	33.2	42.70	327.9	-498.8	413.9	376.3	37.56	11.019	
1,800.0	1,774.8	1,756.8	1,756.8	6.1	35.1	44.89	327.9	-498.8	397.3	357.3	39.97	9.938	
1,900.0	1,872.2	1,854.2	1,854.2	6.6	37.1	47.27	327.9	-498.8	381.3	338.9	42.42	8.989	
2,000.0	1,969.6	1,951.6	1,951.6	7.1	39.0	49.84	327.9	-498.8	366.0	321.1	44.90	8.153	
2,100.0	2,067.0	2,049.0	2,049.0	7.6	41.0	52.63	327.9	-498.8	351.6	304.2	47.40	7.417	
2,200.0	2,164.4	2,146.4	2,146.4	8.1	42.9	55.63	327.9	-498.8	338.0	288.1	49.94	6.769	
2,300.0	2,261.8	2,243.8	2,243.8	8.6	44.9	58.87	327.9	-498.8	325.5	273.0	52.51	6.199	
2,400.0	2,359.1	2,341.1	2,341.1	9.1	46.8	62.35	327.9	-498.8	314.1	259.0	55.10	5.702	
2,500.0	2,456.5	2,438.5	2,438.5	9.6	48.8	66.06	327.9	-498.8	304.0	246.3	57.70	5.269	
2,600.0	2,553.9	2,535.9	2,535.9	10.1	50.7	70.00	327.9	-498.8	295.3	235.0	60.31	4.897	
2,700.0	2,651.3	2,633.3	2,633.3	10.5	52.7	74.15	327.9	-498.8	288.2	225.2	62.92	4.580	
2,800.0	2,748.7	2,730.7	2,730.7	11.0	54.6	78.47	327.9	-498.8	282.6	217.1	65.50	4.315	
2,900.0	2,846.1	2,828.1	2,828.1	11.5	56.6	82.93	327.9	-498.8	278.9	210.8	68.04	4.098	
3,000.0	2,943.5	2,925.5	2,925.5	12.0	58.5	87.48	327.9	-498.8	276.9	206.4	70.54	3.926	
3,055.1	2,997.2	2,979.2	2,979.2	12.3	59.6	90.00	327.9	-498.8	276.6	204.8	71.89	3.848	CC
3,100.0	3,040.8	3,022.8	3,022.8	12.5	60.5	92.05	327.9	-498.8	276.8	203.9	72.97	3.794	
3,200.0	3,138.2	3,120.2	3,120.2	13.0	62.4	96.61	327.9	-498.8	278.6	203.3	75.33	3.698	ES
3,300.0	3,235.6	3,217.6	3,217.6	13.5	64.4	101.08	327.9	-498.8	282.2	204.6	77.61	3.636	
3,400.0	3,333.0	3,315.0	3,315.0	14.0	66.3	105.42	327.9	-498.8	287.5	207.7	79.82	3.602	
3,500.0	3,430.4	3,412.4	3,412.4	14.5	68.2	109.58	327.9	-498.8	294.5	212.6	81.96	3.593	SF
3,600.0	3,527.8	3,509.8	3,509.8	15.0	70.2	113.54	327.9	-498.8	303.1	219.0	84.04	3.606	
3,700.0	3,625.2	3,607.2	3,607.2	15.5	72.1	117.28	327.9	-498.8	313.0	227.0	86.08	3.637	
3,800.0	3,722.5	3,704.5	3,704.5	16.0	74.1	120.78	327.9	-498.8	324.3	236.2	88.07	3.682	
3,900.0	3,819.9	3,801.9	3,801.9	16.5	76.0	124.04	327.9	-498.8	336.7	246.7	90.04	3.739	
4,000.0	3,917.3	3,899.3	3,899.3	17.0	78.0	127.07	327.9	-498.8	350.1	258.2	91.99	3.806	
4,100.0	4,014.7	3,996.7	3,996.7	17.5	79.9	129.88	327.9	-498.8	364.5	270.6	93.93	3.881	
4,200.0	4,112.1	4,094.1	4,094.1	18.0	81.9	132.47	327.9	-498.8	379.7	283.8	95.87	3.961	
4,300.0	4,209.5	4,191.5	4,191.5	18.5	83.8	134.87	327.9	-498.8	395.6	297.8	97.80	4.045	
4,400.0	4,306.9	4,288.9	4,288.9	19.0	85.8	137.08	327.9	-498.8	412.1	312.4	99.74	4.132	
4,500.0	4,404.2	4,386.2	4,386.2	19.5	87.7	139.12	327.9	-498.8	429.3	327.6	101.69	4.221	
4,600.0	4,501.6	4,483.6	4,483.6	20.0	89.7	141.01	327.9	-498.8	446.9	343.2	103.65	4.311	
4,700.0	4,599.0	4,581.0	4,581.0	20.5	91.6	142.76	327.9	-498.8	464.9	359.3	105.61	4.402	
4,800.0	4,696.4	4,678.4	4,678.4	21.0	93.6	144.37	327.9	-498.8	483.4	375.8	107.59	4.493	
4,900.0	4,793.8	4,775.8	4,775.8	21.5	95.5	145.87	327.9	-498.8	502.2	392.6	109.58	4.583	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Chesnut Existing Pad Sec.27-T5N-R64W - White 27-6 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

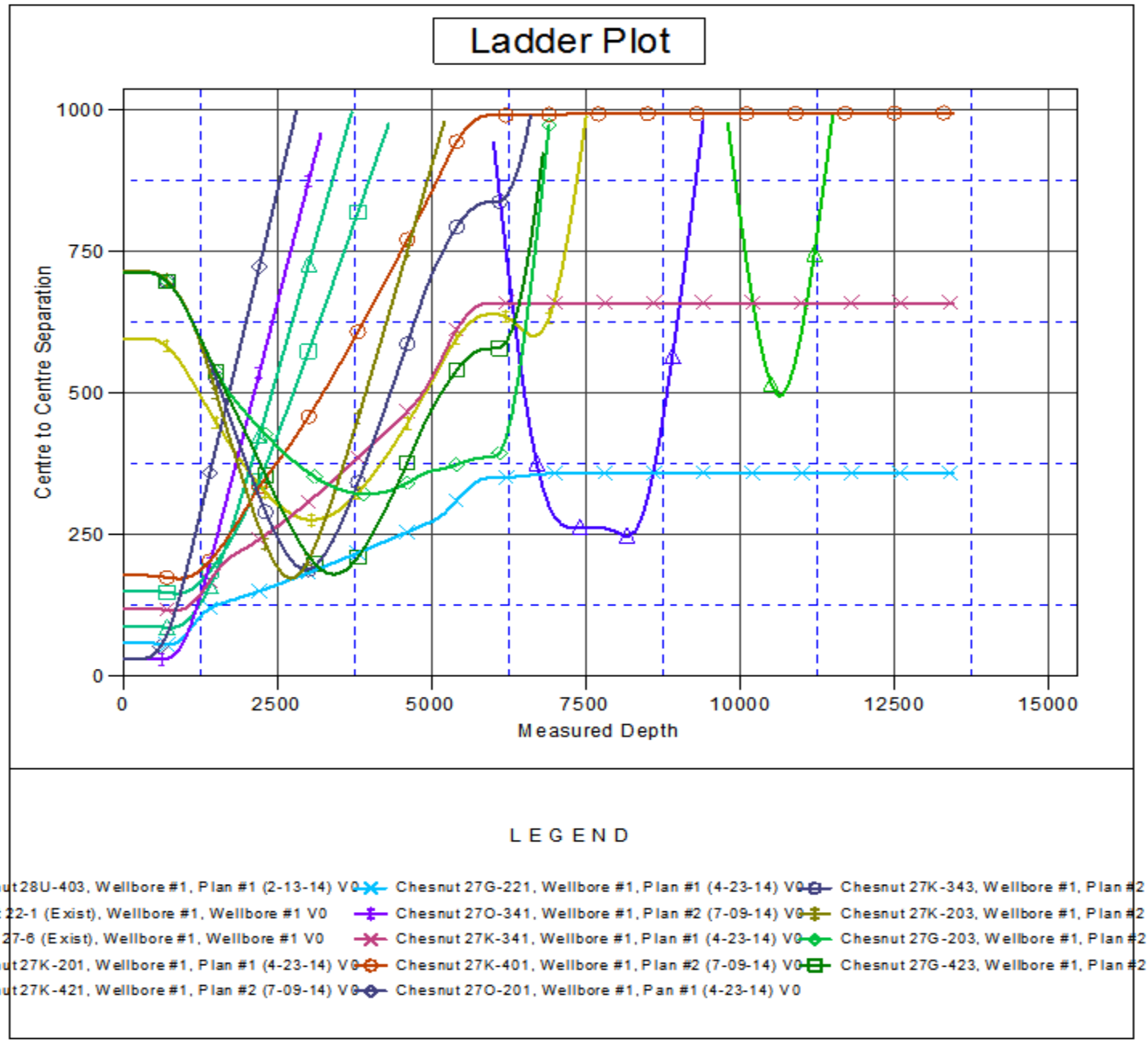
Survey Program: 6900-UNKNOWN

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
5,000.0	4,891.2	4,873.2	4,873.2	22.0	97.5	147.26	327.9	-498.8	521.3	409.7	111.57	4.672	
5,100.0	4,988.6	4,970.6	4,970.6	22.5	99.4	148.55	327.9	-498.8	540.7	427.1	113.58	4.760	
5,200.0	5,085.9	5,067.9	5,067.9	23.0	101.4	149.76	327.9	-498.8	560.3	444.7	115.59	4.847	
5,300.0	5,183.4	5,165.4	5,165.4	23.4	103.3	150.94	327.9	-498.8	580.0	462.2	117.81	4.923	
5,400.0	5,281.4	5,263.4	5,263.4	23.8	105.3	152.02	327.9	-498.8	597.5	477.1	120.35	4.964	
5,500.0	5,380.0	5,362.0	5,362.0	24.1	107.2	152.88	327.9	-498.8	612.0	489.2	122.85	4.982	
5,600.0	5,479.2	5,461.2	5,461.2	24.3	109.2	153.52	327.9	-498.8	623.6	498.3	125.29	4.977	
5,700.0	5,578.7	5,560.7	5,560.7	24.5	111.2	153.98	327.9	-498.8	632.1	504.4	127.65	4.952	
5,800.0	5,678.6	5,660.6	5,660.6	24.7	113.2	154.26	327.9	-498.8	637.5	507.5	129.92	4.907	
5,900.0	5,778.5	5,760.5	5,760.5	24.8	115.2	154.38	327.9	-498.8	639.7	507.6	132.07	4.844	
6,000.0	5,878.5	5,860.5	5,860.5	24.9	117.2	70.09	327.9	-498.8	639.8	505.6	134.21	4.767	
6,100.0	5,978.5	5,960.5	5,960.5	25.0	119.2	70.20	327.9	-498.8	639.4	503.2	136.29	4.692	
6,200.0	6,077.8	6,059.8	6,059.8	25.1	121.2	71.45	327.9	-498.8	635.6	497.6	138.00	4.606	
6,300.0	6,174.6	6,156.6	6,156.6	25.3	123.1	74.04	327.9	-498.8	628.1	488.6	139.48	4.503	
6,400.0	6,267.5	6,249.5	6,249.5	25.5	125.0	77.81	327.9	-498.8	618.5	477.4	141.07	4.384	
6,500.0	6,354.7	6,336.7	6,336.7	25.7	126.7	82.44	327.9	-498.8	609.0	466.1	142.96	4.260	
6,600.0	6,434.9	6,416.9	6,416.9	25.9	128.3	87.43	327.9	-498.8	602.6	457.6	145.01	4.156	
6,652.6	6,473.7	6,455.7	6,455.7	26.1	129.1	90.00	327.9	-498.8	601.5	455.5	146.04	4.119	
6,700.0	6,506.6	6,488.6	6,488.6	26.2	129.8	92.18	327.9	-498.8	602.5	455.7	146.84	4.103	
6,800.0	6,568.5	6,550.5	6,550.5	26.6	131.0	96.06	327.9	-498.8	612.0	463.8	148.22	4.129	
6,900.0	6,619.7	6,601.7	6,601.7	27.1	132.0	98.54	327.9	-498.8	633.4	484.0	149.39	4.240	
7,000.0	6,659.3	6,641.3	6,641.3	27.7	132.8	99.18	327.9	-498.8	667.9	516.9	150.92	4.425	
7,100.0	6,686.5	6,668.5	6,668.5	28.4	133.4	97.65	327.9	-498.8	714.9	561.7	153.17	4.667	
7,200.0	6,701.0	6,683.0	6,683.0	29.3	133.7	93.68	327.9	-498.8	772.8	617.1	155.72	4.963	
7,300.0	6,703.5	6,685.5	6,685.5	30.2	133.7	90.07	327.9	-498.8	839.2	681.9	157.28	5.335	
7,400.0	6,703.6	6,685.6	6,685.6	31.3	133.7	90.08	327.9	-498.8	911.7	753.0	158.71	5.744	
7,500.0	6,703.7	6,685.7	6,685.7	32.4	133.7	90.09	327.9	-498.8	989.1	828.9	160.20	6.174	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4628.0ft (Ensign 123 RKB - Coordinates are relative to: Chesnut 27G-301
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.62°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Chesnut 27G-301
Project:	SEC.27-T5N-R64W	**TVD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	**MD Reference:**	WELL @ 4628.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Chesnut 27G-301	**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 7-09-14)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4628.0ft (Ensign 123 RKB - Coordinates are relative to: Chesnut 27G-301
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.62°