

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Chesnut 27K-421**

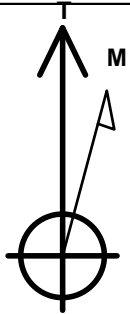
Surface Location: Chesnut 27GK-HZ Pad Sec.27-T5N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4616.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1379473.00	3267158.33	40.371090	-104.541150	

Ensign 123 RKB - 15' WELL @ 4631.0ft (Ensign 123 RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2334'FNL & 1118'FWL, Sec.27	1.0	0.0	0.0	Point
BHL 500'FNL & 1760'FWL, Sec.22	6751.0	7151.4	559.9	Point



Azimuths to True North
Magnetic North: 8.33°

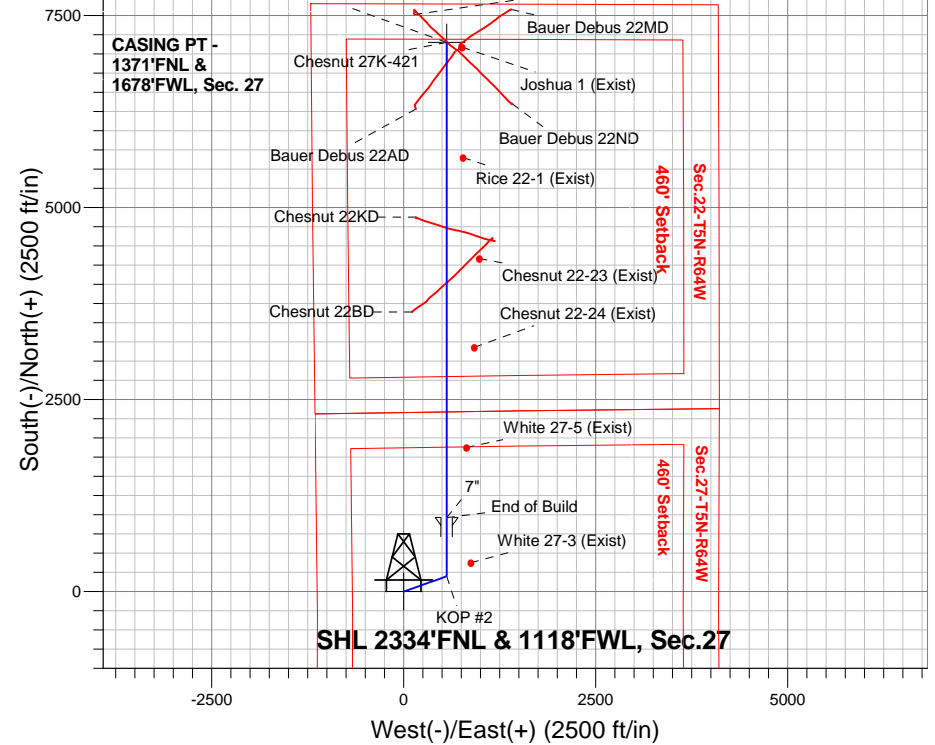
Magnetic Field
Strength: 52818.4nT
Dip Angle: 66.96°
Date: 7/8/2014
Model: IGRF2010

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

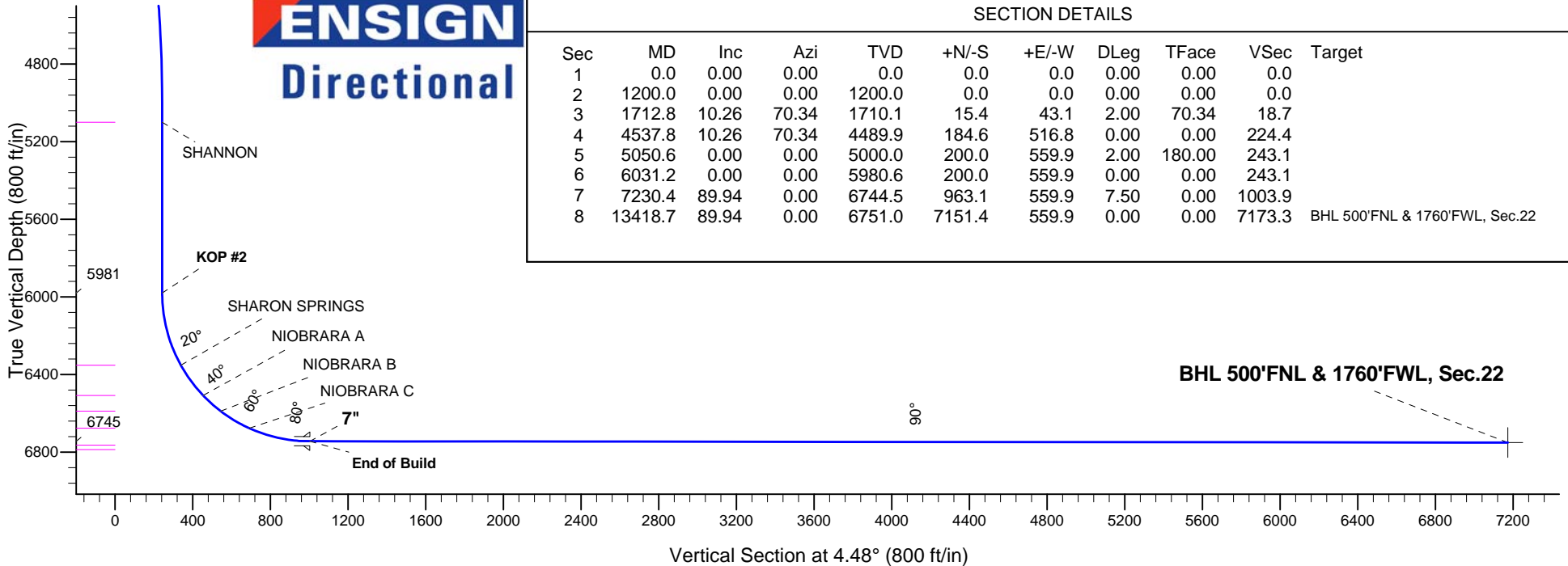
ANNOTATIONS

TVD	MD	Annotation
1200.0	1200.0	KOP #1
5980.6	6031.2	KOP #2
6744.5	7230.4	End of Build

BHL 500'FNL & 1760'FWL, Sec.22



ENSIGN
Directional



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	1712.8	10.26	70.34	1710.1	15.4	43.1	2.00	70.34	18.7	
4	4537.8	10.26	70.34	4489.9	184.6	516.8	0.00	0.00	224.4	
5	5050.6	0.00	0.00	5000.0	200.0	559.9	2.00	180.00	243.1	
6	6031.2	0.00	0.00	5980.6	200.0	559.9	0.00	0.00	243.1	
7	7230.4	89.94	0.00	6744.5	963.1	559.9	7.50	0.00	1003.9	
8	13418.7	89.94	0.00	6751.0	7151.4	559.9	0.00	0.00	7173.3	BHL 500'FNL & 1760'FWL, Sec.22



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.27-T5N-R64W

Chesnut 27GK-HZ Pad Sec.27-T5N-R64W

Chesnut 27K-421

Wellbore #1

Plan: Plan #2 (7-09-14)

Standard Planning Report

09 July, 2014

Database:	landmark	Local Co-ordinate Reference:	Well Chesnut 27K-421
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Project:	SEC.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	North Reference:	True
Well:	Chesnut 27K-421	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
From:	Lat/Long	Easting:	3,267,026.65 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.369860
		Longitude:	-104.541640
		Grid Convergence:	0.62 °

Well	Chesnut 27K-421		
Well Position	+N/-S	448.1 ft	Northing:
	+E/-W	136.5 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			ft
			Latitude:
			40.371090
			Longitude:
			-104.541150
			Ground Level:
			4,616.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/8/2014	8.33	66.96	52,818

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	4.48

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,712.8	10.26	70.34	1,710.1	15.4	43.1	2.00	2.00	0.00	70.34	
4,537.8	10.26	70.34	4,489.9	184.6	516.8	0.00	0.00	0.00	0.00	
5,050.6	0.00	0.00	5,000.0	200.0	559.9	2.00	-2.00	0.00	180.00	
6,031.2	0.00	0.00	5,980.6	200.0	559.9	0.00	0.00	0.00	0.00	
7,230.4	89.94	0.00	6,744.5	963.1	559.9	7.50	7.50	0.00	0.00	
13,418.7	89.94	0.00	6,751.0	7,151.4	559.9	0.00	0.00	0.00	0.00	BHL 500'FNL & 176

Database:	landmark	Local Co-ordinate Reference:	Well Chesnut 27K-421
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Project:	SEC.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	North Reference:	True
Well:	Chesnut 27K-421	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
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,300.0	2.00	70.34	1,300.0	0.6	1.6	0.7	2.00	2.00	0.00
1,400.0	4.00	70.34	1,399.8	2.3	6.6	2.9	2.00	2.00	0.00
1,500.0	6.00	70.34	1,499.5	5.3	14.8	6.4	2.00	2.00	0.00
1,600.0	8.00	70.34	1,598.7	9.4	26.3	11.4	2.00	2.00	0.00
1,700.0	10.00	70.34	1,697.5	14.6	41.0	17.8	2.00	2.00	0.00
1,712.8	10.26	70.34	1,710.1	15.4	43.1	18.7	2.00	2.00	0.00
1,800.0	10.26	70.34	1,795.9	20.6	57.7	25.1	0.00	0.00	0.00
1,900.0	10.26	70.34	1,894.3	26.6	74.5	32.3	0.00	0.00	0.00
2,000.0	10.26	70.34	1,992.7	32.6	91.3	39.6	0.00	0.00	0.00
2,100.0	10.26	70.34	2,091.1	38.6	108.0	46.9	0.00	0.00	0.00
2,200.0	10.26	70.34	2,189.5	44.6	124.8	54.2	0.00	0.00	0.00
2,300.0	10.26	70.34	2,287.9	50.6	141.6	61.5	0.00	0.00	0.00
2,400.0	10.26	70.34	2,386.3	56.6	158.3	68.7	0.00	0.00	0.00
2,500.0	10.26	70.34	2,484.7	62.5	175.1	76.0	0.00	0.00	0.00
2,600.0	10.26	70.34	2,583.1	68.5	191.9	83.3	0.00	0.00	0.00
2,700.0	10.26	70.34	2,681.5	74.5	208.6	90.6	0.00	0.00	0.00
2,800.0	10.26	70.34	2,779.9	80.5	225.4	97.9	0.00	0.00	0.00
2,900.0	10.26	70.34	2,878.3	86.5	242.2	105.1	0.00	0.00	0.00
3,000.0	10.26	70.34	2,976.7	92.5	258.9	112.4	0.00	0.00	0.00
3,100.0	10.26	70.34	3,075.1	98.5	275.7	119.7	0.00	0.00	0.00
3,200.0	10.26	70.34	3,173.5	104.5	292.5	127.0	0.00	0.00	0.00
3,300.0	10.26	70.34	3,271.9	110.5	309.2	134.3	0.00	0.00	0.00
3,400.0	10.26	70.34	3,370.3	116.5	326.0	141.5	0.00	0.00	0.00
3,460.7	10.26	70.34	3,430.0	120.1	336.2	146.0	0.00	0.00	0.00
PARKMAN									
3,500.0	10.26	70.34	3,468.7	122.4	342.8	148.8	0.00	0.00	0.00
3,600.0	10.26	70.34	3,567.1	128.4	359.5	156.1	0.00	0.00	0.00
3,700.0	10.26	70.34	3,665.5	134.4	376.3	163.4	0.00	0.00	0.00
3,800.0	10.26	70.34	3,763.9	140.4	393.1	170.7	0.00	0.00	0.00
3,900.0	10.26	70.34	3,862.3	146.4	409.8	177.9	0.00	0.00	0.00
4,000.0	10.26	70.34	3,960.7	152.4	426.6	185.2	0.00	0.00	0.00
4,100.0	10.26	70.34	4,059.1	158.4	443.4	192.5	0.00	0.00	0.00
4,192.4	10.26	70.34	4,150.0	163.9	458.9	199.2	0.00	0.00	0.00
SUSSEX									
4,200.0	10.26	70.34	4,157.5	164.4	460.2	199.8	0.00	0.00	0.00
4,300.0	10.26	70.34	4,255.9	170.4	476.9	207.1	0.00	0.00	0.00
4,400.0	10.26	70.34	4,354.3	176.3	493.7	214.3	0.00	0.00	0.00
4,500.0	10.26	70.34	4,452.7	182.3	510.5	221.6	0.00	0.00	0.00
4,537.8	10.26	70.34	4,489.9	184.6	516.8	224.4	0.00	0.00	0.00

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Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	North Reference:	True
Well:	Chesnut 27K-421	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)
4,600.0	9.01	70.34	4,551.2	188.1	526.6	228.6	2.00	-2.00	0.00
4,700.0	7.01	70.34	4,650.3	192.8	539.7	234.3	2.00	-2.00	0.00
4,800.0	5.01	70.34	4,749.7	196.3	549.6	238.6	2.00	-2.00	0.00
4,900.0	3.01	70.34	4,849.5	198.7	556.2	241.5	2.00	-2.00	0.00
5,000.0	1.01	70.34	4,949.4	199.8	559.5	242.9	2.00	-2.00	0.00
5,050.6	0.00	0.00	5,000.0	200.0	559.9	243.1	2.00	-2.00	0.00
5,100.0	0.00	0.00	5,049.4	200.0	559.9	243.1	0.00	0.00	0.00
5,150.6	0.00	0.00	5,100.0	200.0	559.9	243.1	0.00	0.00	0.00
SHANNON									
5,200.0	0.00	0.00	5,149.4	200.0	559.9	243.1	0.00	0.00	0.00
5,300.0	0.00	0.00	5,249.4	200.0	559.9	243.1	0.00	0.00	0.00
5,400.0	0.00	0.00	5,349.4	200.0	559.9	243.1	0.00	0.00	0.00
5,500.0	0.00	0.00	5,449.4	200.0	559.9	243.1	0.00	0.00	0.00
5,600.0	0.00	0.00	5,549.4	200.0	559.9	243.1	0.00	0.00	0.00
5,700.0	0.00	0.00	5,649.4	200.0	559.9	243.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,749.4	200.0	559.9	243.1	0.00	0.00	0.00
5,900.0	0.00	0.00	5,849.4	200.0	559.9	243.1	0.00	0.00	0.00
6,000.0	0.00	0.00	5,949.4	200.0	559.9	243.1	0.00	0.00	0.00
6,031.2	0.00	0.00	5,980.6	200.0	559.9	243.1	0.00	0.00	0.00
KOP #2									
6,100.0	5.16	0.00	6,049.3	203.1	559.9	246.2	7.50	7.50	0.00
6,200.0	12.66	0.00	6,148.0	218.6	559.9	261.6	7.50	7.50	0.00
6,300.0	20.16	0.00	6,243.9	246.8	559.9	289.8	7.50	7.50	0.00
6,400.0	27.66	0.00	6,335.2	287.3	559.9	330.1	7.50	7.50	0.00
6,419.1	29.09	0.00	6,352.0	296.4	559.9	339.2	7.50	7.50	0.00
SHARON SPRINGS									
6,500.0	35.16	0.00	6,420.5	339.4	559.9	382.1	7.50	7.50	0.00
6,600.0	42.66	0.00	6,498.3	402.2	559.9	444.6	7.50	7.50	0.00
6,613.3	43.66	0.00	6,508.0	411.3	559.9	453.7	7.50	7.50	0.00
NIOBRARA A									
6,700.0	50.16	0.00	6,567.2	474.5	559.9	516.8	7.50	7.50	0.00
6,735.1	52.79	0.00	6,589.0	502.0	559.9	544.1	7.50	7.50	0.00
NIOBRARA B									
6,800.0	57.66	0.00	6,626.0	555.3	559.9	597.3	7.50	7.50	0.00
6,900.0	65.16	0.00	6,673.8	643.0	559.9	684.8	7.50	7.50	0.00
6,907.6	65.73	0.00	6,677.0	649.9	559.9	691.7	7.50	7.50	0.00
NIOBRARA C									
7,000.0	72.66	0.00	6,709.8	736.3	559.9	777.7	7.50	7.50	0.00
7,100.0	80.16	0.00	6,733.3	833.4	559.9	874.6	7.50	7.50	0.00
7,200.0	87.66	0.00	6,743.9	932.8	559.9	973.6	7.50	7.50	0.00
7,230.4	89.94	0.00	6,744.5	963.2	559.9	1,003.9	7.50	7.50	0.00
End of Build - 7"									
7,300.0	89.94	0.00	6,744.6	1,032.8	559.9	1,073.3	0.00	0.00	0.00
7,400.0	89.94	0.00	6,744.7	1,132.8	559.9	1,173.0	0.00	0.00	0.00
7,500.0	89.94	0.00	6,744.8	1,232.8	559.9	1,272.7	0.00	0.00	0.00
7,600.0	89.94	0.00	6,744.9	1,332.8	559.9	1,372.4	0.00	0.00	0.00
7,700.0	89.94	0.00	6,745.0	1,432.8	559.9	1,472.1	0.00	0.00	0.00
7,800.0	89.94	0.00	6,745.1	1,532.8	559.9	1,571.8	0.00	0.00	0.00
7,900.0	89.94	0.00	6,745.2	1,632.8	559.9	1,671.5	0.00	0.00	0.00
8,000.0	89.94	0.00	6,745.3	1,732.8	559.9	1,771.2	0.00	0.00	0.00
8,100.0	89.94	0.00	6,745.4	1,832.8	559.9	1,870.9	0.00	0.00	0.00
8,200.0	89.94	0.00	6,745.5	1,932.8	559.9	1,970.6	0.00	0.00	0.00

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Project:	SEC.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
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Well:	Chesnut 27K-421	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	89.94	0.00	6,745.6	2,032.8	559.9	2,070.3	0.00	0.00	0.00
8,400.0	89.94	0.00	6,745.7	2,132.8	559.9	2,170.0	0.00	0.00	0.00
8,500.0	89.94	0.00	6,745.8	2,232.8	559.9	2,269.6	0.00	0.00	0.00
8,600.0	89.94	0.00	6,746.0	2,332.8	559.9	2,369.3	0.00	0.00	0.00
8,700.0	89.94	0.00	6,746.1	2,432.8	559.9	2,469.0	0.00	0.00	0.00
8,800.0	89.94	0.00	6,746.2	2,532.8	559.9	2,568.7	0.00	0.00	0.00
8,900.0	89.94	0.00	6,746.3	2,632.8	559.9	2,668.4	0.00	0.00	0.00
9,000.0	89.94	0.00	6,746.4	2,732.8	559.9	2,768.1	0.00	0.00	0.00
9,100.0	89.94	0.00	6,746.5	2,832.8	559.9	2,867.8	0.00	0.00	0.00
9,200.0	89.94	0.00	6,746.6	2,932.8	559.9	2,967.5	0.00	0.00	0.00
9,300.0	89.94	0.00	6,746.7	3,032.8	559.9	3,067.2	0.00	0.00	0.00
9,400.0	89.94	0.00	6,746.8	3,132.8	559.9	3,166.9	0.00	0.00	0.00
9,500.0	89.94	0.00	6,746.9	3,232.8	559.9	3,266.6	0.00	0.00	0.00
9,600.0	89.94	0.00	6,747.0	3,332.8	559.9	3,366.3	0.00	0.00	0.00
9,700.0	89.94	0.00	6,747.1	3,432.8	559.9	3,466.0	0.00	0.00	0.00
9,800.0	89.94	0.00	6,747.2	3,532.8	559.9	3,565.7	0.00	0.00	0.00
9,900.0	89.94	0.00	6,747.3	3,632.8	559.9	3,665.4	0.00	0.00	0.00
10,000.0	89.94	0.00	6,747.4	3,732.8	559.9	3,765.1	0.00	0.00	0.00
10,100.0	89.94	0.00	6,747.5	3,832.8	559.9	3,864.8	0.00	0.00	0.00
10,200.0	89.94	0.00	6,747.6	3,932.8	559.9	3,964.5	0.00	0.00	0.00
10,300.0	89.94	0.00	6,747.7	4,032.8	559.9	4,064.2	0.00	0.00	0.00
10,400.0	89.94	0.00	6,747.8	4,132.8	559.9	4,163.9	0.00	0.00	0.00
10,500.0	89.94	0.00	6,747.9	4,232.8	559.9	4,263.5	0.00	0.00	0.00
10,600.0	89.94	0.00	6,748.0	4,332.8	559.9	4,363.2	0.00	0.00	0.00
10,700.0	89.94	0.00	6,748.2	4,432.8	559.9	4,462.9	0.00	0.00	0.00
10,800.0	89.94	0.00	6,748.3	4,532.8	559.9	4,562.6	0.00	0.00	0.00
10,900.0	89.94	0.00	6,748.4	4,632.8	559.9	4,662.3	0.00	0.00	0.00
11,000.0	89.94	0.00	6,748.5	4,732.8	559.9	4,762.0	0.00	0.00	0.00
11,100.0	89.94	0.00	6,748.6	4,832.8	559.9	4,861.7	0.00	0.00	0.00
11,200.0	89.94	0.00	6,748.7	4,932.8	559.9	4,961.4	0.00	0.00	0.00
11,300.0	89.94	0.00	6,748.8	5,032.8	559.9	5,061.1	0.00	0.00	0.00
11,400.0	89.94	0.00	6,748.9	5,132.8	559.9	5,160.8	0.00	0.00	0.00
11,500.0	89.94	0.00	6,749.0	5,232.8	559.9	5,260.5	0.00	0.00	0.00
11,600.0	89.94	0.00	6,749.1	5,332.8	559.9	5,360.2	0.00	0.00	0.00
11,700.0	89.94	0.00	6,749.2	5,432.8	559.9	5,459.9	0.00	0.00	0.00
11,800.0	89.94	0.00	6,749.3	5,532.8	559.9	5,559.6	0.00	0.00	0.00
11,900.0	89.94	0.00	6,749.4	5,632.8	559.9	5,659.3	0.00	0.00	0.00
12,000.0	89.94	0.00	6,749.5	5,732.8	559.9	5,759.0	0.00	0.00	0.00
12,100.0	89.94	0.00	6,749.6	5,832.8	559.9	5,858.7	0.00	0.00	0.00
12,200.0	89.94	0.00	6,749.7	5,932.8	559.9	5,958.4	0.00	0.00	0.00
12,300.0	89.94	0.00	6,749.8	6,032.8	559.9	6,058.1	0.00	0.00	0.00
12,400.0	89.94	0.00	6,749.9	6,132.8	559.9	6,157.7	0.00	0.00	0.00
12,500.0	89.94	0.00	6,750.0	6,232.8	559.9	6,257.4	0.00	0.00	0.00
12,600.0	89.94	0.00	6,750.1	6,332.8	559.9	6,357.1	0.00	0.00	0.00
12,700.0	89.94	0.00	6,750.2	6,432.8	559.9	6,456.8	0.00	0.00	0.00
12,800.0	89.94	0.00	6,750.4	6,532.8	559.9	6,556.5	0.00	0.00	0.00
12,900.0	89.94	0.00	6,750.5	6,632.8	559.9	6,656.2	0.00	0.00	0.00
13,000.0	89.94	0.00	6,750.6	6,732.8	559.9	6,755.9	0.00	0.00	0.00
13,100.0	89.94	0.00	6,750.7	6,832.8	559.9	6,855.6	0.00	0.00	0.00
13,200.0	89.94	0.00	6,750.8	6,932.8	559.9	6,955.3	0.00	0.00	0.00
13,300.0	89.94	0.00	6,750.9	7,032.8	559.9	7,055.0	0.00	0.00	0.00
13,400.0	89.94	0.00	6,751.0	7,132.8	559.9	7,154.7	0.00	0.00	0.00
13,418.7	89.94	0.00	6,751.0	7,151.4	559.9	7,173.3	0.00	0.00	0.00

Database:	landmark	Local Co-ordinate Reference:	Well Chesnut 27K-421
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Project:	SEC.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	North Reference:	True
Well:	Chesnut 27K-421	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 (")
7,230.4	6,744.5	7"	7	7-1/2

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,460.7	3,430.0	PARKMAN		0.00	
4,192.4	4,150.0	SUSSEX		0.00	
5,150.6	5,100.0	SHANNON		0.00	
6,419.1	6,352.0	SHARON SPRINGS		0.00	
6,613.3	6,508.0	NIOBRARA A		0.00	
6,735.1	6,589.0	NIOBRARA B		0.00	
6,907.6	6,677.0	NIOBRARA C		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		Comment
		+N/-S (ft)	+E/-W (ft)	
1,200.0	1,200.0	0.0	0.0	KOP #1
6,031.2	5,980.6	200.0	559.9	KOP #2
7,230.4	6,744.5	963.2	559.9	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.27-T5N-R64W

Chesnut 27GK-HZ Pad Sec.27-T5N-R64W

Chesnut 27K-421

Wellbore #1

Plan #2 (7-09-14)

Anticollision Report

09 July, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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	13,418.7	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)	Between Ellipses (ft)	Separation Factor	Warning
Bauer Debus 22AD Pad Sec.22-T5N-R64W						
Bauer Debus 22AD - Wellbore #1 - Wellbore #1	12,559.3	6,824.3	404.1	264.1	2.888	CC, ES
Bauer Debus 22AD - Wellbore #1 - Wellbore #1	12,600.0	6,822.4	406.1	265.4	2.887	SF
Bauer Debus 22JD - Wellbore #1 - Wellbore #1	13,418.7	6,818.9	566.1	412.5	3.685	CC, ES, SF
Bauer Debus 22MD - Wellbore #1 - Wellbore #1	13,418.7	6,795.6	946.1	791.5	6.119	CC, ES, SF
Bauer Debus 22ND Pad Sec.22-T5N-R64W						
Bauer Debus 22ND - Wellbore #1 - Wellbore #1	12,621.1	6,819.9	854.0	712.8	6.050	CC, ES
Bauer Debus 22ND - Wellbore #1 - Wellbore #1	12,700.0	6,819.4	857.6	714.9	6.012	SF
Chesnut 22KD Pad Sec.22-T5N-R64W						
Chesnut 22BD - Wellbore #1 - Wellbore #1	9,908.8	6,939.5	449.1	355.5	4.797	CC, ES, SF
Chesnut 22KD - Wellbore #1 - Wellbore #1	11,140.9	6,880.3	398.1	288.1	3.620	CC, ES, SF
Chesnut 27G-HZ Pad Sec.27-T5N-R64W						
Chesnut 27K-203 - Wellbore #1 - Plan #2 (7-08-14)	1,690.2	1,799.7	640.3	632.9	86.153	CC
Chesnut 27K-203 - Wellbore #1 - Plan #2 (7-08-14)	1,700.0	1,809.5	640.3	632.8	85.657	ES
Chesnut 27K-203 - Wellbore #1 - Plan #2 (7-08-14)	6,100.0	6,050.0	678.2	646.8	21.618	SF
Chesnut 27GK-HZ Pad Sec.27-T5N-R64W						
Chesnut 27G-221 - Wellbore #1 - Plan #1 (4-23-14)	1,091.8	1,092.8	30.3	25.6	6.477	CC
Chesnut 27G-221 - Wellbore #1 - Plan #1 (4-23-14)	1,100.0	1,101.0	30.3	25.6	6.428	ES
Chesnut 27G-221 - Wellbore #1 - Plan #1 (4-23-14)	1,300.0	1,300.0	33.3	27.7	5.959	SF
Chesnut 27G-301 - Wellbore #1 - Plan #1 (4-23-14)	754.7	756.6	86.4	83.3	27.330	CC, ES
Chesnut 27G-301 - Wellbore #1 - Plan #1 (4-23-14)	1,000.0	996.9	95.5	91.2	22.292	SF
Chesnut 27K-201 - Wellbore #1 - Plan #1 (4-23-14)	1,200.0	1,201.0	62.4	57.2	12.066	CC, ES
Chesnut 27K-201 - Wellbore #1 - Plan #1 (4-23-14)	13,418.7	13,271.8	358.3	116.2	1.480	Level 3, SF
Chesnut 27K-341 - Wellbore #1 - Plan #1 (4-23-14)	1,200.0	1,201.0	31.2	26.0	6.033	CC, ES
Chesnut 27K-341 - Wellbore #1 - Plan #1 (4-23-14)	13,418.7	13,358.8	970.3	695.3	3.529	SF
Chesnut 27K-401 - Wellbore #1 - Plan #2 (7-09-14)	1,200.0	1,201.0	89.2	84.0	17.251	CC, ES
Chesnut 27K-401 - Wellbore #1 - Plan #2 (7-09-14)	13,418.7	13,405.7	640.0	364.5	2.323	SF
Chesnut 27O-201 - Wellbore #1 - Pan #1 (4-23-14)	200.0	200.0	119.5	118.8	177.203	CC, ES
Chesnut 27O-201 - Wellbore #1 - Pan #1 (4-23-14)	13,418.7	13,373.6	706.9	440.5	2.654	SF
Chesnut 27O-341 - Wellbore #1 - Plan #1 (4-23-14)	800.0	800.0	58.0	54.7	17.211	CC, ES
Chesnut 27O-341 - Wellbore #1 - Plan #1 (4-23-14)	13,418.7	13,393.6	369.4	105.9	1.402	Level 3, SF

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Chesnut 27K-HZ Pad Sec.27-T5N-R64W						
Chesnut 27K-323 - Wellbore #1 - Plan #2 (7-09-14)	5,964.5	5,986.1	249.6	213.7	6.958	CC
Chesnut 27K-323 - Wellbore #1 - Plan #2 (7-09-14)	6,000.0	6,020.2	249.6	213.6	6.937	ES, SF
Chesnut 27K-403 - Wellbore #1 - Plan #2 (7-09-14)	6,000.0	6,008.7	334.5	305.9	11.703	CC
Chesnut 27K-403 - Wellbore #1 - Plan #2 (7-09-14)	6,006.9	6,015.5	334.5	305.9	11.688	ES
Chesnut 27K-403 - Wellbore #1 - Plan #2 (7-09-14)	6,100.0	6,100.0	337.4	308.4	11.617	SF
Chesnut 27O-243 - Wellbore #1 - Plan #2 (7-08-14)	4,701.0	4,725.1	445.1	411.4	13.239	CC, ES
Chesnut 27O-243 - Wellbore #1 - Plan #2 (7-08-14)	4,900.0	4,922.0	448.9	414.3	12.989	SF
Chesnut 27O-303 - Wellbore #1 - Plan #2 (7-08-14)	1,066.4	1,079.1	553.9	549.0	113.294	CC
Chesnut 27O-303 - Wellbore #1 - Plan #2 (7-08-14)	1,100.0	1,111.5	554.0	548.9	109.709	ES
Chesnut 27O-303 - Wellbore #1 - Plan #2 (7-08-14)	4,700.0	4,685.1	660.5	627.3	19.877	SF
Chesnut Existing Pad Sec.27-T5N-R64W						
Chesnut 22-23 (Exist) - Wellbore #1 - Wellbore #1	10,602.6	6,719.1	426.3	208.2	1.955	CC, ES, SF
Chesnut 22-24 (Exist) - Wellbore #1 - Wellbore #1	9,447.7	6,716.8	359.5	163.1	1.831	CC, ES, SF
Joshua 1 (Exist) - Wellbore #1 - Wellbore #1	13,356.8	6,695.9	203.4	-66.7	0.753	Level 1, CC, ES, SF
Rice 22-1 (Exist) - Wellbore #1 - Wellbore #1	11,917.7	6,724.4	214.5	-28.6	0.882	Level 1, CC, ES, SF
White 27-3 (Exist) - Wellbore #1 - Wellbore #1	6,559.1	6,437.5	315.0	170.4	2.178	CC, ES
White 27-3 (Exist) - Wellbore #1 - Wellbore #1	6,600.0	6,468.3	316.2	170.6	2.173	SF
White 27-5 (Exist) - Wellbore #1 - Wellbore #1	8,143.5	6,714.5	259.2	86.7	1.503	CC, ES, SF

Bauer Debus 22AD Pad Sec.22-T5N-R64W - Bauer Debus 22AD - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 733-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
11,700.0	6,749.2	6,862.5	6,751.3	104.9	20.9	-96.25	6,290.2	156.5	948.7	825.6	123.09	7.708	
11,800.0	6,749.3	6,858.3	6,747.1	106.8	20.9	-95.66	6,290.4	156.4	859.4	734.3	125.08	6.871	
11,900.0	6,749.4	6,854.1	6,742.9	108.7	20.9	-95.06	6,290.6	156.3	772.7	645.6	127.06	6.081	
12,000.0	6,749.5	6,849.8	6,738.5	110.6	20.9	-94.46	6,290.8	156.3	689.5	560.4	129.04	5.343	
12,100.0	6,749.6	6,845.4	6,734.2	112.5	20.8	-93.84	6,291.0	156.2	611.3	480.3	131.01	4.667	
12,200.0	6,749.7	6,840.9	6,729.7	114.4	20.8	-93.21	6,291.2	156.1	540.4	407.5	132.97	4.064	
12,300.0	6,749.8	6,836.4	6,725.2	116.3	20.8	-92.57	6,291.5	156.1	479.9	345.0	134.91	3.557	
12,400.0	6,749.9	6,831.8	6,720.7	118.2	20.8	-91.92	6,291.7	156.0	434.3	297.4	136.85	3.173	
12,500.0	6,750.0	6,827.2	6,716.0	120.1	20.8	-91.26	6,291.9	155.9	408.4	269.6	138.78	2.943	
12,559.3	6,750.1	6,824.3	6,713.2	121.2	20.8	-90.86	6,292.0	155.9	404.1	264.1	139.91	2.888 CC, ES	
12,600.0	6,750.1	6,822.4	6,711.2	122.0	20.8	-90.58	6,292.1	155.9	406.1	265.4	140.68	2.887 SF	
12,700.0	6,750.2	6,817.6	6,706.5	123.9	20.8	-89.91	6,292.4	155.8	427.8	285.2	142.58	3.000	
12,800.0	6,750.4	6,813.0	6,701.9	125.8	20.8	-89.26	6,292.6	155.7	470.2	325.7	144.46	3.255	
12,900.0	6,750.5	6,808.5	6,697.4	127.7	20.8	-88.62	6,292.8	155.7	528.3	382.0	146.32	3.611	
13,000.0	6,750.6	6,804.1	6,693.0	129.6	20.8	-88.00	6,293.0	155.6	597.6	449.4	148.17	4.033	
13,100.0	6,750.7	6,799.9	6,688.7	131.5	20.8	-87.40	6,293.2	155.6	674.5	524.5	150.00	4.497	
13,200.0	6,750.8	6,795.7	6,684.5	133.4	20.8	-86.81	6,293.4	155.5	756.9	605.1	151.83	4.985	
13,300.0	6,750.9	6,791.6	6,680.5	135.3	20.8	-86.23	6,293.5	155.4	843.1	689.4	153.63	5.488	
13,400.0	6,751.0	6,787.6	6,676.5	137.2	20.7	-85.67	6,293.7	155.4	932.0	776.6	155.43	5.996	
13,418.7	6,751.0	6,786.9	6,675.8	137.6	20.7	-85.57	6,293.7	155.4	948.9	793.1	155.77	6.092	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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												Offset Site Error:	0.0 ft
Survey Program: 732-MWD												Offset Well Error:	0.0 ft
Bauer Debus 22AD Pad Sec.22-T5N-R64W - Bauer Debus 22JD - Wellbore #1 - Wellbore #1													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,900.0	6,750.5	6,844.1	6,752.0	127.7	18.9	-95.89	7,525.9	136.8	989.3	846.0	143.27	6.905	
13,000.0	6,750.6	6,839.1	6,747.0	129.6	18.9	-95.22	7,526.1	136.8	900.0	754.7	145.30	6.194	
13,100.0	6,750.7	6,834.2	6,742.1	131.5	18.9	-94.56	7,526.3	136.8	813.2	665.9	147.31	5.520	
13,200.0	6,750.8	6,829.3	6,737.2	133.4	18.9	-93.90	7,526.6	136.8	729.7	580.4	149.30	4.888	
13,300.0	6,750.9	6,824.5	6,732.4	135.3	18.9	-93.25	7,526.8	136.8	650.9	499.7	151.29	4.303	
13,400.0	6,751.0	6,819.7	6,727.7	137.2	18.9	-92.61	7,527.0	136.8	578.7	425.4	153.25	3.776	
13,418.7	6,751.0	6,818.9	6,726.8	137.6	18.9	-92.49	7,527.1	136.8	566.1	412.5	153.62	3.685 CC, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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												Offset Site Error:	0.0 ft
Survey Program: 148-MWD												Offset Well Error:	0.0 ft
Bauer Debus 22AD Pad Sec.22-T5N-R64W - Bauer Debus 22MD - Wellbore #1 - Wellbore #1													
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,400.0	6,751.0	6,795.5	6,706.3	137.2	20.7	89.85	7,580.9	1,402.9	954.7	800.5	154.25	6.189	
13,418.7	6,751.0	6,795.6	6,706.3	137.6	20.7	89.86	7,580.9	1,402.9	946.1	791.5	154.60	6.119 CC, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 Bauer Debus 22ND Pad Sec.22-T5N-R64W - Bauer Debus 22ND - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 732-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
12,200.0	6,749.7	6,822.2	6,698.6	114.4	22.5	89.43	6,353.8	1,413.8	952.1	819.0	133.12	7.152		
12,300.0	6,749.8	6,821.7	6,698.1	116.3	22.5	89.39	6,353.8	1,413.8	912.3	777.3	135.02	6.757		
12,400.0	6,749.9	6,821.1	6,697.5	118.2	22.5	89.35	6,353.8	1,413.8	882.1	745.2	136.93	6.442		
12,500.0	6,750.0	6,820.5	6,696.9	120.1	22.5	89.31	6,353.8	1,413.8	862.5	723.7	138.83	6.212		
12,600.0	6,750.1	6,820.0	6,696.4	122.0	22.5	89.28	6,353.8	1,413.8	854.2	713.5	140.74	6.069		
12,621.1	6,750.2	6,819.9	6,696.2	122.4	22.5	89.27	6,353.8	1,413.8	854.0	712.8	141.14	6.050 CC, ES		
12,700.0	6,750.2	6,819.4	6,695.8	123.9	22.5	89.24	6,353.8	1,413.8	857.6	714.9	142.64	6.012 SF		
12,800.0	6,750.4	6,818.9	6,695.2	125.8	22.5	89.20	6,353.8	1,413.8	872.5	727.9	144.55	6.036		
12,900.0	6,750.5	6,818.3	6,694.7	127.7	22.5	89.16	6,353.8	1,413.8	898.4	751.9	146.46	6.134		
13,000.0	6,750.6	6,817.7	6,694.1	129.6	22.5	89.13	6,353.8	1,413.8	934.3	785.9	148.36	6.297		
13,100.0	6,750.7	6,817.2	6,693.6	131.5	22.5	89.09	6,353.8	1,413.8	979.1	828.8	150.27	6.515		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 22KD Pad Sec.22-T5N-R64W - Chesnut 22BD - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 797-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
9,100.0	6,746.5	6,944.0	6,731.1	56.3	28.9	-90.22	3,641.5	110.8	925.1	846.6	78.54	11.778	
9,200.0	6,746.6	6,943.4	6,730.5	58.1	28.9	-90.15	3,641.5	110.8	839.1	758.7	80.39	10.437	
9,300.0	6,746.7	6,942.9	6,730.0	60.0	28.9	-90.08	3,641.5	110.8	756.5	674.3	82.25	9.198	
9,400.0	6,746.8	6,942.3	6,729.4	61.8	28.9	-90.01	3,641.6	110.8	678.6	594.5	84.11	8.069	
9,500.0	6,746.9	6,941.8	6,728.9	63.7	28.9	-89.95	3,641.6	110.8	607.3	521.3	85.97	7.064	
9,600.0	6,747.0	6,941.2	6,728.3	65.5	28.9	-89.88	3,641.6	110.8	545.0	457.2	87.83	6.205	
9,700.0	6,747.1	6,940.7	6,727.8	67.4	28.9	-89.80	3,641.6	110.8	495.2	405.5	89.70	5.521	
9,800.0	6,747.2	6,940.1	6,727.2	69.2	28.9	-89.73	3,641.6	110.8	462.1	370.5	91.57	5.046	
9,900.0	6,747.3	6,939.6	6,726.7	71.1	28.9	-89.66	3,641.6	110.8	449.2	355.7	93.45	4.807	
9,908.8	6,747.3	6,939.5	6,726.6	71.2	28.9	-89.66	3,641.6	110.8	449.1	355.5	93.61	4.797 CC, ES, SF	
10,000.0	6,747.4	6,939.0	6,726.1	72.9	28.9	-89.59	3,641.6	110.8	458.2	362.9	95.32	4.807	
10,100.0	6,747.5	6,938.5	6,725.6	74.8	28.9	-89.52	3,641.6	110.8	488.1	390.9	97.20	5.021	
10,200.0	6,747.6	6,937.9	6,725.0	76.7	28.9	-89.45	3,641.6	110.8	535.2	436.1	99.08	5.402	
10,300.0	6,747.7	6,937.3	6,724.4	78.5	28.9	-89.37	3,641.6	110.8	595.6	494.6	100.96	5.899	
10,400.0	6,747.8	6,936.7	6,723.9	80.4	28.9	-89.30	3,641.6	110.9	665.5	562.7	102.84	6.471	
10,500.0	6,747.9	6,936.2	6,723.3	82.3	28.9	-89.23	3,641.6	110.9	742.4	637.7	104.73	7.089	
10,600.0	6,748.0	6,935.6	6,722.7	84.2	28.9	-89.15	3,641.6	110.9	824.3	717.6	106.61	7.731	
10,700.0	6,748.2	6,935.0	6,722.1	86.0	28.9	-89.08	3,641.6	110.9	909.7	801.2	108.50	8.385	
10,800.0	6,748.3	6,934.4	6,721.5	87.9	28.9	-89.01	3,641.6	110.9	997.9	887.5	110.39	9.040	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 22KD Pad Sec.22-T5N-R64W - Chesnut 22KD - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 701-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,300.0	6,747.7	6,866.3	6,715.7	78.5	24.1	-87.86	4,873.4	161.8	930.2	836.2	94.04	9.892		
10,400.0	6,747.8	6,867.9	6,717.4	80.4	24.1	-88.10	4,873.4	161.8	841.0	745.0	95.93	8.766		
10,500.0	6,747.9	6,869.6	6,719.1	82.3	24.1	-88.34	4,873.4	161.8	754.4	656.5	97.83	7.711		
10,600.0	6,748.0	6,871.3	6,720.7	84.2	24.1	-88.58	4,873.5	161.8	671.5	571.8	99.73	6.734		
10,700.0	6,748.2	6,873.0	6,722.4	86.0	24.1	-88.82	4,873.5	161.8	594.0	492.3	101.63	5.845		
10,800.0	6,748.3	6,874.6	6,724.1	87.9	24.1	-89.06	4,873.5	161.8	524.1	420.6	103.52	5.062		
10,900.0	6,748.4	6,876.3	6,725.8	89.8	24.1	-89.30	4,873.5	161.8	465.3	359.9	105.42	4.414		
11,000.0	6,748.5	6,878.0	6,727.4	91.7	24.1	-89.54	4,873.6	161.8	422.3	315.0	107.32	3.935		
11,100.0	6,748.6	6,879.7	6,729.1	93.6	24.1	-89.79	4,873.6	161.8	400.2	291.0	109.22	3.664		
11,140.9	6,748.6	6,880.3	6,729.8	94.3	24.1	-89.88	4,873.6	161.8	398.1	288.1	109.99	3.620 CC, ES, SF		
11,200.0	6,748.7	6,881.3	6,730.8	95.5	24.1	-90.03	4,873.6	161.8	402.5	291.4	111.11	3.622		
11,300.0	6,748.8	6,883.0	6,732.5	97.3	24.1	-90.27	4,873.7	161.8	428.8	315.7	113.01	3.794		
11,400.0	6,748.9	6,884.7	6,734.2	99.2	24.1	-90.51	4,873.7	161.8	475.0	360.1	114.90	4.134		
11,500.0	6,749.0	6,886.4	6,735.8	101.1	24.1	-90.75	4,873.7	161.8	536.2	419.4	116.80	4.590		
11,600.0	6,749.1	6,888.0	6,737.5	103.0	24.1	-90.99	4,873.7	161.8	607.7	489.0	118.69	5.120		
11,700.0	6,749.2	6,889.7	6,739.2	104.9	24.1	-91.24	4,873.8	161.8	686.3	565.8	120.58	5.692		
11,800.0	6,749.3	6,891.4	6,740.9	106.8	24.1	-91.48	4,873.8	161.8	770.0	647.5	122.47	6.287		
11,900.0	6,749.4	6,893.1	6,742.6	108.7	24.1	-91.72	4,873.8	161.8	857.1	732.8	124.36	6.892		
12,000.0	6,749.5	6,894.8	6,744.2	110.6	24.2	-91.96	4,873.8	161.7	946.8	820.6	126.25	7.500		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.5	1.5	0.0	0.0	-87.55	29.2	-682.7	683.3				
100.0	100.0	101.5	101.5	0.1	0.1	-87.55	29.2	-682.7	683.3	683.1	0.23	2,995.089	
200.0	200.0	201.5	201.5	0.3	0.3	-87.55	29.2	-682.7	683.3	682.6	0.68	1,008.297	
300.0	300.0	301.5	301.5	0.6	0.6	-87.55	29.2	-682.7	683.3	682.2	1.13	606.184	
400.0	400.0	401.5	401.5	0.8	0.8	-87.55	29.2	-682.7	683.3	681.7	1.58	433.359	
500.0	500.0	501.5	501.5	1.0	1.0	-87.55	29.2	-682.7	683.3	681.3	2.03	337.217	
600.0	600.0	601.5	601.5	1.2	1.2	-87.55	29.2	-682.7	683.3	680.8	2.48	275.989	
700.0	700.0	701.5	701.5	1.5	1.5	-87.55	29.2	-682.7	683.3	680.4	2.93	233.578	
800.0	800.0	801.5	801.5	1.7	1.7	-87.55	29.2	-682.7	683.3	679.9	3.37	202.465	
900.0	900.0	901.5	901.5	1.9	1.9	-87.55	29.2	-682.7	683.3	679.5	3.82	178.667	
1,000.0	1,000.0	1,002.0	1,002.0	2.1	2.1	-87.55	29.2	-682.7	683.3	679.0	4.27	159.849	
1,100.0	1,100.0	1,131.9	1,131.9	2.4	2.4	-87.62	28.3	-679.8	681.0	676.3	4.77	142.884	
1,200.0	1,200.0	1,261.3	1,260.9	2.6	2.7	-87.81	25.7	-671.3	674.4	669.1	5.26	128.278	
1,300.0	1,300.0	1,389.9	1,388.7	2.8	3.0	-158.61	21.5	-657.3	665.0	659.3	5.73	116.122	
1,400.0	1,399.8	1,511.2	1,508.5	3.0	3.3	-159.32	16.0	-639.2	654.8	648.6	6.19	105.724	
1,500.0	1,499.5	1,610.5	1,606.4	3.2	3.6	-160.06	11.1	-623.1	646.5	639.9	6.61	97.781	
1,600.0	1,598.7	1,710.0	1,704.4	3.5	3.9	-160.89	6.2	-606.9	641.7	634.7	7.04	91.155	
1,690.2	1,687.8	1,799.7	1,792.9	3.7	4.2	-161.71	1.8	-592.3	640.3	632.9	7.43	86.153 CC	
1,700.0	1,697.5	1,809.5	1,802.4	3.7	4.2	-161.80	1.3	-590.8	640.3	632.8	7.48	85.657 ES	
1,800.0	1,795.9	1,908.9	1,900.4	4.0	4.6	-162.76	-3.5	-574.6	641.1	633.2	7.94	80.704	
1,900.0	1,894.3	2,008.3	1,998.4	4.4	4.9	-163.73	-8.4	-558.5	642.2	633.8	8.43	76.186	
2,000.0	1,992.7	2,107.7	2,096.3	4.7	5.3	-164.69	-13.3	-542.3	643.4	634.5	8.92	72.104	
2,100.0	2,091.1	2,207.1	2,194.3	5.0	5.6	-165.64	-18.2	-526.2	644.8	635.4	9.43	68.409	
2,200.0	2,189.5	2,306.5	2,292.2	5.4	6.0	-166.60	-23.1	-510.0	646.4	636.5	9.94	65.055	
2,300.0	2,287.9	2,405.9	2,390.2	5.7	6.4	-167.54	-28.0	-493.9	648.2	637.7	10.45	62.003	
2,400.0	2,386.3	2,505.3	2,488.2	6.1	6.7	-168.48	-32.9	-477.7	650.1	639.1	10.98	59.220	
2,500.0	2,484.7	2,604.7	2,586.1	6.5	7.1	-169.42	-37.7	-461.6	652.2	640.7	11.51	56.673	
2,600.0	2,583.1	2,704.1	2,684.1	6.8	7.5	-170.35	-42.6	-445.4	654.5	642.5	12.05	54.337	
2,700.0	2,681.5	2,803.5	2,782.1	7.2	7.9	-171.27	-47.5	-429.3	657.0	644.4	12.59	52.189	
2,800.0	2,779.9	2,902.9	2,880.0	7.6	8.3	-172.19	-52.4	-413.1	659.6	646.5	13.14	50.209	
2,900.0	2,878.3	3,002.3	2,978.0	8.0	8.6	-173.10	-57.3	-397.0	662.5	648.8	13.69	48.379	
3,000.0	2,976.7	3,101.7	3,075.9	8.3	9.0	-174.00	-62.2	-380.8	665.4	651.2	14.25	46.683	
3,100.0	3,075.1	3,201.1	3,173.9	8.7	9.4	-174.89	-67.1	-364.7	668.6	653.8	14.82	45.109	
3,200.0	3,173.5	3,300.5	3,271.9	9.1	9.8	-175.77	-71.9	-348.5	671.9	656.5	15.39	43.645	
3,300.0	3,271.9	3,399.9	3,369.8	9.5	10.2	-176.65	-76.8	-332.4	675.3	659.4	15.97	42.280	
3,400.0	3,370.3	3,499.3	3,467.8	9.9	10.6	-177.51	-81.7	-316.3	679.0	662.4	16.56	41.005	
3,500.0	3,468.7	3,598.7	3,565.8	10.3	10.9	-178.37	-86.6	-300.1	682.7	665.6	17.15	39.812	
3,600.0	3,567.1	3,698.1	3,663.7	10.7	11.3	-179.22	-91.5	-284.0	686.7	668.9	17.75	38.694	
3,700.0	3,665.5	3,797.5	3,761.7	11.1	11.7	-179.94	-96.4	-267.8	690.7	672.4	18.35	37.645	
3,800.0	3,763.9	3,896.9	3,859.6	11.5	12.1	-179.12	-101.3	-251.7	695.0	676.0	18.96	36.659	
3,900.0	3,862.3	3,996.3	3,957.6	11.9	12.5	-178.30	-106.2	-235.5	699.3	679.8	19.57	35.731	
4,000.0	3,960.7	4,095.7	4,055.6	12.3	12.9	-177.49	-111.0	-219.4	703.8	683.7	20.19	34.856	
4,100.0	4,059.1	4,195.2	4,153.5	12.7	13.3	-176.69	-115.9	-203.2	708.5	687.7	20.82	34.030	
4,200.0	4,157.5	4,294.6	4,251.5	13.1	13.7	-175.91	-120.8	-187.1	713.3	691.8	21.45	33.250	
4,300.0	4,255.9	4,394.0	4,349.4	13.5	14.1	-175.13	-125.7	-170.9	718.2	696.1	22.09	32.512	
4,400.0	4,354.3	4,493.4	4,447.4	13.8	14.4	-174.37	-130.6	-154.8	723.3	700.5	22.73	31.813	
4,500.0	4,452.7	4,592.8	4,545.4	14.2	14.8	-173.61	-135.5	-138.6	728.4	705.1	23.38	31.151	
4,600.0	4,551.2	4,692.2	4,643.4	14.6	15.2	-172.87	-140.4	-122.5	733.1	709.0	24.05	30.476	
4,700.0	4,650.3	4,791.7	4,741.4	14.9	15.6	-172.10	-145.2	-106.3	734.6	709.9	24.69	29.753	
4,800.0	4,749.7	4,891.1	4,839.4	15.1	16.0	-171.28	-150.1	-90.2	732.9	707.6	25.31	28.960	
4,900.0	4,849.5	4,990.4	4,937.2	15.3	16.4	-170.40	-155.0	-74.0	727.8	701.9	25.90	28.100	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,949.4	5,089.3	5,034.7	15.5	16.8	169.45	-159.9	-58.0	719.5	693.0	26.47	27.178	
5,100.0	5,049.4	5,187.9	5,131.9	15.6	17.2	-121.22	-164.7	-41.9	708.4	681.3	27.07	26.165	
5,200.0	5,149.4	5,284.3	5,226.9	15.8	17.6	-122.22	-169.5	-26.3	697.1	669.4	27.72	25.151	
5,300.0	5,249.4	5,369.7	5,311.3	15.9	17.8	-123.03	-173.2	-14.0	687.2	659.0	28.22	24.350	
5,400.0	5,349.4	5,455.8	5,396.8	16.1	18.0	-123.70	-176.2	-4.1	679.5	650.8	28.69	23.680	
5,500.0	5,449.4	5,542.4	5,483.0	16.2	18.2	-124.22	-178.5	3.5	673.7	644.6	29.13	23.129	
5,600.0	5,549.4	5,629.4	5,569.9	16.4	18.3	-124.57	-180.0	8.5	669.9	640.4	29.53	22.690	
5,700.0	5,649.4	5,716.7	5,657.1	16.6	18.5	-124.75	-180.8	11.0	668.0	638.2	29.88	22.355	
5,765.5	5,714.9	5,776.0	5,716.4	16.7	18.6	-124.77	-180.8	11.3	667.8	637.7	30.10	22.184	
5,800.0	5,749.4	5,810.5	5,750.9	16.7	18.6	-124.77	-180.8	11.3	667.8	637.6	30.22	22.095	
5,900.0	5,849.4	5,910.5	5,850.9	16.9	18.7	-124.77	-180.8	11.3	667.8	637.2	30.58	21.841	
6,000.0	5,949.4	5,982.2	5,922.6	17.1	18.9	-124.92	-182.9	11.3	669.6	638.7	30.92	21.654	
6,100.0	6,049.3	6,050.0	5,989.9	17.2	19.0	-125.20	-190.9	11.3	678.2	646.8	31.37	21.618 SF	
6,200.0	6,148.0	6,100.0	6,038.9	17.5	19.1	-125.04	-200.6	11.3	699.2	667.6	31.59	22.133	
6,300.0	6,243.9	6,161.2	6,097.9	17.7	19.2	-125.02	-216.8	11.3	733.2	701.5	31.71	23.125	
6,400.0	6,335.2	6,200.0	6,134.5	18.1	19.3	-123.56	-229.5	11.3	780.3	748.8	31.54	24.744	
6,500.0	6,420.5	6,237.9	6,169.7	18.5	19.5	-121.13	-243.7	11.3	839.4	808.0	31.40	26.730	
6,600.0	6,498.3	6,250.0	6,180.8	18.9	19.5	-115.56	-248.6	11.3	908.9	877.5	31.44	28.912	
6,700.0	6,567.2	6,276.9	6,205.1	19.5	19.6	-109.24	-260.1	11.3	986.3	954.2	32.08	30.744	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	16.00	29.1	8.4	30.3	30.3	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	16.00	29.1	8.4	30.3	30.1	0.23	133.577	
200.0	200.0	201.0	201.0	0.3	0.3	16.00	29.1	8.4	30.3	29.6	0.68	44.822	
300.0	300.0	301.0	301.0	0.6	0.6	16.00	29.1	8.4	30.3	29.2	1.13	26.929	
400.0	400.0	401.0	401.0	0.8	0.8	16.00	29.1	8.4	30.3	28.7	1.58	19.246	
500.0	500.0	501.0	501.0	1.0	1.0	16.00	29.1	8.4	30.3	28.3	2.03	14.974	
600.0	600.0	601.0	601.0	1.2	1.2	16.00	29.1	8.4	30.3	27.8	2.47	12.254	
700.0	700.0	701.0	701.0	1.5	1.5	16.00	29.1	8.4	30.3	27.4	2.92	10.370	
800.0	800.0	801.0	801.0	1.7	1.7	16.00	29.1	8.4	30.3	27.0	3.37	8.988	
900.0	900.0	901.0	901.0	1.9	1.9	16.00	29.1	8.4	30.3	26.5	3.82	7.931	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	16.00	29.1	8.4	30.3	26.1	4.27	7.097	
1,091.8	1,091.8	1,092.8	1,092.8	2.3	2.3	13.16	29.5	6.9	30.3	25.6	4.68	6.477 CC	
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	12.64	29.6	6.6	30.3	25.6	4.71	6.428 ES	
1,200.0	1,200.0	1,200.8	1,200.6	2.6	2.6	2.81	30.8	1.5	30.8	25.6	5.15	5.983	
1,300.0	1,300.0	1,300.0	1,299.5	2.8	2.8	-85.18	32.7	-6.9	33.3	27.7	5.59	5.959 SF	
1,400.0	1,399.8	1,397.7	1,396.4	3.0	3.0	-107.02	35.4	-18.5	41.7	35.7	6.02	6.929	
1,500.0	1,499.5	1,493.5	1,491.0	3.2	3.3	-124.30	38.8	-32.9	59.1	52.6	6.45	9.156	
1,600.0	1,598.7	1,588.4	1,584.3	3.5	3.6	-135.32	42.7	-49.8	84.4	77.5	6.87	12.283	
1,700.0	1,697.5	1,683.0	1,677.3	3.7	3.9	-142.19	46.7	-66.8	114.4	107.2	7.28	15.714	
1,800.0	1,795.9	1,776.9	1,769.6	4.0	4.2	-146.87	50.7	-83.7	147.2	139.5	7.71	19.091	
1,900.0	1,894.3	1,870.9	1,862.0	4.4	4.6	-149.89	54.6	-100.7	180.5	172.3	8.15	22.151	
2,000.0	1,992.7	1,964.8	1,954.3	4.7	4.9	-151.96	58.6	-117.6	214.1	205.5	8.60	24.906	
2,100.0	2,091.1	2,058.7	2,046.6	5.0	5.3	-153.48	62.6	-134.5	247.9	238.9	9.05	27.388	
2,200.0	2,189.5	2,152.7	2,138.9	5.4	5.6	-154.63	66.5	-151.4	281.9	272.3	9.51	29.625	
2,300.0	2,287.9	2,246.6	2,231.2	5.7	6.0	-155.54	70.5	-168.4	315.9	305.9	9.98	31.645	
2,400.0	2,386.3	2,340.5	2,323.5	6.1	6.3	-156.26	74.4	-185.3	349.9	339.5	10.45	33.475	
2,500.0	2,484.7	2,434.5	2,415.8	6.5	6.7	-156.86	78.4	-202.2	384.0	373.1	10.93	35.138	
2,600.0	2,583.1	2,528.4	2,508.1	6.8	7.1	-157.37	82.3	-219.1	418.2	406.8	11.41	36.654	
2,700.0	2,681.5	2,622.3	2,600.5	7.2	7.5	-157.79	86.3	-236.1	452.3	440.5	11.89	38.041	
2,800.0	2,779.9	2,716.3	2,692.8	7.6	7.8	-158.16	90.3	-253.0	486.5	474.2	12.38	39.312	
2,900.0	2,878.3	2,810.2	2,785.1	8.0	8.2	-158.48	94.2	-269.9	520.7	507.9	12.86	40.482	
3,000.0	2,976.7	2,904.1	2,877.4	8.3	8.6	-158.76	98.2	-286.8	554.9	541.6	13.35	41.560	
3,100.0	3,075.1	2,998.1	2,969.7	8.7	9.0	-159.00	102.1	-303.8	589.2	575.3	13.84	42.558	
3,200.0	3,173.5	3,092.0	3,062.0	9.1	9.4	-159.22	106.1	-320.7	623.4	609.0	14.34	43.482	
3,300.0	3,271.9	3,185.9	3,154.3	9.5	9.7	-159.42	110.0	-337.6	657.6	642.8	14.83	44.341	
3,400.0	3,370.3	3,279.9	3,246.6	9.9	10.1	-159.60	114.0	-354.5	691.9	676.5	15.33	45.141	
3,500.0	3,468.7	3,373.8	3,339.0	10.3	10.5	-159.76	118.0	-371.4	726.1	710.3	15.82	45.887	
3,600.0	3,567.1	3,467.7	3,431.3	10.7	10.9	-159.90	121.9	-388.4	760.4	744.0	16.32	46.585	
3,700.0	3,665.5	3,561.7	3,523.6	11.1	11.3	-160.04	125.9	-405.3	794.6	777.8	16.82	47.239	
3,800.0	3,763.9	3,655.6	3,615.9	11.5	11.7	-160.16	129.8	-422.2	828.9	811.6	17.32	47.852	
3,900.0	3,862.3	3,749.5	3,708.2	11.9	12.1	-160.27	133.8	-439.1	863.1	845.3	17.82	48.429	
4,000.0	3,960.7	3,843.5	3,800.5	12.3	12.4	-160.38	137.8	-456.1	897.4	879.1	18.32	48.973	
4,100.0	4,059.1	3,937.4	3,892.8	12.7	12.8	-160.47	141.7	-473.0	931.7	912.8	18.83	49.485	
4,200.0	4,157.5	4,031.3	3,985.1	13.1	13.2	-160.56	145.7	-489.9	965.9	946.6	19.33	49.969	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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-301 - Wellbore #1 - Plan #1 (4-23-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	20.09	83.8	30.7	89.2	89.2	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	20.09	83.8	30.7	89.2	89.0	0.23	393.039		
200.0	200.0	201.0	201.0	0.3	0.3	20.09	83.8	30.7	89.2	88.5	0.68	131.883		
300.0	300.0	301.0	301.0	0.6	0.6	20.09	83.8	30.7	89.2	88.1	1.13	79.235		
400.0	400.0	401.0	401.0	0.8	0.8	20.09	83.8	30.7	89.2	87.6	1.58	56.632		
500.0	500.0	501.7	501.7	1.0	1.0	18.96	84.0	28.9	88.8	86.8	2.02	44.037		
600.0	600.0	602.2	602.1	1.2	1.2	15.57	84.5	23.6	87.7	85.3	2.46	35.684		
700.0	700.0	702.2	701.7	1.5	1.5	9.84	85.4	14.8	86.7	83.7	2.91	29.766		
754.7	754.7	756.6	755.7	1.6	1.6	5.71	86.0	8.6	86.4	83.3	3.16	27.330 CC, ES		
800.0	800.0	801.5	800.2	1.7	1.7	1.79	86.6	2.7	86.6	83.3	3.37	25.719		
900.0	900.0	900.0	897.5	1.9	2.0	-8.17	88.1	-12.7	89.1	85.3	3.82	23.295		
1,000.0	1,000.0	996.9	992.6	2.1	2.4	-19.01	90.0	-31.0	95.5	91.2	4.29	22.292 SF		
1,100.0	1,100.0	1,093.4	1,086.7	2.4	2.8	-29.56	92.1	-52.2	106.8	102.0	4.78	22.355		
1,200.0	1,200.0	1,190.8	1,181.6	2.6	3.2	-38.22	94.3	-74.2	121.6	116.2	5.31	22.893		
1,300.0	1,300.0	1,287.8	1,276.1	2.8	3.7	-115.57	96.5	-96.2	139.2	133.2	6.04	23.034		
1,400.0	1,399.8	1,384.0	1,369.7	3.0	4.1	-121.88	98.6	-117.9	160.4	153.9	6.48	24.758		
1,500.0	1,499.5	1,479.2	1,462.4	3.2	4.6	-127.41	100.8	-139.4	185.3	178.4	6.89	26.884		
1,600.0	1,598.7	1,573.4	1,554.1	3.5	5.0	-132.19	102.9	-160.7	214.0	206.7	7.29	29.340		
1,700.0	1,697.5	1,666.4	1,644.7	3.7	5.5	-136.26	105.0	-181.7	246.3	238.6	7.69	32.040		
1,800.0	1,795.9	1,758.5	1,734.5	4.0	5.9	-140.01	107.1	-202.6	281.3	273.2	8.09	34.754		
1,900.0	1,894.3	1,850.7	1,824.2	4.4	6.4	-142.99	109.2	-223.4	317.2	308.7	8.52	37.232		
2,000.0	1,992.7	1,942.9	1,914.0	4.7	6.8	-145.37	111.3	-244.2	353.7	344.7	8.96	39.484		
2,100.0	2,091.1	2,035.1	2,003.7	5.0	7.3	-147.31	113.4	-265.1	390.6	381.2	9.41	41.525		
2,200.0	2,189.5	2,127.2	2,093.5	5.4	7.7	-148.92	115.4	-285.9	427.9	418.0	9.86	43.375		
2,300.0	2,287.9	2,219.4	2,183.3	5.7	8.2	-150.27	117.5	-306.7	465.4	455.1	10.33	45.055		
2,400.0	2,386.3	2,311.6	2,273.0	6.1	8.6	-151.42	119.6	-327.6	503.1	492.3	10.80	46.585		
2,500.0	2,484.7	2,403.8	2,362.8	6.5	9.1	-152.41	121.7	-348.4	541.0	529.7	11.27	47.980		
2,600.0	2,583.1	2,495.9	2,452.6	6.8	9.5	-153.28	123.8	-369.2	578.9	567.2	11.75	49.257		
2,700.0	2,681.5	2,588.1	2,542.3	7.2	10.0	-154.04	125.9	-390.1	617.0	604.8	12.24	50.428		
2,800.0	2,779.9	2,680.3	2,632.1	7.6	10.5	-154.71	127.9	-410.9	655.2	642.5	12.72	51.505		
2,900.0	2,878.3	2,772.5	2,721.9	8.0	10.9	-155.30	130.0	-431.7	693.4	680.2	13.21	52.498		
3,000.0	2,976.7	2,864.6	2,811.6	8.3	11.4	-155.84	132.1	-452.6	731.7	718.0	13.70	53.417		
3,100.0	3,075.1	2,956.8	2,901.4	8.7	11.8	-156.32	134.2	-473.4	770.0	755.9	14.19	54.268		
3,200.0	3,173.5	3,049.0	2,991.2	9.1	12.3	-156.76	136.3	-494.2	808.4	793.7	14.68	55.059		
3,300.0	3,271.9	3,141.2	3,080.9	9.5	12.7	-157.15	138.4	-515.1	846.8	831.7	15.18	55.795		
3,400.0	3,370.3	3,233.3	3,170.7	9.9	13.2	-157.51	140.4	-535.9	885.3	869.6	15.67	56.482		
3,500.0	3,468.7	3,325.5	3,260.5	10.3	13.6	-157.85	142.5	-556.7	923.8	907.6	16.17	57.125		
3,600.0	3,567.1	3,417.7	3,350.2	10.7	14.1	-158.15	144.6	-577.6	962.3	945.6	16.67	57.726		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-159.07	-159.07	-58.3	-22.3	62.4	62.4	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-159.07	-159.07	-58.3	-22.3	62.4	62.2	0.23	274.886	
200.0	200.0	201.0	201.0	0.3	0.3	-159.07	-159.07	-58.3	-22.3	62.4	61.7	0.68	92.237	
300.0	300.0	301.0	301.0	0.6	0.6	-159.07	-159.07	-58.3	-22.3	62.4	61.3	1.13	55.416	
400.0	400.0	401.0	401.0	0.8	0.8	-159.07	-159.07	-58.3	-22.3	62.4	60.8	1.58	39.605	
500.0	500.0	501.0	501.0	1.0	1.0	-159.07	-159.07	-58.3	-22.3	62.4	60.4	2.03	30.814	
600.0	600.0	601.0	601.0	1.2	1.2	-159.07	-159.07	-58.3	-22.3	62.4	59.9	2.47	25.217	
700.0	700.0	701.0	701.0	1.5	1.5	-159.07	-159.07	-58.3	-22.3	62.4	59.5	2.92	21.340	
800.0	800.0	801.0	801.0	1.7	1.7	-159.07	-159.07	-58.3	-22.3	62.4	59.0	3.37	18.497	
900.0	900.0	901.0	901.0	1.9	1.9	-159.07	-159.07	-58.3	-22.3	62.4	58.6	3.82	16.322	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-159.07	-159.07	-58.3	-22.3	62.4	58.1	4.27	14.605	
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	-159.07	-159.07	-58.3	-22.3	62.4	57.7	4.72	13.214	
1,200.0	1,200.0	1,201.0	1,201.0	2.6	2.6	-159.07	-159.07	-58.3	-22.3	62.4	57.2	5.17	12.066 CC, ES	
1,300.0	1,300.0	1,301.0	1,301.0	2.8	2.8	-131.76	-131.76	-58.3	-22.3	63.6	57.9	5.61	11.324	
1,400.0	1,399.8	1,400.8	1,400.8	3.0	3.0	135.04	135.04	-58.3	-22.3	67.2	61.1	6.05	11.109	
1,500.0	1,499.5	1,500.5	1,500.5	3.2	3.3	139.75	139.75	-58.3	-22.3	73.6	67.1	6.48	11.357	
1,600.0	1,598.7	1,599.7	1,599.7	3.5	3.5	145.05	145.05	-58.3	-22.3	83.3	76.4	6.91	12.049	
1,700.0	1,697.5	1,701.8	1,701.8	3.7	3.7	150.30	150.30	-57.0	-21.0	94.8	87.5	7.34	12.918	
1,800.0	1,795.9	1,804.6	1,804.4	4.0	3.9	154.95	154.95	-53.3	-17.0	105.3	97.6	7.78	13.541	
1,900.0	1,894.3	1,908.0	1,907.4	4.4	4.2	158.84	158.84	-46.9	-10.3	112.9	104.6	8.23	13.716	
2,000.0	1,992.7	2,009.9	2,008.6	4.7	4.4	162.34	162.34	-38.3	-1.3	117.6	108.9	8.68	13.549	
2,100.0	2,091.1	2,109.6	2,107.4	5.0	4.7	165.53	165.53	-29.6	7.9	122.1	113.0	9.13	13.381	
2,200.0	2,189.5	2,209.3	2,206.3	5.4	4.9	168.48	168.48	-20.8	17.1	127.0	117.4	9.58	13.262	
2,300.0	2,287.9	2,309.0	2,305.2	5.7	5.2	171.21	171.21	-12.0	26.3	132.2	122.2	10.03	13.180	
2,400.0	2,386.3	2,408.6	2,404.0	6.1	5.4	173.73	173.73	-3.3	35.5	137.7	127.2	10.49	13.124	
2,500.0	2,484.7	2,508.3	2,502.9	6.5	5.7	176.05	176.05	5.5	44.7	143.4	132.4	10.96	13.088	
2,600.0	2,583.1	2,608.0	2,601.7	6.8	6.0	178.19	178.19	14.3	53.9	149.3	137.9	11.43	13.066	
2,700.0	2,681.5	2,707.6	2,700.6	7.2	6.3	-179.83	-179.83	23.0	63.1	155.5	143.6	11.91	13.053	
2,800.0	2,779.9	2,807.3	2,799.5	7.6	6.6	-178.01	-178.01	31.8	72.3	161.8	149.4	12.40	13.047	
2,900.0	2,878.3	2,907.0	2,898.3	8.0	6.9	-176.32	-176.32	40.5	81.5	168.2	155.3	12.89	13.045	
3,000.0	2,976.7	3,006.7	2,997.2	8.3	7.2	-174.76	-174.76	49.3	90.7	174.8	161.4	13.40	13.046	
3,100.0	3,075.1	3,106.3	3,096.0	8.7	7.5	-173.31	-173.31	58.1	99.9	181.5	167.6	13.91	13.048	
3,200.0	3,173.5	3,206.0	3,194.9	9.1	7.8	-171.97	-171.97	66.8	109.1	188.3	173.9	14.43	13.051	
3,300.0	3,271.9	3,305.7	3,293.8	9.5	8.1	-170.72	-170.72	75.6	118.3	195.2	180.3	14.96	13.054	
3,400.0	3,370.3	3,405.4	3,392.6	9.9	8.4	-169.56	-169.56	84.4	127.5	202.2	186.7	15.49	13.057	
3,500.0	3,468.7	3,505.0	3,491.5	10.3	8.7	-168.47	-168.47	93.1	136.7	209.3	193.3	16.03	13.059	
3,600.0	3,567.1	3,604.7	3,590.3	10.7	9.0	-167.46	-167.46	101.9	145.9	216.4	199.9	16.57	13.061	
3,700.0	3,665.5	3,704.4	3,689.2	11.1	9.3	-166.51	-166.51	110.6	155.1	223.7	206.5	17.12	13.062	
3,800.0	3,763.9	3,804.1	3,788.1	11.5	9.6	-165.62	-165.62	119.4	164.3	230.9	213.2	17.68	13.063	
3,900.0	3,862.3	3,903.7	3,886.9	11.9	9.9	-164.79	-164.79	128.2	173.5	238.2	220.0	18.24	13.064	
4,000.0	3,960.7	4,003.4	3,985.8	12.3	10.2	-164.00	-164.00	136.9	182.7	245.6	226.8	18.80	13.064	
4,100.0	4,059.1	4,103.1	4,084.7	12.7	10.5	-163.26	-163.26	145.7	191.9	253.0	233.6	19.37	13.063	
4,200.0	4,157.5	4,202.8	4,183.5	13.1	10.8	-162.57	-162.57	154.5	201.1	260.5	240.5	19.94	13.062	
4,300.0	4,255.9	4,302.4	4,282.4	13.5	11.1	-161.91	-161.91	163.2	210.3	267.9	247.4	20.51	13.061	
4,400.0	4,354.3	4,402.1	4,381.2	13.8	11.5	-161.29	-161.29	172.0	219.5	275.5	254.4	21.09	13.059	
4,500.0	4,452.7	4,501.8	4,480.1	14.2	11.8	-160.70	-160.70	180.7	228.7	283.0	261.3	21.67	13.057	
4,600.0	4,551.2	4,598.4	4,576.0	14.6	12.1	-160.18	-160.18	189.0	237.4	290.2	267.9	22.25	13.044	
4,700.0	4,650.3	4,691.4	4,668.5	14.9	12.3	-159.87	-159.87	195.3	243.9	296.3	273.6	22.71	13.049	
4,800.0	4,749.7	4,784.3	4,761.2	15.1	12.5	-159.75	-159.75	199.4	248.3	301.5	278.4	23.11	13.047	
4,900.0	4,849.5	4,877.1	4,854.0	15.3	12.6	-159.81	-159.81	201.5	250.4	305.8	282.3	23.45	13.040	
5,000.0	4,949.4	4,973.5	4,950.4	15.5	12.8	-159.99	-159.99	201.7	250.7	308.8	285.0	23.75	13.002	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,049.4	5,073.5	5,050.4	15.6	13.0	-89.68		201.7	250.7	309.2	285.1	24.09	12.834	
5,200.0	5,149.4	5,173.5	5,150.4	15.8	13.2	-89.68		201.7	250.7	309.2	284.7	24.48	12.630	
5,300.0	5,249.4	5,273.5	5,250.4	15.9	13.3	-89.68		201.7	250.7	309.2	284.3	24.87	12.431	
5,400.0	5,349.4	5,373.5	5,350.4	16.1	13.5	-89.68		201.7	250.7	309.2	283.9	25.27	12.237	
5,500.0	5,449.4	5,473.5	5,450.4	16.2	13.7	-89.68		201.7	250.7	309.2	283.5	25.66	12.048	
5,600.0	5,549.4	5,573.5	5,550.4	16.4	13.9	-89.68		201.7	250.7	309.2	283.1	26.06	11.864	
5,700.0	5,649.4	5,673.5	5,650.4	16.6	14.1	-89.68		201.7	250.7	309.2	282.7	26.46	11.685	
5,800.0	5,749.4	5,773.5	5,750.4	16.7	14.3	-89.68		201.7	250.7	309.2	282.3	26.86	11.510	
5,900.0	5,849.4	5,873.5	5,850.4	16.9	14.5	-89.68		201.7	250.7	309.2	281.9	27.27	11.340	
5,921.1	5,870.5	5,894.6	5,871.5	16.9	14.5	-89.68		201.7	250.7	309.2	281.8	27.35	11.305	
6,000.0	5,949.4	5,973.0	5,949.7	17.1	14.7	-88.79		206.5	250.7	309.3	281.5	27.76	11.141	
6,100.0	6,049.3	6,070.2	6,045.3	17.2	15.0	-86.16		223.5	250.7	309.9	281.4	28.46	10.891	
6,200.0	6,148.0	6,165.6	6,136.3	17.5	15.3	-83.50		251.8	250.7	311.2	282.0	29.27	10.632	
6,300.0	6,243.9	6,259.4	6,221.7	17.7	15.8	-80.99		290.5	250.7	313.1	282.9	30.20	10.368	
6,400.0	6,335.2	6,350.0	6,299.1	18.1	16.3	-78.71		337.6	250.7	315.4	284.2	31.21	10.106	
6,500.0	6,420.5	6,442.9	6,372.1	18.5	16.9	-76.56		394.9	250.7	318.0	285.7	32.34	9.832	
6,600.0	6,498.3	6,532.9	6,435.7	18.9	17.6	-74.69		458.6	250.7	320.7	287.1	33.54	9.560	
6,700.0	6,567.2	6,622.0	6,490.8	19.5	18.4	-73.09		528.5	250.7	323.3	288.4	34.83	9.283	
6,800.0	6,626.0	6,710.3	6,537.0	20.2	19.3	-71.75		603.7	250.7	325.7	289.5	36.20	8.997	
6,900.0	6,673.8	6,800.0	6,574.8	21.1	20.3	-70.67		685.0	250.7	327.7	290.0	37.70	8.693	
7,000.0	6,709.8	6,885.2	6,601.6	22.1	21.4	-69.91		765.9	250.7	329.2	290.0	39.29	8.381	
7,100.0	6,733.3	6,972.1	6,619.5	23.3	22.6	-69.42		850.8	250.7	330.3	289.2	41.05	8.046	
7,200.0	6,743.9	7,058.9	6,627.7	24.5	23.8	-69.22		937.1	250.7	330.7	287.7	42.97	7.695	
7,300.0	6,744.6	7,153.4	6,627.6	25.9	25.3	-69.11		1,031.7	250.7	330.9	285.4	45.50	7.273	
7,400.0	6,744.7	7,253.4	6,626.7	27.3	26.8	-68.95		1,131.7	250.7	331.3	283.0	48.35	6.852	
7,500.0	6,744.8	7,353.4	6,625.8	28.8	28.4	-68.78		1,231.6	250.7	331.7	280.4	51.28	6.467	
7,600.0	6,744.9	7,453.4	6,624.8	30.3	30.0	-68.62		1,331.6	250.7	332.1	277.8	54.29	6.116	
7,700.0	6,745.0	7,553.4	6,623.9	31.9	31.7	-68.45		1,431.6	250.7	332.4	275.1	57.35	5.796	
7,800.0	6,745.1	7,653.4	6,623.0	33.5	33.4	-68.29		1,531.6	250.7	332.8	272.4	60.46	5.505	
7,900.0	6,745.2	7,753.4	6,622.1	35.2	35.1	-68.12		1,631.6	250.7	333.2	269.6	63.61	5.238	
8,000.0	6,745.3	7,853.3	6,621.1	36.8	36.8	-67.96		1,731.6	250.7	333.6	266.8	66.79	4.994	
8,100.0	6,745.4	7,953.3	6,620.2	38.5	38.6	-67.79		1,831.6	250.7	334.0	264.0	70.00	4.771	
8,200.0	6,745.5	8,053.3	6,619.3	40.3	40.4	-67.63		1,931.6	250.7	334.4	261.1	73.24	4.565	
8,300.0	6,745.6	8,153.3	6,618.4	42.0	42.2	-67.47		2,031.6	250.7	334.8	258.3	76.49	4.377	
8,400.0	6,745.7	8,253.3	6,617.4	43.7	43.9	-67.31		2,131.6	250.7	335.1	255.4	79.75	4.202	
8,500.0	6,745.8	8,353.3	6,616.5	45.5	45.7	-67.14		2,231.6	250.7	335.5	252.5	83.03	4.041	
8,600.0	6,746.0	8,453.3	6,615.6	47.3	47.6	-66.98		2,331.5	250.7	335.9	249.6	86.32	3.892	
8,700.0	6,746.1	8,553.3	6,614.7	49.1	49.4	-66.82		2,431.5	250.7	336.4	246.7	89.62	3.753	
8,800.0	6,746.2	8,653.3	6,613.7	50.9	51.2	-66.66		2,531.5	250.7	336.8	243.8	92.93	3.624	
8,900.0	6,746.3	8,753.3	6,612.8	52.7	53.0	-66.50		2,631.5	250.7	337.2	240.9	96.24	3.504	
9,000.0	6,746.4	8,853.3	6,611.9	54.5	54.9	-66.34		2,731.5	250.7	337.6	238.0	99.55	3.391	
9,100.0	6,746.5	8,953.3	6,611.0	56.3	56.7	-66.18		2,831.5	250.7	338.0	235.1	102.86	3.286	
9,200.0	6,746.6	9,053.3	6,610.0	58.1	58.6	-66.02		2,931.5	250.7	338.4	232.2	106.18	3.187	
9,300.0	6,746.7	9,153.3	6,609.1	60.0	60.4	-65.86		3,031.5	250.7	338.8	229.3	109.50	3.094	
9,400.0	6,746.8	9,253.3	6,608.2	61.8	62.3	-65.70		3,131.5	250.7	339.3	226.4	112.82	3.007	
9,500.0	6,746.9	9,353.3	6,607.3	63.7	64.2	-65.54		3,231.5	250.7	339.7	223.5	116.13	2.925	
9,600.0	6,747.0	9,453.3	6,606.3	65.5	66.0	-65.38		3,331.4	250.7	340.1	220.7	119.45	2.847	
9,700.0	6,747.1	9,553.3	6,605.4	67.4	67.9	-65.23		3,431.4	250.7	340.5	217.8	122.76	2.774	
9,800.0	6,747.2	9,653.3	6,604.5	69.2	69.8	-65.07		3,531.4	250.7	341.0	214.9	126.07	2.705	
9,900.0	6,747.3	9,753.2	6,603.6	71.1	71.6	-64.91		3,631.4	250.7	341.4	212.0	129.38	2.639	
10,000.0	6,747.4	9,853.2	6,602.6	72.9	73.5	-64.76		3,731.4	250.7	341.8	209.2	132.68	2.576	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,100.0	6,747.5	9,953.2	6,601.7	74.8	75.4	-64.60	3,831.4	250.7	342.3	206.3	135.98	2.517		
10,200.0	6,747.6	10,053.2	6,600.8	76.7	77.3	-64.45	3,931.4	250.7	342.7	203.5	139.28	2.461		
10,300.0	6,747.7	10,153.2	6,599.9	78.5	79.2	-64.29	4,031.4	250.7	343.2	200.6	142.57	2.407		
10,400.0	6,747.8	10,253.2	6,598.9	80.4	81.0	-64.14	4,131.4	250.7	343.6	197.8	145.86	2.356		
10,500.0	6,747.9	10,353.2	6,598.0	82.3	82.9	-63.98	4,231.4	250.7	344.1	194.9	149.14	2.307		
10,600.0	6,748.0	10,453.2	6,597.1	84.2	84.8	-63.83	4,331.4	250.7	344.5	192.1	152.41	2.260		
10,700.0	6,748.2	10,553.2	6,596.2	86.0	86.7	-63.67	4,431.3	250.7	345.0	189.3	155.69	2.216		
10,800.0	6,748.3	10,653.2	6,595.2	87.9	88.6	-63.52	4,531.3	250.7	345.4	186.5	158.95	2.173		
10,900.0	6,748.4	10,753.2	6,594.3	89.8	90.5	-63.37	4,631.3	250.7	345.9	183.7	162.21	2.132		
11,000.0	6,748.5	10,853.2	6,593.4	91.7	92.4	-63.22	4,731.3	250.7	346.4	180.9	165.47	2.093		
11,100.0	6,748.6	10,953.2	6,592.5	93.6	94.3	-63.06	4,831.3	250.7	346.8	178.1	168.71	2.056		
11,200.0	6,748.7	11,053.2	6,591.5	95.5	96.2	-62.91	4,931.3	250.7	347.3	175.3	171.96	2.020		
11,300.0	6,748.8	11,153.2	6,590.6	97.3	98.1	-62.76	5,031.3	250.7	347.8	172.6	175.19	1.985		
11,400.0	6,748.9	11,253.2	6,589.7	99.2	100.0	-62.61	5,131.3	250.7	348.2	169.8	178.42	1.952		
11,500.0	6,749.0	11,353.2	6,588.8	101.1	101.9	-62.46	5,231.3	250.7	348.7	167.1	181.64	1.920		
11,600.0	6,749.1	11,453.2	6,587.8	103.0	103.8	-62.31	5,331.3	250.7	349.2	164.3	184.86	1.889		
11,700.0	6,749.2	11,553.2	6,586.9	104.9	105.7	-62.16	5,431.2	250.7	349.7	161.6	188.07	1.859		
11,800.0	6,749.3	11,653.1	6,586.0	106.8	107.6	-62.01	5,531.2	250.7	350.2	158.9	191.27	1.831		
11,900.0	6,749.4	11,753.1	6,585.1	108.7	109.5	-61.86	5,631.2	250.7	350.6	156.2	194.46	1.803		
12,000.0	6,749.5	11,853.1	6,584.1	110.6	111.4	-61.72	5,731.2	250.7	351.1	153.5	197.65	1.777		
12,100.0	6,749.6	11,953.1	6,583.2	112.5	113.3	-61.57	5,831.2	250.7	351.6	150.8	200.83	1.751		
12,200.0	6,749.7	12,053.1	6,582.3	114.4	115.2	-61.42	5,931.2	250.7	352.1	148.1	204.01	1.726		
12,300.0	6,749.8	12,153.1	6,581.4	116.3	117.1	-61.27	6,031.2	250.7	352.6	145.4	207.17	1.702		
12,400.0	6,749.9	12,253.1	6,580.4	118.2	119.0	-61.13	6,131.2	250.7	353.1	142.8	210.33	1.679		
12,500.0	6,750.0	12,353.1	6,579.5	120.1	120.9	-60.98	6,231.2	250.7	353.6	140.1	213.48	1.656		
12,600.0	6,750.1	12,453.1	6,578.6	122.0	122.8	-60.84	6,331.2	250.7	354.1	137.5	216.63	1.635		
12,700.0	6,750.2	12,553.1	6,577.7	123.9	124.7	-60.69	6,431.1	250.7	354.6	134.8	219.77	1.614		
12,800.0	6,750.4	12,653.1	6,576.7	125.8	126.6	-60.55	6,531.1	250.7	355.1	132.2	222.90	1.593		
12,900.0	6,750.5	12,753.1	6,575.8	127.7	128.5	-60.40	6,631.1	250.7	355.6	129.6	226.02	1.573		
13,000.0	6,750.6	12,853.1	6,574.9	129.6	130.4	-60.26	6,731.1	250.7	356.1	127.0	229.13	1.554		
13,100.0	6,750.7	12,953.1	6,574.0	131.5	132.3	-60.11	6,831.1	250.7	356.6	124.4	232.24	1.536		
13,200.0	6,750.8	13,053.1	6,573.0	133.4	134.2	-59.97	6,931.1	250.7	357.2	121.8	235.34	1.518		
13,300.0	6,750.9	13,153.1	6,572.1	135.3	136.1	-59.83	7,031.1	250.7	357.7	119.2	238.43	1.500		
13,400.0	6,751.0	13,253.1	6,571.2	137.2	138.1	-59.69	7,131.1	250.7	358.2	116.7	241.52	1.483 Level 3		
13,418.7	6,751.0	13,271.8	6,571.0	137.6	138.4	-59.66	7,149.8	250.7	358.3	116.2	242.09	1.480 Level 3, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	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	137.434		
200.0	200.0	201.0	201.0	0.3	0.3	-159.07	-29.1	-11.1	31.2	30.5	0.68	46.116		
300.0	300.0	301.0	301.0	0.6	0.6	-159.07	-29.1	-11.1	31.2	30.1	1.13	27.706		
400.0	400.0	401.0	401.0	0.8	0.8	-159.07	-29.1	-11.1	31.2	29.6	1.58	19.802		
500.0	500.0	501.0	501.0	1.0	1.0	-159.07	-29.1	-11.1	31.2	29.2	2.03	15.406		
600.0	600.0	601.0	601.0	1.2	1.2	-159.07	-29.1	-11.1	31.2	28.7	2.47	12.608		
700.0	700.0	701.0	701.0	1.5	1.5	-159.07	-29.1	-11.1	31.2	28.3	2.92	10.669		
800.0	800.0	801.0	801.0	1.7	1.7	-159.07	-29.1	-11.1	31.2	27.8	3.37	9.248		
900.0	900.0	901.0	901.0	1.9	1.9	-159.07	-29.1	-11.1	31.2	27.4	3.82	8.160		
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-159.07	-29.1	-11.1	31.2	26.9	4.27	7.302		
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	-159.07	-29.1	-11.1	31.2	26.5	4.72	6.607		
1,200.0	1,200.0	1,201.0	1,201.0	2.6	2.6	-159.07	-29.1	-11.1	31.2	26.0	5.17	6.033 CC, ES		
1,300.0	1,300.0	1,301.0	1,301.0	2.8	2.8	132.92	-29.1	-11.1	32.4	26.7	5.61	5.766		
1,400.0	1,399.8	1,400.8	1,400.8	3.0	3.0	138.95	-29.1	-11.1	36.1	30.1	6.04	5.978		
1,500.0	1,499.5	1,500.2	1,500.2	3.2	3.3	148.79	-28.3	-12.7	43.3	36.9	6.47	6.702		
1,600.0	1,598.7	1,598.5	1,598.3	3.5	3.5	160.43	-25.7	-17.1	55.8	48.9	6.87	8.115		
1,700.0	1,697.5	1,695.0	1,694.5	3.7	3.7	170.42	-21.6	-24.3	74.7	67.5	7.28	10.272		
1,800.0	1,795.9	1,789.7	1,788.5	4.0	3.9	177.89	-15.9	-34.1	99.1	91.4	7.70	12.869		
1,900.0	1,894.3	1,885.0	1,882.8	4.4	4.2	-176.79	-9.1	-45.8	126.1	117.9	8.15	15.477		
2,000.0	1,992.7	1,980.7	1,977.6	4.7	4.4	-173.31	-2.3	-57.6	153.8	145.2	8.60	17.888		
2,100.0	2,091.1	2,076.5	2,072.4	5.0	4.7	-170.89	4.5	-69.5	181.8	172.7	9.05	20.081		
2,200.0	2,189.5	2,172.2	2,167.1	5.4	5.0	-169.11	11.4	-81.3	210.0	200.5	9.52	22.069		
2,300.0	2,287.9	2,268.0	2,261.9	5.7	5.2	-167.76	18.2	-93.1	238.4	228.5	9.99	23.872		
2,400.0	2,386.3	2,363.7	2,356.7	6.1	5.5	-166.69	25.0	-105.0	266.9	256.5	10.46	25.508		
2,500.0	2,484.7	2,459.5	2,451.4	6.5	5.8	-165.83	31.9	-116.8	295.5	284.6	10.95	26.996		
2,600.0	2,583.1	2,555.2	2,546.2	6.8	6.1	-165.12	38.7	-128.6	324.1	312.7	11.43	28.353		
2,700.0	2,681.5	2,651.0	2,641.0	7.2	6.4	-164.53	45.5	-140.5	352.8	340.8	11.92	29.593		
2,800.0	2,779.9	2,746.7	2,735.7	7.6	6.7	-164.03	52.4	-152.3	381.4	369.0	12.41	30.730		
2,900.0	2,878.3	2,842.5	2,830.5	8.0	7.0	-163.59	59.2	-164.1	410.1	397.2	12.91	31.774		
3,000.0	2,976.7	2,938.2	2,925.3	8.3	7.3	-163.21	66.0	-176.0	438.9	425.5	13.41	32.737		
3,100.0	3,075.1	3,034.0	3,020.1	8.7	7.7	-162.88	72.9	-187.8	467.6	453.7	13.91	33.625		
3,200.0	3,173.5	3,129.7	3,114.8	9.1	8.0	-162.59	79.7	-199.7	496.4	481.9	14.41	34.448		
3,300.0	3,271.9	3,225.5	3,209.6	9.5	8.3	-162.33	86.6	-211.5	525.1	510.2	14.91	35.212		
3,400.0	3,370.3	3,321.2	3,304.4	9.9	8.6	-162.10	93.4	-223.3	553.9	538.5	15.42	35.922		
3,500.0	3,468.7	3,417.0	3,399.1	10.3	8.9	-161.89	100.2	-235.2	582.7	566.7	15.93	36.584		
3,600.0	3,567.1	3,512.7	3,493.9	10.7	9.2	-161.70	107.1	-247.0	611.4	595.0	16.44	37.203		
3,700.0	3,665.5	3,608.5	3,588.7	11.1	9.6	-161.52	113.9	-258.8	640.2	623.3	16.95	37.781		
3,800.0	3,763.9	3,704.2	3,683.4	11.5	9.9	-161.36	120.7	-270.7	669.0	651.6	17.46	38.324		
3,900.0	3,862.3	3,800.0	3,778.2	11.9	10.2	-161.22	127.6	-282.5	697.8	679.9	17.97	38.833		
4,000.0	3,960.7	3,895.7	3,873.0	12.3	10.5	-161.08	134.4	-294.3	726.6	708.1	18.48	39.313		
4,100.0	4,059.1	3,991.5	3,967.7	12.7	10.9	-160.96	141.2	-306.2	755.4	736.4	19.00	39.764		
4,200.0	4,157.5	4,087.2	4,062.5	13.1	11.2	-160.85	148.1	-318.0	784.2	764.7	19.51	40.190		
4,300.0	4,255.9	4,183.0	4,157.3	13.5	11.5	-160.74	154.9	-329.9	813.1	793.0	20.03	40.593		
4,400.0	4,354.3	4,278.7	4,252.0	13.8	11.8	-160.64	161.7	-341.7	841.9	821.3	20.55	40.974		
4,500.0	4,452.7	4,374.5	4,346.8	14.2	12.2	-160.55	168.6	-353.5	870.7	849.6	21.06	41.335		
4,600.0	4,551.2	4,470.4	4,441.8	14.6	12.5	-160.56	175.4	-365.4	898.9	877.3	21.62	41.582		
4,700.0	4,650.3	4,567.1	4,537.5	14.9	12.8	-160.57	182.3	-377.3	924.2	902.0	22.15	41.721		
4,800.0	4,749.7	4,661.9	4,631.2	15.1	13.2	-160.47	190.2	-391.0	945.8	923.2	22.69	41.693		
4,900.0	4,849.5	4,820.7	4,789.3	15.3	13.5	-160.35	197.0	-402.7	960.8	937.7	23.19	41.439		
5,000.0	4,949.4	4,961.4	4,929.8	15.5	13.8	-160.30	200.4	-408.7	968.4	944.8	23.63	40.982		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,049.4	5,082.0	5,050.4	15.6	14.0	-89.95	-89.95	200.9	-409.4	969.3	945.3	24.01	40.366	
5,200.0	5,149.4	5,182.0	5,150.4	15.8	14.1	-89.95	-89.95	200.9	-409.4	969.3	944.9	24.40	39.727	
5,300.0	5,249.4	5,282.0	5,250.4	15.9	14.3	-89.95	-89.95	200.9	-409.4	969.3	944.6	24.79	39.100	
5,400.0	5,349.4	5,382.0	5,350.4	16.1	14.5	-89.95	-89.95	200.9	-409.4	969.3	944.2	25.18	38.490	
5,500.0	5,449.4	5,482.0	5,450.4	16.2	14.7	-89.95	-89.95	200.9	-409.4	969.3	943.8	25.58	37.895	
5,600.0	5,549.4	5,582.0	5,550.4	16.4	14.8	-89.95	-89.95	200.9	-409.4	969.3	943.4	25.98	37.317	
5,700.0	5,649.4	5,682.0	5,650.4	16.6	15.0	-89.95	-89.95	200.9	-409.4	969.3	943.0	26.37	36.753	
5,800.0	5,749.4	5,782.0	5,750.4	16.7	15.2	-89.95	-89.95	200.9	-409.4	969.3	942.6	26.77	36.204	
5,900.0	5,849.4	5,882.0	5,850.4	16.9	15.4	-89.95	-89.95	200.9	-409.4	969.3	942.2	27.18	35.669	
5,963.2	5,912.6	5,945.2	5,913.6	17.0	15.5	-89.95	-89.95	200.9	-409.4	969.3	941.9	27.43	35.338	
6,000.0	5,949.4	5,982.0	5,950.4	17.1	15.6	-89.95	-89.95	200.9	-409.4	969.3	941.8	27.58	35.147	
6,100.0	6,049.3	6,081.5	6,049.5	17.2	15.8	-89.67	-89.67	208.7	-409.4	969.4	941.3	28.04	34.573	
6,200.0	6,148.0	6,180.3	6,146.1	17.5	16.1	-89.36	-89.36	229.0	-409.4	969.4	940.8	28.61	33.879	
6,300.0	6,243.9	6,278.4	6,238.7	17.7	16.4	-89.06	-89.06	261.4	-409.4	969.5	940.2	29.33	33.059	
6,400.0	6,335.2	6,376.0	6,325.8	18.1	16.8	-88.78	-88.78	305.1	-409.4	969.6	939.4	30.20	32.104	
6,500.0	6,420.5	6,473.0	6,406.3	18.5	17.3	-88.52	-88.52	359.2	-409.4	969.7	938.4	31.28	31.004	
6,600.0	6,498.3	6,569.5	6,478.9	18.9	17.9	-88.29	-88.29	422.7	-409.4	969.8	937.2	32.59	29.761	
6,700.0	6,567.2	6,665.5	6,542.6	19.5	18.6	-88.08	-88.08	494.5	-409.4	969.9	935.7	34.16	28.395	
6,800.0	6,626.0	6,761.2	6,596.6	20.2	19.5	-87.91	-87.91	573.4	-409.4	970.0	934.0	36.00	26.941	
6,900.0	6,673.8	6,856.6	6,640.3	21.1	20.5	-87.77	-87.77	658.2	-409.4	970.1	932.0	38.12	25.446	
7,000.0	6,709.8	6,951.8	6,673.0	22.1	21.6	-87.67	-87.67	747.5	-409.4	970.2	929.7	40.50	23.957	
7,100.0	6,733.3	7,046.8	6,694.3	23.3	22.8	-87.60	-87.60	840.0	-409.4	970.2	927.1	43.08	22.519	
7,200.0	6,743.9	7,141.7	6,703.9	24.5	24.1	-87.58	-87.58	934.4	-409.5	970.2	924.4	45.84	21.165	
7,300.0	6,744.6	7,240.2	6,704.6	25.9	25.5	-87.58	-87.58	1,032.8	-409.5	970.2	921.4	48.78	19.889	
7,400.0	6,744.7	7,340.2	6,704.7	27.3	27.0	-87.58	-87.58	1,132.8	-409.5	970.2	918.4	51.86	18.709	
7,500.0	6,744.8	7,440.2	6,704.8	28.8	28.6	-87.58	-87.58	1,232.8	-409.5	970.2	915.2	55.03	17.631	
7,600.0	6,744.9	7,540.2	6,704.9	30.3	30.1	-87.58	-87.58	1,332.8	-409.5	970.2	911.9	58.28	16.647	
7,700.0	6,745.0	7,640.2	6,705.0	31.9	31.8	-87.58	-87.58	1,432.8	-409.5	970.2	908.6	61.60	15.750	
7,800.0	6,745.1	7,740.2	6,705.1	33.5	33.4	-87.58	-87.58	1,532.8	-409.5	970.2	905.2	64.98	14.931	
7,900.0	6,745.2	7,840.2	6,705.2	35.2	35.1	-87.58	-87.58	1,632.8	-409.5	970.2	901.8	68.40	14.184	
8,000.0	6,745.3	7,940.2	6,705.3	36.8	36.8	-87.58	-87.58	1,732.8	-409.5	970.2	898.4	71.87	13.499	
8,100.0	6,745.4	8,040.2	6,705.4	38.5	38.6	-87.58	-87.58	1,832.8	-409.5	970.2	894.8	75.38	12.872	
8,200.0	6,745.5	8,140.2	6,705.5	40.3	40.3	-87.58	-87.58	1,932.8	-409.5	970.2	891.3	78.91	12.295	
8,300.0	6,745.6	8,240.2	6,705.6	42.0	42.1	-87.58	-87.58	2,032.8	-409.5	970.2	887.8	82.47	11.764	
8,400.0	6,745.7	8,340.2	6,705.7	43.7	43.8	-87.58	-87.58	2,132.8	-409.5	970.2	884.2	86.06	11.274	
8,500.0	6,745.8	8,440.2	6,705.8	45.5	45.6	-87.58	-87.58	2,232.8	-409.5	970.2	880.6	89.66	10.821	
8,600.0	6,746.0	8,540.2	6,706.0	47.3	47.4	-87.58	-87.58	2,332.8	-409.5	970.2	876.9	93.29	10.400	
8,700.0	6,746.1	8,640.2	6,706.1	49.1	49.2	-87.58	-87.58	2,432.8	-409.5	970.2	873.3	96.93	10.009	
8,800.0	6,746.2	8,740.2	6,706.2	50.9	51.1	-87.58	-87.58	2,532.8	-409.5	970.2	869.6	100.59	9.646	
8,900.0	6,746.3	8,840.2	6,706.3	52.7	52.9	-87.58	-87.58	2,632.8	-409.5	970.2	866.0	104.26	9.306	
9,000.0	6,746.4	8,940.2	6,706.4	54.5	54.7	-87.58	-87.58	2,732.8	-409.5	970.2	862.3	107.94	8.989	
9,100.0	6,746.5	9,040.2	6,706.5	56.3	56.5	-87.58	-87.58	2,832.8	-409.5	970.2	858.6	111.63	8.692	
9,200.0	6,746.6	9,140.2	6,706.6	58.1	58.4	-87.58	-87.58	2,932.8	-409.5	970.2	854.9	115.33	8.413	
9,300.0	6,746.7	9,240.2	6,706.7	60.0	60.2	-87.58	-87.58	3,032.8	-409.5	970.2	851.2	119.04	8.150	
9,400.0	6,746.8	9,340.2	6,706.8	61.8	62.1	-87.58	-87.58	3,132.8	-409.5	970.2	847.5	122.76	7.904	
9,500.0	6,746.9	9,440.2	6,706.9	63.7	63.9	-87.58	-87.58	3,232.8	-409.5	970.2	843.8	126.48	7.671	
9,600.0	6,747.0	9,540.2	6,707.0	65.5	65.8	-87.58	-87.58	3,332.8	-409.5	970.2	840.0	130.21	7.451	
9,700.0	6,747.1	9,640.2	6,707.1	67.4	67.7	-87.58	-87.58	3,432.8	-409.5	970.2	836.3	133.95	7.243	
9,800.0	6,747.2	9,740.2	6,707.2	69.2	69.5	-87.58	-87.58	3,532.8	-409.5	970.2	832.5	137.69	7.046	
9,900.0	6,747.3	9,840.2	6,707.3	71.1	71.4	-87.58	-87.58	3,632.8	-409.5	970.2	828.8	141.44	6.860	
10,000.0	6,747.4	9,940.2	6,707.4	72.9	73.3	-87.58	-87.58	3,732.8	-409.5	970.2	825.0	145.20	6.682	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,100.0	6,747.5	10,040.2	6,707.5	74.8	75.1	-87.58	3,832.8	-409.5	970.2	821.3	148.95	6.514		
10,200.0	6,747.6	10,140.2	6,707.6	76.7	77.0	-87.58	3,932.8	-409.5	970.2	817.5	152.71	6.353		
10,300.0	6,747.7	10,240.2	6,707.7	78.5	78.9	-87.58	4,032.8	-409.5	970.2	813.8	156.48	6.200		
10,400.0	6,747.8	10,340.2	6,707.8	80.4	80.8	-87.58	4,132.8	-409.5	970.2	810.0	160.25	6.055		
10,500.0	6,747.9	10,440.2	6,707.9	82.3	82.7	-87.58	4,232.8	-409.5	970.2	806.2	164.02	5.915		
10,600.0	6,748.0	10,540.2	6,708.0	84.2	84.5	-87.58	4,332.8	-409.5	970.2	802.4	167.80	5.782		
10,700.0	6,748.2	10,640.2	6,708.1	86.0	86.4	-87.58	4,432.8	-409.5	970.2	798.7	171.57	5.655		
10,800.0	6,748.3	10,740.2	6,708.3	87.9	88.3	-87.58	4,532.8	-409.5	970.2	794.9	175.35	5.533		
10,900.0	6,748.4	10,840.2	6,708.4	89.8	90.2	-87.58	4,632.8	-409.5	970.2	791.1	179.14	5.416		
11,000.0	6,748.5	10,940.2	6,708.5	91.7	92.1	-87.58	4,732.8	-409.5	970.2	787.3	182.92	5.304		
11,100.0	6,748.6	11,040.2	6,708.6	93.6	94.0	-87.58	4,832.8	-409.5	970.2	783.5	186.71	5.197		
11,200.0	6,748.7	11,140.2	6,708.7	95.5	95.9	-87.58	4,932.8	-409.5	970.2	779.7	190.50	5.093		
11,300.0	6,748.8	11,240.2	6,708.8	97.3	97.8	-87.58	5,032.8	-409.5	970.2	776.0	194.29	4.994		
11,400.0	6,748.9	11,340.2	6,708.9	99.2	99.7	-87.58	5,132.8	-409.5	970.2	772.2	198.08	4.898		
11,500.0	6,749.0	11,440.2	6,709.0	101.1	101.6	-87.58	5,232.8	-409.5	970.2	768.4	201.88	4.806		
11,600.0	6,749.1	11,540.2	6,709.1	103.0	103.4	-87.58	5,332.8	-409.5	970.2	764.6	205.67	4.717		
11,700.0	6,749.2	11,640.2	6,709.2	104.9	105.3	-87.58	5,432.8	-409.5	970.2	760.8	209.47	4.632		
11,800.0	6,749.3	11,740.2	6,709.3	106.8	107.2	-87.58	5,532.8	-409.5	970.2	757.0	213.27	4.549		
11,900.0	6,749.4	11,840.2	6,709.4	108.7	109.1	-87.58	5,632.8	-409.5	970.2	753.2	217.07	4.470		
12,000.0	6,749.5	11,940.2	6,709.5	110.6	111.0	-87.58	5,732.8	-409.5	970.3	749.4	220.87	4.393		
12,100.0	6,749.6	12,040.2	6,709.6	112.5	112.9	-87.58	5,832.8	-409.5	970.3	745.6	224.68	4.318		
12,200.0	6,749.7	12,140.2	6,709.7	114.4	114.8	-87.58	5,932.8	-409.5	970.3	741.8	228.48	4.247		
12,300.0	6,749.8	12,240.2	6,709.8	116.3	116.7	-87.58	6,032.8	-409.5	970.3	738.0	232.29	4.177		
12,400.0	6,749.9	12,340.2	6,709.9	118.2	118.6	-87.58	6,132.8	-409.5	970.3	734.2	236.09	4.110		
12,500.0	6,750.0	12,440.2	6,710.0	120.1	120.5	-87.58	6,232.8	-409.5	970.3	730.4	239.90	4.044		
12,600.0	6,750.1	12,540.2	6,710.1	122.0	122.5	-87.58	6,332.8	-409.5	970.3	726.5	243.71	3.981		
12,700.0	6,750.2	12,640.2	6,710.2	123.9	124.4	-87.58	6,432.8	-409.5	970.3	722.7	247.52	3.920		
12,800.0	6,750.4	12,740.2	6,710.3	125.8	126.3	-87.58	6,532.8	-409.5	970.3	718.9	251.33	3.861		
12,900.0	6,750.5	12,840.2	6,710.5	127.7	128.2	-87.58	6,632.8	-409.5	970.3	715.1	255.14	3.803		
13,000.0	6,750.6	12,940.2	6,710.6	129.6	130.1	-87.58	6,732.8	-409.5	970.3	711.3	258.95	3.747		
13,100.0	6,750.7	13,040.2	6,710.7	131.5	132.0	-87.58	6,832.8	-409.5	970.3	707.5	262.76	3.693		
13,200.0	6,750.8	13,140.2	6,710.8	133.4	133.9	-87.58	6,932.8	-409.5	970.3	703.7	266.58	3.640		
13,300.0	6,750.9	13,240.2	6,710.9	135.3	135.8	-87.58	7,032.8	-409.5	970.3	699.9	270.39	3.588		
13,400.0	6,751.0	13,340.2	6,711.0	137.2	137.7	-87.58	7,132.8	-409.5	970.3	696.1	274.21	3.538		
13,418.7	6,751.0	13,358.8	6,711.0	137.6	138.0	-87.58	7,151.5	-409.5	970.3	695.3	274.92	3.529 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-159.91	-159.91	-83.8	-30.7	89.2	89.2	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-159.91	-159.91	-83.8	-30.7	89.2	89.0	0.23	393.005	
200.0	200.0	201.0	201.0	0.3	0.3	-159.91	-159.91	-83.8	-30.7	89.2	88.5	0.68	131.872	
300.0	300.0	301.0	301.0	0.6	0.6	-159.91	-159.91	-83.8	-30.7	89.2	88.1	1.13	79.229	
400.0	400.0	401.0	401.0	0.8	0.8	-159.91	-159.91	-83.8	-30.7	89.2	87.6	1.58	56.624	
500.0	500.0	501.0	501.0	1.0	1.0	-159.91	-159.91	-83.8	-30.7	89.2	87.2	2.03	44.055	
600.0	600.0	601.0	601.0	1.2	1.2	-159.91	-159.91	-83.8	-30.7	89.2	86.7	2.47	36.052	
700.0	700.0	701.0	701.0	1.5	1.5	-159.91	-159.91	-83.8	-30.7	89.2	86.3	2.92	30.510	
800.0	800.0	801.0	801.0	1.7	1.7	-159.91	-159.91	-83.8	-30.7	89.2	85.8	3.37	26.445	
900.0	900.0	901.0	901.0	1.9	1.9	-159.91	-159.91	-83.8	-30.7	89.2	85.4	3.82	23.335	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-159.91	-159.91	-83.8	-30.7	89.2	84.9	4.27	20.880	
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	-159.91	-159.91	-83.8	-30.7	89.2	84.5	4.72	18.893	
1,200.0	1,200.0	1,201.0	1,201.0	2.6	2.6	-159.91	-159.91	-83.8	-30.7	89.2	84.0	5.17	17.251 CC, ES	
1,300.0	1,300.0	1,301.0	1,301.0	2.8	2.8	-130.58	-130.58	-83.8	-30.7	90.3	84.7	5.61	16.098	
1,400.0	1,399.8	1,400.8	1,400.8	3.0	3.0	132.96	132.96	-83.8	-30.7	93.8	87.8	6.05	15.521	
1,500.0	1,499.5	1,500.5	1,500.5	3.2	3.3	136.52	136.52	-83.8	-30.7	100.0	93.5	6.48	15.427	
1,600.0	1,598.7	1,599.7	1,599.7	3.5	3.5	140.80	140.80	-83.8	-30.7	109.2	102.3	6.92	15.781	
1,700.0	1,697.5	1,698.5	1,698.5	3.7	3.7	145.30	145.30	-83.8	-30.7	121.7	114.4	7.35	16.557	
1,800.0	1,795.9	1,796.9	1,796.9	4.0	3.9	149.50	149.50	-83.8	-30.7	136.8	129.0	7.80	17.530	
1,900.0	1,894.3	1,895.3	1,895.3	4.4	4.1	152.89	152.89	-83.8	-30.7	152.5	144.2	8.26	18.461	
2,000.0	1,992.7	1,993.7	1,993.7	4.7	4.4	155.64	155.64	-83.8	-30.7	168.5	159.8	8.71	19.341	
2,100.0	2,091.1	2,094.5	2,094.5	5.0	4.6	158.27	158.27	-82.6	-30.8	184.4	175.2	9.17	20.098	
2,200.0	2,189.5	2,195.5	2,195.4	5.4	4.8	161.15	161.15	-78.9	-31.5	199.2	189.6	9.63	20.694	
2,300.0	2,287.9	2,296.4	2,296.1	5.7	5.1	164.26	164.26	-72.4	-32.5	213.3	203.2	10.07	21.170	
2,400.0	2,386.3	2,397.1	2,396.4	6.1	5.3	167.59	167.59	-63.4	-34.0	226.9	216.3	10.52	21.560	
2,500.0	2,484.7	2,496.1	2,494.8	6.5	5.5	170.96	170.96	-52.5	-35.8	240.4	229.4	10.97	21.908	
2,600.0	2,583.1	2,594.3	2,592.3	6.8	5.7	173.98	173.98	-41.5	-37.6	254.6	243.1	11.43	22.269	
2,700.0	2,681.5	2,692.4	2,689.8	7.2	6.0	176.68	176.68	-30.4	-39.4	269.4	257.5	11.90	22.636	
2,800.0	2,779.9	2,790.5	2,787.3	7.6	6.2	179.10	179.10	-19.4	-41.2	284.8	272.4	12.38	22.998	
2,900.0	2,878.3	2,888.6	2,884.8	8.0	6.5	-178.73	-178.73	-8.4	-43.0	300.6	287.7	12.87	23.351	
3,000.0	2,976.7	2,986.8	2,982.2	8.3	6.7	-176.78	-176.78	2.6	-44.8	316.8	303.4	13.37	23.691	
3,100.0	3,075.1	3,084.9	3,079.7	8.7	7.0	-175.02	-175.02	13.7	-46.6	333.3	319.4	13.88	24.015	
3,200.0	3,173.5	3,183.0	3,177.2	9.1	7.3	-173.42	-173.42	24.7	-48.4	350.1	335.7	14.39	24.323	
3,300.0	3,271.9	3,281.2	3,274.7	9.5	7.5	-171.97	-171.97	35.7	-50.2	367.1	352.2	14.91	24.615	
3,400.0	3,370.3	3,379.3	3,372.2	9.9	7.8	-170.65	-170.65	46.8	-52.0	384.4	368.9	15.44	24.890	
3,500.0	3,468.7	3,477.4	3,469.7	10.3	8.1	-169.44	-169.44	57.8	-53.8	401.8	385.8	15.98	25.150	
3,600.0	3,567.1	3,575.5	3,567.2	10.7	8.3	-168.33	-168.33	68.8	-55.6	419.4	402.9	16.51	25.395	
3,700.0	3,665.5	3,673.7	3,664.7	11.1	8.6	-167.31	-167.31	79.8	-57.4	437.1	420.1	17.06	25.627	
3,800.0	3,763.9	3,771.8	3,762.2	11.5	8.9	-166.37	-166.37	90.9	-59.2	455.0	437.4	17.60	25.845	
3,900.0	3,862.3	3,869.9	3,859.6	11.9	9.2	-165.50	-165.50	101.9	-61.0	473.0	454.8	18.16	26.050	
4,000.0	3,960.7	3,968.0	3,957.1	12.3	9.4	-164.69	-164.69	112.9	-62.8	491.0	472.3	18.71	26.244	
4,100.0	4,059.1	4,066.2	4,054.6	12.7	9.7	-163.95	-163.95	124.0	-64.6	509.2	489.9	19.27	26.428	
4,200.0	4,157.5	4,164.3	4,152.1	13.1	10.0	-163.25	-163.25	135.0	-66.4	527.4	507.6	19.83	26.601	
4,300.0	4,255.9	4,262.4	4,249.6	13.5	10.3	-162.60	-162.60	146.0	-68.2	545.7	525.3	20.39	26.765	
4,400.0	4,354.3	4,360.6	4,347.1	13.8	10.6	-161.99	-161.99	157.0	-70.0	564.1	543.1	20.95	26.921	
4,500.0	4,452.7	4,458.7	4,444.6	14.2	10.9	-161.42	-161.42	168.1	-71.8	582.5	561.0	21.52	27.068	
4,600.0	4,551.2	4,556.9	4,542.2	14.6	11.1	-160.93	-160.93	179.1	-73.6	600.4	578.3	22.11	27.153	
4,700.0	4,650.3	4,657.5	4,642.2	14.9	11.4	-160.47	-160.47	189.6	-75.3	615.1	592.5	22.63	27.178	
4,800.0	4,749.7	4,759.5	4,743.8	15.1	11.6	-160.13	-160.13	197.7	-76.7	626.3	603.2	23.09	27.122	
4,900.0	4,849.5	4,862.0	4,846.2	15.3	11.8	-159.90	-159.90	203.2	-77.6	633.8	610.3	23.50	26.971	
5,000.0	4,949.4	4,964.8	4,948.9	15.5	12.0	-159.80	-159.80	205.9	-78.0	637.5	613.7	23.85	26.731	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,100.0	5,049.4	5,066.2	5,050.4	15.6	12.2	-89.44	206.2	-78.1	638.0	613.8	24.19	26.377		
5,200.0	5,149.4	5,166.2	5,150.4	15.8	12.4	-89.44	206.2	-78.1	638.0	613.4	24.57	25.963		
5,300.0	5,249.4	5,266.2	5,250.4	15.9	12.6	-89.44	206.2	-78.1	638.0	613.0	24.97	25.553		
5,400.0	5,349.4	5,366.2	5,350.4	16.1	12.8	-89.44	206.2	-78.1	638.0	612.6	25.36	25.155		
5,500.0	5,449.4	5,466.2	5,450.4	16.2	13.0	-89.44	206.2	-78.1	638.0	612.2	25.76	24.766		
5,600.0	5,549.4	5,566.2	5,550.4	16.4	13.2	-89.44	206.2	-78.1	638.0	611.8	26.16	24.388		
5,700.0	5,649.4	5,666.2	5,650.4	16.6	13.4	-89.44	206.2	-78.1	638.0	611.4	26.56	24.020		
5,800.0	5,749.4	5,766.2	5,750.4	16.7	13.6	-89.44	206.2	-78.1	638.0	611.0	26.96	23.662		
5,900.0	5,849.4	5,866.2	5,850.4	16.9	13.8	-89.44	206.2	-78.1	638.0	610.6	27.37	23.313		
6,000.0	5,949.4	5,966.2	5,950.4	17.1	14.0	-89.44	206.2	-78.1	638.0	610.2	27.77	22.973		
6,100.0	6,049.3	6,065.9	6,050.1	17.2	14.2	-89.62	207.3	-78.1	638.0	609.8	28.19	22.628		
6,200.0	6,148.0	6,165.5	6,148.9	17.5	14.5	-89.94	219.2	-78.1	638.0	609.2	28.73	22.202		
6,217.4	6,165.0	6,182.9	6,166.0	17.5	14.5	-90.00	222.6	-78.1	638.0	609.1	28.85	22.114		
6,300.0	6,243.9	6,265.6	6,245.8	17.7	14.9	-90.27	243.9	-78.1	638.0	608.5	29.43	21.680		
6,400.0	6,335.2	6,366.2	6,339.1	18.1	15.3	-90.60	281.3	-78.1	638.0	607.7	30.30	21.058		
6,500.0	6,420.5	6,467.3	6,427.1	18.5	15.9	-90.91	330.9	-78.0	638.0	606.7	31.38	20.333		
6,600.0	6,498.3	6,568.8	6,508.1	18.9	16.6	-91.21	392.0	-78.0	638.1	605.4	32.71	19.506		
6,700.0	6,567.2	6,670.7	6,580.6	19.5	17.5	-91.49	463.6	-78.0	638.2	603.8	34.33	18.588		
6,800.0	6,626.0	6,773.1	6,643.1	20.2	18.5	-91.74	544.5	-78.0	638.2	602.0	36.25	17.605		
6,900.0	6,673.8	6,875.8	6,694.5	21.1	19.7	-91.96	633.4	-78.0	638.3	599.8	38.48	16.587		
7,000.0	6,709.8	6,978.9	6,733.5	22.1	21.0	-92.15	728.7	-78.0	638.4	597.4	41.00	15.571		
7,100.0	6,733.3	7,082.3	6,759.5	23.3	22.4	-92.30	828.7	-78.0	638.5	594.7	43.76	14.590		
7,200.0	6,743.9	7,185.8	6,771.7	24.5	23.9	-92.41	931.4	-78.0	638.5	591.8	46.71	13.669		
7,300.0	6,744.6	7,287.0	6,773.0	25.9	25.5	-92.46	1,032.6	-78.0	638.5	588.8	49.74	12.838		
7,400.0	6,744.7	7,387.0	6,773.5	27.3	27.1	-92.50	1,132.6	-78.0	638.6	585.7	52.84	12.084		
7,500.0	6,744.8	7,487.0	6,774.0	28.8	28.7	-92.53	1,232.6	-78.0	638.6	582.5	56.04	11.396		
7,600.0	6,744.9	7,587.0	6,774.5	30.3	30.3	-92.57	1,332.6	-78.0	638.6	579.3	59.31	10.767		
7,700.0	6,745.0	7,687.0	6,775.0	31.9	32.0	-92.60	1,432.6	-78.0	638.6	576.0	62.64	10.194		
7,800.0	6,745.1	7,787.0	6,775.5	33.5	33.7	-92.64	1,532.6	-78.0	638.6	572.6	66.03	9.671		
7,900.0	6,745.2	7,887.0	6,776.0	35.2	35.5	-92.68	1,632.6	-78.0	638.6	569.2	69.47	9.193		
8,000.0	6,745.3	7,987.0	6,776.6	36.8	37.2	-92.71	1,732.6	-78.0	638.7	565.7	72.95	8.755		
8,100.0	6,745.4	8,087.0	6,777.1	38.5	39.0	-92.75	1,832.6	-78.0	638.7	562.2	76.46	8.354		
8,200.0	6,745.5	8,187.0	6,777.6	40.3	40.8	-92.78	1,932.6	-78.0	638.7	558.7	80.00	7.984		
8,300.0	6,745.6	8,287.0	6,778.1	42.0	42.6	-92.82	2,032.6	-78.0	638.7	555.2	83.56	7.644		
8,400.0	6,745.7	8,387.0	6,778.6	43.7	44.4	-92.86	2,132.6	-78.0	638.7	551.6	87.15	7.329		
8,500.0	6,745.8	8,487.0	6,779.1	45.5	46.2	-92.89	2,232.6	-78.0	638.8	548.0	90.76	7.038		
8,600.0	6,746.0	8,587.0	6,779.6	47.3	48.0	-92.93	2,332.6	-78.0	638.8	544.4	94.39	6.768		
8,700.0	6,746.1	8,687.0	6,780.1	49.1	49.8	-92.96	2,432.6	-78.0	638.8	540.8	98.03	6.516		
8,800.0	6,746.2	8,787.0	6,780.6	50.9	51.7	-93.00	2,532.6	-78.0	638.8	537.1	101.69	6.282		
8,900.0	6,746.3	8,887.0	6,781.1	52.7	53.5	-93.04	2,632.6	-78.0	638.8	533.5	105.35	6.064		
9,000.0	6,746.4	8,987.0	6,781.6	54.5	55.3	-93.07	2,732.6	-78.0	638.9	529.8	109.03	5.859		
9,100.0	6,746.5	9,087.0	6,782.1	56.3	57.2	-93.11	2,832.6	-78.0	638.9	526.2	112.73	5.668		
9,200.0	6,746.6	9,187.0	6,782.6	58.1	59.1	-93.14	2,932.6	-78.0	638.9	522.5	116.42	5.488		
9,300.0	6,746.7	9,287.0	6,783.1	60.0	60.9	-93.18	3,032.6	-78.0	638.9	518.8	120.13	5.318		
9,400.0	6,746.8	9,387.0	6,783.6	61.8	62.8	-93.22	3,132.6	-78.0	638.9	515.1	123.85	5.159		
9,500.0	6,746.9	9,487.0	6,784.1	63.7	64.6	-93.25	3,232.6	-78.0	639.0	511.4	127.57	5.009		
9,600.0	6,747.0	9,587.0	6,784.7	65.5	66.5	-93.29	3,332.6	-78.0	639.0	507.7	131.30	4.867		
9,700.0	6,747.1	9,687.0	6,785.2	67.4	68.4	-93.32	3,432.6	-78.0	639.0	504.0	135.03	4.732		
9,800.0	6,747.2	9,787.0	6,785.7	69.2	70.3	-93.36	3,532.6	-78.0	639.0	500.3	138.77	4.605		
9,900.0	6,747.3	9,887.0	6,786.2	71.1	72.1	-93.40	3,632.6	-78.0	639.1	496.5	142.51	4.484		
10,000.0	6,747.4	9,987.0	6,786.7	72.9	74.0	-93.43	3,732.6	-78.0	639.1	492.8	146.26	4.370		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,100.0	6,747.5	10,087.0	6,787.2	74.8	75.9	-93.47	3,832.6	-78.0	639.1	489.1	150.01	4.260		
10,200.0	6,747.6	10,187.0	6,787.7	76.7	77.8	-93.50	3,932.6	-78.0	639.1	485.4	153.77	4.156		
10,300.0	6,747.7	10,287.0	6,788.2	78.5	79.7	-93.54	4,032.6	-78.0	639.1	481.6	157.52	4.057		
10,400.0	6,747.8	10,387.0	6,788.7	80.4	81.6	-93.58	4,132.6	-78.0	639.2	477.9	161.29	3.963		
10,500.0	6,747.9	10,487.0	6,789.2	82.3	83.4	-93.61	4,232.6	-78.0	639.2	474.1	165.05	3.873		
10,600.0	6,748.0	10,587.0	6,789.7	84.2	85.3	-93.65	4,332.6	-78.0	639.2	470.4	168.82	3.786		
10,700.0	6,748.2	10,687.0	6,790.2	86.0	87.2	-93.68	4,432.6	-78.0	639.2	466.7	172.59	3.704		
10,800.0	6,748.3	10,787.0	6,790.7	87.9	89.1	-93.72	4,532.6	-78.0	639.3	462.9	176.36	3.625		
10,900.0	6,748.4	10,887.0	6,791.2	89.8	91.0	-93.76	4,632.5	-78.0	639.3	459.2	180.13	3.549		
11,000.0	6,748.5	10,987.0	6,791.7	91.7	92.9	-93.79	4,732.5	-78.0	639.3	455.4	183.91	3.476		
11,100.0	6,748.6	11,087.0	6,792.2	93.6	94.8	-93.83	4,832.5	-78.0	639.4	451.7	187.69	3.406		
11,200.0	6,748.7	11,187.0	6,792.8	95.5	96.7	-93.86	4,932.5	-78.0	639.4	447.9	191.47	3.339		
11,300.0	6,748.8	11,287.0	6,793.3	97.3	98.6	-93.90	5,032.5	-78.0	639.4	444.2	195.25	3.275		
11,400.0	6,748.9	11,387.0	6,793.8	99.2	100.5	-93.93	5,132.5	-78.0	639.4	440.4	199.03	3.213		
11,500.0	6,749.0	11,487.0	6,794.3	101.1	102.4	-93.97	5,232.5	-78.0	639.5	436.6	202.81	3.153		
11,600.0	6,749.1	11,587.0	6,794.8	103.0	104.3	-94.01	5,332.5	-78.0	639.5	432.9	206.60	3.095		
11,700.0	6,749.2	11,687.0	6,795.3	104.9	106.2	-94.04	5,432.5	-78.0	639.5	429.1	210.38	3.040		
11,800.0	6,749.3	11,787.0	6,795.8	106.8	108.1	-94.08	5,532.5	-78.0	639.5	425.4	214.17	2.986		
11,900.0	6,749.4	11,887.0	6,796.3	108.7	110.0	-94.11	5,632.5	-78.0	639.6	421.6	217.96	2.934		
12,000.0	6,749.5	11,987.0	6,796.8	110.6	111.9	-94.15	5,732.5	-78.0	639.6	417.8	221.75	2.884		
12,100.0	6,749.6	12,087.0	6,797.3	112.5	113.8	-94.19	5,832.5	-78.0	639.6	414.1	225.54	2.836		
12,200.0	6,749.7	12,187.0	6,797.8	114.4	115.7	-94.22	5,932.5	-78.0	639.7	410.3	229.33	2.789		
12,300.0	6,749.8	12,287.0	6,798.3	116.3	117.6	-94.26	6,032.5	-78.0	639.7	406.6	233.12	2.744		
12,400.0	6,749.9	12,387.0	6,798.8	118.2	119.5	-94.29	6,132.5	-78.0	639.7	402.8	236.91	2.700		
12,500.0	6,750.0	12,487.0	6,799.3	120.1	121.4	-94.33	6,232.5	-78.0	639.7	399.0	240.71	2.658		
12,600.0	6,750.1	12,587.0	6,799.8	122.0	123.3	-94.37	6,332.5	-78.0	639.8	395.3	244.50	2.617		
12,700.0	6,750.2	12,687.0	6,800.3	123.9	125.2	-94.40	6,432.5	-78.0	639.8	391.5	248.29	2.577		
12,800.0	6,750.4	12,787.0	6,800.8	125.8	127.2	-94.44	6,532.5	-78.0	639.8	387.7	252.09	2.538		
12,900.0	6,750.5	12,887.0	6,801.4	127.7	129.1	-94.47	6,632.5	-78.0	639.9	384.0	255.88	2.501		
13,000.0	6,750.6	12,987.0	6,801.9	129.6	131.0	-94.51	6,732.5	-78.0	639.9	380.2	259.68	2.464		
13,100.0	6,750.7	13,087.0	6,802.4	131.5	132.9	-94.54	6,832.5	-78.0	639.9	376.5	263.47	2.429		
13,200.0	6,750.8	13,187.0	6,802.9	133.4	134.8	-94.58	6,932.5	-78.0	640.0	372.7	267.27	2.394		
13,300.0	6,750.9	13,287.0	6,803.4	135.3	136.7	-94.62	7,032.5	-78.0	640.0	368.9	271.07	2.361		
13,400.0	6,751.0	13,387.0	6,803.9	137.2	138.6	-94.65	7,132.5	-78.0	640.0	365.2	274.86	2.329		
13,418.7	6,751.0	13,405.7	6,804.0	137.6	139.0	-94.66	7,151.2	-78.0	640.0	364.5	275.57	2.323 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	19.05	112.9	39.0	119.5					
100.0	100.0	100.0	100.0	0.1	0.1	19.05	112.9	39.0	119.5	119.3	0.22	531.608	CC, ES	
200.0	200.0	200.0	200.0	0.3	0.3	19.05	112.9	39.0	119.5	118.8	0.67	177.203		
300.0	300.0	298.4	298.3	0.6	0.5	19.80	113.1	40.7	120.2	119.1	1.11	108.129		
400.0	400.0	396.5	396.3	0.8	0.8	21.97	113.4	45.7	122.3	120.8	1.55	78.684		
500.0	500.0	494.2	493.7	1.0	1.0	25.39	113.9	54.1	126.3	124.3	2.01	62.692		
600.0	600.0	591.2	590.0	1.2	1.3	29.77	114.7	65.6	132.5	130.0	2.50	53.041		
700.0	700.0	687.3	684.9	1.5	1.6	34.75	115.7	80.3	141.6	138.6	3.02	46.885		
800.0	800.0	782.3	778.3	1.7	2.0	39.94	116.9	97.9	154.0	150.4	3.59	42.879		
900.0	900.0	876.0	869.8	1.9	2.4	45.00	118.2	118.2	169.9	165.7	4.22	40.270		
1,000.0	1,000.0	971.6	962.5	2.1	2.8	49.73	119.7	141.4	189.0	184.1	4.90	38.550		
1,100.0	1,100.0	1,068.6	1,056.5	2.4	3.3	53.67	121.3	165.0	209.3	203.7	5.62	37.254		
1,200.0	1,200.0	1,165.5	1,150.6	2.6	3.8	56.91	122.9	188.6	230.5	224.1	6.35	36.321		
1,300.0	1,300.0	1,262.9	1,245.0	2.8	4.3	-10.72	124.5	212.3	250.5	244.4	6.10	41.050		
1,400.0	1,399.8	1,361.0	1,340.1	3.0	4.8	-8.54	126.1	236.2	267.6	261.0	6.58	40.672		
1,500.0	1,499.5	1,459.6	1,435.7	3.2	5.3	-6.71	127.6	260.3	281.6	274.5	7.06	39.900		
1,600.0	1,598.7	1,558.7	1,531.8	3.5	5.8	-5.13	129.3	284.4	292.4	284.8	7.53	38.806		
1,700.0	1,697.5	1,658.2	1,628.3	3.7	6.3	-3.72	130.9	308.6	299.9	291.9	8.01	37.447		
1,800.0	1,795.9	1,757.8	1,724.9	4.0	6.9	-2.40	132.5	332.9	305.4	296.9	8.50	35.930		
1,900.0	1,894.3	1,857.4	1,821.5	4.4	7.4	-1.13	134.1	357.2	311.1	302.1	8.99	34.584		
2,000.0	1,992.7	1,957.0	1,918.0	4.7	7.9	0.09	135.7	381.4	316.9	307.4	9.49	33.395		
2,100.0	2,091.1	2,056.6	2,014.6	5.0	8.4	1.27	137.3	405.7	322.8	312.8	9.98	32.337		
2,200.0	2,189.5	2,156.2	2,111.2	5.4	8.9	2.41	138.9	430.0	328.9	318.4	10.48	31.391		
2,300.0	2,287.9	2,255.8	2,207.8	5.7	9.5	3.51	140.5	454.2	335.1	324.1	10.97	30.538		
2,400.0	2,386.3	2,355.4	2,304.4	6.1	10.0	4.56	142.2	478.5	341.4	329.9	11.47	29.765		
2,500.0	2,484.7	2,455.0	2,401.0	6.5	10.5	5.58	143.8	502.8	347.8	335.8	11.97	29.060		
2,600.0	2,583.1	2,554.6	2,497.6	6.8	11.0	6.56	145.4	527.0	354.3	341.9	12.47	28.415		
2,700.0	2,681.5	2,654.2	2,594.2	7.2	11.6	7.50	147.0	551.3	361.0	348.0	12.98	27.820		
2,800.0	2,779.9	2,753.8	2,690.8	7.6	12.1	8.41	148.6	575.6	367.7	354.2	13.48	27.270		
2,900.0	2,878.3	2,853.4	2,787.4	8.0	12.6	9.29	150.2	599.8	374.5	360.5	14.00	26.759		
3,000.0	2,976.7	2,953.0	2,884.0	8.3	13.1	10.14	151.8	624.1	381.4	366.9	14.51	26.283		
3,100.0	3,075.1	3,052.7	2,980.5	8.7	13.7	10.95	153.5	648.4	388.4	373.4	15.03	25.838		
3,200.0	3,173.5	3,152.3	3,077.1	9.1	14.2	11.74	155.1	672.7	395.4	379.9	15.56	25.420		
3,300.0	3,271.9	3,251.9	3,173.7	9.5	14.7	12.50	156.7	696.9	402.6	386.5	16.09	25.027		
3,400.0	3,370.3	3,351.5	3,270.3	9.9	15.2	13.23	158.3	721.2	409.8	393.2	16.62	24.656		
3,500.0	3,468.7	3,451.1	3,366.9	10.3	15.7	13.94	159.9	745.5	417.0	399.9	17.16	24.305		
3,600.0	3,567.1	3,550.7	3,463.5	10.7	16.3	14.62	161.5	769.7	424.4	406.7	17.70	23.973		
3,700.0	3,665.5	3,650.3	3,560.1	11.1	16.8	15.28	163.1	794.0	431.7	413.5	18.25	23.657		
3,800.0	3,763.9	3,749.9	3,656.7	11.5	17.3	15.92	164.7	818.3	439.2	420.4	18.80	23.357		
3,900.0	3,862.3	3,849.5	3,753.3	11.9	17.8	16.53	166.4	842.5	446.7	427.3	19.36	23.071		
4,000.0	3,960.7	3,949.1	3,849.9	12.3	18.4	17.13	168.0	866.8	454.2	434.3	19.92	22.799		
4,100.0	4,059.1	4,048.7	3,946.5	12.7	18.9	17.71	169.6	891.1	461.8	441.3	20.49	22.539		
4,200.0	4,157.5	4,148.3	4,043.0	13.1	19.4	18.27	171.2	915.3	469.4	448.3	21.06	22.290		
4,300.0	4,255.9	4,247.9	4,139.6	13.5	19.9	18.81	172.8	939.6	477.1	455.4	21.63	22.052		
4,400.0	4,354.3	4,347.5	4,236.2	13.8	20.5	19.33	174.4	963.9	484.8	462.6	22.21	21.824		
4,500.0	4,452.7	4,447.1	4,332.8	14.2	21.0	19.84	176.0	988.1	492.5	469.7	22.80	21.606		
4,600.0	4,551.2	4,546.7	4,429.4	14.6	21.5	20.34	177.6	1,012.4	501.0	477.6	23.36	21.445		
4,700.0	4,650.3	4,646.0	4,525.7	14.9	22.0	20.74	179.3	1,036.6	512.4	488.6	23.86	21.481		
4,800.0	4,749.7	4,744.9	4,621.6	15.1	22.6	21.01	180.9	1,060.7	527.1	502.8	24.31	21.688		
4,900.0	4,849.5	4,843.3	4,717.0	15.3	23.1	21.17	182.5	1,084.6	545.1	520.4	24.71	22.059		
5,000.0	4,949.4	4,941.0	4,811.7	15.5	23.6	21.22	184.0	1,108.5	566.2	541.1	25.07	22.588		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,049.4	5,038.1	4,905.9	15.6	24.1	91.44	91.44	185.6	1,132.1	590.1	564.7	25.44	23.194	
5,200.0	5,149.4	5,135.0	4,999.9	15.8	24.6	91.23	91.23	187.2	1,155.7	614.4	588.6	25.89	23.737	
5,300.0	5,249.4	5,259.5	5,121.2	15.9	25.1	91.01	91.01	189.0	1,183.5	636.7	610.3	26.36	24.158	
5,400.0	5,349.4	5,386.3	5,246.0	16.1	25.5	90.84	90.84	190.5	1,206.3	654.7	627.9	26.81	24.423	
5,500.0	5,449.4	5,515.0	5,373.5	16.2	25.9	90.72	90.72	191.7	1,223.8	668.3	641.0	27.24	24.528	
5,600.0	5,549.4	5,645.1	5,502.9	16.4	26.1	90.64	90.64	192.5	1,235.6	677.4	649.7	27.67	24.483	
5,700.0	5,649.4	5,775.9	5,633.6	16.6	26.3	90.60	90.60	192.9	1,241.6	682.0	653.9	28.07	24.291	
5,800.0	5,749.4	5,891.7	5,749.4	16.7	26.4	90.59	90.59	192.9	1,242.4	682.5	654.1	28.45	23.987	
5,900.0	5,849.4	5,991.8	5,849.5	16.9	26.5	90.58	90.58	193.0	1,242.4	682.5	653.7	28.82	23.685	
5,991.9	5,941.3	6,083.9	5,941.3	17.0	26.6	90.00	90.00	200.0	1,242.4	682.5	653.4	29.12	23.434	
6,000.0	5,949.4	6,091.9	5,949.2	17.1	26.6	89.90	89.90	201.1	1,242.4	682.5	653.4	29.15	23.415	
6,100.0	6,049.3	6,189.1	6,044.2	17.2	26.7	88.43	88.43	221.4	1,242.4	682.8	653.3	29.47	23.166	
6,200.0	6,148.0	6,284.0	6,133.7	17.5	26.9	86.95	86.95	252.6	1,242.4	683.5	653.6	29.90	22.860	
6,300.0	6,243.9	6,376.9	6,217.0	17.7	27.0	85.53	85.53	293.8	1,242.4	684.7	654.2	30.43	22.498	
6,400.0	6,335.2	6,468.2	6,293.3	18.1	27.2	84.19	84.19	343.7	1,242.4	686.1	655.0	31.09	22.070	
6,500.0	6,420.5	6,557.9	6,362.0	18.5	27.4	82.96	82.96	401.3	1,242.4	687.8	655.9	31.90	21.560	
6,600.0	6,498.3	6,646.3	6,422.7	18.9	27.6	81.84	81.84	465.6	1,242.4	689.6	656.7	32.92	20.946	
6,700.0	6,567.2	6,733.7	6,474.9	19.5	27.9	80.85	80.85	535.6	1,242.4	691.4	657.2	34.21	20.213	
6,800.0	6,626.0	6,820.0	6,518.4	20.2	28.3	80.00	80.00	610.1	1,242.4	693.1	657.3	35.80	19.363	
6,900.0	6,673.8	6,905.6	6,552.9	21.1	28.7	79.31	79.31	688.4	1,242.4	694.6	656.9	37.72	18.416	
7,000.0	6,709.8	6,990.7	6,578.3	22.1	29.1	78.77	78.77	769.5	1,242.4	695.9	655.9	39.99	17.403	
7,100.0	6,733.3	7,075.3	6,594.4	23.3	29.7	78.40	78.40	852.5	1,242.4	696.8	654.2	42.57	16.368	
7,200.0	6,743.9	7,159.6	6,601.3	24.5	30.3	78.20	78.20	936.6	1,242.4	697.2	651.8	45.41	15.355	
7,300.0	6,744.6	7,255.0	6,601.2	25.9	31.2	78.13	78.13	1,032.0	1,242.4	697.4	649.1	48.27	14.448	
7,400.0	6,744.7	7,355.0	6,600.6	27.3	32.1	78.08	78.08	1,132.0	1,242.4	697.5	646.4	51.17	13.631	
7,500.0	6,744.8	7,455.0	6,600.1	28.8	33.2	78.03	78.03	1,232.0	1,242.4	697.7	643.5	54.18	12.877	
7,600.0	6,744.9	7,555.0	6,599.5	30.3	34.4	77.97	77.97	1,331.9	1,242.4	697.8	640.5	57.28	12.184	
7,700.0	6,745.0	7,655.0	6,598.9	31.9	35.6	77.92	77.92	1,431.9	1,242.4	698.0	637.5	60.45	11.547	
7,800.0	6,745.1	7,755.0	6,598.4	33.5	36.9	77.87	77.87	1,531.9	1,242.4	698.1	634.4	63.68	10.962	
7,900.0	6,745.2	7,855.0	6,597.8	35.2	38.3	77.81	77.81	1,631.9	1,242.4	698.2	631.3	66.97	10.426	
8,000.0	6,745.3	7,955.0	6,597.3	36.8	39.7	77.76	77.76	1,731.9	1,242.4	698.4	628.1	70.31	9.933	
8,100.0	6,745.4	8,055.0	6,596.7	38.5	41.1	77.71	77.71	1,831.9	1,242.4	698.5	624.8	73.68	9.480	
8,200.0	6,745.5	8,155.0	6,596.2	40.3	42.6	77.65	77.65	1,931.9	1,242.4	698.7	621.6	77.09	9.063	
8,300.0	6,745.6	8,255.0	6,595.6	42.0	44.2	77.60	77.60	2,031.9	1,242.4	698.8	618.3	80.53	8.677	
8,400.0	6,745.7	8,355.0	6,595.0	43.7	45.8	77.55	77.55	2,131.9	1,242.4	698.9	614.9	84.00	8.321	
8,500.0	6,745.8	8,455.0	6,594.5	45.5	47.4	77.49	77.49	2,231.9	1,242.4	699.1	611.6	87.49	7.991	
8,600.0	6,746.0	8,555.0	6,593.9	47.3	49.0	77.44	77.44	2,331.9	1,242.4	699.2	608.2	91.00	7.684	
8,700.0	6,746.1	8,655.0	6,593.4	49.1	50.6	77.39	77.39	2,431.9	1,242.4	699.4	604.9	94.52	7.399	
8,800.0	6,746.2	8,755.0	6,592.8	50.9	52.3	77.34	77.34	2,531.9	1,242.4	699.5	601.5	98.06	7.133	
8,900.0	6,746.3	8,855.0	6,592.2	52.7	54.0	77.28	77.28	2,631.9	1,242.4	699.7	598.0	101.62	6.885	
9,000.0	6,746.4	8,955.0	6,591.7	54.5	55.7	77.23	77.23	2,731.9	1,242.4	699.8	594.6	105.19	6.653	
9,100.0	6,746.5	9,055.0	6,591.1	56.3	57.4	77.18	77.18	2,831.9	1,242.4	700.0	591.2	108.76	6.436	
9,200.0	6,746.6	9,155.0	6,590.6	58.1	59.2	77.12	77.12	2,931.9	1,242.4	700.1	587.8	112.35	6.231	
9,300.0	6,746.7	9,255.0	6,590.0	60.0	60.9	77.07	77.07	3,031.9	1,242.4	700.3	584.3	115.95	6.039	
9,400.0	6,746.8	9,355.0	6,589.4	61.8	62.7	77.02	77.02	3,131.9	1,242.4	700.4	580.8	119.55	5.859	
9,500.0	6,746.9	9,455.0	6,588.9	63.7	64.4	76.97	76.97	3,231.9	1,242.4	700.6	577.4	123.16	5.688	
9,600.0	6,747.0	9,555.0	6,588.3	65.5	66.2	76.91	76.91	3,331.9	1,242.4	700.7	573.9	126.78	5.527	
9,700.0	6,747.1	9,655.0	6,587.8	67.4	68.0	76.86	76.86	3,431.9	1,242.4	700.8	570.4	130.40	5.374	
9,800.0	6,747.2	9,755.0	6,587.2	69.2	69.8	76.81	76.81	3,531.9	1,242.4	701.0	567.0	134.03	5.230	
9,900.0	6,747.3	9,855.0	6,586.7	71.1	71.6	76.75	76.75	3,631.9	1,242.4	701.2	563.5	137.66	5.093	
10,000.0	6,747.4	9,955.0	6,586.1	72.9	73.4	76.70	76.70	3,731.9	1,242.4	701.3	560.0	141.30	4.963	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,100.0	6,747.5	10,055.0	6,585.5	74.8	75.2	76.65	3,831.9	1,242.4	701.5	556.5	144.94	4.840		
10,200.0	6,747.6	10,155.0	6,585.0	76.7	77.0	76.60	3,931.9	1,242.4	701.6	553.0	148.58	4.722		
10,300.0	6,747.7	10,255.0	6,584.4	78.5	78.8	76.54	4,031.8	1,242.4	701.8	549.5	152.23	4.610		
10,400.0	6,747.8	10,354.9	6,583.9	80.4	80.6	76.49	4,131.8	1,242.4	701.9	546.0	155.87	4.503		
10,500.0	6,747.9	10,454.9	6,583.3	82.3	82.5	76.44	4,231.8	1,242.4	702.1	542.5	159.52	4.401		
10,600.0	6,748.0	10,554.9	6,582.7	84.2	84.3	76.39	4,331.8	1,242.4	702.2	539.1	163.18	4.303		
10,700.0	6,748.2	10,654.9	6,582.2	86.0	86.1	76.33	4,431.8	1,242.4	702.4	535.6	166.83	4.210		
10,800.0	6,748.3	10,754.9	6,581.6	87.9	88.0	76.28	4,531.8	1,242.4	702.5	532.1	170.49	4.121		
10,900.0	6,748.4	10,854.9	6,581.1	89.8	89.8	76.23	4,631.8	1,242.4	702.7	528.6	174.14	4.035		
11,000.0	6,748.5	10,954.9	6,580.5	91.7	91.7	76.18	4,731.8	1,242.4	702.9	525.1	177.80	3.953		
11,100.0	6,748.6	11,054.9	6,580.0	93.6	93.5	76.12	4,831.8	1,242.4	703.0	521.6	181.46	3.874		
11,200.0	6,748.7	11,154.9	6,579.4	95.5	95.4	76.07	4,931.8	1,242.4	703.2	518.1	185.12	3.799		
11,300.0	6,748.8	11,254.9	6,578.8	97.3	97.2	76.02	5,031.8	1,242.4	703.3	514.6	188.78	3.726		
11,400.0	6,748.9	11,354.9	6,578.3	99.2	99.1	75.97	5,131.8	1,242.4	703.5	511.1	192.44	3.656		
11,500.0	6,749.0	11,454.9	6,577.7	101.1	100.9	75.91	5,231.8	1,242.4	703.7	507.6	196.10	3.588		
11,600.0	6,749.1	11,554.9	6,577.2	103.0	102.8	75.86	5,331.8	1,242.4	703.8	504.1	199.76	3.523		
11,700.0	6,749.2	11,654.9	6,576.6	104.9	104.7	75.81	5,431.8	1,242.4	704.0	500.6	203.42	3.461		
11,800.0	6,749.3	11,754.9	6,576.0	106.8	106.5	75.76	5,531.8	1,242.4	704.1	497.1	207.09	3.400		
11,900.0	6,749.4	11,854.9	6,575.5	108.7	108.4	75.70	5,631.8	1,242.4	704.3	493.6	210.75	3.342		
12,000.0	6,749.5	11,954.9	6,574.9	110.6	110.3	75.65	5,731.8	1,242.4	704.5	490.1	214.41	3.286		
12,100.0	6,749.6	12,054.9	6,574.4	112.5	112.2	75.60	5,831.8	1,242.4	704.6	486.6	218.07	3.231		
12,200.0	6,749.7	12,154.9	6,573.8	114.4	114.0	75.55	5,931.8	1,242.4	704.8	483.1	221.73	3.179		
12,300.0	6,749.8	12,254.9	6,573.3	116.3	115.9	75.49	6,031.8	1,242.4	705.0	479.6	225.39	3.128		
12,400.0	6,749.9	12,354.9	6,572.7	118.2	117.8	75.44	6,131.8	1,242.4	705.1	476.1	229.05	3.078		
12,500.0	6,750.0	12,454.9	6,572.1	120.1	119.7	75.39	6,231.8	1,242.4	705.3	472.6	232.71	3.031		
12,600.0	6,750.1	12,554.9	6,571.6	122.0	121.5	75.34	6,331.8	1,242.4	705.5	469.1	236.37	2.985		
12,700.0	6,750.2	12,654.9	6,571.0	123.9	123.4	75.29	6,431.8	1,242.4	705.6	465.6	240.03	2.940		
12,800.0	6,750.4	12,754.9	6,570.5	125.8	125.3	75.23	6,531.8	1,242.4	705.8	462.1	243.69	2.896		
12,900.0	6,750.5	12,854.9	6,569.9	127.7	127.2	75.18	6,631.7	1,242.4	706.0	458.6	247.35	2.854		
13,000.0	6,750.6	12,954.9	6,569.3	129.6	129.1	75.13	6,731.7	1,242.4	706.1	455.1	251.00	2.813		
13,100.0	6,750.7	13,054.9	6,568.8	131.5	131.0	75.08	6,831.7	1,242.4	706.3	451.6	254.66	2.774		
13,200.0	6,750.8	13,154.9	6,568.2	133.4	132.8	75.03	6,931.7	1,242.4	706.5	448.2	258.31	2.735		
13,300.0	6,750.9	13,254.9	6,567.7	135.3	134.7	74.97	7,031.7	1,242.4	706.6	444.7	261.97	2.697		
13,400.0	6,751.0	13,354.9	6,567.1	137.2	136.6	74.92	7,131.7	1,242.4	706.8	441.2	265.62	2.661		
13,418.7	6,751.0	13,373.6	6,567.0	137.6	137.0	74.91	7,150.4	1,242.4	706.9	440.5	266.30	2.654 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 #1 (4-23-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	19.64	54.7	19.5	58.0					
100.0	100.0	100.0	100.0	0.1	0.1	19.64	54.7	19.5	58.0	57.8	0.22	258.166		
200.0	200.0	200.0	200.0	0.3	0.3	19.64	54.7	19.5	58.0	57.4	0.67	86.055		
300.0	300.0	300.0	300.0	0.6	0.6	19.64	54.7	19.5	58.0	56.9	1.12	51.633		
400.0	400.0	400.0	400.0	0.8	0.8	19.64	54.7	19.5	58.0	56.5	1.57	36.881		
500.0	500.0	500.0	500.0	1.0	1.0	19.64	54.7	19.5	58.0	56.0	2.02	28.685		
600.0	600.0	600.0	600.0	1.2	1.2	19.64	54.7	19.5	58.0	55.6	2.47	23.470		
700.0	700.0	700.0	700.0	1.5	1.5	19.64	54.7	19.5	58.0	55.1	2.92	19.859		
800.0	800.0	800.0	800.0	1.7	1.7	19.64	54.7	19.5	58.0	54.7	3.37	17.211 CC, ES		
900.0	900.0	899.0	899.0	1.9	1.9	21.10	54.9	21.2	58.9	55.1	3.81	15.461		
1,000.0	1,000.0	997.8	997.6	2.1	2.1	25.23	55.7	26.2	61.6	57.4	4.24	14.537		
1,100.0	1,100.0	1,096.1	1,095.5	2.4	2.3	31.25	57.0	34.6	66.8	62.2	4.68	14.278		
1,200.0	1,200.0	1,193.7	1,192.4	2.6	2.6	38.13	58.8	46.2	75.2	70.0	5.15	14.613		
1,300.0	1,300.0	1,290.6	1,288.2	2.8	2.8	-25.86	61.2	60.9	85.5	80.0	5.59	15.310		
1,400.0	1,399.8	1,387.1	1,383.0	3.0	3.2	-20.63	64.0	78.7	96.4	90.3	6.03	15.976		
1,500.0	1,499.5	1,485.7	1,479.4	3.2	3.5	-16.36	67.2	99.2	106.5	100.1	6.48	16.445		
1,600.0	1,598.7	1,585.3	1,576.7	3.5	3.9	-13.21	70.4	119.9	113.9	107.0	6.93	16.442		
1,700.0	1,697.5	1,685.1	1,674.3	3.7	4.3	-10.78	73.7	140.6	118.1	110.7	7.38	16.013		
1,800.0	1,795.9	1,784.9	1,771.9	4.0	4.7	-8.68	76.9	161.4	120.4	112.5	7.85	15.340		
1,900.0	1,894.3	1,884.8	1,869.6	4.4	5.1	-6.66	80.2	182.2	122.8	114.5	8.33	14.745		
2,000.0	1,992.7	1,984.7	1,967.2	4.7	5.5	-4.73	83.5	202.9	125.3	116.5	8.80	14.234		
2,100.0	2,091.1	2,084.6	2,064.9	5.0	6.0	-2.87	86.7	223.7	128.0	118.7	9.28	13.791		
2,200.0	2,189.5	2,184.5	2,162.5	5.4	6.4	-1.09	90.0	244.5	130.8	121.1	9.76	13.403		
2,300.0	2,287.9	2,284.3	2,260.1	5.7	6.9	0.61	93.2	265.3	133.8	123.5	10.24	13.061		
2,400.0	2,386.3	2,384.2	2,357.8	6.1	7.3	2.23	96.5	286.0	136.8	126.1	10.72	12.756		
2,500.0	2,484.7	2,484.1	2,455.4	6.5	7.7	3.79	99.8	306.8	140.0	128.7	11.21	12.483		
2,600.0	2,583.1	2,584.0	2,553.1	6.8	8.2	5.28	103.0	327.6	143.2	131.5	11.70	12.236		
2,700.0	2,681.5	2,683.9	2,650.7	7.2	8.6	6.70	106.3	348.3	146.5	134.3	12.20	12.012		
2,800.0	2,779.9	2,783.7	2,748.3	7.6	9.1	8.05	109.6	369.1	150.0	137.3	12.70	11.806		
2,900.0	2,878.3	2,883.6	2,846.0	8.0	9.5	9.35	112.8	389.9	153.5	140.3	13.21	11.615		
3,000.0	2,976.7	2,983.5	2,943.6	8.3	10.0	10.58	116.1	410.7	157.1	143.3	13.73	11.439		
3,100.0	3,075.1	3,083.4	3,041.3	8.7	10.5	11.76	119.3	431.4	160.7	146.5	14.26	11.274		
3,200.0	3,173.5	3,183.3	3,138.9	9.1	10.9	12.89	122.6	452.2	164.4	149.7	14.79	11.120		
3,300.0	3,271.9	3,283.1	3,236.6	9.5	11.4	13.97	125.9	473.0	168.2	152.9	15.33	10.976		
3,400.0	3,370.3	3,383.0	3,334.2	9.9	11.8	15.00	129.1	493.8	172.1	156.2	15.87	10.839		
3,500.0	3,468.7	3,482.9	3,431.8	10.3	12.3	15.98	132.4	514.5	175.9	159.5	16.43	10.710		
3,600.0	3,567.1	3,582.8	3,529.5	10.7	12.7	16.92	135.7	535.3	179.9	162.9	16.99	10.588		
3,700.0	3,665.5	3,682.7	3,627.1	11.1	13.2	17.82	138.9	556.1	183.9	166.3	17.56	10.472		
3,800.0	3,763.9	3,782.5	3,724.8	11.5	13.6	18.69	142.2	576.8	187.9	169.8	18.13	10.362		
3,900.0	3,862.3	3,882.4	3,822.4	11.9	14.1	19.51	145.4	597.6	192.0	173.2	18.72	10.257		
4,000.0	3,960.7	3,982.3	3,920.0	12.3	14.6	20.30	148.7	618.4	196.1	176.8	19.30	10.157		
4,100.0	4,059.1	4,082.2	4,017.7	12.7	15.0	21.06	152.0	639.2	200.2	180.3	19.90	10.061		
4,200.0	4,157.5	4,182.0	4,115.3	13.1	15.5	21.79	155.2	659.9	204.4	183.9	20.50	9.970		
4,300.0	4,255.9	4,281.9	4,213.0	13.5	15.9	22.49	158.5	680.7	208.6	187.5	21.11	9.883		
4,400.0	4,354.3	4,381.8	4,310.6	13.8	16.4	23.16	161.8	701.5	212.8	191.1	21.72	9.800		
4,500.0	4,452.7	4,481.7	4,408.2	14.2	16.9	23.81	165.0	722.2	217.1	194.8	22.34	9.720		
4,600.0	4,551.2	4,581.5	4,505.9	14.6	17.3	24.38	168.3	743.0	222.0	199.1	22.94	9.679		
4,700.0	4,650.3	4,681.2	4,603.3	14.9	17.8	24.63	171.5	763.7	229.9	206.4	23.45	9.602		
4,800.0	4,749.7	4,780.6	4,700.5	15.1	18.2	24.54	174.8	784.4	240.9	217.0	23.90	10.082		
4,900.0	4,849.5	4,879.6	4,797.2	15.3	18.7	24.17	178.0	805.0	255.1	230.8	24.27	10.511		
5,000.0	4,949.4	4,978.0	4,893.4	15.5	19.1	23.58	181.2	825.5	272.4	247.9	24.58	11.084		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 #1 (4-23-14)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
5,100.0	5,049.4	5,075.8	4,989.1	15.6	19.6	93.12	184.4	845.8	292.6	267.7	24.89	11.758			
5,200.0	5,149.4	5,184.4	5,095.5	15.8	20.0	92.30	187.7	866.7	311.7	286.5	25.24	12.350			
5,300.0	5,249.4	5,295.3	5,205.0	15.9	20.3	91.70	190.4	883.9	327.1	301.5	25.61	12.776			
5,400.0	5,349.4	5,407.4	5,316.4	16.1	20.6	91.28	192.5	897.0	338.8	312.8	25.98	13.041			
5,500.0	5,449.4	5,520.4	5,429.0	16.2	20.8	91.02	193.9	905.9	346.6	320.3	26.36	13.151			
5,600.0	5,549.4	5,633.9	5,542.5	16.4	21.0	90.89	194.6	910.3	350.5	323.8	26.74	13.111			
5,700.0	5,649.4	5,740.9	5,649.4	16.6	21.1	90.87	194.7	910.9	351.0	323.9	27.12	12.946			
5,800.0	5,749.4	5,840.9	5,749.4	16.7	21.2	90.87	194.7	910.9	351.0	323.6	27.50	12.768			
5,900.0	5,849.4	5,940.9	5,849.4	16.9	21.3	90.87	194.7	910.9	351.0	323.2	27.88	12.593			
6,000.0	5,949.4	6,041.1	5,949.6	17.1	21.5	90.70	195.7	910.9	351.0	322.8	28.25	12.427			
6,061.7	6,011.0	6,102.9	6,011.1	17.2	21.6	90.05	201.4	910.9	351.0	322.6	28.45	12.336			
6,100.0	6,049.3	6,140.8	6,048.5	17.2	21.6	89.30	207.3	910.9	351.0	322.5	28.56	12.289			
6,200.0	6,148.0	6,239.2	6,143.9	17.5	21.8	87.81	231.4	910.9	351.3	322.3	28.99	12.118			
6,300.0	6,243.9	6,336.5	6,234.4	17.7	22.0	86.38	267.0	910.9	351.7	322.2	29.53	11.910			
6,400.0	6,335.2	6,432.8	6,318.8	18.1	22.3	85.01	313.3	910.9	352.3	322.1	30.21	11.662			
6,500.0	6,420.5	6,528.2	6,395.9	18.5	22.6	83.73	369.2	910.9	353.1	322.1	31.07	11.364			
6,600.0	6,498.3	6,622.7	6,464.9	18.9	22.9	82.57	433.7	910.9	354.0	321.8	32.16	11.007			
6,700.0	6,567.2	6,716.4	6,525.0	19.5	23.3	81.53	505.6	910.9	354.9	321.4	33.52	10.587			
6,800.0	6,626.0	6,809.5	6,575.5	20.2	23.8	80.63	583.7	910.9	355.8	320.6	35.20	10.106			
6,900.0	6,673.8	6,902.1	6,616.0	21.1	24.4	79.89	666.9	910.9	356.5	319.3	37.23	9.577			
7,000.0	6,709.8	6,994.3	6,645.9	22.1	25.1	79.31	754.0	910.9	357.2	317.6	39.60	9.020			
7,100.0	6,733.3	7,086.1	6,665.1	23.3	26.0	78.89	843.8	910.9	357.7	315.4	42.28	8.460			
7,200.0	6,743.9	7,177.7	6,673.5	24.5	26.9	78.65	934.9	910.9	358.0	312.8	45.22	7.917			
7,300.0	6,744.6	7,275.1	6,673.4	25.9	28.0	78.53	1,032.3	910.9	358.2	310.0	48.15	7.439			
7,400.0	6,744.7	7,375.1	6,672.8	27.3	29.2	78.42	1,132.3	910.9	358.3	307.2	51.10	7.011			
7,500.0	6,744.8	7,475.1	6,672.2	28.8	30.5	78.31	1,232.3	910.9	358.4	304.3	54.16	6.618			
7,600.0	6,744.9	7,575.1	6,671.5	30.3	31.9	78.20	1,332.3	910.9	358.6	301.3	57.30	6.258			
7,700.0	6,745.0	7,675.1	6,670.9	31.9	33.3	78.08	1,432.3	910.9	358.7	298.2	60.51	5.929			
7,800.0	6,745.1	7,775.1	6,670.3	33.5	34.8	77.97	1,532.3	910.9	358.9	295.1	63.77	5.628			
7,900.0	6,745.2	7,875.1	6,669.7	35.2	36.3	77.86	1,632.3	910.9	359.0	291.9	67.09	5.352			
8,000.0	6,745.3	7,975.1	6,669.1	36.8	37.9	77.75	1,732.3	910.9	359.2	288.7	70.44	5.099			
8,100.0	6,745.4	8,075.1	6,668.5	38.5	39.5	77.64	1,832.3	910.9	359.3	285.5	73.83	4.867			
8,200.0	6,745.5	8,175.1	6,667.9	40.3	41.1	77.53	1,932.3	910.9	359.5	282.2	77.26	4.653			
8,300.0	6,745.6	8,275.1	6,667.3	42.0	42.8	77.41	2,032.3	910.9	359.6	278.9	80.71	4.456			
8,400.0	6,745.7	8,375.1	6,666.7	43.7	44.5	77.30	2,132.3	910.9	359.8	275.6	84.18	4.274			
8,500.0	6,745.8	8,475.1	6,666.0	45.5	46.2	77.19	2,232.3	910.9	360.0	272.3	87.67	4.106			
8,600.0	6,746.0	8,575.0	6,665.4	47.3	47.9	77.08	2,332.3	910.9	360.1	268.9	91.17	3.950			
8,700.0	6,746.1	8,675.0	6,664.8	49.1	49.6	76.97	2,432.3	910.9	360.3	265.6	94.70	3.805			
8,800.0	6,746.2	8,775.0	6,664.2	50.9	51.4	76.86	2,532.3	910.9	360.4	262.2	98.23	3.669			
8,900.0	6,746.3	8,875.0	6,663.6	52.7	53.1	76.75	2,632.3	910.9	360.6	258.8	101.78	3.543			
9,000.0	6,746.4	8,975.0	6,663.0	54.5	54.9	76.64	2,732.2	910.9	360.8	255.4	105.33	3.425			
9,100.0	6,746.5	9,075.0	6,662.4	56.3	56.7	76.53	2,832.2	910.9	360.9	252.0	108.89	3.315			
9,200.0	6,746.6	9,175.0	6,661.8	58.1	58.4	76.42	2,932.2	910.9	361.1	248.6	112.46	3.211			
9,300.0	6,746.7	9,275.0	6,661.2	60.0	60.2	76.31	3,032.2	910.9	361.3	245.2	116.04	3.113			
9,400.0	6,746.8	9,375.0	6,660.6	61.8	62.0	76.20	3,132.2	910.9	361.4	241.8	119.62	3.022			
9,500.0	6,746.9	9,475.0	6,659.9	63.7	63.9	76.09	3,232.2	910.9	361.6	238.4	123.20	2.935			
9,600.0	6,747.0	9,575.0	6,659.3	65.5	65.7	75.98	3,332.2	910.9	361.8	235.0	126.79	2.853			
9,700.0	6,747.1	9,675.0	6,658.7	67.4	67.5	75.87	3,432.2	910.9	362.0	231.6	130.39	2.776			
9,800.0	6,747.2	9,775.0	6,658.1	69.2	69.3	75.76	3,532.2	910.9	362.1	228.2	133.98	2.703			
9,900.0	6,747.3	9,875.0	6,657.5	71.1	71.2	75.65	3,632.2	910.9	362.3	224.7	137.58	2.633			
10,000.0	6,747.4	9,975.0	6,656.9	72.9	73.0	75.54	3,732.2	910.9	362.5	221.3	141.18	2.568			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 #1 (4-23-14)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,747.5	10,075.0	6,656.3	74.8	74.8	75.43	3,832.2	910.9	362.7	217.9	144.77	2.505	
10,200.0	6,747.6	10,175.0	6,655.7	76.7	76.7	75.32	3,932.2	910.9	362.8	214.5	148.37	2.445	
10,300.0	6,747.7	10,275.0	6,655.1	78.5	78.5	75.21	4,032.2	910.9	363.0	211.1	151.98	2.389	
10,400.0	6,747.8	10,375.0	6,654.4	80.4	80.4	75.10	4,132.2	910.9	363.2	207.6	155.58	2.335	
10,500.0	6,747.9	10,475.0	6,653.8	82.3	82.2	74.99	4,232.2	910.9	363.4	204.2	159.18	2.283	
10,600.0	6,748.0	10,575.0	6,653.2	84.2	84.1	74.88	4,332.2	910.9	363.6	200.8	162.78	2.234	
10,700.0	6,748.2	10,675.0	6,652.6	86.0	86.0	74.77	4,432.2	910.9	363.8	197.4	166.38	2.186	
10,800.0	6,748.3	10,775.0	6,652.0	87.9	87.8	74.66	4,532.2	910.9	364.0	194.0	169.98	2.141	
10,900.0	6,748.4	10,875.0	6,651.4	89.8	89.7	74.56	4,632.2	910.9	364.1	190.6	173.57	2.098	
11,000.0	6,748.5	10,975.0	6,650.8	91.7	91.6	74.45	4,732.2	910.9	364.3	187.2	177.17	2.056	
11,100.0	6,748.6	11,075.0	6,650.2	93.6	93.4	74.34	4,832.2	910.9	364.5	183.8	180.76	2.017	
11,200.0	6,748.7	11,175.0	6,649.6	95.5	95.3	74.23	4,932.2	910.9	364.7	180.4	184.36	1.978	
11,300.0	6,748.8	11,275.0	6,648.9	97.3	97.2	74.12	5,032.1	910.9	364.9	177.0	187.95	1.942	
11,400.0	6,748.9	11,375.0	6,648.3	99.2	99.1	74.01	5,132.1	910.9	365.1	173.6	191.54	1.906	
11,500.0	6,749.0	11,475.0	6,647.7	101.1	100.9	73.91	5,232.1	910.9	365.3	170.2	195.13	1.872	
11,600.0	6,749.1	11,575.0	6,647.1	103.0	102.8	73.80	5,332.1	910.9	365.5	166.8	198.71	1.839	
11,700.0	6,749.2	11,675.0	6,646.5	104.9	104.7	73.69	5,432.1	910.9	365.7	163.4	202.30	1.808	
11,800.0	6,749.3	11,775.0	6,645.9	106.8	106.6	73.58	5,532.1	910.9	365.9	160.0	205.88	1.777	
11,900.0	6,749.4	11,875.0	6,645.3	108.7	108.5	73.48	5,632.1	910.9	366.1	156.7	209.45	1.748	
12,000.0	6,749.5	11,975.0	6,644.7	110.6	110.3	73.37	5,732.1	910.9	366.3	153.3	213.03	1.720	
12,100.0	6,749.6	12,075.0	6,644.1	112.5	112.2	73.26	5,832.1	910.9	366.5	149.9	216.60	1.692	
12,200.0	6,749.7	12,175.0	6,643.4	114.4	114.1	73.15	5,932.1	910.9	366.7	146.6	220.17	1.666	
12,300.0	6,749.8	12,275.0	6,642.8	116.3	116.0	73.05	6,032.1	910.9	366.9	143.2	223.74	1.640	
12,400.0	6,749.9	12,375.0	6,642.2	118.2	117.9	72.94	6,132.1	910.9	367.1	139.8	227.30	1.615	
12,500.0	6,750.0	12,474.9	6,641.6	120.1	119.8	72.83	6,232.1	910.9	367.4	136.5	230.87	1.591	
12,600.0	6,750.1	12,574.9	6,641.0	122.0	121.7	72.73	6,332.1	910.9	367.6	133.1	234.42	1.568	
12,700.0	6,750.2	12,674.9	6,640.4	123.9	123.6	72.62	6,432.1	910.9	367.8	129.8	237.98	1.545	
12,800.0	6,750.4	12,774.9	6,639.8	125.8	125.5	72.51	6,532.1	910.9	368.0	126.5	241.53	1.524	
12,900.0	6,750.5	12,874.9	6,639.2	127.7	127.4	72.41	6,632.1	910.9	368.2	123.1	245.08	1.502	
13,000.0	6,750.6	12,974.9	6,638.6	129.6	129.3	72.30	6,732.1	910.9	368.4	119.8	248.63	1.482 Level 3	
13,100.0	6,750.7	13,074.9	6,638.0	131.5	131.2	72.20	6,832.1	910.9	368.6	116.5	252.17	1.462 Level 3	
13,200.0	6,750.8	13,174.9	6,637.3	133.4	133.0	72.09	6,932.1	910.9	368.9	113.2	255.71	1.443 Level 3	
13,300.0	6,750.9	13,274.9	6,636.7	135.3	134.9	71.99	7,032.1	910.9	369.1	109.8	259.24	1.424 Level 3	
13,400.0	6,751.0	13,374.9	6,636.1	137.2	136.8	71.88	7,132.1	910.9	369.3	106.5	262.77	1.405 Level 3	
13,418.7	6,751.0	13,393.6	6,636.0	137.6	137.2	71.86	7,150.7	910.9	369.4	105.9	263.43	1.402 Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 27K-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-323 - Wellbore #1 - Plan #2 (7-09-14)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	171.10	-623.0	97.5	630.6						
100.0	100.0	99.5	99.5	0.1	0.1	171.10	-623.0	97.5	630.6	630.3	0.22	2,812.434			
200.0	200.0	199.5	199.5	0.3	0.3	171.10	-623.0	97.5	630.6	629.9	0.67	936.700			
300.0	300.0	299.5	299.5	0.6	0.6	171.10	-623.0	97.5	630.6	629.4	1.12	561.645			
400.0	400.0	399.5	399.5	0.8	0.8	171.10	-623.0	97.5	630.6	629.0	1.57	401.060			
500.0	500.0	499.5	499.5	1.0	1.0	171.10	-623.0	97.5	630.6	628.5	2.02	311.886			
600.0	600.0	599.5	599.5	1.2	1.2	171.10	-623.0	97.5	630.6	628.1	2.47	255.154			
700.0	700.0	699.5	699.5	1.5	1.5	171.10	-623.0	97.5	630.6	627.6	2.92	215.884			
800.0	800.0	799.5	799.5	1.7	1.7	171.10	-623.0	97.5	630.6	627.2	3.37	187.090			
900.0	900.0	899.5	899.5	1.9	1.9	171.10	-623.0	97.5	630.6	626.7	3.82	165.073			
1,000.0	1,000.0	999.5	999.5	2.1	2.1	171.10	-623.0	97.5	630.6	626.3	4.27	147.692			
1,100.0	1,100.0	1,115.0	1,115.0	2.4	2.4	170.94	-621.3	99.1	629.3	624.6	4.75	132.526			
1,200.0	1,200.0	1,230.3	1,230.0	2.6	2.6	170.43	-616.2	103.8	625.7	620.4	5.23	119.679			
1,300.0	1,300.0	1,345.0	1,344.1	2.8	2.9	99.54	-607.8	111.7	619.9	614.2	5.72	108.408			
1,400.0	1,399.8	1,459.1	1,457.2	3.0	3.2	99.04	-596.2	122.6	612.4	606.2	6.22	98.478			
1,500.0	1,499.5	1,568.3	1,564.6	3.2	3.5	98.62	-582.1	135.8	603.3	596.5	6.74	89.469			
1,600.0	1,598.7	1,667.8	1,662.4	3.5	3.8	98.50	-568.5	148.5	594.2	586.9	7.28	81.656			
1,700.0	1,697.5	1,767.4	1,760.3	3.7	4.2	98.70	-555.0	161.1	585.6	577.7	7.85	74.624			
1,800.0	1,795.9	1,867.1	1,858.2	4.0	4.5	98.96	-541.4	173.8	577.3	568.9	8.45	68.287			
1,900.0	1,894.3	1,966.7	1,956.0	4.4	4.9	99.22	-527.9	186.5	569.1	560.0	9.09	62.625			
2,000.0	1,992.7	2,066.3	2,053.9	4.7	5.3	99.48	-514.3	199.2	560.9	551.1	9.74	57.590			
2,100.0	2,091.1	2,166.0	2,151.8	5.0	5.6	99.75	-500.8	211.8	552.7	542.3	10.41	53.111			
2,200.0	2,189.5	2,265.6	2,249.7	5.4	6.0	100.02	-487.2	224.5	544.5	533.4	11.08	49.120			
2,300.0	2,287.9	2,365.2	2,347.6	5.7	6.4	100.31	-473.7	237.2	536.3	524.5	11.77	45.554			
2,400.0	2,386.3	2,464.8	2,445.5	6.1	6.8	100.60	-460.1	249.9	528.1	515.6	12.47	42.357			
2,500.0	2,484.7	2,564.5	2,543.3	6.5	7.2	100.90	-446.6	262.5	519.9	506.8	13.17	39.483			
2,600.0	2,583.1	2,664.1	2,641.2	6.8	7.5	101.22	-433.0	275.2	511.8	497.9	13.87	36.888			
2,700.0	2,681.5	2,763.7	2,739.1	7.2	7.9	101.54	-419.5	287.9	503.7	489.1	14.58	34.538			
2,800.0	2,779.9	2,863.4	2,837.0	7.6	8.3	101.87	-405.9	300.6	495.6	480.3	15.29	32.402			
2,900.0	2,878.3	2,963.0	2,934.9	8.0	8.7	102.22	-392.4	313.2	487.5	471.5	16.01	30.454			
3,000.0	2,976.7	3,062.6	3,032.8	8.3	9.1	102.57	-378.8	325.9	479.4	462.7	16.72	28.671			
3,100.0	3,075.1	3,162.2	3,130.7	8.7	9.5	102.94	-365.3	338.6	471.3	453.9	17.43	27.036			
3,200.0	3,173.5	3,261.9	3,228.5	9.1	9.9	103.32	-351.7	351.3	463.3	445.2	18.15	25.531			
3,300.0	3,271.9	3,361.5	3,326.4	9.5	10.3	103.72	-338.2	363.9	455.3	436.4	18.86	24.142			
3,400.0	3,370.3	3,461.1	3,424.3	9.9	10.7	104.12	-324.6	376.6	447.3	427.7	19.57	22.857			
3,500.0	3,468.7	3,560.7	3,522.2	10.3	11.1	104.55	-311.1	389.3	439.3	419.0	20.28	21.665			
3,600.0	3,567.1	3,660.4	3,620.1	10.7	11.5	104.99	-297.5	402.0	431.4	410.4	20.98	20.558			
3,700.0	3,665.5	3,760.0	3,718.0	11.1	11.9	105.44	-284.0	414.7	423.5	401.8	21.69	19.526			
3,800.0	3,763.9	3,859.6	3,815.9	11.5	12.4	105.91	-270.4	427.3	415.6	393.2	22.39	18.563			
3,900.0	3,862.3	3,959.3	3,913.7	11.9	12.8	106.40	-256.9	440.0	407.7	384.6	23.08	17.663			
4,000.0	3,960.7	4,058.9	4,011.6	12.3	13.2	106.91	-243.3	452.7	399.9	376.1	23.77	16.820			
4,100.0	4,059.1	4,158.5	4,109.5	12.7	13.6	107.44	-229.7	465.4	392.1	367.6	24.46	16.029			
4,200.0	4,157.5	4,258.1	4,207.4	13.1	14.0	108.00	-216.2	478.0	384.3	359.2	25.14	15.286			
4,300.0	4,255.9	4,357.8	4,305.3	13.5	14.4	108.57	-202.6	490.7	376.6	350.8	25.81	14.587			
4,400.0	4,354.3	4,457.4	4,403.2	13.8	14.8	109.17	-189.1	503.4	368.9	342.4	26.48	13.929			
4,500.0	4,452.7	4,557.0	4,501.0	14.2	15.2	109.79	-175.5	516.1	361.2	334.1	27.14	13.308			
4,600.0	4,551.2	4,656.7	4,598.9	14.6	15.6	110.25	-162.0	528.7	353.4	325.6	27.78	12.723			
4,700.0	4,650.3	4,756.3	4,696.8	14.9	16.0	110.74	-148.4	541.4	344.5	316.1	28.37	12.141			
4,800.0	4,749.7	4,855.7	4,794.5	15.1	16.4	109.46	-134.9	554.1	334.3	305.3	29.00	11.528			
4,900.0	4,849.5	4,954.9	4,891.9	15.3	16.8	108.14	-121.4	566.7	323.1	293.5	29.68	10.888			
5,000.0	4,949.4	5,053.6	4,989.0	15.5	17.2	106.11	-108.0	579.2	311.1	280.7	30.41	10.230			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 27K-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-323 - Wellbore #1 - Plan #2 (7-09-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,100.0	5,049.4	5,151.9	5,085.6	15.6	17.6	173.83	-94.6	591.8	298.6	267.4	31.19	9.574		
5,200.0	5,149.4	5,250.2	5,182.1	15.8	18.0	171.04	-81.3	604.3	286.7	254.7	32.00	8.959		
5,300.0	5,249.4	5,347.8	5,278.0	15.9	18.4	168.04	-68.0	616.7	275.5	242.7	32.80	8.398		
5,400.0	5,349.4	5,441.5	5,370.3	16.1	18.7	165.29	-56.6	627.3	266.2	232.7	33.49	7.950		
5,500.0	5,449.4	5,536.1	5,464.1	16.2	19.0	162.92	-47.4	635.9	259.3	225.2	34.07	7.610		
5,600.0	5,549.4	5,631.4	5,559.0	16.4	19.2	161.04	-40.4	642.5	254.4	219.8	34.58	7.357		
5,700.0	5,649.4	5,727.3	5,654.6	16.6	19.4	159.74	-35.7	646.9	251.3	216.3	35.01	7.178		
5,800.0	5,749.4	5,823.5	5,750.8	16.7	19.5	159.07	-33.3	649.1	249.8	214.4	35.36	7.063		
5,868.1	5,817.5	5,889.7	5,817.0	16.8	19.6	158.98	-33.0	649.4	249.6	214.0	35.57	7.017		
5,900.0	5,849.4	5,921.6	5,848.9	16.9	19.7	158.98	-33.0	649.4	249.6	213.9	35.67	6.998		
5,964.5	5,913.9	5,986.1	5,913.4	17.0	19.8	158.98	-33.0	649.4	249.6	213.7	35.87	6.958 CC		
6,000.0	5,949.4	6,020.2	5,947.4	17.1	19.8	158.98	-33.0	649.4	249.6	213.6	35.98	6.937 ES, SF		
6,100.0	6,049.3	6,100.0	6,027.1	17.2	19.9	159.37	-37.6	649.4	257.8	221.6	36.16	7.128		
6,200.0	6,148.0	6,167.5	6,093.7	17.5	19.9	160.18	-48.1	649.4	286.4	250.4	35.91	7.974		
6,300.0	6,243.9	6,229.7	6,154.2	17.7	19.8	160.99	-62.8	649.4	334.4	299.2	35.21	9.498		
6,400.0	6,335.2	6,280.5	6,202.5	18.1	19.8	161.17	-78.5	649.4	399.1	365.0	34.13	11.694		
6,500.0	6,420.5	6,319.3	6,238.6	18.5	19.7	160.20	-92.6	649.4	477.0	444.2	32.78	14.552		
6,600.0	6,498.3	6,350.0	6,266.7	18.9	19.6	157.52	-105.1	649.4	564.5	533.2	31.36	18.004		
6,700.0	6,567.2	6,364.0	6,279.3	19.5	19.6	149.91	-111.1	649.4	658.5	627.9	30.62	21.506		
6,800.0	6,626.0	6,372.7	6,287.1	20.2	19.6	129.03	-115.0	649.4	756.2	723.5	32.74	23.095		
6,900.0	6,673.8	6,374.2	6,288.4	21.1	19.6	71.11	-115.7	649.4	855.5	821.5	33.95	25.200		
7,000.0	6,709.8	6,369.7	6,284.4	22.1	19.6	30.44	-113.6	649.4	954.4	930.1	24.31	39.262		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 27K-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-403 - Wellbore #1 - Plan #2 (7-09-14)											Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.5	0.5	0.0	0.0	171.73	-652.1	94.7	659.0					
100.0	100.0	100.5	100.5	0.1	0.1	171.73	-652.1	94.7	659.0	658.7	0.23	2,917.161		
200.0	200.0	200.5	200.5	0.3	0.3	171.73	-652.1	94.7	659.0	658.3	0.68	975.623		
300.0	300.0	300.5	300.5	0.6	0.6	171.73	-652.1	94.7	659.0	657.8	1.12	585.764		
400.0	400.0	400.5	400.5	0.8	0.8	171.73	-652.1	94.7	659.0	657.4	1.57	418.522		
500.0	500.0	500.5	500.5	1.0	1.0	171.73	-652.1	94.7	659.0	656.9	2.02	325.569		
600.0	600.0	600.5	600.5	1.2	1.2	171.73	-652.1	94.7	659.0	656.5	2.47	266.401		
700.0	700.0	700.5	700.5	1.5	1.5	171.73	-652.1	94.7	659.0	656.0	2.92	225.432		
800.0	800.0	800.5	800.5	1.7	1.7	171.73	-652.1	94.7	659.0	655.6	3.37	195.385		
900.0	900.0	900.5	900.5	1.9	1.9	171.73	-652.1	94.7	659.0	655.1	3.82	172.405		
1,000.0	1,000.0	1,000.5	1,000.5	2.1	2.1	171.73	-652.1	94.7	659.0	654.7	4.27	154.262		
1,100.0	1,100.0	1,100.5	1,100.5	2.4	2.4	171.73	-652.1	94.7	659.0	654.2	4.72	139.574		
1,200.0	1,200.0	1,200.5	1,200.5	2.6	2.6	171.73	-652.1	94.7	659.0	653.8	5.17	127.440		
1,300.0	1,300.0	1,300.5	1,300.5	2.8	2.8	101.53	-652.1	94.7	659.3	653.7	5.61	117.486		
1,400.0	1,399.8	1,400.3	1,400.3	3.0	3.0	101.96	-652.1	94.7	660.4	654.3	6.05	109.178		
1,500.0	1,499.5	1,500.0	1,500.0	3.2	3.3	102.65	-652.1	94.7	662.2	655.7	6.50	101.958		
1,600.0	1,598.7	1,599.2	1,599.2	3.5	3.5	103.62	-652.1	94.7	665.0	658.1	6.96	95.583		
1,700.0	1,697.5	1,698.0	1,698.0	3.7	3.7	104.83	-652.1	94.7	668.9	661.5	7.44	89.872		
1,800.0	1,795.9	1,796.4	1,796.4	4.0	3.9	106.26	-652.1	94.7	673.7	665.8	7.95	84.703		
1,900.0	1,894.3	1,894.8	1,894.8	4.4	4.1	107.68	-652.1	94.7	679.0	670.5	8.48	80.067		
2,000.0	1,992.7	1,993.2	1,993.2	4.7	4.4	109.08	-652.1	94.7	684.7	675.7	9.02	75.927		
2,100.0	2,091.1	2,118.1	2,118.1	5.0	4.6	110.75	-649.9	95.7	689.1	679.4	9.62	71.634		
2,200.0	2,189.5	2,245.8	2,245.5	5.4	4.9	112.28	-642.4	98.7	689.7	679.4	10.23	67.400		
2,300.0	2,287.9	2,374.0	2,372.9	5.7	5.2	113.66	-629.6	104.0	686.4	675.5	10.85	63.238		
2,400.0	2,386.3	2,502.0	2,499.4	6.1	5.5	114.90	-611.5	111.3	679.1	667.6	11.48	59.142		
2,500.0	2,484.7	2,611.1	2,606.6	6.5	5.8	115.90	-592.7	119.0	668.7	656.6	12.08	55.368		
2,600.0	2,583.1	2,710.0	2,703.7	6.8	6.1	116.82	-575.3	126.2	658.2	645.6	12.65	52.037		
2,700.0	2,681.5	2,808.8	2,800.7	7.2	6.4	117.78	-557.9	133.3	647.9	634.6	13.22	48.998		
2,800.0	2,779.9	2,907.7	2,897.8	7.6	6.7	118.76	-540.5	140.4	637.7	623.9	13.80	46.226		
2,900.0	2,878.3	3,006.6	2,994.9	8.0	7.0	119.77	-523.1	147.5	627.8	613.4	14.37	43.691		
3,000.0	2,976.7	3,105.4	3,092.0	8.3	7.4	120.82	-505.7	154.6	618.0	603.1	14.94	41.370		
3,100.0	3,075.1	3,204.3	3,189.0	8.7	7.7	121.90	-488.4	161.7	608.5	593.0	15.51	39.241		
3,200.0	3,173.5	3,303.2	3,286.1	9.1	8.0	123.01	-471.0	168.8	599.2	583.1	16.07	37.286		
3,300.0	3,271.9	3,402.0	3,383.2	9.5	8.4	124.16	-453.6	175.9	590.1	573.5	16.63	35.487		
3,400.0	3,370.3	3,500.9	3,480.2	9.9	8.8	125.34	-436.2	183.0	581.3	564.1	17.18	33.830		
3,500.0	3,468.7	3,599.8	3,577.3	10.3	9.1	126.56	-418.8	190.1	572.7	555.0	17.73	32.301		
3,600.0	3,567.1	3,698.7	3,674.4	10.7	9.5	127.81	-401.5	197.2	564.4	546.1	18.27	30.889		
3,700.0	3,665.5	3,797.5	3,771.4	11.1	9.8	129.10	-384.1	204.3	556.4	537.6	18.81	29.583		
3,800.0	3,763.9	3,896.4	3,868.5	11.5	10.2	130.43	-366.7	211.4	548.6	529.3	19.34	28.374		
3,900.0	3,862.3	3,995.3	3,965.6	11.9	10.6	131.79	-349.3	218.5	541.2	521.4	19.86	27.253		
4,000.0	3,960.7	4,094.1	4,062.7	12.3	11.0	133.19	-331.9	225.6	534.1	513.7	20.37	26.214		
4,100.0	4,059.1	4,193.0	4,159.7	12.7	11.3	134.62	-314.6	232.7	527.3	506.4	20.88	25.250		
4,200.0	4,157.5	4,291.9	4,256.8	13.1	11.7	136.09	-297.2	239.8	520.9	499.5	21.39	24.355		
4,300.0	4,255.9	4,390.7	4,353.9	13.5	12.1	137.60	-279.8	246.9	514.8	492.9	21.89	23.523		
4,400.0	4,354.3	4,489.6	4,450.9	13.8	12.5	139.13	-262.4	254.0	509.1	486.7	22.38	22.749		
4,500.0	4,452.7	4,588.5	4,548.0	14.2	12.9	140.71	-245.0	261.2	503.8	480.9	22.87	22.029		
4,600.0	4,551.2	4,687.4	4,645.1	14.6	13.3	142.22	-227.7	268.3	498.3	475.0	23.34	21.348		
4,700.0	4,650.3	4,786.4	4,742.3	14.9	13.7	143.50	-210.2	275.4	490.6	466.9	23.76	20.651		
4,800.0	4,749.7	4,885.3	4,839.4	15.1	14.1	144.57	-192.9	282.5	480.4	456.2	24.16	19.887		
4,900.0	4,849.5	4,984.1	4,936.5	15.3	14.4	145.41	-175.5	289.6	467.5	442.9	24.53	19.055		
5,000.0	4,949.4	5,082.7	5,033.2	15.5	14.8	146.04	-158.2	296.7	451.9	427.0	24.89	18.156		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 27K-HZ Pad Sec.27-T5N-R64W - Chesnut 27K-403 - Wellbore #1 - Plan #2 (7-09-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	5,049.4	5,180.9	5,129.7	15.6	15.2	-143.08	-140.9	303.7	433.8	408.6	25.25	17.177		
5,200.0	5,149.4	5,279.1	5,226.1	15.8	15.6	-142.41	-123.6	310.8	415.4	389.8	25.67	16.184		
5,300.0	5,249.4	5,377.3	5,322.5	15.9	16.0	-141.69	-106.4	317.8	397.1	371.0	26.09	15.223		
5,400.0	5,349.4	5,468.3	5,411.9	16.1	16.3	-140.98	-90.9	324.2	379.5	353.0	26.48	14.334		
5,500.0	5,449.4	5,556.1	5,498.7	16.2	16.6	-140.35	-78.3	329.3	364.7	337.8	26.83	13.589		
5,600.0	5,549.4	5,644.8	5,586.6	16.4	16.8	-139.81	-68.0	333.5	352.8	325.6	27.18	12.976		
5,700.0	5,649.4	5,734.0	5,675.5	16.6	17.0	-139.38	-60.3	336.7	343.8	316.3	27.53	12.487		
5,800.0	5,749.4	5,823.7	5,765.0	16.7	17.2	-139.08	-55.1	338.8	337.9	310.0	27.88	12.118		
5,900.0	5,849.4	5,913.7	5,854.9	16.9	17.4	-138.93	-52.4	339.9	334.9	306.7	28.23	11.865		
5,966.8	5,916.2	5,975.5	5,916.7	17.0	17.5	-138.91	-52.1	340.0	334.5	306.1	28.46	11.755		
6,000.0	5,949.4	6,008.7	5,949.9	17.1	17.5	-138.91	-52.1	340.0	334.5	305.9	28.59	11.703 CC		
6,006.9	5,956.3	6,015.5	5,956.8	17.1	17.5	-138.91	-52.1	340.0	334.5	305.9	28.62	11.688 ES		
6,100.0	6,049.3	6,100.0	6,041.2	17.2	17.6	-139.12	-52.7	340.0	337.4	308.4	29.04	11.617 SF		
6,200.0	6,148.0	6,170.7	6,111.7	17.5	17.7	-140.05	-58.8	340.0	355.8	326.6	29.23	12.172		
6,300.0	6,243.9	6,234.9	6,174.9	17.7	17.7	-141.18	-69.9	340.0	391.8	362.6	29.12	13.452		
6,400.0	6,335.2	6,288.5	6,226.7	18.1	17.6	-141.61	-83.2	340.0	444.4	415.7	28.73	15.466		
6,500.0	6,420.5	6,330.3	6,266.5	18.5	17.6	-140.53	-96.1	340.0	511.7	483.5	28.23	18.125		
6,600.0	6,498.3	6,360.8	6,295.0	18.9	17.5	-137.05	-106.8	340.0	590.7	562.7	28.01	21.087		
6,700.0	6,567.2	6,380.9	6,313.6	19.5	17.5	-129.66	-114.6	340.0	678.2	649.3	28.87	23.493		
6,800.0	6,626.0	6,400.0	6,331.0	20.2	17.4	-117.16	-122.4	340.0	771.3	739.7	31.56	24.441		
6,900.0	6,673.8	6,400.0	6,331.0	21.1	17.4	-92.60	-122.4	340.0	867.2	831.5	35.68	24.306		
7,000.0	6,709.8	6,400.0	6,331.0	22.1	17.4	-64.23	-122.4	340.0	964.1	929.5	34.51	27.932		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 27K-HZ Pad Sec.27-T5N-R64W - Chesnut 27O-243 - Wellbore #1 - Plan #2 (7-08-14)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
0.0	0.0	0.0	0.0	0.0	0.0	170.62	-590.2	97.5	598.2						
100.0	100.0	99.5	99.5	0.1	0.1	170.62	-590.2	97.5	598.2	598.0	0.22	2,668.013			
200.0	200.0	199.5	199.5	0.3	0.3	170.62	-590.2	97.5	598.2	597.5	0.67	888.599			
300.0	300.0	299.5	299.5	0.6	0.6	170.62	-590.2	97.5	598.2	597.1	1.12	532.804			
400.0	400.0	399.5	399.5	0.8	0.8	170.62	-590.2	97.5	598.2	596.6	1.57	380.465			
500.0	500.0	508.1	508.0	1.0	1.0	170.44	-589.1	99.3	597.5	595.4	2.04	293.580			
600.0	600.0	616.3	616.1	1.2	1.3	169.89	-585.9	104.5	595.3	592.8	2.50	238.004			
700.0	700.0	724.0	723.3	1.5	1.5	168.98	-580.5	113.1	591.9	588.9	2.98	198.713			
800.0	800.0	830.8	829.2	1.7	1.8	167.70	-573.1	125.0	587.4	583.9	3.47	169.193			
900.0	900.0	936.4	933.2	1.9	2.2	166.05	-563.8	140.1	581.9	577.9	3.98	146.185			
1,000.0	1,000.0	1,040.5	1,035.2	2.1	2.6	164.03	-552.6	158.1	575.9	571.4	4.50	127.842			
1,100.0	1,100.0	1,138.1	1,130.3	2.4	3.0	161.93	-541.2	176.6	570.1	565.1	5.01	113.761			
1,200.0	1,200.0	1,235.6	1,225.4	2.6	3.4	159.79	-529.7	195.0	565.1	559.6	5.51	102.542			
1,300.0	1,300.0	1,333.5	1,320.8	2.8	3.8	87.52	-518.2	213.5	560.8	554.2	6.62	84.684			
1,400.0	1,399.8	1,432.0	1,416.8	3.0	4.3	85.89	-506.7	232.2	557.1	549.8	7.28	76.494			
1,500.0	1,499.5	1,531.0	1,513.3	3.2	4.7	84.58	-495.1	250.9	553.5	545.5	7.96	69.533			
1,600.0	1,598.7	1,630.4	1,610.3	3.5	5.2	83.60	-483.4	269.7	549.8	541.1	8.66	63.495			
1,700.0	1,697.5	1,730.1	1,707.4	3.7	5.7	82.98	-471.7	288.6	545.8	536.5	9.39	58.155			
1,800.0	1,795.9	1,829.9	1,804.7	4.0	6.1	82.50	-460.0	307.4	541.7	531.6	10.14	53.400			
1,900.0	1,894.3	1,929.7	1,902.1	4.4	6.6	82.01	-448.3	326.3	537.6	526.7	10.92	49.222			
2,000.0	1,992.7	2,029.5	1,999.4	4.7	7.1	81.51	-436.6	345.2	533.6	521.8	11.72	45.544			
2,100.0	2,091.1	2,129.3	2,096.7	5.0	7.5	81.00	-424.9	364.1	529.5	517.0	12.52	42.297			
2,200.0	2,189.5	2,229.1	2,194.0	5.4	8.0	80.48	-413.2	383.0	525.6	512.2	13.33	39.416			
2,300.0	2,287.9	2,328.9	2,291.3	5.7	8.5	79.96	-401.5	401.9	521.6	507.5	14.15	36.852			
2,400.0	2,386.3	2,428.7	2,388.6	6.1	8.9	79.43	-389.8	420.7	517.7	502.8	14.98	34.559			
2,500.0	2,484.7	2,528.5	2,485.9	6.5	9.4	78.89	-378.1	439.6	513.9	498.1	15.81	32.499			
2,600.0	2,583.1	2,628.3	2,583.2	6.8	9.9	78.34	-366.3	458.5	510.1	493.5	16.65	30.643			
2,700.0	2,681.5	2,728.1	2,680.5	7.2	10.4	77.78	-354.6	477.4	506.4	488.9	17.48	28.962			
2,800.0	2,779.9	2,828.0	2,777.8	7.6	10.8	77.22	-342.9	496.3	502.7	484.3	18.32	27.436			
2,900.0	2,878.3	2,927.8	2,875.1	8.0	11.3	76.65	-331.2	515.1	499.0	479.9	19.16	26.044			
3,000.0	2,976.7	3,027.6	2,972.4	8.3	11.8	76.07	-319.5	534.0	495.4	475.4	20.00	24.772			
3,100.0	3,075.1	3,127.4	3,069.7	8.7	12.3	75.48	-307.8	552.9	491.9	471.0	20.84	23.606			
3,200.0	3,173.5	3,227.2	3,167.0	9.1	12.7	74.88	-296.1	571.8	488.4	466.7	21.67	22.533			
3,300.0	3,271.9	3,327.0	3,264.3	9.5	13.2	74.28	-284.4	590.7	484.9	462.4	22.51	21.544			
3,400.0	3,370.3	3,426.8	3,361.6	9.9	13.7	73.66	-272.7	609.5	481.5	458.2	23.34	20.629			
3,500.0	3,468.7	3,526.6	3,458.9	10.3	14.2	73.04	-261.0	628.4	478.2	454.0	24.17	19.783			
3,600.0	3,567.1	3,626.4	3,556.2	10.7	14.7	72.41	-249.3	647.3	474.9	449.9	25.00	18.997			
3,700.0	3,665.5	3,726.2	3,653.5	11.1	15.1	71.77	-237.6	666.2	471.7	445.9	25.83	18.266			
3,800.0	3,763.9	3,826.0	3,750.8	11.5	15.6	71.12	-225.9	685.1	468.6	441.9	26.65	17.585			
3,900.0	3,862.3	3,925.8	3,848.1	11.9	16.1	70.46	-214.1	703.9	465.5	438.0	27.46	16.949			
4,000.0	3,960.7	4,025.6	3,945.4	12.3	16.6	69.79	-202.4	722.8	462.5	434.2	28.28	16.355			
4,100.0	4,059.1	4,125.5	4,042.7	12.7	17.0	69.12	-190.7	741.7	459.5	430.4	29.08	15.799			
4,200.0	4,157.5	4,225.3	4,140.0	13.1	17.5	68.43	-179.0	760.6	456.6	426.7	29.88	15.278			
4,300.0	4,255.9	4,325.1	4,237.3	13.5	18.0	67.74	-167.3	779.5	453.7	423.1	30.68	14.790			
4,400.0	4,354.3	4,424.9	4,334.7	13.8	18.5	67.04	-155.6	798.3	451.0	419.5	31.47	14.331			
4,500.0	4,452.7	4,524.7	4,432.0	14.2	18.9	66.33	-143.9	817.2	448.3	416.0	32.25	13.899			
4,600.0	4,551.2	4,624.5	4,529.2	14.6	19.4	65.51	-132.2	836.1	445.9	412.9	33.00	13.515			
4,700.0	4,650.3	4,724.0	4,626.3	14.9	19.9	64.32	-120.5	854.9	445.1	411.4	33.61	13.241			
4,701.0	4,651.3	4,725.1	4,627.3	14.9	19.9	64.30	-120.4	855.1	445.1	411.4	33.62	13.239 CC, ES			
4,800.0	4,749.7	4,823.3	4,723.0	15.1	20.4	62.76	-108.9	873.7	446.0	411.8	34.14	13.065			
4,900.0	4,849.5	4,922.0	4,819.3	15.3	20.9	60.87	-97.3	892.4	448.9	414.3	34.56	12.989 SF			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 27K-HZ Pad Sec.27-T5N-R64W - Chesnut 27O-243 - Wellbore #1 - Plan #2 (7-08-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,949.4	5,020.2	4,915.1	15.5	21.3	58.69		-85.8	911.0	454.2	419.3	34.88	13.021	
5,100.0	5,049.4	5,117.8	5,010.2	15.6	21.8	126.59		-74.3	929.4	461.8	426.7	35.11	13.156	
5,200.0	5,149.4	5,218.5	5,108.5	15.8	22.2	124.08		-62.7	948.2	470.5	435.2	35.28	13.336	
5,300.0	5,249.4	5,324.3	5,212.4	15.9	22.6	121.90		-52.2	965.1	478.7	443.3	35.41	13.519	
5,400.0	5,349.4	5,431.5	5,318.3	16.1	22.9	120.18		-43.6	978.9	485.7	450.1	35.56	13.658	
5,500.0	5,449.4	5,539.7	5,425.8	16.2	23.1	118.90		-37.1	989.4	491.2	455.4	35.74	13.742	
5,600.0	5,549.4	5,648.8	5,534.5	16.4	23.3	118.05		-32.7	996.6	495.0	459.0	35.96	13.764	
5,700.0	5,649.4	5,758.3	5,643.9	16.6	23.5	117.63		-30.5	1,000.2	497.0	460.7	36.22	13.720	
5,800.0	5,749.4	5,863.2	5,748.9	16.7	23.6	117.58		-30.2	1,000.6	497.2	460.7	36.52	13.617	
5,900.0	5,849.4	5,963.2	5,848.9	16.9	23.7	117.58		-30.2	1,000.6	497.2	460.4	36.81	13.506	
6,000.0	5,949.4	6,043.5	5,929.1	17.1	23.8	117.86		-32.9	1,000.6	498.9	461.8	37.11	13.443	
6,100.0	6,049.3	6,118.4	6,003.3	17.2	23.8	118.66		-42.9	1,000.6	506.8	469.4	37.33	13.575	
6,200.0	6,148.0	6,187.0	6,070.1	17.5	23.8	119.88		-58.4	1,000.6	526.2	488.8	37.41	14.066	
6,300.0	6,243.9	6,250.0	6,130.0	17.7	23.7	121.08		-77.8	1,000.6	559.0	521.7	37.28	14.993	
6,400.0	6,335.2	6,300.0	6,176.3	18.1	23.6	121.17		-96.7	1,000.6	605.7	568.8	36.84	16.441	
6,500.0	6,420.5	6,326.9	6,200.7	18.5	23.6	118.53		-108.1	1,000.6	665.3	629.2	36.13	18.416	
6,600.0	6,498.3	6,350.0	6,221.2	18.9	23.6	113.93		-118.6	1,000.6	736.1	700.6	35.49	20.740	
6,700.0	6,567.2	6,365.0	6,234.4	19.5	23.5	106.37		-125.7	1,000.6	815.4	780.2	35.19	23.173	
6,800.0	6,626.0	6,371.1	6,239.8	20.2	23.5	95.18		-128.7	1,000.6	900.5	865.2	35.33	25.489	
6,900.0	6,673.8	6,370.4	6,239.2	21.1	23.5	80.98		-128.4	1,000.6	988.8	953.4	35.44	27.902	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 27K-HZ Pad Sec.27-T5N-R64W - Chesnut 27O-303 - Wellbore #1 - Plan #2 (7-08-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	170.14	170.14	-561.0	97.5	569.4				
100.0	100.0	99.5	99.5	0.1	0.1	170.14	170.14	-561.0	97.5	569.4	569.2	0.22	2,539.849	
200.0	200.0	199.5	199.5	0.3	0.3	170.14	170.14	-561.0	97.5	569.4	568.8	0.67	845.913	
300.0	300.0	304.3	304.2	0.6	0.6	169.95	169.95	-560.3	99.3	569.0	567.9	1.13	504.325	
400.0	400.0	408.8	408.6	0.8	0.8	169.39	169.39	-558.0	104.5	567.8	566.2	1.59	356.803	
500.0	500.0	512.7	512.1	1.0	1.1	168.46	168.46	-554.3	113.2	565.9	563.8	2.06	274.036	
600.0	600.0	615.9	614.4	1.2	1.4	167.16	167.16	-549.1	125.2	563.4	560.9	2.55	220.919	
700.0	700.0	717.9	715.1	1.5	1.7	165.49	165.49	-542.6	140.4	560.7	557.6	3.05	184.035	
800.0	800.0	818.7	813.9	1.7	2.1	163.47	163.47	-534.7	158.7	558.0	554.4	3.55	157.110	
900.0	900.0	917.9	910.4	1.9	2.6	161.12	161.12	-525.7	179.7	555.7	551.6	4.06	136.842	
1,000.0	1,000.0	1,015.2	1,004.3	2.1	3.1	158.50	158.50	-515.6	203.1	554.2	549.6	4.57	121.307	
1,066.4	1,066.4	1,079.1	1,065.9	2.3	3.4	156.72	156.72	-508.8	218.9	553.9	549.0	4.89	113.294 CC	
1,100.0	1,100.0	1,111.5	1,097.1	2.4	3.6	155.83	155.83	-505.4	226.9	554.0	548.9	5.05	109.709 ES	
1,200.0	1,200.0	1,207.8	1,189.9	2.6	4.1	153.16	153.16	-495.2	250.6	555.1	549.5	5.52	100.498	
1,300.0	1,300.0	1,304.6	1,283.1	2.8	4.6	80.27	80.27	-484.9	274.4	557.1	549.7	7.40	75.336	
1,400.0	1,399.8	1,402.2	1,377.2	3.0	5.2	78.06	78.06	-474.6	298.5	559.6	551.5	8.12	68.883	
1,500.0	1,499.5	1,500.5	1,471.8	3.2	5.7	76.18	76.18	-464.2	322.7	562.1	553.2	8.86	63.416	
1,600.0	1,598.7	1,599.4	1,567.1	3.5	6.3	74.66	74.66	-453.7	347.1	564.2	554.6	9.62	58.651	
1,700.0	1,697.5	1,698.7	1,662.8	3.7	6.8	73.48	73.48	-443.2	371.5	565.7	555.3	10.40	54.387	
1,800.0	1,795.9	1,798.3	1,758.7	4.0	7.4	72.54	72.54	-432.6	396.1	566.8	555.6	11.21	50.553	
1,900.0	1,894.3	1,897.9	1,854.6	4.4	7.9	71.61	71.61	-422.0	420.6	568.0	556.0	12.03	47.200	
2,000.0	1,992.7	1,997.4	1,950.5	4.7	8.5	70.68	70.68	-411.5	445.1	569.4	556.5	12.86	44.262	
2,100.0	2,091.1	2,097.0	2,046.5	5.0	9.0	69.76	69.76	-400.9	469.7	570.9	557.2	13.70	41.678	
2,200.0	2,189.5	2,196.5	2,142.4	5.4	9.6	68.84	68.84	-390.4	494.2	572.6	558.0	14.53	39.396	
2,300.0	2,287.9	2,296.1	2,238.3	5.7	10.2	67.93	67.93	-379.8	518.7	574.4	559.0	15.37	37.373	
2,400.0	2,386.3	2,395.7	2,334.2	6.1	10.7	67.02	67.02	-369.3	543.3	576.3	560.1	16.20	35.572	
2,500.0	2,484.7	2,495.2	2,430.1	6.5	11.3	66.13	66.13	-358.7	567.8	578.4	561.4	17.03	33.963	
2,600.0	2,583.1	2,594.8	2,526.0	6.8	11.8	65.23	65.23	-348.2	592.3	580.7	562.8	17.86	32.519	
2,700.0	2,681.5	2,694.4	2,621.9	7.2	12.4	64.35	64.35	-337.6	616.8	583.1	564.4	18.68	31.220	
2,800.0	2,779.9	2,793.9	2,717.9	7.6	13.0	63.47	63.47	-327.1	641.4	585.6	566.1	19.49	30.046	
2,900.0	2,878.3	2,893.5	2,813.8	8.0	13.5	62.60	62.60	-316.5	665.9	588.3	568.0	20.30	28.983	
3,000.0	2,976.7	2,993.0	2,909.7	8.3	14.1	61.73	61.73	-306.0	690.4	591.1	570.0	21.10	28.018	
3,100.0	3,075.1	3,092.6	3,005.6	8.7	14.7	60.88	60.88	-295.4	715.0	594.0	572.1	21.89	27.139	
3,200.0	3,173.5	3,192.2	3,101.5	9.1	15.2	60.03	60.03	-284.9	739.5	597.1	574.4	22.67	26.336	
3,300.0	3,271.9	3,291.7	3,197.4	9.5	15.8	59.20	59.20	-274.3	764.0	600.3	576.8	23.45	25.602	
3,400.0	3,370.3	3,391.3	3,293.3	9.9	16.4	58.37	58.37	-263.8	788.5	603.6	579.4	24.21	24.928	
3,500.0	3,468.7	3,490.9	3,389.3	10.3	16.9	57.55	57.55	-253.2	813.1	607.1	582.1	24.97	24.310	
3,600.0	3,567.1	3,590.4	3,485.2	10.7	17.5	56.74	56.74	-242.7	837.6	610.6	584.9	25.72	23.741	
3,700.0	3,665.5	3,690.0	3,581.1	11.1	18.0	55.94	55.94	-232.1	862.1	614.3	587.9	26.46	23.216	
3,800.0	3,763.9	3,789.5	3,677.0	11.5	18.6	55.15	55.15	-221.5	886.7	618.1	591.0	27.19	22.732	
3,900.0	3,862.3	3,889.1	3,772.9	11.9	19.2	54.37	54.37	-211.0	911.2	622.1	594.2	27.91	22.285	
4,000.0	3,960.7	3,988.7	3,868.8	12.3	19.7	53.60	53.60	-200.4	935.7	626.1	597.5	28.63	21.871	
4,100.0	4,059.1	4,088.2	3,964.8	12.7	20.3	52.84	52.84	-189.9	960.3	630.3	601.0	29.33	21.487	
4,200.0	4,157.5	4,187.8	4,060.7	13.1	20.9	52.09	52.09	-179.3	984.8	634.6	604.5	30.03	21.132	
4,300.0	4,255.9	4,287.4	4,156.6	13.5	21.4	51.35	51.35	-168.8	1,009.3	638.9	608.2	30.72	20.802	
4,400.0	4,354.3	4,386.9	4,252.5	13.8	22.0	50.62	50.62	-158.2	1,033.8	643.4	612.0	31.39	20.495	
4,500.0	4,452.7	4,486.5	4,348.4	14.2	22.6	49.89	49.89	-147.7	1,058.4	648.0	615.9	32.06	20.210	
4,600.0	4,551.2	4,586.0	4,444.3	14.6	23.1	49.19	49.19	-137.1	1,082.9	653.1	620.4	32.70	19.971	
4,700.0	4,650.3	4,685.1	4,539.8	14.9	23.7	48.35	48.35	-126.6	1,107.3	660.5	627.3	33.23	19.877 SF	
4,800.0	4,749.7	4,783.7	4,634.7	15.1	24.2	47.36	47.36	-116.2	1,131.6	670.4	636.8	33.67	19.914	
4,900.0	4,849.5	4,881.7	4,729.1	15.3	24.8	46.23	46.23	-105.8	1,155.7	683.0	649.0	34.02	20.078	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 27K-HZ Pad Sec.27-T5N-R64W - Chesnut 27O-303 - Wellbore #1 - Plan #2 (7-08-14)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,949.4	4,978.9	4,822.8	15.5	25.3	44.99	-95.5	1,179.7	698.4	664.1	34.29	20.370	
5,100.0	5,049.4	5,075.3	4,915.7	15.6	25.9	113.91	-85.3	1,203.5	716.4	682.0	34.48	20.779	
5,200.0	5,149.4	5,171.7	5,008.5	15.8	26.4	112.40	-75.1	1,227.2	735.3	700.6	34.67	21.206	
5,300.0	5,249.4	5,285.2	5,118.2	15.9	26.9	110.80	-63.6	1,253.9	753.8	719.0	34.82	21.650	
5,400.0	5,349.4	5,406.5	5,236.6	16.1	27.4	109.41	-53.1	1,278.1	769.8	734.8	34.98	22.008	
5,500.0	5,449.4	5,529.9	5,358.1	16.2	27.8	108.33	-44.6	1,298.0	782.9	747.7	35.17	22.258	
5,600.0	5,549.4	5,655.1	5,482.1	16.4	28.1	107.53	-38.0	1,313.3	792.9	757.5	35.40	22.396	
5,700.0	5,649.4	5,781.4	5,608.0	16.6	28.3	107.01	-33.6	1,323.6	799.7	764.0	35.67	22.419	
5,800.0	5,749.4	5,908.5	5,734.9	16.7	28.5	106.74	-31.3	1,328.8	803.1	767.1	35.97	22.330	
5,900.0	5,849.4	6,022.5	5,848.9	16.9	28.6	106.71	-31.0	1,329.5	803.6	767.3	36.28	22.150	
5,964.1	5,913.5	6,086.6	5,913.0	17.0	28.7	106.71	-31.0	1,329.5	803.6	767.1	36.47	22.031	
6,000.0	5,949.4	6,120.8	5,947.2	17.1	28.7	106.71	-31.1	1,329.5	803.6	767.0	36.58	21.966	
6,100.0	6,049.3	6,200.0	6,026.2	17.2	28.8	107.04	-35.7	1,329.5	806.1	769.3	36.83	21.890	
6,200.0	6,148.0	6,268.3	6,093.7	17.5	28.8	107.77	-46.3	1,329.5	815.7	778.7	37.02	22.032	
6,300.0	6,243.9	6,330.6	6,154.2	17.7	28.7	108.56	-61.2	1,329.5	833.7	796.6	37.11	22.464	
6,400.0	6,335.2	6,381.4	6,202.5	18.1	28.7	108.75	-76.9	1,329.5	861.7	824.7	36.98	23.300	
6,500.0	6,420.5	6,420.1	6,238.5	18.5	28.7	107.82	-91.1	1,329.5	900.3	863.7	36.65	24.568	
6,600.0	6,498.3	6,450.0	6,265.8	18.9	28.6	105.57	-103.2	1,329.5	949.5	913.2	36.27	26.175	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 - Chesnut 22-23 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 6939-UNKNOWN												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,700.0	6,747.1	6,718.1	6,718.1	67.4	134.4	89.87	4,335.3	986.2	998.2	797.1	201.12	4.963	
9,800.0	6,747.2	6,718.2	6,718.2	69.2	134.4	89.89	4,335.3	986.2	908.8	705.8	202.99	4.477	
9,900.0	6,747.3	6,718.3	6,718.3	71.1	134.4	89.90	4,335.3	986.2	821.8	616.9	204.87	4.011	
10,000.0	6,747.4	6,718.4	6,718.4	72.9	134.4	89.92	4,335.3	986.2	738.1	531.4	206.75	3.570	
10,100.0	6,747.5	6,718.5	6,718.5	74.8	134.4	89.93	4,335.3	986.2	659.0	450.4	208.63	3.159	
10,200.0	6,747.6	6,718.6	6,718.6	76.7	134.4	89.94	4,335.3	986.2	586.3	375.8	210.51	2.785	
10,300.0	6,747.7	6,718.7	6,718.7	78.5	134.4	89.96	4,335.3	986.2	522.8	310.4	212.40	2.461	
10,400.0	6,747.8	6,718.8	6,718.8	80.4	134.4	89.97	4,335.3	986.2	472.0	257.7	214.28	2.203	
10,500.0	6,747.9	6,718.9	6,718.9	82.3	134.4	89.99	4,335.3	986.2	438.5	222.3	216.17	2.028	
10,600.0	6,748.0	6,719.0	6,719.0	84.2	134.4	90.00	4,335.3	986.2	426.3	208.3	218.06	1.955	
10,602.6	6,748.1	6,719.1	6,719.1	84.2	134.4	90.00	4,335.3	986.2	426.3	208.2	218.11	1.955	CC, ES, SF
10,700.0	6,748.2	6,719.2	6,719.2	86.0	134.4	90.01	4,335.3	986.2	437.3	217.4	219.95	1.988	
10,800.0	6,748.3	6,719.3	6,719.3	87.9	134.4	90.03	4,335.3	986.2	469.8	248.0	221.85	2.118	
10,900.0	6,748.4	6,719.4	6,719.4	89.8	134.4	90.04	4,335.3	986.2	519.8	296.1	223.74	2.323	
11,000.0	6,748.5	6,719.5	6,719.5	91.7	134.4	90.06	4,335.3	986.2	582.8	357.2	225.64	2.583	
11,100.0	6,748.6	6,719.6	6,719.6	93.6	134.4	90.07	4,335.3	986.2	655.1	427.6	227.53	2.879	
11,200.0	6,748.7	6,719.7	6,719.7	95.5	134.4	90.08	4,335.3	986.2	733.9	504.5	229.43	3.199	
11,300.0	6,748.8	6,719.8	6,719.8	97.3	134.4	90.10	4,335.3	986.2	817.4	586.1	231.33	3.534	
11,400.0	6,748.9	6,719.9	6,719.9	99.2	134.4	90.11	4,335.3	986.2	904.2	671.0	233.23	3.877	
11,500.0	6,749.0	6,720.0	6,720.0	101.1	134.4	90.13	4,335.3	986.2	993.5	758.4	235.13	4.226	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 - Chesnut 22-24 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 69450-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
8,600.0	6,746.0	6,716.0	6,716.0	47.3	134.3	89.86	3,180.5	919.4	920.8	740.0	180.75	5.094		
8,700.0	6,746.1	6,716.1	6,716.1	49.1	134.3	89.88	3,180.5	919.4	829.6	647.1	182.57	4.544		
8,800.0	6,746.2	6,716.2	6,716.2	50.9	134.3	89.89	3,180.5	919.4	740.8	556.4	184.40	4.017		
8,900.0	6,746.3	6,716.3	6,716.3	52.7	134.3	89.91	3,180.5	919.4	655.1	468.9	186.24	3.518		
9,000.0	6,746.4	6,716.4	6,716.4	54.5	134.3	89.93	3,180.5	919.4	574.2	386.1	188.08	3.053		
9,100.0	6,746.5	6,716.5	6,716.5	56.3	134.3	89.94	3,180.5	919.4	500.1	310.2	189.93	2.633		
9,200.0	6,746.6	6,716.6	6,716.6	58.1	134.3	89.96	3,180.5	919.4	436.6	244.8	191.78	2.276		
9,300.0	6,746.7	6,716.7	6,716.7	60.0	134.3	89.98	3,180.5	919.4	388.7	195.0	193.63	2.007		
9,400.0	6,746.8	6,716.8	6,716.8	61.8	134.3	89.99	3,180.5	919.4	362.6	167.2	195.49	1.855		
9,447.7	6,746.8	6,716.8	6,716.8	62.7	134.3	90.00	3,180.5	919.4	359.5	163.1	196.38	1.831	CC, ES, SF	
9,500.0	6,746.9	6,716.9	6,716.9	63.7	134.3	90.01	3,180.5	919.4	363.3	165.9	197.36	1.841		
9,600.0	6,747.0	6,717.0	6,717.0	65.5	134.3	90.03	3,180.5	919.4	390.4	191.2	199.23	1.960		
9,700.0	6,747.1	6,717.1	6,717.1	67.4	134.3	90.04	3,180.5	919.4	439.2	238.1	201.10	2.184		
9,800.0	6,747.2	6,717.2	6,717.2	69.2	134.3	90.06	3,180.5	919.4	503.3	300.4	202.97	2.480		
9,900.0	6,747.3	6,717.3	6,717.3	71.1	134.3	90.08	3,180.5	919.4	577.8	372.9	204.85	2.821		
10,000.0	6,747.4	6,717.4	6,717.4	72.9	134.3	90.09	3,180.5	919.4	659.0	452.3	206.72	3.188		
10,100.0	6,747.5	6,717.5	6,717.5	74.8	134.4	90.11	3,180.5	919.4	744.8	536.2	208.60	3.570		
10,200.0	6,747.6	6,717.6	6,717.6	76.7	134.4	90.13	3,180.5	919.4	833.8	623.3	210.49	3.961		
10,300.0	6,747.7	6,717.7	6,717.7	78.5	134.4	90.14	3,180.5	919.4	925.0	712.6	212.37	4.356		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 - Joshua 1 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 6889-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
12,400.0	6,749.9	6,694.9	6,694.9	118.2	133.9	89.72	7,089.5	763.3	978.1	726.4	251.75	3.885		
12,500.0	6,750.0	6,695.0	6,695.0	120.1	133.9	89.75	7,089.5	763.3	880.6	626.9	253.66	3.471		
12,600.0	6,750.1	6,695.1	6,695.1	122.0	133.9	89.78	7,089.5	763.3	783.6	528.0	255.56	3.066		
12,700.0	6,750.2	6,695.2	6,695.2	123.9	133.9	89.81	7,089.5	763.3	687.5	430.0	257.47	2.670		
12,800.0	6,750.4	6,695.4	6,695.4	125.8	133.9	89.84	7,089.5	763.3	592.7	333.3	259.38	2.285		
12,900.0	6,750.5	6,695.5	6,695.5	127.7	133.9	89.87	7,089.5	763.3	500.0	238.7	261.29	1.913		
13,000.0	6,750.6	6,695.6	6,695.6	129.6	133.9	89.89	7,089.5	763.3	410.6	147.4	263.20	1.560		
13,100.0	6,750.7	6,695.7	6,695.7	131.5	133.9	89.92	7,089.5	763.3	327.5	62.4	265.11	1.235 Level 2		
13,200.0	6,750.8	6,695.8	6,695.8	133.4	133.9	89.95	7,089.5	763.3	256.8	-10.3	267.02	0.962 Level 1		
13,300.0	6,750.9	6,695.9	6,695.9	135.3	133.9	89.98	7,089.5	763.3	211.1	-57.8	268.93	0.785 Level 1		
13,356.8	6,750.9	6,695.9	6,695.9	136.4	133.9	90.00	7,089.5	763.3	203.4	-66.7	270.01	0.753 Level 1, CC, ES, SF		
13,400.0	6,751.0	6,696.0	6,696.0	137.2	133.9	90.01	7,089.5	763.3	207.9	-62.9	270.84	0.768 Level 1		
13,418.7	6,751.0	6,696.0	6,696.0	137.6	133.9	90.02	7,089.5	763.3	212.6	-58.6	271.19	0.784 Level 1		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 - Rice 22-1 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 6840-UNKNOWN												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
11,000.0	6,748.5	6,723.5	6,723.5	91.7	134.5	89.74	5,650.5	774.4	942.5	716.7	225.72	4.175	
11,100.0	6,748.6	6,723.6	6,723.6	93.6	134.5	89.77	5,650.5	774.4	845.4	617.8	227.62	3.714	
11,200.0	6,748.7	6,723.7	6,723.7	95.5	134.5	89.80	5,650.5	774.4	749.1	519.6	229.52	3.264	
11,300.0	6,748.8	6,723.8	6,723.8	97.3	134.5	89.83	5,650.5	774.4	653.9	422.5	231.41	2.826	
11,400.0	6,748.9	6,723.9	6,723.9	99.2	134.5	89.86	5,650.5	774.4	560.4	327.1	233.31	2.402	
11,500.0	6,749.0	6,724.0	6,724.0	101.1	134.5	89.88	5,650.5	774.4	469.6	234.4	235.21	1.996	
11,600.0	6,749.1	6,724.1	6,724.1	103.0	134.5	89.91	5,650.5	774.4	383.4	146.3	237.11	1.617	
11,700.0	6,749.2	6,724.2	6,724.2	104.9	134.5	89.94	5,650.5	774.4	305.7	66.7	239.01	1.279	Level 3
11,800.0	6,749.3	6,724.3	6,724.3	106.8	134.5	89.97	5,650.5	774.4	244.7	3.8	240.92	1.016	Level 2
11,900.0	6,749.4	6,724.4	6,724.4	108.7	134.5	90.00	5,650.5	774.4	215.3	-27.5	242.82	0.887	Level 1
11,917.7	6,749.4	6,724.4	6,724.4	109.0	134.5	90.00	5,650.5	774.4	214.5	-28.6	243.16	0.882	Level 1, CC, ES, SF
12,000.0	6,749.5	6,724.5	6,724.5	110.6	134.5	90.02	5,650.5	774.4	229.8	-14.9	244.72	0.939	Level 1
12,100.0	6,749.6	6,724.6	6,724.6	112.5	134.5	90.05	5,650.5	774.4	281.5	34.9	246.63	1.141	Level 2
12,200.0	6,749.7	6,724.7	6,724.7	114.4	134.5	90.08	5,650.5	774.4	354.6	106.0	248.53	1.427	Level 3
12,300.0	6,749.8	6,724.8	6,724.8	116.3	134.5	90.11	5,650.5	774.4	438.4	187.9	250.44	1.750	
12,400.0	6,749.9	6,724.9	6,724.9	118.2	134.5	90.13	5,650.5	774.4	527.8	275.5	252.34	2.092	
12,500.0	6,750.0	6,725.0	6,725.0	120.1	134.5	90.16	5,650.5	774.4	620.5	366.3	254.25	2.441	
12,600.0	6,750.1	6,725.1	6,725.1	122.0	134.5	90.19	5,650.5	774.4	715.2	459.1	256.15	2.792	
12,700.0	6,750.2	6,725.2	6,725.2	123.9	134.5	90.22	5,650.5	774.4	811.2	553.1	258.06	3.143	
12,800.0	6,750.4	6,725.4	6,725.4	125.8	134.5	90.25	5,650.5	774.4	908.0	648.0	259.97	3.493	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 27-3 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 6910-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	66.78	375.3	874.9	952.5					
100.0	100.0	70.0	70.0	0.1	1.4	66.78	375.3	874.9	952.0	950.5	1.51	629.389		
200.0	200.0	170.0	170.0	0.3	3.4	66.78	375.3	874.9	952.0	948.3	3.74	254.727		
300.0	300.0	270.0	270.0	0.6	5.4	66.78	375.3	874.9	952.0	946.0	5.96	159.675		
400.0	400.0	370.0	370.0	0.8	7.4	66.78	375.3	874.9	952.0	943.8	8.19	116.284		
500.0	500.0	470.0	470.0	1.0	9.4	66.78	375.3	874.9	952.0	941.6	10.41	91.436		
600.0	600.0	570.0	570.0	1.2	11.4	66.78	375.3	874.9	952.0	939.4	12.64	75.338		
700.0	700.0	670.0	670.0	1.5	13.4	66.78	375.3	874.9	952.0	937.1	14.86	64.060		
800.0	800.0	770.0	770.0	1.7	15.4	66.78	375.3	874.9	952.0	934.9	17.09	55.718		
900.0	900.0	870.0	870.0	1.9	17.4	66.78	375.3	874.9	952.0	932.7	19.31	49.299		
1,000.0	1,000.0	970.0	970.0	2.1	19.4	66.78	375.3	874.9	952.0	930.5	21.54	44.206		
1,100.0	1,100.0	1,070.0	1,070.0	2.4	21.4	66.78	375.3	874.9	952.0	928.2	23.76	40.067		
1,200.0	1,200.0	1,170.0	1,170.0	2.6	23.4	66.78	375.3	874.9	952.0	926.0	25.98	36.637		
1,300.0	1,300.0	1,270.0	1,270.0	2.8	25.4	-3.57	375.3	874.9	950.3	922.1	28.18	33.717		
1,400.0	1,399.8	1,369.8	1,369.8	3.0	27.4	-3.59	375.3	874.9	945.0	914.7	30.33	31.154		
1,500.0	1,499.5	1,469.5	1,469.5	3.2	29.4	-3.64	375.3	874.9	936.3	903.9	32.44	28.867		
1,600.0	1,598.7	1,568.7	1,568.7	3.5	31.4	-3.70	375.3	874.9	924.2	889.7	34.48	26.802		
1,700.0	1,697.5	1,667.5	1,667.5	3.7	33.3	-3.79	375.3	874.9	908.6	872.1	36.46	24.918		
1,800.0	1,795.9	1,765.9	1,765.9	4.0	35.3	-3.86	375.3	874.9	890.8	852.2	38.60	23.081		
1,900.0	1,894.3	1,864.3	1,864.3	4.4	37.3	-3.94	375.3	874.9	873.1	832.3	40.76	21.419		
2,000.0	1,992.7	1,962.7	1,962.7	4.7	39.3	-4.02	375.3	874.9	855.3	812.4	42.93	19.923		
2,100.0	2,091.1	2,061.1	2,061.1	5.0	41.2	-4.11	375.3	874.9	837.5	792.4	45.10	18.569		
2,200.0	2,189.5	2,159.5	2,159.5	5.4	43.2	-4.20	375.3	874.9	819.8	772.5	47.28	17.339		
2,300.0	2,287.9	2,257.9	2,257.9	5.7	45.2	-4.29	375.3	874.9	802.0	752.6	49.46	16.217		
2,400.0	2,386.3	2,356.3	2,356.3	6.1	47.1	-4.39	375.3	874.9	784.3	732.6	51.64	15.188		
2,500.0	2,484.7	2,454.7	2,454.7	6.5	49.1	-4.49	375.3	874.9	766.5	712.7	53.82	14.243		
2,600.0	2,583.1	2,553.1	2,553.1	6.8	51.1	-4.60	375.3	874.9	748.8	692.8	56.00	13.371		
2,700.0	2,681.5	2,651.5	2,651.5	7.2	53.0	-4.71	375.3	874.9	731.0	672.8	58.18	12.564		
2,800.0	2,779.9	2,749.9	2,749.9	7.6	55.0	-4.83	375.3	874.9	713.3	652.9	60.37	11.815		
2,900.0	2,878.3	2,848.3	2,848.3	8.0	57.0	-4.95	375.3	874.9	695.5	633.0	62.56	11.118		
3,000.0	2,976.7	2,946.7	2,946.7	8.3	58.9	-5.08	375.3	874.9	677.8	613.0	64.74	10.469		
3,100.0	3,075.1	3,045.1	3,045.1	8.7	60.9	-5.22	375.3	874.9	660.0	593.1	66.93	9.861		
3,200.0	3,173.5	3,143.5	3,143.5	9.1	62.9	-5.36	375.3	874.9	642.3	573.2	69.12	9.292		
3,300.0	3,271.9	3,241.9	3,241.9	9.5	64.8	-5.52	375.3	874.9	624.6	553.3	71.32	8.758		
3,400.0	3,370.3	3,340.3	3,340.3	9.9	66.8	-5.68	375.3	874.9	606.9	533.4	73.51	8.256		
3,500.0	3,468.7	3,438.7	3,438.7	10.3	68.8	-5.85	375.3	874.9	589.1	513.4	75.70	7.783		
3,600.0	3,567.1	3,537.1	3,537.1	10.7	70.7	-6.03	375.3	874.9	571.4	493.5	77.89	7.336		
3,700.0	3,665.5	3,635.5	3,635.5	11.1	72.7	-6.22	375.3	874.9	553.7	473.6	80.09	6.914		
3,800.0	3,763.9	3,733.9	3,733.9	11.5	74.7	-6.43	375.3	874.9	536.0	453.7	82.29	6.514		
3,900.0	3,862.3	3,832.3	3,832.3	11.9	76.6	-6.65	375.3	874.9	518.3	433.8	84.48	6.135		
4,000.0	3,960.7	3,930.7	3,930.7	12.3	78.6	-6.89	375.3	874.9	500.6	414.0	86.68	5.776		
4,100.0	4,059.1	4,029.1	4,029.1	12.7	80.6	-7.14	375.3	874.9	483.0	394.1	88.88	5.434		
4,200.0	4,157.5	4,127.5	4,127.5	13.1	82.6	-7.41	375.3	874.9	465.3	374.2	91.09	5.108		
4,300.0	4,255.9	4,225.9	4,225.9	13.5	84.5	-7.71	375.3	874.9	447.6	354.4	93.29	4.799		
4,400.0	4,354.3	4,324.3	4,324.3	13.8	86.5	-8.02	375.3	874.9	430.0	334.5	95.49	4.503		
4,500.0	4,452.7	4,422.7	4,422.7	14.2	88.5	-8.37	375.3	874.9	412.4	314.7	97.70	4.221		
4,600.0	4,551.2	4,521.2	4,521.2	14.6	90.4	-8.70	375.3	874.9	395.4	295.2	100.22	3.945		
4,700.0	4,650.3	4,620.3	4,620.3	14.9	92.4	-8.97	375.3	874.9	381.6	278.8	102.83	3.711		
4,800.0	4,749.7	4,719.7	4,719.7	15.1	94.4	-9.19	375.3	874.9	371.3	266.0	105.33	3.525		
4,900.0	4,849.5	4,819.5	4,819.5	15.3	96.4	-9.34	375.3	874.9	364.4	256.7	107.72	3.383		
5,000.0	4,949.4	4,919.4	4,919.4	15.5	98.4	-9.42	375.3	874.9	360.9	251.0	109.98	3.282		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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

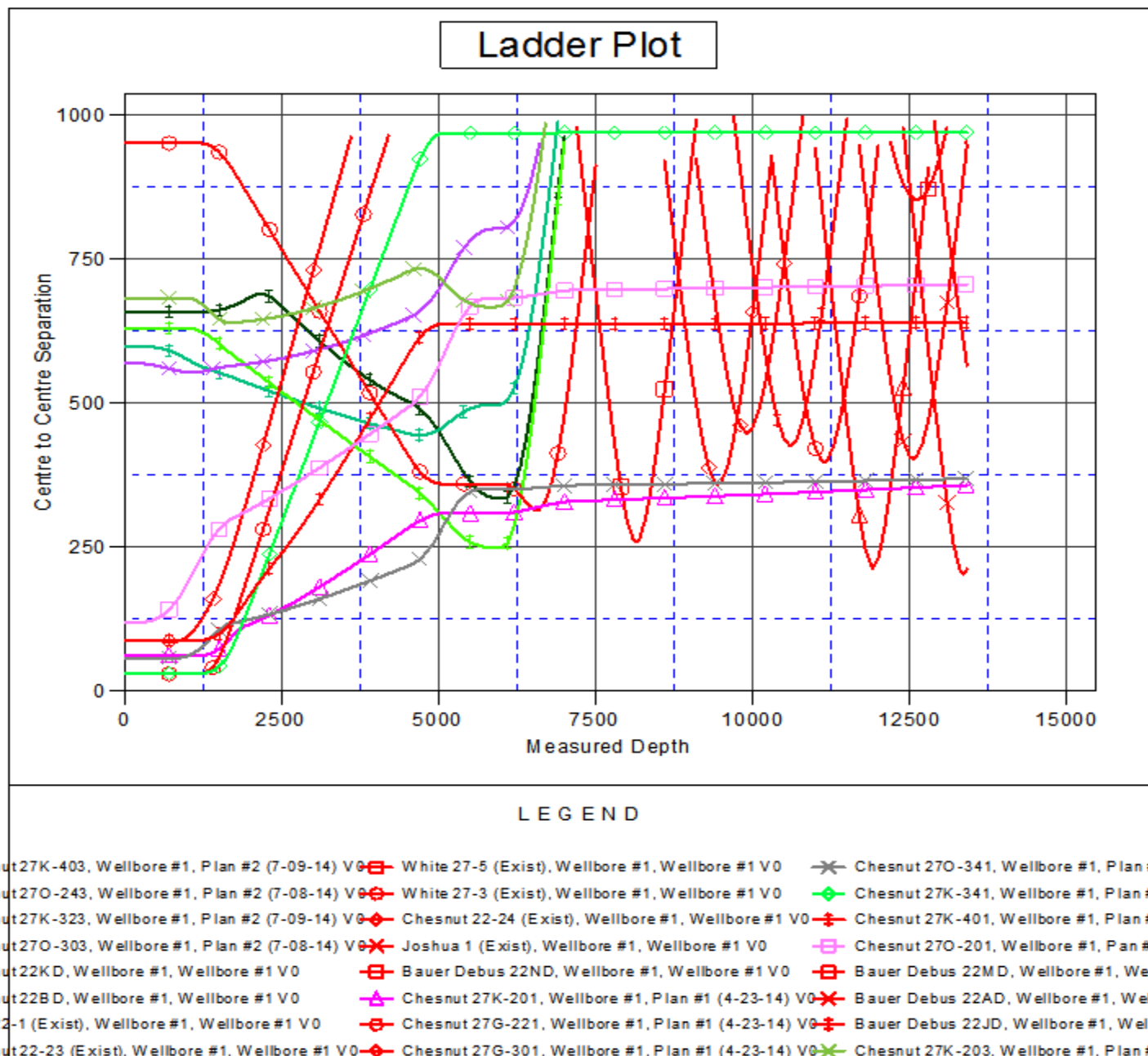
Offset Design Chesnut Existing Pad Sec.27-T5N-R64W - White 27-3 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 6910-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,072.5	5,021.9	4,991.9	4,991.9	15.6	99.8	-9.44	375.3	874.9	360.1	248.6	111.55	3.228		
5,100.0	5,049.4	5,019.4	5,019.4	15.6	100.4	60.91	375.3	874.9	360.5	248.3	112.15	3.214		
5,200.0	5,149.4	5,119.4	5,119.4	15.8	102.4	60.91	375.3	874.9	360.5	246.1	114.35	3.153		
5,300.0	5,249.4	5,219.4	5,219.4	15.9	104.4	60.91	375.3	874.9	360.5	243.9	116.55	3.093		
5,400.0	5,349.4	5,319.4	5,319.4	16.1	106.4	60.91	375.3	874.9	360.5	241.7	118.75	3.036		
5,500.0	5,449.4	5,419.4	5,419.4	16.2	108.4	60.91	375.3	874.9	360.5	239.5	120.95	2.981		
5,600.0	5,549.4	5,519.4	5,519.4	16.4	110.4	60.91	375.3	874.9	360.5	237.3	123.15	2.927		
5,700.0	5,649.4	5,619.4	5,619.4	16.6	112.4	60.91	375.3	874.9	360.5	235.1	125.35	2.876		
5,800.0	5,749.4	5,719.4	5,719.4	16.7	114.4	60.91	375.3	874.9	360.5	232.9	127.55	2.826		
5,900.0	5,849.4	5,819.4	5,819.4	16.9	116.4	60.91	375.3	874.9	360.5	230.7	129.76	2.778		
6,000.0	5,949.4	5,919.4	5,919.4	17.1	118.4	60.91	375.3	874.9	360.5	228.5	131.96	2.732		
6,100.0	6,049.3	6,019.3	6,019.3	17.2	120.4	61.44	375.3	874.9	359.0	224.9	134.07	2.678		
6,200.0	6,148.0	6,118.0	6,118.0	17.5	122.4	64.11	375.3	874.9	351.8	216.1	135.76	2.592		
6,300.0	6,243.9	6,213.9	6,213.9	17.7	124.3	69.05	375.3	874.9	340.2	202.7	137.48	2.475		
6,400.0	6,335.2	6,305.2	6,305.2	18.1	126.1	76.11	375.3	874.9	327.1	187.2	139.89	2.338		
6,500.0	6,420.5	6,390.5	6,390.5	18.5	127.8	84.68	375.3	874.9	317.1	174.1	142.96	2.218		
6,559.1	6,467.5	6,437.5	6,437.5	18.7	128.7	90.00	375.3	874.9	315.0	170.4	144.64	2.178 CC, ES		
6,600.0	6,498.3	6,468.3	6,468.3	18.9	129.4	93.59	375.3	874.9	316.2	170.6	145.52	2.173 SF		
6,700.0	6,567.2	6,537.2	6,537.2	19.5	130.7	101.41	375.3	874.9	330.3	183.9	146.36	2.257		
6,800.0	6,626.0	6,596.0	6,596.0	20.2	131.9	107.00	375.3	874.9	362.8	217.2	145.66	2.491		
6,900.0	6,673.8	6,643.8	6,643.8	21.1	132.9	109.65	375.3	874.9	413.4	268.4	145.02	2.851		
7,000.0	6,709.8	6,679.8	6,679.8	22.1	133.6	108.86	375.3	874.9	479.1	332.7	146.45	3.272		
7,100.0	6,733.3	6,703.3	6,703.3	23.3	134.1	103.96	375.3	874.9	556.0	405.0	150.99	3.682		
7,200.0	6,743.9	6,713.9	6,713.9	24.5	134.3	94.13	375.3	874.9	640.3	483.8	156.56	4.090		
7,300.0	6,744.6	6,714.6	6,714.6	25.9	134.3	90.13	375.3	874.9	729.1	570.5	158.53	4.599		
7,400.0	6,744.7	6,714.7	6,714.7	27.3	134.3	90.14	375.3	874.9	820.4	660.3	160.06	5.126		
7,500.0	6,744.8	6,714.8	6,714.8	28.8	134.3	90.16	375.3	874.9	913.5	751.9	161.63	5.652		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 27-5 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 6910-UNKNOWN												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,200.0	6,743.9	6,712.9	6,712.9	24.5	134.3	81.55	1,876.2	819.1	978.4	822.9	155.55	6.290	
7,300.0	6,744.6	6,713.6	6,713.6	25.9	134.3	89.80	1,876.2	819.1	882.4	723.9	158.52	5.567	
7,400.0	6,744.7	6,713.7	6,713.7	27.3	134.3	89.83	1,876.2	819.1	787.4	627.3	160.05	4.920	
7,500.0	6,744.8	6,713.8	6,713.8	28.8	134.3	89.85	1,876.2	819.1	693.7	532.1	161.62	4.292	
7,600.0	6,744.9	6,713.9	6,713.9	30.3	134.3	89.87	1,876.2	819.1	602.1	438.9	163.24	3.689	
7,700.0	6,745.0	6,714.0	6,714.0	31.9	134.3	89.90	1,876.2	819.1	513.7	348.8	164.90	3.115	
7,800.0	6,745.1	6,714.1	6,714.1	33.5	134.3	89.92	1,876.2	819.1	430.3	263.7	166.58	2.583	
7,900.0	6,745.2	6,714.2	6,714.2	35.2	134.3	89.94	1,876.2	819.1	355.6	187.3	168.29	2.113	
8,000.0	6,745.3	6,714.3	6,714.3	36.8	134.3	89.97	1,876.2	819.1	296.3	126.3	170.02	1.743	
8,100.0	6,745.4	6,714.4	6,714.4	38.5	134.3	89.99	1,876.2	819.1	262.9	91.1	171.77	1.530	
8,143.5	6,745.5	6,714.5	6,714.5	39.3	134.3	90.00	1,876.2	819.1	259.2	86.7	172.54	1.503 CC, ES, SF	
8,200.0	6,745.5	6,714.5	6,714.5	40.3	134.3	90.01	1,876.2	819.1	265.3	91.8	173.54	1.529	
8,300.0	6,745.6	6,714.6	6,714.6	42.0	134.3	90.04	1,876.2	819.1	302.8	127.5	175.32	1.727	
8,400.0	6,745.7	6,714.7	6,714.7	43.7	134.3	90.06	1,876.2	819.1	364.7	187.6	177.11	2.059	
8,500.0	6,745.8	6,714.8	6,714.8	45.5	134.3	90.08	1,876.2	819.1	440.8	261.9	178.91	2.464	
8,600.0	6,746.0	6,715.0	6,715.0	47.3	134.3	90.11	1,876.2	819.1	525.0	344.3	180.72	2.905	
8,700.0	6,746.1	6,715.1	6,715.1	49.1	134.3	90.13	1,876.2	819.1	614.0	431.4	182.55	3.363	
8,800.0	6,746.2	6,715.2	6,715.2	50.9	134.3	90.15	1,876.2	819.1	705.9	521.5	184.37	3.828	
8,900.0	6,746.3	6,715.3	6,715.3	52.7	134.3	90.18	1,876.2	819.1	799.7	613.5	186.21	4.295	
9,000.0	6,746.4	6,715.4	6,715.4	54.5	134.3	90.20	1,876.2	819.1	894.9	706.9	188.05	4.759	
9,100.0	6,746.5	6,715.5	6,715.5	56.3	134.3	90.22	1,876.2	819.1	991.0	801.2	189.90	5.219	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 @ 4631.0ft (Ensign 123 RKB - Coordinates are relative to: Chesnut 27K-421
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.62°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Chesnut 27K-421
Project:	SEC.27-T5N-R64W	TVD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Reference Site:	Chesnut 27GK-HZ Pad Sec.27-T5N-R64W	MD Reference:	WELL @ 4631.0ft (Ensign 123 RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Chesnut 27K-421	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 @ 4631.0ft (Ensign 123 RKB - Coordinates are relative to: Chesnut 27K-421

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°

