

# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Hankins 20R-403**

Surface Location: Hankins 5N67W20MR Pad Sec.20-T5N-R67W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

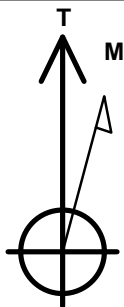
Ground Elevation: 4958.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1386229.64	3162762.46	40.392130	-104.915660	

RKB - 15' WELL @ 4973.0ft (RKB - 15')

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 90'FNL, 2302'FEL		0.0	0.0	Point
BHL 500'FSL, 1425'FEL	7173.0	-4699.6	847.0	Point



Azimuths to True North  
Magnetic North: 8.52°

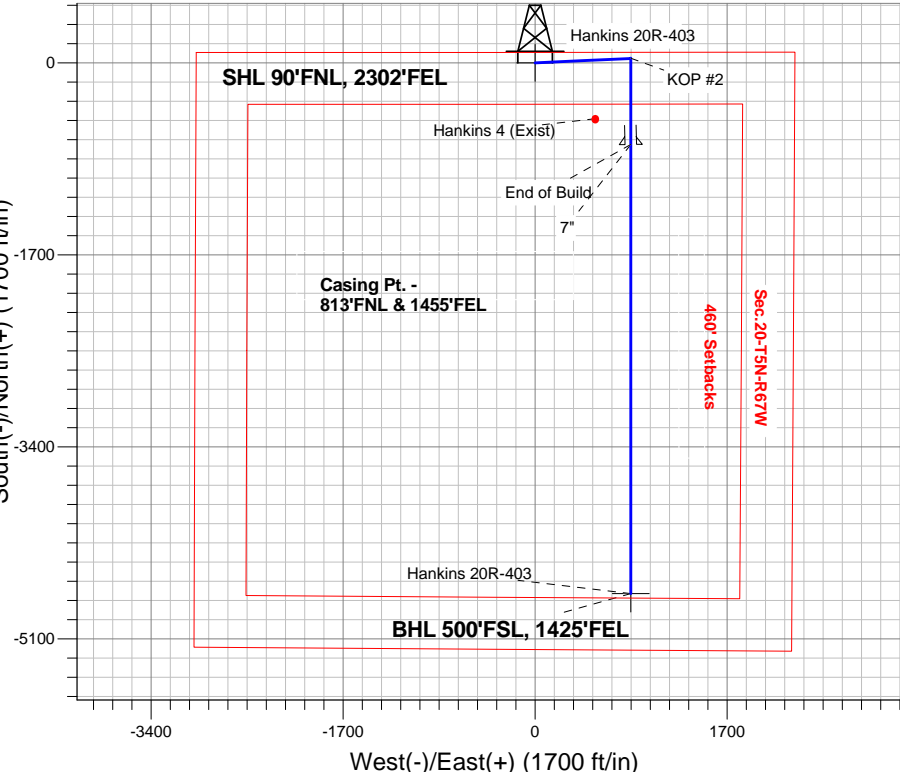
Magnetic Field  
Strength: 52777.4snT  
Dip Angle: 66.91°  
Date: 8/12/2014  
Model: IGRF2010

Hankins 5N67W20MR Pad Sec.20-T5N-R67W  
Hankins 20R-403  
Plan #1 (8-12-14)  
9:02, August 13 2014

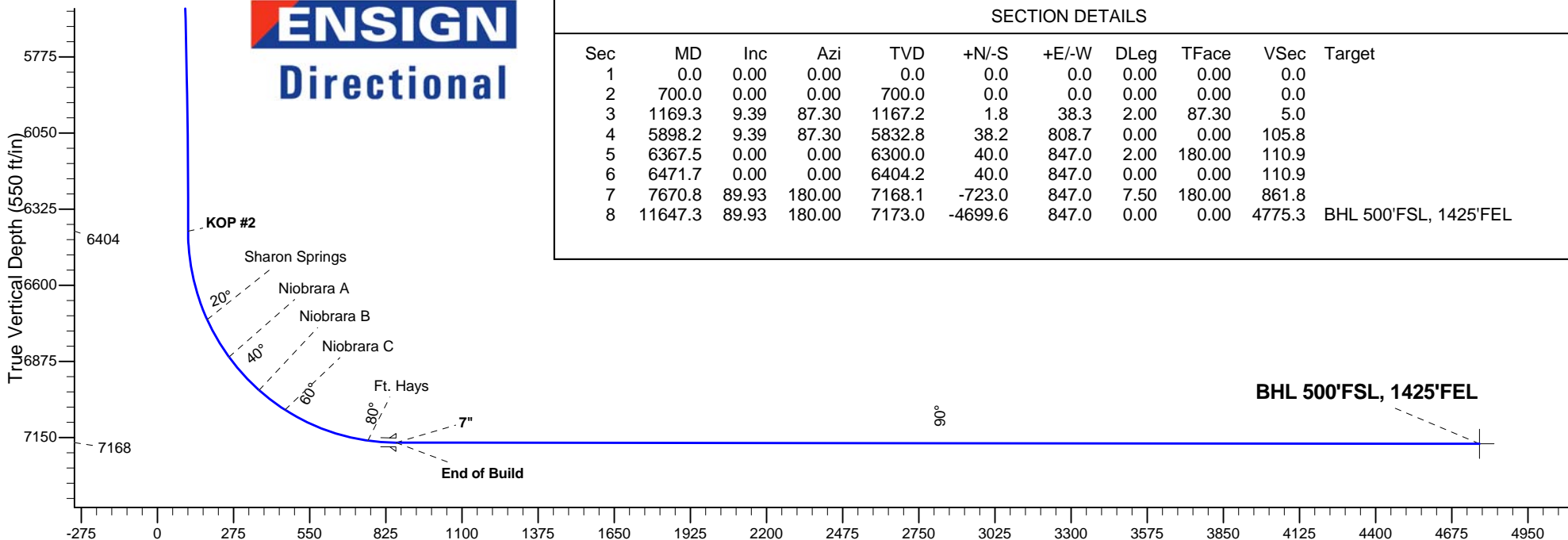
## ANNOTATIONS

TVD	MD	Annotation
700.0	700.0	KOP #1
6404.2	6471.7	KOP #2
7168.1	7670.8	End of Build

South(-)/North(+) (1700 ft/in)



**ENSIGN**  
Directional



## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.0	
3	1169.3	9.39	87.30	1167.2	1.8	38.3	2.00	87.30	5.0	
4	5898.2	9.39	87.30	5832.8	38.2	808.7	0.00	0.00	105.8	
5	6367.5	0.00	0.00	6300.0	40.0	847.0	2.00	180.00	110.9	
6	6471.7	0.00	0.00	6404.2	40.0	847.0	0.00	0.00	110.9	
7	7670.8	89.93	180.00	7168.1	-723.0	847.0	7.50	180.00	861.8	
8	11647.3	89.93	180.00	7173.0	-4699.6	847.0	0.00	0.00	4775.3	BHL 500'FSL, 1425'FEL

Vertical Section at 169.78° (550 ft/in)



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.20-T5N-R67W**

**Hankins 5N67W20MR Pad Sec.20-T5N-R67W**

**Hankins 20R-403**

**Wellbore #1**

**Plan: Plan #1 (8-12-14)**

## **Standard Planning Report**

**13 August, 2014**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Project:</b>	SEC.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-12-14)		

<b>Project</b>	SEC.20-T5N-R67W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site						Hankins 5N67W20MR Pad Sec.20-T5N-R67W											
Site Position:						Northing:			1,386,228.87 ft			Latitude:			40.392130		
From:			Lat/Long			Easting:			3,162,642.69ft			Longitude:			-104.916090		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.38 °		

Well	Hankins 20R-403					
Well Position	+N/-S	0.0 ft	Northing:	1,386,229.64 ft	Latitude:	40.392130
	+E/-W	119.8 ft	Easting:	3,162,762.46 ft	Longitude:	-104.915660
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,958.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	8/12/2014	8.52	66.91	52,777

<b>Design</b>	Plan #1 (8-12-14)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	169.78

<b>Plan Sections</b>										
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	
700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,169.3	9.39	87.30	1,167.2	1.8	38.3	2.00	2.00	0.00	87.30	
5,898.2	9.39	87.30	5,832.8	38.2	808.7	0.00	0.00	0.00	0.00	
6,367.5	0.00	0.00	6,300.0	40.0	847.0	2.00	-2.00	0.00	180.00	
6,471.7	0.00	0.00	6,404.2	40.0	847.0	0.00	0.00	0.00	0.00	
7,670.8	89.93	180.00	7,168.1	-723.0	847.0	7.50	7.50	0.00	180.00	
11,647.3	89.93	180.00	7,173.0	-4,699.6	847.0	0.00	0.00	0.00	0.00	BHL 500'FSL, 1425

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Project:</b>	SEC.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-12-14)		

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
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>SHL 90'FNL, 2302'FEL</b>									
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
<b>KOP #1</b>									
800.0	2.00	87.30	800.0	0.1	1.7	0.2	2.00	2.00	0.00
900.0	4.00	87.30	899.8	0.3	7.0	0.9	2.00	2.00	0.00
1,000.0	6.00	87.30	999.5	0.7	15.7	2.1	2.00	2.00	0.00
1,100.0	8.00	87.30	1,098.7	1.3	27.8	3.6	2.00	2.00	0.00
1,169.3	9.39	87.30	1,167.2	1.8	38.3	5.0	2.00	2.00	0.00
1,200.0	9.39	87.30	1,197.5	2.0	43.3	5.7	0.00	0.00	0.00
1,300.0	9.39	87.30	1,296.2	2.8	59.6	7.8	0.00	0.00	0.00
1,400.0	9.39	87.30	1,394.8	3.6	75.9	9.9	0.00	0.00	0.00
1,500.0	9.39	87.30	1,493.5	4.4	92.2	12.1	0.00	0.00	0.00
1,600.0	9.39	87.30	1,592.1	5.1	108.5	14.2	0.00	0.00	0.00
1,700.0	9.39	87.30	1,690.8	5.9	124.8	16.3	0.00	0.00	0.00
1,800.0	9.39	87.30	1,789.5	6.7	141.1	18.5	0.00	0.00	0.00
1,900.0	9.39	87.30	1,888.1	7.4	157.3	20.6	0.00	0.00	0.00
2,000.0	9.39	87.30	1,986.8	8.2	173.6	22.7	0.00	0.00	0.00
2,100.0	9.39	87.30	2,085.4	9.0	189.9	24.9	0.00	0.00	0.00
2,200.0	9.39	87.30	2,184.1	9.7	206.2	27.0	0.00	0.00	0.00
2,300.0	9.39	87.30	2,282.8	10.5	222.5	29.1	0.00	0.00	0.00
2,400.0	9.39	87.30	2,381.4	11.3	238.8	31.3	0.00	0.00	0.00
2,500.0	9.39	87.30	2,480.1	12.0	255.1	33.4	0.00	0.00	0.00
2,600.0	9.39	87.30	2,578.8	12.8	271.4	35.5	0.00	0.00	0.00
2,700.0	9.39	87.30	2,677.4	13.6	287.7	37.7	0.00	0.00	0.00
2,800.0	9.39	87.30	2,776.1	14.4	304.0	39.8	0.00	0.00	0.00
2,900.0	9.39	87.30	2,874.7	15.1	320.2	41.9	0.00	0.00	0.00
3,000.0	9.39	87.30	2,973.4	15.9	336.5	44.0	0.00	0.00	0.00
3,100.0	9.39	87.30	3,072.1	16.7	352.8	46.2	0.00	0.00	0.00
3,200.0	9.39	87.30	3,170.7	17.4	369.1	48.3	0.00	0.00	0.00
3,300.0	9.39	87.30	3,269.4	18.2	385.4	50.4	0.00	0.00	0.00
3,400.0	9.39	87.30	3,368.0	19.0	401.7	52.6	0.00	0.00	0.00
3,500.0	9.39	87.30	3,466.7	19.7	418.0	54.7	0.00	0.00	0.00
3,527.7	9.39	87.30	3,494.0	20.0	422.5	55.3	0.00	0.00	0.00
<b>Parkman</b>									
3,600.0	9.39	87.30	3,565.4	20.5	434.3	56.8	0.00	0.00	0.00
3,700.0	9.39	87.30	3,664.0	21.3	450.6	59.0	0.00	0.00	0.00
3,800.0	9.39	87.30	3,762.7	22.0	466.9	61.1	0.00	0.00	0.00
3,900.0	9.39	87.30	3,861.3	22.8	483.1	63.2	0.00	0.00	0.00
4,000.0	9.39	87.30	3,960.0	23.6	499.4	65.4	0.00	0.00	0.00
4,100.0	9.39	87.30	4,058.7	24.4	515.7	67.5	0.00	0.00	0.00
4,133.8	9.39	87.30	4,092.0	24.6	521.2	68.2	0.00	0.00	0.00
<b>Sussex</b>									
4,200.0	9.39	87.30	4,157.3	25.1	532.0	69.6	0.00	0.00	0.00
4,300.0	9.39	87.30	4,256.0	25.9	548.3	71.8	0.00	0.00	0.00

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<b>Project:</b>	SEC.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site:</b>	Hankins 5N67W20MR Pad	<b>North Reference:</b>	True
	Sec.20-T5N-R67W		
<b>Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-12-14)		

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)
4,400.0	9.39	87.30	4,354.7	26.7	564.6	73.9	0.00	0.00	0.00
4,500.0	9.39	87.30	4,453.3	27.4	580.9	76.0	0.00	0.00	0.00
4,598.0	9.39	87.30	4,550.0	28.2	596.9	78.1	0.00	0.00	0.00
<b>Shannon</b>									
4,600.0	9.39	87.30	4,552.0	28.2	597.2	78.2	0.00	0.00	0.00
4,700.0	9.39	87.30	4,650.6	29.0	613.5	80.3	0.00	0.00	0.00
4,800.0	9.39	87.30	4,749.3	29.7	629.8	82.4	0.00	0.00	0.00
4,900.0	9.39	87.30	4,848.0	30.5	646.0	84.6	0.00	0.00	0.00
5,000.0	9.39	87.30	4,946.6	31.3	662.3	86.7	0.00	0.00	0.00
5,100.0	9.39	87.30	5,045.3	32.0	678.6	88.8	0.00	0.00	0.00
5,200.0	9.39	87.30	5,143.9	32.8	694.9	91.0	0.00	0.00	0.00
5,300.0	9.39	87.30	5,242.6	33.6	711.2	93.1	0.00	0.00	0.00
5,400.0	9.39	87.30	5,341.3	34.4	727.5	95.2	0.00	0.00	0.00
5,500.0	9.39	87.30	5,439.9	35.1	743.8	97.4	0.00	0.00	0.00
5,600.0	9.39	87.30	5,538.6	35.9	760.1	99.5	0.00	0.00	0.00
5,700.0	9.39	87.30	5,637.2	36.7	776.4	101.6	0.00	0.00	0.00
5,800.0	9.39	87.30	5,735.9	37.4	792.7	103.7	0.00	0.00	0.00
5,898.2	9.39	87.30	5,832.8	38.2	808.7	105.8	0.00	0.00	0.00
5,900.0	9.35	87.30	5,834.6	38.2	808.9	105.9	2.00	-2.00	0.00
6,000.0	7.35	87.30	5,933.5	38.9	823.5	107.8	2.00	-2.00	0.00
6,100.0	5.35	87.30	6,032.9	39.4	834.5	109.2	2.00	-2.00	0.00
6,200.0	3.35	87.30	6,132.6	39.8	842.1	110.2	2.00	-2.00	0.00
6,300.0	1.35	87.30	6,232.5	40.0	846.2	110.8	2.00	-2.00	0.00
6,367.5	0.00	0.00	6,300.0	40.0	847.0	110.9	2.00	-2.00	0.00
6,400.0	0.00	0.00	6,332.5	40.0	847.0	110.9	0.00	0.00	0.00
6,471.7	0.00	0.00	6,404.2	40.0	847.0	110.9	0.00	0.00	0.00
<b>KOP #2</b>									
6,500.0	2.12	180.00	6,432.5	39.5	847.0	111.4	7.50	7.50	0.00
6,600.0	9.62	180.00	6,531.9	29.3	847.0	121.4	7.50	7.50	0.00
6,700.0	17.12	180.00	6,629.1	6.1	847.0	144.2	7.50	7.50	0.00
6,800.0	24.62	180.00	6,722.5	-29.5	847.0	179.2	7.50	7.50	0.00
6,801.7	24.75	180.00	6,724.0	-30.2	847.0	179.9	7.50	7.50	0.00
<b>Sharon Springs</b>									
6,900.0	32.12	180.00	6,810.4	-77.0	847.0	226.0	7.50	7.50	0.00
6,958.9	36.54	180.00	6,859.0	-110.1	847.0	258.6	7.50	7.50	0.00
<b>Niobrara A</b>									
7,000.0	39.62	180.00	6,891.4	-135.5	847.0	283.6	7.50	7.50	0.00
7,100.0	47.12	180.00	6,964.0	-204.1	847.0	351.1	7.50	7.50	0.00
7,122.4	48.80	180.00	6,979.0	-220.7	847.0	367.5	7.50	7.50	0.00
<b>Niobrara B</b>									
7,200.0	54.62	180.00	7,027.1	-281.7	847.0	427.4	7.50	7.50	0.00
7,241.2	57.71	180.00	7,050.0	-315.8	847.0	461.1	7.50	7.50	0.00
<b>Niobrara C</b>									
7,300.0	62.12	180.00	7,079.5	-366.7	847.0	511.1	7.50	7.50	0.00
7,400.0	69.62	180.00	7,120.3	-457.9	847.0	600.9	7.50	7.50	0.00
7,500.0	77.12	180.00	7,148.9	-553.7	847.0	695.1	7.50	7.50	0.00
7,567.2	82.16	180.00	7,161.0	-619.7	847.0	760.1	7.50	7.50	0.00
<b>Ft. Hays</b>									
7,600.0	84.62	180.00	7,164.8	-652.3	847.0	792.2	7.50	7.50	0.00
7,670.8	89.93	180.00	7,168.1	-723.0	847.0	861.8	7.50	7.50	0.00
<b>End of Build - 7"</b>									

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
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<b>Project:</b>	SEC.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-12-14)		

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)
7,700.0	89.93	180.00	7,168.2	-752.2	847.0	890.5	0.00	0.00	0.00
7,800.0	89.93	180.00	7,168.3	-852.2	847.0	989.0	0.00	0.00	0.00
7,900.0	89.93	180.00	7,168.4	-952.2	847.0	1,087.4	0.00	0.00	0.00
8,000.0	89.93	180.00	7,168.5	-1,052.2	847.0	1,185.8	0.00	0.00	0.00
8,100.0	89.93	180.00	7,168.7	-1,152.2	847.0	1,284.2	0.00	0.00	0.00
8,200.0	89.93	180.00	7,168.8	-1,252.2	847.0	1,382.6	0.00	0.00	0.00
8,300.0	89.93	180.00	7,168.9	-1,352.2	847.0	1,481.0	0.00	0.00	0.00
8,400.0	89.93	180.00	7,169.0	-1,452.2	847.0	1,579.4	0.00	0.00	0.00
8,500.0	89.93	180.00	7,169.2	-1,552.2	847.0	1,677.9	0.00	0.00	0.00
8,600.0	89.93	180.00	7,169.3	-1,652.2	847.0	1,776.3	0.00	0.00	0.00
8,700.0	89.93	180.00	7,169.4	-1,752.2	847.0	1,874.7	0.00	0.00	0.00
8,800.0	89.93	180.00	7,169.5	-1,852.2	847.0	1,973.1	0.00	0.00	0.00
8,900.0	89.93	180.00	7,169.6	-1,952.2	847.0	2,071.5	0.00	0.00	0.00
9,000.0	89.93	180.00	7,169.8	-2,052.2	847.0	2,169.9	0.00	0.00	0.00
9,100.0	89.93	180.00	7,169.9	-2,152.2	847.0	2,268.3	0.00	0.00	0.00
9,200.0	89.93	180.00	7,170.0	-2,252.2	847.0	2,366.8	0.00	0.00	0.00
9,300.0	89.93	180.00	7,170.1	-2,352.2	847.0	2,465.2	0.00	0.00	0.00
9,400.0	89.93	180.00	7,170.3	-2,452.2	847.0	2,563.6	0.00	0.00	0.00
9,500.0	89.93	180.00	7,170.4	-2,552.2	847.0	2,662.0	0.00	0.00	0.00
9,600.0	89.93	180.00	7,170.5	-2,652.2	847.0	2,760.4	0.00	0.00	0.00
9,700.0	89.93	180.00	7,170.6	-2,752.2	847.0	2,858.8	0.00	0.00	0.00
9,800.0	89.93	180.00	7,170.7	-2,852.2	847.0	2,957.2	0.00	0.00	0.00
9,900.0	89.93	180.00	7,170.9	-2,952.2	847.0	3,055.7	0.00	0.00	0.00
10,000.0	89.93	180.00	7,171.0	-3,052.2	847.0	3,154.1	0.00	0.00	0.00
10,100.0	89.93	180.00	7,171.1	-3,152.2	847.0	3,252.5	0.00	0.00	0.00
10,200.0	89.93	180.00	7,171.2	-3,252.2	847.0	3,350.9	0.00	0.00	0.00
10,300.0	89.93	180.00	7,171.4	-3,352.2	847.0	3,449.3	0.00	0.00	0.00
10,400.0	89.93	180.00	7,171.5	-3,452.2	847.0	3,547.7	0.00	0.00	0.00
10,500.0	89.93	180.00	7,171.6	-3,552.2	847.0	3,646.1	0.00	0.00	0.00
10,600.0	89.93	180.00	7,171.7	-3,652.2	847.0	3,744.6	0.00	0.00	0.00
10,700.0	89.93	180.00	7,171.8	-3,752.2	847.0	3,843.0	0.00	0.00	0.00
10,800.0	89.93	180.00	7,172.0	-3,852.2	847.0	3,941.4	0.00	0.00	0.00
10,900.0	89.93	180.00	7,172.1	-3,952.2	847.0	4,039.8	0.00	0.00	0.00
11,000.0	89.93	180.00	7,172.2	-4,052.2	847.0	4,138.2	0.00	0.00	0.00
11,100.0	89.93	180.00	7,172.3	-4,152.2	847.0	4,236.6	0.00	0.00	0.00
11,200.0	89.93	180.00	7,172.5	-4,252.2	847.0	4,335.0	0.00	0.00	0.00
11,300.0	89.93	180.00	7,172.6	-4,352.2	847.0	4,433.5	0.00	0.00	0.00
11,400.0	89.93	180.00	7,172.7	-4,452.2	847.0	4,531.9	0.00	0.00	0.00
11,500.0	89.93	180.00	7,172.8	-4,552.2	847.0	4,630.3	0.00	0.00	0.00
11,600.0	89.93	180.00	7,172.9	-4,652.2	847.0	4,728.7	0.00	0.00	0.00
11,647.3	89.93	180.00	7,173.0	-4,699.6	847.0	4,775.3	0.00	0.00	0.00
BHL 500'FSL, 1425'FEL									

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Project:</b>	SEC.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-12-14)		

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude
	- Shape								Longitude
SHL 90'FNL, 2302'FE	- plan hits target center	0.00	0.00	1.0	0.0	0.0	1,386,229.65	3,162,762.46	40.392130
	- Point								-104.915660
BHL 500'FSL, 1425'FI	- plan hits target center	0.00	0.00	7,173.0	-4,699.6	847.0	1,381,535.94	3,163,640.34	40.379230
	- Point								-104.912620

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,670.8	7,168.1	7"	7	7-1/2	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,527.7	3,494.0	Parkman				
4,133.8	4,092.0	Sussex				
4,598.0	4,550.0	Shannon				
6,801.7	6,724.0	Sharon Springs				
6,958.9	6,859.0	Niobrara A				
7,122.4	6,979.0	Niobrara B				
7,241.2	7,050.0	Niobrara C				
7,567.2	7,161.0	Ft. Hays				
	7,183.0	Codell				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
700.0	700.0	0.0	0.0	KOP #1
6,471.7	6,404.2	40.0	847.0	KOP #2
7,670.8	7,168.1	-723.0	847.0	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.20-T5N-R67W**

**Hankins 5N67W20MR Pad Sec.20-T5N-R67W**

**Hankins 20R-403**

**Wellbore #1**

**Plan #1 (8-12-14)**

## **Anticollision Report**

**13 August, 2014**







<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.20-T5N-R67W - Hankins 4 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error: 0.0 ft	
Survey Program: 7359-UNKNOWN												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
1,169.3	1,167.2	1,135.2	1,135.2	2.6	22.7	48.29	-495.4	532.0	700.7	675.7	25.07	27.955	
1,200.0	1,197.5	1,165.5	1,165.5	2.7	23.3	48.60	-495.4	532.0	697.4	671.6	25.75	27.080	
1,300.0	1,296.2	1,264.2	1,264.2	3.0	25.3	49.61	-495.4	532.0	686.6	658.6	28.00	24.525	
1,400.0	1,394.8	1,362.8	1,362.8	3.3	27.3	50.65	-495.4	532.0	676.1	645.8	30.26	22.345	
1,500.0	1,493.5	1,461.5	1,461.5	3.6	29.2	51.73	-495.4	532.0	665.8	633.3	32.53	20.467	
1,600.0	1,592.1	1,560.1	1,560.1	4.0	31.2	52.84	-495.4	532.0	655.7	620.9	34.81	18.835	
1,700.0	1,690.8	1,658.8	1,658.8	4.3	33.2	53.98	-495.4	532.0	645.9	608.8	37.11	17.406	
1,800.0	1,789.5	1,757.5	1,757.5	4.7	35.1	55.16	-495.4	532.0	636.4	597.0	39.42	16.146	
1,900.0	1,888.1	1,856.1	1,856.1	5.0	37.1	56.37	-495.4	532.0	627.1	585.4	41.73	15.028	
2,000.0	1,986.8	1,954.8	1,954.8	5.4	39.1	57.62	-495.4	532.0	618.2	574.1	44.05	14.032	
2,100.0	2,085.4	2,053.4	2,053.4	5.8	41.1	58.90	-495.4	532.0	609.5	563.1	46.38	13.140	
2,200.0	2,184.1	2,152.1	2,152.1	6.1	43.0	60.22	-495.4	532.0	601.2	552.4	48.72	12.338	
2,300.0	2,282.8	2,250.8	2,250.8	6.5	45.0	61.57	-495.4	532.0	593.1	542.1	51.07	11.614	
2,400.0	2,381.4	2,349.4	2,349.4	6.9	47.0	62.96	-495.4	532.0	585.5	532.0	53.42	10.959	
2,500.0	2,480.1	2,448.1	2,448.1	7.3	49.0	64.38	-495.4	532.0	578.2	522.4	55.78	10.364	
2,600.0	2,578.8	2,546.8	2,546.8	7.6	50.9	65.84	-495.4	532.0	571.2	513.1	58.15	9.823	
2,700.0	2,677.4	2,645.4	2,645.4	8.0	52.9	67.33	-495.4	532.0	564.7	504.1	60.52	9.330	
2,800.0	2,776.1	2,744.1	2,744.1	8.4	54.9	68.86	-495.4	532.0	558.5	495.6	62.90	8.880	
2,900.0	2,874.7	2,842.7	2,842.7	8.8	56.9	70.42	-495.4	532.0	552.8	487.5	65.28	8.468	
3,000.0	2,973.4	2,941.4	2,941.4	9.1	58.8	72.01	-495.4	532.0	547.4	479.8	67.66	8.091	
3,100.0	3,072.1	3,040.1	3,040.1	9.5	60.8	73.63	-495.4	532.0	542.6	472.5	70.05	7.745	
3,200.0	3,170.7	3,138.7	3,138.7	9.9	62.8	75.27	-495.4	532.0	538.1	465.7	72.44	7.429	
3,300.0	3,269.4	3,237.4	3,237.4	10.3	64.7	76.94	-495.4	532.0	534.2	459.3	74.83	7.139	
3,400.0	3,368.0	3,336.0	3,336.0	10.7	66.7	78.63	-495.4	532.0	530.7	453.5	77.22	6.873	
3,500.0	3,466.7	3,434.7	3,434.7	11.0	68.7	80.35	-495.4	532.0	527.7	448.1	79.61	6.628	
3,600.0	3,565.4	3,533.4	3,533.4	11.4	70.7	82.08	-495.4	532.0	525.1	443.1	81.99	6.405	
3,700.0	3,664.0	3,632.0	3,632.0	11.8	72.6	83.83	-495.4	532.0	523.1	438.7	84.38	6.200	
3,800.0	3,762.7	3,730.7	3,730.7	12.2	74.6	85.58	-495.4	532.0	521.6	434.8	86.75	6.012	
3,900.0	3,861.3	3,829.3	3,829.3	12.6	76.6	87.35	-495.4	532.0	520.6	431.4	89.13	5.841	
4,000.0	3,960.0	3,928.0	3,928.0	12.9	78.6	89.12	-495.4	532.0	520.1	428.6	91.50	5.684	
4,049.6	4,009.0	3,977.0	3,977.0	13.1	79.5	90.00	-495.4	532.0	520.0	427.3	92.67	5.611	
4,100.0	4,058.7	4,026.7	4,026.7	13.3	80.5	90.89	-495.4	532.0	520.1	426.2	93.86	5.541	
4,200.0	4,157.3	4,125.3	4,125.3	13.7	82.5	92.66	-495.4	532.0	520.6	424.4	96.21	5.411	
4,300.0	4,256.0	4,224.0	4,224.0	14.1	84.5	94.43	-495.4	532.0	521.6	423.0	98.55	5.292	
4,400.0	4,354.7	4,322.7	4,322.7	14.5	86.5	96.19	-495.4	532.0	523.1	422.2	100.89	5.185	
4,500.0	4,453.3	4,421.3	4,421.3	14.8	88.4	97.93	-495.4	532.0	525.2	421.9	103.22	5.088	
4,600.0	4,552.0	4,520.0	4,520.0	15.2	90.4	99.66	-495.4	532.0	527.7	422.2	105.53	5.000	
4,700.0	4,650.6	4,618.6	4,618.6	15.6	92.4	101.38	-495.4	532.0	530.7	422.9	107.84	4.921	
4,800.0	4,749.3	4,717.3	4,717.3	16.0	94.3	103.07	-495.4	532.0	534.2	424.1	110.13	4.851	
4,900.0	4,848.0	4,816.0	4,816.0	16.4	96.3	104.74	-495.4	532.0	538.2	425.8	112.41	4.787	
5,000.0	4,946.6	4,914.6	4,914.6	16.8	98.3	106.39	-495.4	532.0	542.6	427.9	114.69	4.731	
5,100.0	5,045.3	5,013.3	5,013.3	17.1	100.3	108.00	-495.4	532.0	547.5	430.5	116.95	4.681	
5,200.0	5,143.9	5,111.9	5,111.9	17.5	102.2	109.59	-495.4	532.0	552.8	433.6	119.20	4.637	
5,300.0	5,242.6	5,210.6	5,210.6	17.9	104.2	111.15	-495.4	532.0	558.6	437.1	121.45	4.599	
5,400.0	5,341.3	5,309.3	5,309.3	18.3	106.2	112.68	-495.4	532.0	564.7	441.0	123.68	4.566	
5,500.0	5,439.9	5,407.9	5,407.9	18.7	108.2	114.17	-495.4	532.0	571.3	445.4	125.90	4.537	
5,600.0	5,538.6	5,506.6	5,506.6	19.1	110.1	115.63	-495.4	532.0	578.2	450.1	128.12	4.513	
5,700.0	5,637.2	5,605.2	5,605.2	19.4	112.1	117.05	-495.4	532.0	585.5	455.2	130.33	4.493	
5,800.0	5,735.9	5,703.9	5,703.9	19.8	114.1	118.44	-495.4	532.0	593.2	460.7	132.52	4.476	
5,898.2	5,832.8	5,800.8	5,800.8	20.2	116.0	119.77	-495.4	532.0	601.1	466.4	134.68	4.463	
5,900.0	5,834.6	5,802.6	5,802.6	20.2	116.1	119.80	-495.4	532.0	601.2	466.5	134.72	4.463	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.20-T5N-R67W - Hankins 4 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7359-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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
6,000.0	5,933.5	5,901.5	5,901.5	20.5	118.0	121.10	-495.4	532.0	608.6	471.7	136.96	4.444		
6,100.0	6,032.9	6,000.9	6,000.9	20.7	120.0	122.08	-495.4	532.0	614.5	475.3	139.19	4.415		
6,200.0	6,132.6	6,100.6	6,100.6	20.9	122.0	122.74	-495.4	532.0	618.5	477.1	141.39	4.375		
6,300.0	6,232.5	6,200.5	6,200.5	21.1	124.0	123.10	-495.4	532.0	620.8	477.2	143.55	4.324		
6,367.5	6,300.0	6,268.0	6,268.0	21.1	125.4	-149.54	-495.4	532.0	621.2	476.2	144.99	4.284		
6,400.0	6,332.5	6,300.5	6,300.5	21.2	126.0	-149.54	-495.4	532.0	621.2	475.5	145.68	4.264		
6,471.7	6,404.2	6,372.2	6,372.2	21.3	127.4	-149.54	-495.4	532.0	621.2	474.0	147.22	4.219		
6,500.0	6,432.5	6,400.5	6,400.5	21.3	128.0	30.50	-495.4	532.0	620.7	473.0	147.73	4.202		
6,550.0	6,482.4	6,450.4	6,450.4	21.4	129.0	30.78	-495.4	532.0	617.7	469.5	148.24	4.167		
6,600.0	6,531.9	6,499.9	6,499.9	21.4	130.0	31.33	-495.4	532.0	612.0	463.7	148.27	4.127		
6,650.0	6,580.9	6,548.9	6,548.9	21.5	131.0	32.16	-495.4	532.0	603.4	455.6	147.85	4.081		
6,700.0	6,629.1	6,597.1	6,597.1	21.6	131.9	33.30	-495.4	532.0	592.3	445.2	147.03	4.028		
6,750.0	6,676.4	6,644.4	6,644.4	21.6	132.9	34.78	-495.4	532.0	578.5	432.6	145.90	3.965		
6,800.0	6,722.5	6,690.5	6,690.5	21.7	133.8	36.63	-495.4	532.0	562.4	417.8	144.58	3.890		
6,850.0	6,767.2	6,735.2	6,735.2	21.8	134.7	38.89	-495.4	532.0	544.1	400.8	143.24	3.798		
6,900.0	6,810.4	6,778.4	6,778.4	21.9	135.6	41.62	-495.4	532.0	523.8	381.7	142.10	3.686		
6,950.0	6,851.9	6,819.9	6,819.9	21.9	136.4	44.86	-495.4	532.0	501.7	360.3	141.41	3.548		
7,000.0	6,891.4	6,859.4	6,859.4	22.0	137.2	48.64	-495.4	532.0	478.3	336.8	141.44	3.381		
7,050.0	6,928.8	6,896.8	6,896.8	22.2	137.9	52.97	-495.4	532.0	453.9	311.4	142.41	3.187		
7,100.0	6,964.0	6,932.0	6,932.0	22.3	138.6	57.81	-495.4	532.0	429.0	284.6	144.39	2.971		
7,150.0	6,996.8	6,964.8	6,964.8	22.4	139.3	63.06	-495.4	532.0	404.3	257.1	147.23	2.746		
7,200.0	7,027.1	6,995.1	6,995.1	22.6	139.9	68.54	-495.4	532.0	380.6	230.1	150.56	2.528		
7,250.0	7,054.7	7,022.7	7,022.7	22.8	140.5	74.01	-495.4	532.0	358.9	205.0	153.87	2.332		
7,300.0	7,079.5	7,047.5	7,047.5	23.1	140.9	79.18	-495.4	532.0	340.2	183.5	156.73	2.171		
7,350.0	7,101.4	7,069.4	7,069.4	23.3	141.4	83.79	-495.4	532.0	325.9	167.0	158.86	2.051		
7,400.0	7,120.3	7,088.3	7,088.3	23.6	141.8	87.62	-495.4	532.0	317.1	156.9	160.29	1.979		
7,439.7	7,133.2	7,101.2	7,101.2	23.9	142.0	90.00	-495.4	532.0	314.9	153.9	161.04	1.956 CC		
7,450.0	7,136.2	7,104.2	7,104.2	24.0	142.1	90.52	-495.4	532.0	315.1	153.9	161.20	1.955 ES, SF		
7,500.0	7,148.9	7,116.9	7,116.9	24.3	142.3	92.36	-495.4	532.0	320.3	158.4	161.87	1.978		
7,550.0	7,158.5	7,126.5	7,126.5	24.7	142.5	93.09	-495.4	532.0	332.7	170.2	162.54	2.047		
7,600.0	7,164.8	7,132.8	7,132.8	25.2	142.7	92.67	-495.4	532.0	351.8	188.5	163.31	2.154		
7,650.0	7,167.8	7,135.8	7,135.8	25.6	142.7	91.07	-495.4	532.0	376.7	212.7	164.07	2.296		
7,670.8	7,168.1	7,136.1	7,136.1	25.9	142.7	90.05	-495.4	532.0	388.5	224.2	164.32	2.365		
7,700.0	7,168.2	7,136.2	7,136.2	26.1	142.7	90.06	-495.4	532.0	406.3	241.7	164.68	2.467		
7,800.0	7,168.3	7,136.3	7,136.3	27.2	142.7	90.08	-495.4	532.0	475.9	309.9	166.00	2.867		
7,900.0	7,168.4	7,136.4	7,136.4	28.4	142.7	90.10	-495.4	532.0	554.8	387.4	167.39	3.315		
8,000.0	7,168.5	7,136.5	7,136.5	29.7	142.7	90.12	-495.4	532.0	639.7	470.8	168.85	3.788		
8,100.0	7,168.7	7,136.7	7,136.7	31.0	142.7	90.15	-495.4	532.0	728.4	558.0	170.37	4.275		
8,200.0	7,168.8	7,136.8	7,136.8	32.4	142.7	90.17	-495.4	532.0	819.7	647.8	171.93	4.768		
8,300.0	7,168.9	7,136.9	7,136.9	33.8	142.7	90.19	-495.4	532.0	912.8	739.3	173.54	5.260		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20M-203 - Wellbore #1 - Plan #1 (8-12-14)													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-89.99	0.0	-119.8	119.8	119.8	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-89.99	0.0	-119.8	119.8	119.6	0.23	527.626		
200.0	200.0	201.0	201.0	0.3	0.3	-89.99	0.0	-119.8	119.8	119.1	0.68	177.044		
300.0	300.0	301.0	301.0	0.6	0.6	-89.99	0.0	-119.8	119.8	118.7	1.13	106.368		
400.0	400.0	401.0	401.0	0.8	0.8	-89.99	0.0	-119.8	119.8	118.2	1.58	76.020		
500.0	500.0	501.0	501.0	1.0	1.0	-89.99	0.0	-119.8	119.8	117.8	2.03	59.146		
600.0	600.0	601.0	601.0	1.2	1.2	-89.99	0.0	-119.8	119.8	117.3	2.47	48.402		
700.0	700.0	701.0	701.0	1.5	1.5	-89.99	0.0	-119.8	119.8	116.9	2.92	40.961 CC, ES		
800.0	800.0	801.0	801.0	1.7	1.7	-177.33	0.0	-119.8	121.5	118.2	3.36	36.152		
900.0	899.8	900.8	900.8	1.9	1.9	-177.43	0.0	-119.8	126.7	123.0	3.79	33.451		
1,000.0	999.5	1,000.5	1,000.5	2.1	2.1	-177.59	0.0	-119.8	135.5	131.2	4.22	32.110		
1,100.0	1,098.7	1,099.7	1,099.7	2.4	2.4	-177.78	0.0	-119.8	147.6	143.0	4.65	31.763 SF		
1,169.3	1,167.2	1,168.2	1,168.2	2.6	2.5	-177.92	0.0	-119.8	158.1	153.2	4.94	31.972		
1,200.0	1,197.5	1,198.5	1,198.5	2.7	2.6	-177.98	0.0	-119.8	163.1	158.0	5.08	32.106		
1,300.0	1,296.2	1,297.2	1,297.2	3.0	2.8	-178.17	0.0	-119.8	179.4	173.9	5.52	32.477		
1,400.0	1,394.8	1,395.8	1,395.8	3.3	3.0	-178.32	0.0	-119.8	195.7	189.7	5.97	32.768		
1,500.0	1,493.5	1,494.5	1,494.5	3.6	3.2	-178.45	0.0	-119.8	212.0	205.6	6.42	33.001		
1,600.0	1,592.1	1,593.1	1,593.1	4.0	3.5	-178.56	0.0	-119.8	228.3	221.4	6.88	33.189		
1,700.0	1,690.8	1,691.8	1,691.8	4.3	3.7	-178.66	0.0	-119.8	244.6	237.3	7.34	33.344		
1,800.0	1,789.5	1,790.5	1,790.5	4.7	3.9	-178.74	0.0	-119.8	260.9	253.1	7.79	33.473		
1,900.0	1,888.1	1,889.1	1,889.1	5.0	4.1	-178.81	0.0	-119.8	277.2	269.0	8.26	33.581		
2,000.0	1,986.8	1,987.8	1,987.8	5.4	4.4	-178.88	0.0	-119.8	293.5	284.8	8.72	33.673		
2,100.0	2,085.4	2,078.2	2,078.2	5.8	4.6	-178.89	0.2	-120.8	311.0	301.8	9.15	33.970		
2,200.0	2,184.1	2,166.4	2,166.4	6.1	4.7	-178.79	1.0	-124.5	331.4	321.8	9.58	34.579		
2,300.0	2,282.8	2,253.5	2,253.2	6.5	4.9	-178.60	2.2	-130.8	354.7	344.7	10.01	35.436		
2,400.0	2,381.4	2,339.3	2,338.5	6.9	5.1	-178.35	4.0	-139.4	380.9	370.4	10.44	36.495		
2,500.0	2,480.1	2,434.1	2,432.6	7.3	5.3	-178.05	6.3	-150.7	408.7	397.8	10.88	37.578		
2,600.0	2,578.8	2,530.1	2,527.9	7.6	5.6	-177.78	8.6	-162.1	436.6	425.3	11.32	38.575		
2,700.0	2,677.4	2,626.1	2,623.2	8.0	5.8	-177.55	10.9	-173.5	464.5	452.7	11.76	39.489		
2,800.0	2,776.1	2,722.1	2,718.5	8.4	6.0	-177.34	13.2	-185.0	492.4	480.2	12.21	40.324		
2,900.0	2,874.7	2,818.2	2,813.8	8.8	6.3	-177.16	15.5	-196.4	520.3	507.7	12.66	41.097		
3,000.0	2,973.4	2,914.2	2,909.1	9.1	6.6	-177.00	17.8	-207.8	548.2	535.1	13.11	41.811		
3,100.0	3,072.1	3,010.2	3,004.4	9.5	6.8	-176.85	20.1	-219.2	576.2	562.6	13.57	42.471		
3,200.0	3,170.7	3,106.2	3,099.7	9.9	7.1	-176.71	22.4	-230.6	604.1	590.1	14.02	43.084		
3,300.0	3,269.4	3,202.2	3,195.0	10.3	7.3	-176.59	24.7	-242.1	632.0	617.5	14.48	43.655		
3,400.0	3,368.0	3,298.2	3,290.4	10.7	7.6	-176.47	27.0	-253.5	659.9	645.0	14.94	44.186		
3,500.0	3,466.7	3,394.2	3,385.7	11.0	7.9	-176.37	29.4	-264.9	687.9	672.5	15.39	44.682		
3,600.0	3,565.4	3,490.3	3,481.0	11.4	8.2	-176.27	31.7	-276.3	715.8	699.9	15.85	45.147		
3,700.0	3,664.0	3,586.3	3,576.3	11.8	8.4	-176.19	34.0	-287.7	743.7	727.4	16.32	45.582		
3,800.0	3,762.7	3,689.2	3,678.5	12.2	8.7	-176.10	36.4	-299.9	771.6	754.8	16.79	45.957		
3,900.0	3,861.3	3,821.8	3,810.5	12.6	9.0	-176.05	38.8	-311.4	796.4	779.1	17.29	46.069		
4,000.0	3,960.0	3,957.2	3,945.8	12.9	9.3	-176.09	39.9	-317.1	816.8	799.0	17.79	45.922		
4,100.0	4,058.7	4,071.1	4,059.7	13.3	9.5	-176.17	40.0	-317.6	833.5	815.2	18.25	45.660		
4,200.0	4,157.3	4,169.8	4,158.3	13.7	9.7	-176.24	40.0	-317.6	849.7	831.0	18.71	45.412		
4,300.0	4,256.0	4,268.4	4,257.0	14.1	9.9	-176.31	40.0	-317.6	866.0	846.8	19.18	45.163		
4,400.0	4,354.7	4,367.1	4,355.7	14.5	10.1	-176.38	40.0	-317.6	882.3	862.6	19.64	44.925		
4,500.0	4,453.3	4,465.7	4,454.3	14.8	10.3	-176.45	40.0	-317.6	898.6	878.5	20.10	44.697		
4,600.0	4,552.0	4,564.4	4,553.0	15.2	10.5	-176.51	40.0	-317.6	914.8	894.3	20.57	44.478		
4,700.0	4,650.6	4,663.1	4,651.6	15.6	10.7	-176.57	40.0	-317.6	931.1	910.1	21.03	44.269		
4,800.0	4,749.3	4,761.7	4,750.3	16.0	10.9	-176.63	40.0	-317.6	947.4	925.9	21.50	44.068		
4,900.0	4,848.0	4,860.4	4,849.0	16.4	11.1	-176.69	40.0	-317.6	963.7	941.7	21.96	43.874		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20M-203 - Wellbore #1 - Plan #1 (8-12-14)		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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore +N/-S (ft)	Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor					
5,000.0	4,946.6	4,959.0	4,947.6	16.8	11.3	-176.74	40.0	-317.6	980.0	957.5	22.43	43.689					
5,100.0	5,045.3	5,057.7	5,046.3	17.1	11.5	-176.80	40.0	-317.6	996.2	973.4	22.90	43.510					

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-90.00	0.0	-58.5	58.5	58.5	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-90.00	0.0	-58.5	58.5	58.3	0.23	257.678		
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	0.0	-58.5	58.5	57.8	0.68	86.463		
300.0	300.0	301.0	301.0	0.6	0.6	-90.00	0.0	-58.5	58.5	57.4	1.13	51.947		
400.0	400.0	401.0	401.0	0.8	0.8	-90.00	0.0	-58.5	58.5	56.9	1.58	37.126		
500.0	500.0	501.0	501.0	1.0	1.0	-90.00	0.0	-58.5	58.5	56.5	2.03	28.885		
600.0	600.0	601.0	601.0	1.2	1.2	-90.00	0.0	-58.5	58.5	56.0	2.47	23.638		
700.0	700.0	701.0	701.0	1.5	1.5	-90.00	0.0	-58.5	58.5	55.6	2.92	20.004 CC, ES		
800.0	800.0	801.0	801.0	1.7	1.7	-177.37	0.0	-58.5	60.2	56.9	3.36	17.921		
900.0	899.8	900.8	900.8	1.9	1.9	-177.57	0.0	-58.5	65.5	61.7	3.79	17.278		
1,000.0	999.5	1,000.5	1,000.5	2.1	2.1	-177.85	0.0	-58.5	74.2	70.0	4.22	17.584		
1,100.0	1,098.7	1,099.7	1,099.7	2.4	2.4	-178.15	0.0	-58.5	86.4	81.7	4.65	18.579		
1,169.3	1,167.2	1,168.2	1,168.2	2.6	2.5	-178.34	0.0	-58.5	96.8	91.9	4.95	19.580		
1,200.0	1,197.5	1,198.5	1,198.5	2.7	2.6	-178.42	0.0	-58.5	101.8	96.7	5.08	20.044		
1,300.0	1,296.2	1,297.2	1,297.2	3.0	2.8	-178.64	0.0	-58.5	118.1	112.6	5.52	21.385		
1,400.0	1,394.8	1,395.8	1,395.8	3.3	3.0	-178.81	0.0	-58.5	134.4	128.5	5.97	22.509		
1,500.0	1,493.5	1,494.5	1,494.5	3.6	3.2	-178.94	0.0	-58.5	150.7	144.3	6.42	23.464		
1,600.0	1,592.1	1,598.8	1,598.8	4.0	3.5	-178.95	0.3	-56.8	165.5	158.6	6.88	24.060		
1,700.0	1,690.8	1,704.4	1,704.4	4.3	3.7	-178.75	1.4	-51.3	176.6	169.3	7.32	24.116		
1,800.0	1,789.5	1,810.7	1,810.1	4.7	3.9	-178.36	3.3	-42.0	184.1	176.3	7.78	23.671		
1,900.0	1,888.1	1,913.3	1,912.0	5.0	4.2	-177.84	5.7	-29.9	188.6	180.4	8.23	22.909		
2,000.0	1,986.8	2,013.2	2,011.1	5.4	4.4	-177.34	8.1	-17.8	192.9	184.2	8.69	22.191		
2,100.0	2,085.4	2,113.1	2,110.3	5.8	4.7	-176.86	10.5	-5.7	197.1	187.9	9.15	21.535		
2,200.0	2,184.1	2,213.0	2,209.4	6.1	4.9	-176.40	12.9	6.4	201.3	191.7	9.62	20.936		
2,300.0	2,282.8	2,312.9	2,308.5	6.5	5.2	-175.96	15.3	18.5	205.6	195.5	10.09	20.386		
2,400.0	2,381.4	2,412.8	2,407.7	6.9	5.5	-175.54	17.8	30.5	209.9	199.3	10.56	19.880		
2,500.0	2,480.1	2,512.7	2,506.8	7.3	5.8	-175.14	20.2	42.6	214.2	203.1	11.03	19.412		
2,600.0	2,578.8	2,612.6	2,605.9	7.6	6.0	-174.75	22.6	54.7	218.5	206.9	11.51	18.980		
2,700.0	2,677.4	2,712.5	2,705.1	8.0	6.3	-174.38	25.0	66.8	222.8	210.8	11.99	18.579		
2,800.0	2,776.1	2,812.4	2,804.2	8.4	6.6	-174.02	27.4	78.9	227.1	214.6	12.47	18.207		
2,900.0	2,874.7	2,912.3	2,903.3	8.8	6.9	-173.67	29.8	91.0	231.4	218.4	12.96	17.860		
3,000.0	2,973.4	3,012.2	3,002.5	9.1	7.2	-173.34	32.2	103.1	235.7	222.3	13.44	17.536		
3,100.0	3,072.1	3,112.1	3,101.6	9.5	7.5	-173.02	34.6	115.2	240.1	226.1	13.93	17.232		
3,200.0	3,170.7	3,207.9	3,196.7	9.9	7.8	-172.75	36.9	126.3	244.9	230.5	14.40	17.004		
3,300.0	3,269.4	3,300.0	3,288.4	10.3	8.0	-172.67	38.5	134.4	252.4	237.6	14.84	17.016		
3,400.0	3,368.0	3,391.4	3,379.7	10.7	8.2	-172.77	39.5	139.6	263.1	247.8	15.26	17.237		
3,500.0	3,466.7	3,482.2	3,470.5	11.0	8.3	-173.02	40.0	142.0	276.8	261.1	15.68	17.649		
3,600.0	3,565.4	3,578.1	3,566.4	11.4	8.5	-173.39	40.0	142.1	292.8	276.7	16.12	18.170		
3,700.0	3,664.0	3,676.8	3,665.0	11.8	8.7	-173.74	40.0	142.1	309.0	292.5	16.57	18.654		
3,800.0	3,762.7	3,775.4	3,763.7	12.2	8.9	-174.05	40.0	142.1	325.3	308.2	17.02	19.108		
3,900.0	3,861.3	3,874.1	3,862.3	12.6	9.1	-174.34	40.0	142.1	341.5	324.0	17.48	19.537		
4,000.0	3,960.0	3,972.8	3,961.0	12.9	9.3	-174.59	40.0	142.1	357.7	339.8	17.94	19.943		
4,100.0	4,058.7	4,071.4	4,059.7	13.3	9.5	-174.83	40.0	142.1	374.0	355.6	18.40	20.329		
4,200.0	4,157.3	4,170.1	4,158.3	13.7	9.7	-175.04	40.0	142.1	390.2	371.3	18.85	20.695		
4,300.0	4,256.0	4,268.8	4,257.0	14.1	9.9	-175.24	40.0	142.1	406.5	387.1	19.31	21.043		
4,400.0	4,354.7	4,367.4	4,355.7	14.5	10.1	-175.43	40.0	142.1	422.7	402.9	19.78	21.375		
4,500.0	4,453.3	4,466.1	4,454.3	14.8	10.3	-175.60	40.0	142.1	439.0	418.7	20.24	21.691		
4,600.0	4,552.0	4,564.7	4,553.0	15.2	10.5	-175.75	40.0	142.1	455.2	434.5	20.70	21.992		
4,700.0	4,650.6	4,663.4	4,651.6	15.6	10.7	-175.90	40.0	142.1	471.5	450.3	21.16	22.279		
4,800.0	4,749.3	4,762.1	4,750.3	16.0	10.9	-176.04	40.0	142.1	487.8	466.1	21.63	22.554		
4,900.0	4,848.0	4,860.7	4,849.0	16.4	11.1	-176.17	40.0	142.1	504.0	481.9	22.09	22.817		

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20M-323 - Wellbore #1 - Plan #1 (8-12-14)													Offset Site Error:	0.0ft
Survey Program: 0-MWDD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,000.0	4,946.6	4,959.4	4,947.6	16.8	11.3	-176.29	40.0	142.1	520.3	497.8	22.55	23.069		
5,100.0	5,045.3	5,058.0	5,046.3	17.1	11.5	-176.40	40.0	142.1	536.6	513.6	23.02	23.311		
5,200.0	5,143.9	5,156.7	5,144.9	17.5	11.7	-176.50	40.0	142.1	552.9	529.4	23.48	23.542		
5,300.0	5,242.6	5,255.4	5,243.6	17.9	12.0	-176.60	40.0	142.1	569.1	545.2	23.95	23.764		
5,400.0	5,341.3	5,354.0	5,342.3	18.3	12.2	-176.70	40.0	142.1	585.4	561.0	24.42	23.978		
5,500.0	5,439.9	5,452.7	5,440.9	18.7	12.4	-176.79	40.0	142.1	601.7	576.8	24.88	24.183		
5,600.0	5,538.6	5,551.3	5,539.6	19.1	12.6	-176.87	40.0	142.1	618.0	592.6	25.35	24.380		
5,700.0	5,637.2	5,650.0	5,638.2	19.4	12.8	-176.95	40.0	142.1	634.3	608.5	25.81	24.570		
5,800.0	5,735.9	5,748.7	5,736.9	19.8	13.0	-177.03	40.0	142.1	650.6	624.3	26.28	24.754		
5,898.2	5,832.8	5,845.6	5,833.8	20.2	13.2	-177.10	40.0	142.1	666.6	639.8	26.74	24.927		
5,900.0	5,834.6	5,847.3	5,835.6	20.2	13.2	-177.10	40.0	142.1	666.8	640.1	26.75	24.930		
6,000.0	5,933.5	5,946.3	5,934.5	20.5	13.4	-177.18	40.0	142.1	681.4	654.1	27.21	25.043		
6,100.0	6,032.9	6,045.6	6,033.9	20.7	13.6	-177.23	40.0	142.1	692.4	664.8	27.63	25.059		
6,200.0	6,132.6	6,145.4	6,133.6	20.9	13.9	-177.27	40.0	142.1	700.0	672.0	28.02	24.981		
6,300.0	6,232.5	6,245.3	6,233.5	21.1	14.1	-177.29	40.0	142.1	704.1	675.7	28.37	24.814		
6,367.5	6,300.0	6,312.8	6,301.0	21.1	14.2	-90.00	40.0	142.1	704.9	676.3	28.60	24.648		
6,385.3	6,317.7	6,330.5	6,318.7	21.2	14.3	-90.00	40.0	142.1	704.9	676.2	28.67	24.586		
6,400.0	6,332.5	6,345.3	6,333.5	21.2	14.3	-90.02	39.8	142.1	704.9	676.1	28.72	24.539		
6,471.7	6,404.2	6,416.6	6,404.6	21.3	14.4	-90.42	34.9	142.1	704.9	675.9	28.98	24.325		
6,500.0	6,432.5	6,444.4	6,432.2	21.3	14.4	89.32	31.1	142.1	704.9	675.8	29.07	24.247		
6,550.0	6,482.4	6,493.4	6,480.3	21.4	14.5	88.86	22.2	142.1	705.0	675.8	29.23	24.116		
6,600.0	6,531.9	6,542.0	6,527.4	21.4	14.6	88.40	10.2	142.1	705.1	675.7	29.39	23.989		
6,650.0	6,580.9	6,590.2	6,573.4	21.5	14.7	87.95	-4.6	142.1	705.3	675.8	29.56	23.862		
6,700.0	6,629.1	6,638.2	6,618.0	21.6	14.8	87.52	-22.1	142.1	705.5	675.8	29.73	23.731		
6,750.0	6,676.4	6,685.8	6,661.1	21.6	14.9	87.09	-42.3	142.1	705.8	675.9	29.92	23.592		
6,800.0	6,722.5	6,733.2	6,702.7	21.7	15.0	86.68	-65.0	142.1	706.1	675.9	30.12	23.439		
6,850.0	6,767.2	6,780.2	6,742.5	21.8	15.1	86.28	-90.0	142.1	706.4	676.0	30.36	23.270		
6,900.0	6,810.4	6,827.0	6,780.5	21.9	15.2	85.90	-117.3	142.1	706.7	676.1	30.62	23.079		
6,950.0	6,851.9	6,873.6	6,816.6	21.9	15.3	85.53	-146.7	142.1	707.0	676.1	30.92	22.863		
7,000.0	6,891.4	6,919.9	6,850.7	22.0	15.5	85.18	-178.1	142.1	707.4	676.1	31.27	22.621		
7,050.0	6,928.8	6,966.1	6,882.7	22.2	15.6	84.86	-211.3	142.1	707.7	676.1	31.67	22.350		
7,100.0	6,964.0	7,012.0	6,912.4	22.3	15.8	84.55	-246.3	142.1	708.1	676.0	32.11	22.050		
7,150.0	6,996.8	7,057.7	6,939.9	22.4	16.1	84.27	-282.8	142.1	708.4	675.8	32.61	21.721		
7,200.0	7,027.1	7,103.3	6,965.1	22.6	16.4	84.01	-320.8	142.1	708.8	675.6	33.18	21.364		
7,250.0	7,054.7	7,150.0	6,988.6	22.8	16.7	83.77	-361.2	142.1	709.1	675.3	33.81	20.975		
7,300.0	7,079.5	7,194.0	7,008.3	23.1	17.0	83.56	-400.5	142.1	709.4	674.9	34.48	20.573		
7,350.0	7,101.4	7,239.1	7,026.2	23.3	17.4	83.37	-441.9	142.1	709.6	674.4	35.22	20.146		
7,400.0	7,120.3	7,284.2	7,041.6	23.6	17.8	83.21	-484.3	142.1	709.8	673.8	36.03	19.703		
7,450.0	7,136.2	7,329.2	7,054.4	24.0	18.3	83.08	-527.4	142.1	710.0	673.2	36.89	19.249		
7,500.0	7,148.9	7,374.1	7,064.7	24.3	18.8	82.97	-571.1	142.1	710.2	672.4	37.80	18.788		
7,550.0	7,158.5	7,418.9	7,072.4	24.7	19.3	82.89	-615.3	142.1	710.3	671.6	38.77	18.324		
7,600.0	7,164.8	7,463.8	7,077.5	25.2	19.8	82.83	-659.8	142.1	710.4	670.6	39.78	17.860		
7,650.0	7,167.8	7,508.6	7,079.9	25.6	20.4	82.81	-704.5	142.1	710.5	669.6	40.83	17.400		
7,670.8	7,168.1	7,527.2	7,080.2	25.9	20.6	82.81	-723.1	142.1	710.5	669.2	41.28	17.210		
7,700.0	7,168.2	7,555.4	7,079.9	26.1	21.0	82.78	-751.3	142.1	710.5	668.5	42.01	16.914		
7,800.0	7,168.3	7,655.4	7,078.9	27.2	22.3	82.69	-851.3	142.1	710.6	666.0	44.64	15.918		
7,900.0	7,168.4	7,755.4	7,077.9	28.4	23.7	82.60	-951.3	142.1	710.8	663.4	47.43	14.986		
8,000.0	7,168.5	7,855.4	7,076.9	29.7	25.2	82.51	-1,051.3	142.1	710.9	660.6	50.35	14.120		
8,100.0	7,168.7	7,955.4	7,075.9	31.0	26.8	82.42	-1,151.3	142.1	711.1	657.7	53.38	13.322		
8,200.0	7,168.8	8,055.4	7,074.9	32.4	28.4	82.33	-1,251.3	142.1	711.2	654.7	56.50	12.588		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference														
Offset														
Semi Major Axis														
Distance														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
8,300.0	7,168.9	8,155.4	7,073.9	33.8	30.0	82.24	-1,351.3	142.1	711.4	651.7	59.70	11.916		
8,400.0	7,169.0	8,255.3	7,072.8	35.3	31.7	82.15	-1,451.3	142.1	711.5	648.6	62.96	11.301		
8,500.0	7,169.2	8,355.3	7,071.8	36.8	33.3	82.06	-1,551.2	142.1	711.7	645.4	66.28	10.737		
8,600.0	7,169.3	8,455.3	7,070.8	38.4	35.1	81.97	-1,651.2	142.1	711.8	642.2	69.65	10.221		
8,700.0	7,169.4	8,555.3	7,069.8	40.0	36.8	81.88	-1,751.2	142.1	712.0	639.0	73.05	9.746		
8,800.0	7,169.5	8,655.3	7,068.8	41.6	38.5	81.79	-1,851.2	142.1	712.2	635.7	76.50	9.310		
8,900.0	7,169.6	8,755.3	7,067.8	43.3	40.3	81.70	-1,951.2	142.1	712.3	632.4	79.97	8.908		
9,000.0	7,169.8	8,855.3	7,066.8	45.0	42.1	81.61	-2,051.2	142.1	712.5	629.0	83.47	8.536		
9,100.0	7,169.9	8,955.3	7,065.8	46.7	43.9	81.52	-2,151.2	142.1	712.7	625.7	86.99	8.193		
9,200.0	7,170.0	9,055.3	7,064.7	48.4	45.7	81.43	-2,251.2	142.1	712.8	622.3	90.53	7.874		
9,300.0	7,170.1	9,155.3	7,063.7	50.1	47.5	81.34	-2,351.2	142.1	713.0	618.9	94.08	7.578		
9,400.0	7,170.3	9,255.3	7,062.7	51.8	49.3	81.25	-2,451.1	142.1	713.2	615.5	97.66	7.303		
9,500.0	7,170.4	9,355.3	7,061.7	53.6	51.1	81.16	-2,551.1	142.1	713.3	612.1	101.24	7.046		
9,600.0	7,170.5	9,455.3	7,060.7	55.4	53.0	81.07	-2,651.1	142.1	713.5	608.7	104.84	6.806		
9,700.0	7,170.6	9,555.3	7,059.7	57.1	54.8	80.98	-2,751.1	142.1	713.7	605.2	108.45	6.581		
9,800.0	7,170.7	9,655.3	7,058.7	58.9	56.7	80.89	-2,851.1	142.1	713.9	601.8	112.07	6.370		
9,900.0	7,170.9	9,755.2	7,057.7	60.7	58.5	80.80	-2,951.1	142.1	714.1	598.4	115.69	6.172		
10,000.0	7,171.0	9,855.2	7,056.7	62.5	60.4	80.71	-3,051.1	142.1	714.2	594.9	119.33	5.986		
10,100.0	7,171.1	9,955.2	7,055.6	64.3	62.2	80.62	-3,151.1	142.1	714.4	591.5	122.97	5.810		
10,200.0	7,171.2	10,055.2	7,054.6	66.1	64.1	80.53	-3,251.1	142.1	714.6	588.0	126.61	5.644		
10,300.0	7,171.4	10,155.2	7,053.6	67.9	66.0	80.44	-3,351.0	142.1	714.8	584.5	130.26	5.487		
10,400.0	7,171.5	10,255.2	7,052.6	69.8	67.8	80.35	-3,451.0	142.1	715.0	581.1	133.92	5.339		
10,500.0	7,171.6	10,355.2	7,051.6	71.6	69.7	80.26	-3,551.0	142.1	715.2	577.6	137.57	5.199		
10,600.0	7,171.7	10,455.2	7,050.6	73.4	71.6	80.17	-3,651.0	142.1	715.4	574.1	141.24	5.065		
10,700.0	7,171.8	10,555.2	7,049.6	75.3	73.5	80.08	-3,751.0	142.1	715.6	570.7	144.90	4.938		
10,800.0	7,172.0	10,655.2	7,048.6	77.1	75.3	79.99	-3,851.0	142.1	715.8	567.2	148.57	4.818		
10,900.0	7,172.1	10,755.2	7,047.5	79.0	77.2	79.90	-3,951.0	142.1	716.0	563.7	152.24	4.703		
11,000.0	7,172.2	10,855.2	7,046.5	80.8	79.1	79.81	-4,051.0	142.1	716.2	560.3	155.91	4.594		
11,100.0	7,172.3	10,955.2	7,045.5	82.7	81.0	79.72	-4,150.9	142.1	716.4	556.8	159.58	4.489		
11,200.0	7,172.5	11,055.2	7,044.5	84.5	82.9	79.63	-4,250.9	142.1	716.6	553.3	163.25	4.389		
11,300.0	7,172.6	11,155.2	7,043.5	86.4	84.8	79.54	-4,350.9	142.1	716.8	549.8	166.93	4.294		
11,400.0	7,172.7	11,255.2	7,042.5	88.2	86.6	79.45	-4,450.9	142.1	717.0	546.4	170.60	4.203		
11,500.0	7,172.8	11,355.1	7,041.5	90.1	88.5	79.37	-4,550.9	142.1	717.2	542.9	174.28	4.115		
11,600.0	7,172.9	11,455.1	7,040.5	92.0	90.4	79.28	-4,650.9	142.1	717.4	539.4	177.96	4.031		
11,647.3	7,173.0	11,500.2	7,040.0	92.8	91.3	79.24	-4,696.0	142.1	717.5	537.8	179.66	3.994 SF		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20M-423 - Wellbore #1 - Plan #1 (8-12-14)												Offset Site Error: 0.0 ft	
Survey Program: 0-MWDD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)		Separation Factor
0.0	0.0	1.0	1.0	0.0	0.0	-90.00	0.0	-89.1	89.1	89.1	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-90.00	0.0	-89.1	89.1	88.9	0.23	392.652	
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	0.0	-89.1	89.1	88.5	0.68	131.754	
300.0	300.0	301.0	301.0	0.6	0.6	-90.00	0.0	-89.1	89.1	88.0	1.13	79.157	
400.0	400.0	401.0	401.0	0.8	0.8	-90.00	0.0	-89.1	89.1	87.6	1.58	56.573	
500.0	500.0	501.0	501.0	1.0	1.0	-90.00	0.0	-89.1	89.1	87.1	2.03	44.015	
600.0	600.0	601.0	601.0	1.2	1.2	-90.00	0.0	-89.1	89.1	86.7	2.47	36.020	
700.0	700.0	701.0	701.0	1.5	1.5	-90.00	0.0	-89.1	89.1	86.2	2.92	30.483 CC, ES	
800.0	800.0	801.0	801.0	1.7	1.7	-177.35	0.0	-89.1	90.9	87.5	3.36	27.036	
900.0	899.8	900.8	900.8	1.9	1.9	-177.49	0.0	-89.1	96.1	92.3	3.79	25.364	
1,000.0	999.5	1,000.5	1,000.5	2.1	2.1	-177.69	0.0	-89.1	104.8	100.6	4.22	24.847	
1,100.0	1,098.7	1,099.7	1,099.7	2.4	2.4	-177.92	0.0	-89.1	117.0	112.3	4.65	25.171	
1,169.3	1,167.2	1,168.2	1,168.2	2.6	2.5	-178.09	0.0	-89.1	127.5	122.5	4.94	25.776	
1,200.0	1,197.5	1,198.5	1,198.5	2.7	2.6	-178.16	0.0	-89.1	132.5	127.4	5.08	26.075	
1,300.0	1,296.2	1,297.2	1,297.2	3.0	2.8	-178.36	0.0	-89.1	148.8	143.2	5.52	26.931	
1,400.0	1,394.8	1,395.8	1,395.8	3.3	3.0	-178.52	0.0	-89.1	165.1	159.1	5.97	27.639	
1,500.0	1,493.5	1,494.5	1,494.5	3.6	3.2	-178.65	0.0	-89.1	181.4	174.9	6.42	28.232	
1,600.0	1,592.1	1,593.1	1,593.1	4.0	3.5	-178.77	0.0	-89.1	197.7	190.8	6.88	28.736	
1,700.0	1,690.8	1,691.8	1,691.8	4.3	3.7	-178.86	0.0	-89.1	214.0	206.6	7.34	29.168	
1,800.0	1,789.5	1,790.5	1,790.5	4.7	3.9	-178.94	0.0	-89.1	230.3	222.5	7.79	29.543	
1,900.0	1,888.1	1,889.1	1,889.1	5.0	4.1	-179.01	0.0	-89.1	246.6	238.3	8.26	29.870	
2,000.0	1,986.8	1,987.8	1,987.8	5.4	4.4	-179.07	0.0	-89.1	262.9	254.2	8.72	30.159	
2,100.0	2,085.4	2,086.4	2,086.4	5.8	4.6	-179.13	0.0	-89.1	279.2	270.0	9.18	30.414	
2,200.0	2,184.1	2,185.1	2,185.1	6.1	4.8	-179.17	0.0	-89.1	295.5	285.9	9.64	30.643	
2,300.0	2,282.8	2,283.8	2,283.8	6.5	5.0	-179.22	0.0	-89.1	311.8	301.7	10.11	30.847	
2,400.0	2,381.4	2,382.4	2,382.4	6.9	5.2	-179.26	0.0	-89.1	328.1	317.6	10.57	31.032	
2,500.0	2,480.1	2,481.1	2,481.1	7.3	5.5	-179.29	0.0	-89.1	344.4	333.4	11.04	31.200	
2,600.0	2,578.8	2,579.8	2,579.8	7.6	5.7	-179.32	0.0	-89.1	360.7	349.2	11.51	31.352	
2,700.0	2,677.4	2,678.4	2,678.4	8.0	5.9	-179.35	0.0	-89.1	377.0	365.1	11.97	31.491	
2,800.0	2,776.1	2,777.1	2,777.1	8.4	6.1	-179.38	0.0	-89.1	393.4	380.9	12.44	31.619	
2,900.0	2,874.7	2,875.7	2,875.7	8.8	6.4	-179.40	0.0	-89.1	409.7	396.8	12.91	31.737	
3,000.0	2,973.4	2,974.4	2,974.4	9.1	6.6	-179.43	0.0	-89.1	426.0	412.6	13.38	31.845	
3,100.0	3,072.1	3,073.1	3,073.1	9.5	6.8	-179.45	0.0	-89.1	442.3	428.4	13.84	31.946	
3,200.0	3,170.7	3,171.7	3,171.7	9.9	7.0	-179.47	0.0	-89.1	458.6	444.3	14.31	32.039	
3,300.0	3,269.4	3,270.4	3,270.4	10.3	7.2	-179.49	0.0	-89.1	474.9	460.1	14.78	32.126	
3,400.0	3,368.0	3,369.0	3,369.0	10.7	7.5	-179.50	0.0	-89.1	491.2	475.9	15.25	32.207	
3,500.0	3,466.7	3,467.7	3,467.7	11.0	7.7	-179.52	0.0	-89.1	507.5	491.8	15.72	32.283	
3,600.0	3,565.4	3,566.4	3,566.4	11.4	7.9	-179.53	0.0	-89.1	523.8	507.6	16.19	32.354	
3,700.0	3,664.0	3,665.0	3,665.0	11.8	8.1	-179.55	0.0	-89.1	540.1	523.5	16.66	32.421	
3,800.0	3,762.7	3,763.7	3,763.7	12.2	8.3	-179.56	0.0	-89.1	556.4	539.3	17.13	32.483	
3,900.0	3,861.3	3,862.3	3,862.3	12.6	8.6	-179.57	0.0	-89.1	572.7	555.1	17.60	32.542	
4,000.0	3,960.0	3,961.0	3,961.0	12.9	8.8	-179.59	0.0	-89.1	589.0	571.0	18.07	32.598	
4,100.0	4,058.7	4,061.1	4,061.1	13.3	9.0	-179.54	0.6	-89.1	605.3	586.7	18.54	32.643	
4,200.0	4,157.3	4,161.4	4,161.3	13.7	9.2	-179.20	4.4	-88.8	621.2	602.2	19.01	32.673	
4,300.0	4,256.0	4,260.0	4,259.8	14.1	9.5	-178.81	8.9	-88.5	637.1	617.6	19.48	32.703	
4,400.0	4,354.7	4,358.6	4,358.4	14.5	9.7	-178.43	13.5	-88.2	652.9	633.0	19.95	32.731	
4,500.0	4,453.3	4,457.3	4,456.9	14.8	9.9	-178.08	18.0	-87.9	668.8	648.4	20.42	32.757	
4,600.0	4,552.0	4,555.9	4,555.4	15.2	10.1	-177.74	22.6	-87.6	684.8	663.9	20.89	32.782	
4,700.0	4,650.6	4,654.6	4,654.0	15.6	10.3	-177.42	27.1	-87.2	700.7	679.4	21.36	32.805	
4,800.0	4,749.3	4,753.2	4,752.5	16.0	10.6	-177.11	31.6	-86.9	716.7	694.9	21.83	32.826	
4,900.0	4,848.0	4,851.9	4,851.0	16.4	10.8	-176.81	36.2	-86.6	732.7	710.4	22.31	32.846	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20M-423 - Wellbore #1 - Plan #1 (8-12-14)											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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.0	4,946.6	4,949.3	4,948.4	16.8	11.0	-176.62	39.5	-86.4	748.8	726.0	22.74	32.924	
5,100.0	5,045.3	5,047.2	5,046.3	17.1	11.2	-176.66	40.0	-86.4	765.0	741.8	23.17	33.016	
5,200.0	5,143.9	5,145.8	5,144.9	17.5	11.4	-176.73	40.0	-86.4	781.3	757.7	23.63	33.068	
5,300.0	5,242.6	5,244.5	5,243.6	17.9	11.6	-176.79	40.0	-86.4	797.6	773.5	24.10	33.098	
5,400.0	5,341.3	5,343.1	5,342.3	18.3	11.8	-176.86	40.0	-86.4	813.9	789.3	24.57	33.126	
5,500.0	5,439.9	5,441.8	5,440.9	18.7	12.0	-176.92	40.0	-86.4	830.2	805.1	25.04	33.154	
5,600.0	5,538.6	5,540.5	5,539.6	19.1	12.2	-176.98	40.0	-86.4	846.4	820.9	25.51	33.180	
5,700.0	5,637.2	5,639.1	5,638.2	19.4	12.5	-177.04	40.0	-86.4	862.7	836.7	25.98	33.205	
5,800.0	5,735.9	5,737.8	5,736.9	19.8	12.7	-177.09	40.0	-86.4	879.0	852.6	26.45	33.230	
5,898.2	5,832.8	5,834.7	5,833.8	20.2	12.9	-177.14	40.0	-86.4	895.0	868.1	26.92	33.252	
5,900.0	5,834.6	5,836.4	5,835.6	20.2	12.9	-177.14	40.0	-86.4	895.3	868.4	26.92	33.252	
6,000.0	5,933.5	5,935.4	5,934.5	20.5	13.1	-177.20	40.0	-86.4	909.8	882.4	27.40	33.205	
6,100.0	6,032.9	6,034.8	6,033.9	20.7	13.4	-177.25	40.0	-86.4	920.9	893.0	27.84	33.075	
6,200.0	6,132.6	6,134.5	6,133.6	20.9	13.6	-177.28	40.0	-86.4	928.4	900.2	28.25	32.868	
6,300.0	6,232.5	6,234.4	6,233.5	21.1	13.8	-177.29	40.0	-86.4	932.5	903.9	28.62	32.587	
6,367.5	6,300.0	6,301.9	6,301.0	21.1	14.0	-90.00	40.0	-86.4	933.3	904.5	28.85	32.350	
6,400.0	6,332.5	6,334.4	6,333.5	21.2	14.0	-90.00	40.0	-86.4	933.3	904.3	28.98	32.202	
6,447.5	6,380.0	6,381.9	6,381.0	21.3	14.1	-90.00	40.0	-86.4	933.3	904.1	29.18	31.987	
6,471.7	6,404.2	6,406.1	6,405.2	21.3	14.2	-90.00	40.0	-86.4	933.3	904.0	29.28	31.879	
6,500.0	6,432.5	6,434.4	6,433.5	21.3	14.2	90.00	39.4	-86.4	933.3	903.9	29.38	31.764	
6,550.0	6,482.4	6,484.4	6,483.4	21.4	14.3	89.99	35.9	-86.4	933.3	903.8	29.55	31.581	
6,600.0	6,531.9	6,534.4	6,532.9	21.4	14.4	89.99	29.1	-86.4	933.3	903.6	29.71	31.410	
6,650.0	6,580.9	6,584.3	6,581.8	21.5	14.5	89.99	19.1	-86.4	933.3	903.4	29.87	31.244	
6,700.0	6,629.1	6,634.3	6,630.0	21.6	14.6	89.98	5.9	-86.4	933.3	903.3	30.03	31.078	
6,750.0	6,676.4	6,684.3	6,677.3	21.6	14.7	89.98	-10.5	-86.4	933.3	903.1	30.20	30.907	
6,800.0	6,722.5	6,734.3	6,723.3	21.7	14.8	89.97	-29.8	-86.4	933.3	902.9	30.38	30.725	
6,850.0	6,767.2	6,784.3	6,768.0	21.8	14.8	89.97	-52.2	-86.4	933.3	902.7	30.58	30.525	
6,900.0	6,810.4	6,834.2	6,811.1	21.9	14.9	89.97	-77.4	-86.4	933.3	902.5	30.80	30.300	
6,950.0	6,851.9	6,884.2	6,852.5	21.9	15.0	89.96	-105.4	-86.4	933.3	902.3	31.07	30.043	
7,000.0	6,891.4	6,934.1	6,892.0	22.0	15.2	89.96	-136.0	-86.4	933.3	901.9	31.37	29.747	
7,050.0	6,928.8	6,984.1	6,929.4	22.2	15.4	89.96	-169.1	-86.4	933.3	901.6	31.74	29.409	
7,100.0	6,964.0	7,034.1	6,964.5	22.3	15.6	89.96	-204.6	-86.4	933.3	901.2	32.16	29.023	
7,150.0	6,996.8	7,084.0	6,997.2	22.4	15.8	89.95	-242.3	-86.4	933.3	900.7	32.65	28.588	
7,200.0	7,027.1	7,134.0	7,027.4	22.6	16.1	89.95	-282.1	-86.4	933.3	900.1	33.21	28.104	
7,250.0	7,054.7	7,183.9	7,055.0	22.8	16.4	89.95	-323.8	-86.4	933.3	899.5	33.85	27.573	
7,300.0	7,079.5	7,233.8	7,079.7	23.1	16.8	89.95	-367.1	-86.4	933.3	898.8	34.57	27.000	
7,350.0	7,101.4	7,283.8	7,101.6	23.3	17.2	89.94	-412.0	-86.4	933.3	898.0	35.37	26.390	
7,400.0	7,120.3	7,333.7	7,120.5	23.6	17.6	89.94	-458.3	-86.4	933.3	897.1	36.24	25.751	
7,450.0	7,136.2	7,383.7	7,136.3	24.0	18.1	89.94	-505.6	-86.4	933.3	896.1	37.20	25.089	
7,500.0	7,148.9	7,433.6	7,149.0	24.3	18.6	89.94	-553.9	-86.4	933.3	895.1	38.23	24.415	
7,550.0	7,158.5	7,483.5	7,158.5	24.7	19.2	89.94	-602.9	-86.4	933.3	894.0	39.32	23.736	
7,600.0	7,164.8	7,533.5	7,164.8	25.2	19.7	89.94	-652.4	-86.4	933.3	892.8	40.48	23.058	
7,650.0	7,167.8	7,583.4	7,167.8	25.6	20.4	89.94	-702.3	-86.4	933.3	891.6	41.68	22.390	
7,670.8	7,168.1	7,604.2	7,168.2	25.9	20.6	89.94	-723.0	-86.4	933.3	891.1	42.20	22.118	
7,680.5	7,168.2	7,613.9	7,168.2	25.9	20.7	89.94	-732.8	-86.4	933.3	890.9	42.45	21.988	
7,700.0	7,168.2	7,633.4	7,168.2	26.1	21.0	89.94	-752.2	-86.4	933.3	890.4	42.95	21.733	
7,800.0	7,168.3	7,733.4	7,168.3	27.2	22.3	89.94	-852.2	-86.4	933.3	887.7	45.59	20.470	
7,900.0	7,168.4	7,833.4	7,168.4	28.4	23.7	89.94	-952.2	-86.4	933.3	884.9	48.40	19.283	
8,000.0	7,168.5	7,933.4	7,168.6	29.7	25.2	89.94	-1,052.2	-86.4	933.3	882.0	51.34	18.178	
8,100.0	7,168.7	8,033.4	7,168.7	31.0	26.8	89.94	-1,152.2	-86.4	933.3	878.9	54.40	17.157	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,200.0	7,168.8	8,133.4	7,168.8	32.4	28.4	89.94	-1,252.2	-86.4	933.3	875.8	57.55	16.218		
8,300.0	7,168.9	8,233.4	7,168.9	33.8	30.0	89.94	-1,352.2	-86.4	933.3	872.5	60.78	15.356		
8,400.0	7,169.0	8,333.4	7,169.0	35.3	31.6	89.94	-1,452.2	-86.4	933.3	869.2	64.07	14.566		
8,500.0	7,169.2	8,433.4	7,169.2	36.8	33.3	89.94	-1,552.2	-86.4	933.3	865.9	67.43	13.842		
8,600.0	7,169.3	8,533.4	7,169.3	38.4	35.0	89.94	-1,652.2	-86.4	933.3	862.5	70.83	13.176		
8,700.0	7,169.4	8,633.4	7,169.4	40.0	36.8	89.94	-1,752.2	-86.4	933.3	859.0	74.28	12.565		
8,800.0	7,169.5	8,733.4	7,169.5	41.6	38.5	89.94	-1,852.2	-86.4	933.3	855.6	77.76	12.002		
8,900.0	7,169.6	8,833.4	7,169.6	43.3	40.3	89.94	-1,952.2	-86.4	933.3	852.0	81.28	11.483		
9,000.0	7,169.8	8,933.4	7,169.8	45.0	42.1	89.94	-2,052.2	-86.4	933.3	848.5	84.82	11.003		
9,100.0	7,169.9	9,033.4	7,169.9	46.7	43.9	89.94	-2,152.2	-86.4	933.3	844.9	88.39	10.559		
9,200.0	7,170.0	9,133.4	7,170.0	48.4	45.7	89.94	-2,252.2	-86.4	933.3	841.3	91.98	10.146		
9,300.0	7,170.1	9,233.4	7,170.1	50.1	47.5	89.94	-2,352.2	-86.4	933.3	837.7	95.60	9.763		
9,400.0	7,170.3	9,333.4	7,170.3	51.8	49.3	89.94	-2,452.2	-86.4	933.3	834.1	99.22	9.406		
9,500.0	7,170.4	9,433.4	7,170.4	53.6	51.1	89.94	-2,552.2	-86.4	933.3	830.5	102.87	9.073		
9,600.0	7,170.5	9,533.4	7,170.5	55.4	53.0	89.94	-2,652.2	-86.4	933.3	826.8	106.52	8.762		
9,700.0	7,170.6	9,633.4	7,170.6	57.1	54.8	89.94	-2,752.2	-86.4	933.3	823.1	110.19	8.470		
9,800.0	7,170.7	9,733.4	7,170.8	58.9	56.6	89.94	-2,852.2	-86.4	933.3	819.4	113.88	8.196		
9,900.0	7,170.9	9,833.4	7,170.9	60.7	58.5	89.94	-2,952.2	-86.4	933.3	815.8	117.57	7.939		
10,000.0	7,171.0	9,933.4	7,171.0	62.5	60.3	89.94	-3,052.2	-86.4	933.3	812.0	121.27	7.696		
10,100.0	7,171.1	10,033.4	7,171.1	64.3	62.2	89.94	-3,152.2	-86.4	933.3	808.3	124.98	7.468		
10,200.0	7,171.2	10,133.4	7,171.2	66.1	64.1	89.94	-3,252.2	-86.4	933.3	804.6	128.70	7.252		
10,300.0	7,171.4	10,233.4	7,171.4	67.9	65.9	89.94	-3,352.2	-86.4	933.3	800.9	132.42	7.048		
10,400.0	7,171.5	10,333.4	7,171.5	69.8	67.8	89.94	-3,452.2	-86.4	933.3	797.2	136.15	6.855		
10,500.0	7,171.6	10,433.4	7,171.6	71.6	69.7	89.94	-3,552.2	-86.4	933.3	793.4	139.89	6.672		
10,600.0	7,171.7	10,533.4	7,171.7	73.4	71.5	89.94	-3,652.2	-86.4	933.3	789.7	143.63	6.498		
10,700.0	7,171.8	10,633.4	7,171.9	75.3	73.4	89.94	-3,752.2	-86.4	933.3	785.9	147.38	6.333		
10,800.0	7,172.0	10,733.4	7,172.0	77.1	75.3	89.94	-3,852.2	-86.4	933.3	782.2	151.13	6.176		
10,900.0	7,172.1	10,833.4	7,172.1	79.0	77.2	89.94	-3,952.2	-86.4	933.3	778.4	154.89	6.026		
11,000.0	7,172.2	10,933.4	7,172.2	80.8	79.1	89.94	-4,052.2	-86.4	933.3	774.7	158.65	5.883		
11,100.0	7,172.3	11,033.4	7,172.3	82.7	80.9	89.94	-4,152.2	-86.4	933.3	770.9	162.42	5.747		
11,200.0	7,172.5	11,133.4	7,172.5	84.5	82.8	89.94	-4,252.2	-86.4	933.3	767.1	166.18	5.616		
11,300.0	7,172.6	11,233.4	7,172.6	86.4	84.7	89.94	-4,352.2	-86.4	933.3	763.4	169.96	5.492		
11,400.0	7,172.7	11,333.4	7,172.7	88.2	86.6	89.94	-4,452.2	-86.4	933.3	759.6	173.73	5.372		
11,500.0	7,172.8	11,433.4	7,172.8	90.1	88.5	89.94	-4,552.2	-86.4	933.3	755.8	177.51	5.258		
11,600.0	7,172.9	11,533.4	7,173.0	92.0	90.3	89.94	-4,652.2	-86.4	933.3	752.1	181.17	5.152		
11,633.7	7,173.0	11,567.1	7,173.0	92.6	90.8	89.94	-4,685.9	-86.4	933.3	751.0	182.32	5.119		
11,647.3	7,173.0	11,573.5	7,173.0	92.8	90.9	89.94	-4,692.3	-86.4	933.3	750.7	182.68	5.109 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20R-243 - Wellbore #1 - Plan #1 (8-12-14)													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	Minimum Separation (ft)	Separation Factor	Warning
				(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
0.0	0.0	0.0	0.0	0.0	0.0	-90.02	-90.02	0.0	-30.6	30.6	30.6	0.22	136.324	
100.0	100.0	100.0	100.0	0.1	0.1	-90.02	-90.02	0.0	-30.6	30.6	30.4	0.67	45.441	
200.0	200.0	200.0	200.0	0.3	0.3	-90.02	-90.02	0.0	-30.6	30.6	30.0	1.12	27.265	
300.0	300.0	300.0	300.0	0.6	0.6	-90.02	-90.02	0.0	-30.6	30.6	29.5	1.57	19.475	
400.0	400.0	400.0	400.0	0.8	0.8	-90.02	-90.02	0.0	-30.6	30.6	29.1	2.02	15.147	
500.0	500.0	500.0	500.0	1.0	1.0	-90.02	-90.02	0.0	-30.6	30.6	28.6	2.47	12.393	
600.0	600.0	600.0	600.0	1.2	1.2	-90.02	-90.02	0.0	-30.6	30.6	28.2	2.92	10.486	CC, ES
700.0	700.0	700.0	700.0	1.5	1.5	-90.02	-90.02	0.0	-30.6	30.6	27.7	3.36	9.641	
800.0	800.0	800.0	800.0	1.7	1.7	-177.46	-177.46	0.0	-30.6	32.4	29.0	3.79	9.932	
900.0	899.8	899.8	899.8	1.9	1.9	-177.81	-177.81	0.0	-30.6	37.6	33.8	4.22	10.987	
1,000.0	999.5	999.5	999.5	2.1	2.1	-178.22	-178.22	0.0	-30.6	46.3	42.1	4.63	12.255	
1,100.0	1,098.7	1,100.7	1,100.7	2.4	2.3	-178.51	-178.51	0.1	-28.9	56.8	52.1	4.91	13.023	
1,169.3	1,167.2	1,171.1	1,171.0	2.6	2.5	-178.63	-178.63	0.3	-25.5	64.0	59.1	5.04	13.291	
1,200.0	1,197.5	1,202.4	1,202.2	2.7	2.6	-178.66	-178.66	0.5	-23.5	67.0	62.0	5.47	13.620	
1,300.0	1,296.2	1,304.6	1,304.1	3.0	2.8	-178.67	-178.67	1.0	-14.5	74.5	69.1	5.92	13.294	
1,400.0	1,394.8	1,406.5	1,405.2	3.3	3.0	-178.58	-178.58	1.9	-2.0	78.6	72.7	6.37	12.852	
1,500.0	1,493.5	1,506.5	1,504.2	3.6	3.3	-178.47	-178.47	2.7	11.1	81.8	75.4	6.82	12.458	
1,600.0	1,592.1	1,606.4	1,603.3	4.0	3.6	-178.37	-178.37	3.6	24.2	85.0	78.2	7.28	12.104	
1,700.0	1,690.8	1,706.4	1,702.4	4.3	3.9	-178.27	-178.27	4.4	37.4	88.2	80.9	7.75	11.786	
1,800.0	1,789.5	1,806.3	1,801.5	4.7	4.1	-178.18	-178.18	5.3	50.5	91.3	83.6	8.22	11.500	
1,900.0	1,888.1	1,906.3	1,900.6	5.0	4.4	-178.10	-178.10	6.1	63.7	94.5	86.3	8.69	11.240	
2,000.0	1,986.8	2,006.2	1,999.6	5.4	4.7	-178.02	-178.02	7.0	76.8	97.7	89.0	9.17	11.004	
2,100.0	2,085.4	2,106.2	2,098.7	5.8	5.1	-177.95	-177.95	7.9	90.0	100.9	91.7	9.64	10.789	
2,200.0	2,184.1	2,206.1	2,197.8	6.1	5.4	-177.88	-177.88	8.7	103.1	104.0	94.4	10.12	10.592	
2,300.0	2,282.8	2,306.1	2,296.9	6.5	5.7	-177.82	-177.82	9.6	116.2	107.2	97.1	10.60	10.412	
2,400.0	2,381.4	2,406.0	2,395.9	6.9	6.0	-177.76	-177.76	10.4	129.4	110.4	99.8	11.08	10.246	
2,500.0	2,480.1	2,506.0	2,495.0	7.3	6.3	-177.70	-177.70	11.3	142.5	113.6	102.5	11.57	10.092	
2,600.0	2,578.8	2,605.9	2,594.1	7.6	6.6	-177.65	-177.65	12.1	155.7	116.7	105.2	12.05	9.950	
2,700.0	2,677.4	2,705.9	2,693.2	8.0	7.0	-177.60	-177.60	13.0	168.8	119.9	107.9	12.53	9.819	
2,800.0	2,776.1	2,805.8	2,792.3	8.4	7.3	-177.55	-177.55	13.9	181.9	123.1	110.5	13.02	9.696	
2,900.0	2,874.7	2,905.8	2,891.3	8.8	7.6	-177.50	-177.50	14.7	195.1	126.3	113.2	13.51	9.582	
3,000.0	2,973.4	3,005.7	2,990.4	9.1	7.9	-177.46	-177.46	15.6	208.2	129.4	115.9	13.99	9.475	
3,100.0	3,072.1	3,105.7	3,089.5	9.5	8.2	-177.42	-177.42	16.4	221.4	132.6	118.6	14.48	9.375	
3,200.0	3,170.7	3,205.6	3,188.6	9.9	8.6	-177.38	-177.38	17.3	234.5	135.8	121.3	14.97	9.281	
3,300.0	3,269.4	3,305.6	3,287.7	10.3	8.9	-177.34	-177.34	18.1	247.7	139.0	124.0	15.46	9.193	
3,400.0	3,368.0	3,405.5	3,386.7	10.7	9.2	-177.30	-177.30	19.0	260.8	142.1	126.7	15.95	9.110	
3,500.0	3,466.7	3,505.5	3,485.8	11.0	9.6	-177.27	-177.27	19.9	273.9	145.3	129.4	16.44	9.032	
3,600.0	3,565.4	3,605.4	3,584.9	11.4	9.9	-177.24	-177.24	20.7	287.1	148.5	132.0	16.93	8.958	
3,700.0	3,664.0	3,705.4	3,684.0	11.8	10.2	-177.20	-177.20	21.6	300.2	151.7	134.7	17.42	8.888	
3,800.0	3,762.7	3,805.3	3,783.0	12.2	10.5	-177.17	-177.17	22.4	313.4	154.8	137.4	17.91	8.822	
3,900.0	3,861.3	3,905.3	3,882.1	12.6	10.9	-177.14	-177.14	23.3	326.5	158.0	140.1	18.40	8.759	
4,000.0	3,960.0	4,005.2	3,981.2	12.9	11.2	-177.12	-177.12	24.2	339.7	161.2	142.8	18.89	8.699	
4,100.0	4,058.7	4,105.1	4,080.3	13.3	11.5	-177.09	-177.09	25.0	352.8	164.4	145.5	19.38	8.642	
4,200.0	4,157.3	4,205.1	4,179.4	13.7	11.9	-177.06	-177.06	25.9	365.9	167.5	148.1	19.88	8.588	
4,300.0	4,256.0	4,305.0	4,278.4	14.1	12.2	-177.04	-177.04	26.7	379.1	170.7	150.8	20.37	8.537	
4,400.0	4,354.7	4,405.0	4,377.5	14.5	12.5	-177.02	-177.02	27.6	392.2	173.9	153.5	20.86	8.487	
4,500.0	4,453.3	4,504.9	4,476.6	14.8	12.9	-176.99	-176.99	28.4	405.4	177.1	156.2	21.35	8.440	
4,600.0	4,552.0	4,604.9	4,575.7	15.2	13.2	-176.97	-176.97	29.3	418.5	180.2	158.9	21.85	8.395	
4,700.0	4,650.6	4,704.8	4,674.7	15.6	13.5	-176.95	-176.95	30.2	431.7	183.4	161.6	22.34	8.352	
4,800.0	4,749.3	4,804.8	4,773.8	16.0	13.9	-176.93	-176.93	31.0	444.8	186.6	164.2	22.83	8.311	
4,900.0	4,848.0	4,904.7	4,872.9	16.4	14.2	-176.91	-176.91	31.9	457.9	189.8	166.9			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20R-243 - Wellbore #1 - Plan #1 (8-12-14)											Offset Site Error:		0.0 ft
Survey Program: 0-MWDD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance				Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)		Minimum Separation (ft)	Separation Factor
5,000.0	4,946.6	5,004.7	4,972.0	16.8	14.5	-176.89	32.7	471.1	192.9	169.6	23.33	8.271	
5,100.0	5,045.3	5,104.6	5,071.1	17.1	14.9	-176.87	33.6	484.2	196.1	172.3	23.82	8.233	
5,200.0	5,143.9	5,204.6	5,170.1	17.5	15.2	-176.85	34.4	497.4	199.3	175.0	24.31	8.197	
5,300.0	5,242.6	5,304.5	5,269.2	17.9	15.5	-176.83	35.3	510.5	202.5	177.7	24.81	8.162	
5,400.0	5,341.3	5,404.5	5,368.3	18.3	15.8	-176.82	36.2	523.6	205.6	180.3	25.30	8.128	
5,500.0	5,439.9	5,504.4	5,467.4	18.7	16.2	-176.80	37.0	536.8	208.8	183.0	25.79	8.096	
5,600.0	5,538.6	5,604.4	5,566.4	19.1	16.5	-176.78	37.9	549.9	212.0	185.7	26.29	8.064	
5,700.0	5,637.2	5,700.0	5,661.3	19.4	16.8	-176.77	38.7	562.2	215.5	188.7	26.76	8.052	
5,800.0	5,735.9	5,794.1	5,754.8	19.8	17.0	-176.81	39.3	571.8	221.7	194.5	27.19	8.152	
5,898.2	5,832.8	5,884.7	5,845.2	20.2	17.2	-176.90	39.7	578.1	230.9	203.3	27.61	8.363	
5,900.0	5,834.6	5,886.4	5,846.9	20.2	17.2	-176.91	39.7	578.2	231.1	203.5	27.61	8.368	
6,000.0	5,933.5	5,978.2	5,938.7	20.5	17.4	-177.03	39.9	581.6	241.9	213.9	27.99	8.640	
6,100.0	6,032.9	6,072.4	6,032.9	20.7	17.5	-177.15	40.0	582.3	252.2	223.9	28.34	8.898	
6,200.0	6,132.6	6,172.1	6,132.6	20.9	17.7	-177.24	40.0	582.3	259.8	231.1	28.68	9.058	
6,300.0	6,232.5	6,272.0	6,232.5	21.1	17.8	-177.29	40.0	582.3	263.9	234.9	28.98	9.106	
6,367.5	6,300.0	6,339.3	6,299.7	21.1	17.9	-90.69	36.8	582.3	264.7	235.5	29.15	9.079	
6,400.0	6,332.5	6,371.4	6,331.6	21.2	18.0	-91.47	33.2	582.3	264.8	235.5	29.27	9.046	
6,471.7	6,404.2	6,440.8	6,399.8	21.3	18.1	-94.13	20.9	582.3	265.4	235.8	29.56	8.977	
6,500.0	6,432.5	6,467.6	6,425.9	21.3	18.1	84.56	14.5	582.3	265.9	236.2	29.69	8.957	
6,550.0	6,482.4	6,514.5	6,470.8	21.4	18.2	82.28	1.1	582.3	267.2	237.3	29.95	8.923	
6,600.0	6,531.9	6,560.8	6,514.3	21.4	18.2	80.06	-14.8	582.3	268.9	238.7	30.23	8.893	
6,650.0	6,580.9	6,606.5	6,556.2	21.5	18.3	77.92	-33.1	582.3	270.9	240.4	30.55	8.869	
6,700.0	6,629.1	6,650.0	6,594.9	21.6	18.4	75.93	-52.7	582.3	273.3	242.4	30.87	8.854	
6,750.0	6,676.4	6,696.5	6,635.1	21.6	18.5	73.90	-76.2	582.3	275.9	244.7	31.22	8.838	
6,800.0	6,722.5	6,740.8	6,672.0	21.7	18.6	72.03	-100.7	582.3	278.7	247.2	31.55	8.834	
6,850.0	6,767.2	6,784.7	6,707.0	21.8	18.7	70.27	-127.1	582.3	281.7	249.8	31.87	8.839	
6,900.0	6,810.4	6,828.2	6,740.2	21.9	18.8	68.62	-155.2	582.3	284.8	252.6	32.16	8.854	
6,950.0	6,851.9	6,871.3	6,771.5	21.9	18.9	67.08	-184.9	582.3	287.9	255.5	32.43	8.880	
7,000.0	6,891.4	6,914.1	6,800.8	22.0	19.0	65.65	-216.1	582.3	291.1	258.5	32.65	8.916	
7,050.0	6,928.8	6,956.7	6,828.2	22.2	19.2	64.33	-248.6	582.3	294.2	261.4	32.84	8.961	
7,100.0	6,964.0	7,000.0	6,854.2	22.3	19.4	63.09	-283.3	582.3	297.3	264.3	32.99	9.011	
7,150.0	6,996.8	7,040.9	6,876.9	22.4	19.6	62.01	-317.3	582.3	300.2	267.1	33.10	9.070	
7,200.0	7,027.1	7,082.6	6,898.1	22.6	19.8	61.02	-353.2	582.3	303.0	269.8	33.19	9.129	
7,250.0	7,054.7	7,124.2	6,917.3	22.8	20.1	60.13	-390.1	582.3	305.6	272.3	33.26	9.189	
7,300.0	7,079.5	7,165.6	6,934.4	23.1	20.3	59.35	-427.8	582.3	308.0	274.6	33.31	9.245	
7,350.0	7,101.4	7,206.8	6,949.3	23.3	20.6	58.67	-466.2	582.3	310.1	276.7	33.36	9.294	
7,400.0	7,120.3	7,250.0	6,962.7	23.6	21.0	58.07	-507.3	582.3	312.0	278.5	33.44	9.328	
7,450.0	7,136.2	7,288.8	6,972.8	24.0	21.3	57.62	-544.8	582.3	313.5	280.0	33.52	9.354	
7,500.0	7,148.9	7,329.7	6,981.3	24.3	21.7	57.24	-584.7	582.3	314.8	281.2	33.64	9.358	
7,550.0	7,158.5	7,370.5	6,987.7	24.7	22.1	56.96	-625.1	582.3	315.8	282.0	33.81	9.340	
7,600.0	7,164.8	7,411.3	6,991.9	25.2	22.5	56.77	-665.6	582.3	316.4	282.4	34.03	9.297	
7,650.0	7,167.8	7,450.0	6,993.9	25.6	23.0	56.68	-704.2	582.3	316.7	282.4	34.30	9.234	
7,670.8	7,168.1	7,468.9	6,994.1	25.9	23.2	56.67	-723.2	582.3	316.8	282.3	34.46	9.191	
7,700.0	7,168.2	7,497.1	6,994.0	26.1	23.5	56.65	-751.4	582.3	316.9	281.8	35.06	9.037	
7,800.0	7,168.3	7,597.1	6,993.5	27.2	24.7	56.55	-851.4	582.3	317.2	279.9	37.25	8.515	
7,900.0	7,168.4	7,697.1	6,993.0	28.4	26.0	56.46	-951.4	582.3	317.5	278.0	39.58	8.022	
8,000.0	7,168.5	7,797.1	6,992.5	29.7	27.4	56.37	-1,051.4	582.3	317.9	275.9	42.04	7.562	
8,100.0	7,168.7	7,897.1	6,992.0	31.0	28.8	56.27	-1,151.3	582.3	318.2	273.6	44.59	7.137	
8,200.0	7,168.8	7,997.1	6,991.5	32.4	30.3	56.18	-1,251.3	582.3	318.6	271.4	47.23	6.746	
8,300.0	7,168.9	8,097.1	6,990.9	33.8	31.9	56.08	-1,351.3	582.3	318.9	269.0	49.93	6.387	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20R-243 - Wellbore #1 - Plan #1 (8-12-14)		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)					
8,400.0	7,169.0	8,197.1	6,990.4	35.3	33.5	55.99	-1,451.3	582.3	319.3	266.6	52.69	6.059				
8,500.0	7,169.2	8,297.1	6,989.9	36.8	35.1	55.90	-1,551.3	582.3	319.6	264.1	55.50	5.759				
8,600.0	7,169.3	8,397.1	6,989.4	38.4	36.7	55.80	-1,651.3	582.3	320.0	261.6	58.35	5.484				
8,700.0	7,169.4	8,497.1	6,988.9	40.0	38.4	55.71	-1,751.3	582.3	320.3	259.1	61.23	5.232				
8,800.0	7,169.5	8,597.1	6,988.4	41.6	40.1	55.62	-1,851.3	582.3	320.7	256.6	64.14	5.000				
8,900.0	7,169.6	8,697.1	6,987.9	43.3	41.8	55.53	-1,951.3	582.3	321.1	254.0	67.07	4.787				
9,000.0	7,169.8	8,797.1	6,987.4	45.0	43.5	55.43	-2,051.3	582.3	321.4	251.4	70.02	4.590				
9,100.0	7,169.9	8,897.1	6,986.9	46.7	45.3	55.34	-2,151.3	582.3	321.8	248.8	72.99	4.409				
9,200.0	7,170.0	8,997.1	6,986.4	48.4	47.0	55.25	-2,251.3	582.3	322.1	246.2	75.97	4.240				
9,300.0	7,170.1	9,097.1	6,985.9	50.1	48.8	55.16	-2,351.3	582.3	322.5	243.5	78.96	4.084				
9,400.0	7,170.3	9,197.1	6,985.4	51.8	50.6	55.07	-2,451.3	582.3	322.8	240.9	81.96	3.939				
9,500.0	7,170.4	9,297.1	6,984.9	53.6	52.4	54.97	-2,551.3	582.3	323.2	238.2	84.97	3.804				
9,600.0	7,170.5	9,397.1	6,984.4	55.4	54.2	54.88	-2,651.3	582.3	323.6	235.6	87.99	3.677				
9,700.0	7,170.6	9,497.1	6,983.9	57.1	56.0	54.79	-2,751.3	582.3	323.9	232.9	91.01	3.559				
9,800.0	7,170.7	9,597.1	6,983.4	58.9	57.8	54.70	-2,851.3	582.3	324.3	230.3	94.04	3.449				
9,900.0	7,170.9	9,697.1	6,982.8	60.7	59.6	54.61	-2,951.3	582.3	324.7	227.6	97.07	3.345				
10,000.0	7,171.0	9,797.1	6,982.3	62.5	61.5	54.52	-3,051.3	582.3	325.0	224.9	100.10	3.247				
10,100.0	7,171.1	9,897.1	6,981.8	64.3	63.3	54.43	-3,151.3	582.3	325.4	222.3	103.13	3.155				
10,200.0	7,171.2	9,997.1	6,981.3	66.1	65.1	54.34	-3,251.3	582.3	325.8	219.6	106.16	3.068				
10,300.0	7,171.4	10,097.1	6,980.8	67.9	67.0	54.25	-3,351.3	582.3	326.1	216.9	109.20	2.987				
10,400.0	7,171.5	10,197.1	6,980.3	69.8	68.8	54.16	-3,451.3	582.3	326.5	214.3	112.23	2.909				
10,500.0	7,171.6	10,297.1	6,979.8	71.6	70.7	54.07	-3,551.3	582.3	326.9	211.6	115.27	2.836				
10,600.0	7,171.7	10,397.1	6,979.3	73.4	72.5	53.98	-3,651.3	582.3	327.2	208.9	118.30	2.766				
10,700.0	7,171.8	10,497.1	6,978.8	75.3	74.4	53.89	-3,751.3	582.3	327.6	206.3	121.33	2.700				
10,800.0	7,172.0	10,597.1	6,978.3	77.1	76.3	53.81	-3,851.3	582.3	328.0	203.6	124.36	2.637				
10,900.0	7,172.1	10,697.1	6,977.8	79.0	78.1	53.72	-3,951.3	582.3	328.3	200.9	127.39	2.577				
11,000.0	7,172.2	10,797.1	6,977.3	80.8	80.0	53.63	-4,051.3	582.3	328.7	198.3	130.41	2.521				
11,100.0	7,172.3	10,897.1	6,976.8	82.7	81.9	53.54	-4,151.3	582.3	329.1	195.6	133.43	2.466				
11,200.0	7,172.5	10,997.0	6,976.3	84.5	83.7	53.45	-4,251.2	582.3	329.5	193.0	136.46	2.414				
11,300.0	7,172.6	11,097.0	6,975.8	86.4	85.6	53.37	-4,351.2	582.3	329.8	190.4	139.47	2.365				
11,400.0	7,172.7	11,197.0	6,975.3	88.2	87.5	53.28	-4,451.2	582.3	330.2	187.7	142.49	2.317				
11,500.0	7,172.8	11,297.0	6,974.8	90.1	89.4	53.19	-4,551.2	582.3	330.6	185.1	145.50	2.272				
11,600.0	7,172.9	11,397.0	6,974.2	92.0	91.2	53.10	-4,651.2	582.3	331.0	182.5	148.51	2.229				
11,647.3	7,173.0	11,444.4	6,974.0	92.8	92.1	53.06	-4,698.6	582.3	331.1	181.2	149.93	2.209 SF				



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20R-303 - Wellbore #1 - Plan #1 (8-12-14)											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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	89.98	0.0	30.6	30.7						
100.0	100.0	99.0	99.0	0.1	0.1	89.98	0.0	30.6	30.6	30.4	0.22	137.008			
200.0	200.0	199.0	199.0	0.3	0.3	89.98	0.0	30.6	30.6	30.0	0.67	45.593			
300.0	300.0	299.0	299.0	0.6	0.6	89.98	0.0	30.6	30.6	29.5	1.12	27.319			
400.0	400.0	399.0	399.0	0.8	0.8	89.98	0.0	30.6	30.6	29.1	1.57	19.503			
500.0	500.0	499.0	499.0	1.0	1.0	89.98	0.0	30.6	30.6	28.6	2.02	15.164	CC, ES		
600.0	600.0	597.9	597.9	1.2	1.2	89.88	0.1	32.3	32.3	29.9	2.46	13.162			
700.0	700.0	696.6	696.4	1.5	1.4	89.61	0.3	37.4	37.5	34.6	2.89	12.961			
800.0	800.0	794.9	794.4	1.7	1.7	2.07	0.6	45.8	44.3	41.0	3.31	13.383			
900.0	899.8	893.1	891.9	1.9	1.9	1.93	1.0	57.5	51.1	47.3	3.72	13.709			
1,000.0	999.5	991.0	988.6	2.1	2.2	1.86	1.6	72.6	57.8	53.6	4.15	13.924			
1,100.0	1,098.7	1,088.7	1,084.6	2.4	2.5	1.84	2.2	90.9	64.4	59.8	4.58	14.055			
1,169.3	1,167.2	1,157.6	1,152.0	2.6	2.8	1.85	2.8	105.2	68.4	63.5	4.89	13.986			
1,200.0	1,197.5	1,188.3	1,182.0	2.7	2.9	1.87	3.0	111.6	69.8	64.8	5.03	13.868			
1,300.0	1,296.2	1,288.2	1,279.7	3.0	3.3	1.92	3.8	132.3	74.4	68.9	5.51	13.509			
1,400.0	1,394.8	1,388.1	1,377.4	3.3	3.8	1.96	4.5	153.1	79.0	73.0	5.99	13.189			
1,500.0	1,493.5	1,488.0	1,475.1	3.6	4.2	2.00	5.3	173.9	83.5	77.1	6.47	12.905			
1,600.0	1,592.1	1,587.9	1,572.8	4.0	4.6	2.04	6.1	194.7	88.1	81.2	6.96	12.653			
1,700.0	1,690.8	1,687.8	1,670.5	4.3	5.1	2.07	6.8	215.4	92.7	85.2	7.46	12.425			
1,800.0	1,789.5	1,787.7	1,768.2	4.7	5.5	2.10	7.6	236.2	97.3	89.3	7.96	12.222			
1,900.0	1,888.1	1,887.5	1,865.9	5.0	5.9	2.12	8.4	257.0	101.9	93.4	8.46	12.039			
2,000.0	1,986.8	1,987.4	1,963.6	5.4	6.4	2.15	9.1	277.8	106.5	97.5	8.97	11.873			
2,100.0	2,085.4	2,087.3	2,061.3	5.8	6.8	2.17	9.9	298.5	111.0	101.6	9.47	11.723			
2,200.0	2,184.1	2,187.2	2,159.1	6.1	7.3	2.19	10.7	319.3	115.6	105.6	9.98	11.586			
2,300.0	2,282.8	2,287.1	2,256.8	6.5	7.7	2.21	11.4	340.1	120.2	109.7	10.49	11.461			
2,400.0	2,381.4	2,387.0	2,354.5	6.9	8.2	2.23	12.2	360.9	124.8	113.8	11.00	11.347			
2,500.0	2,480.1	2,486.9	2,452.2	7.3	8.7	2.24	13.0	381.6	129.4	117.9	11.51	11.241			
2,600.0	2,578.8	2,586.8	2,549.9	7.6	9.1	2.26	13.7	402.4	134.0	121.9	12.02	11.144			
2,700.0	2,677.4	2,686.7	2,647.6	8.0	9.6	2.27	14.5	423.2	138.6	126.0	12.53	11.054			
2,800.0	2,776.1	2,786.6	2,745.3	8.4	10.0	2.28	15.3	444.0	143.1	130.1	13.05	10.970			
2,900.0	2,874.7	2,886.5	2,843.0	8.8	10.5	2.30	16.0	464.7	147.7	134.2	13.56	10.892			
3,000.0	2,973.4	2,986.4	2,940.7	9.1	10.9	2.31	16.8	485.5	152.3	138.2	14.08	10.820			
3,100.0	3,072.1	3,086.3	3,038.4	9.5	11.4	2.32	17.6	506.3	156.9	142.3	14.59	10.752			
3,200.0	3,170.7	3,186.2	3,136.1	9.9	11.8	2.33	18.3	527.1	161.5	146.4	15.11	10.689			
3,300.0	3,269.4	3,286.1	3,233.8	10.3	12.3	2.34	19.1	547.8	166.1	150.4	15.62	10.629			
3,400.0	3,368.0	3,386.0	3,331.5	10.7	12.8	2.35	19.9	568.6	170.6	154.5	16.14	10.574			
3,500.0	3,466.7	3,485.9	3,429.3	11.0	13.2	2.36	20.6	589.4	175.2	158.6	16.66	10.521			
3,600.0	3,565.4	3,585.8	3,527.0	11.4	13.7	2.36	21.4	610.2	179.8	162.6	17.17	10.471			
3,700.0	3,664.0	3,685.7	3,624.7	11.8	14.1	2.37	22.2	630.9	184.4	166.7	17.69	10.424			
3,800.0	3,762.7	3,785.5	3,722.4	12.2	14.6	2.38	22.9	651.7	189.0	170.8	18.21	10.380			
3,900.0	3,861.3	3,885.4	3,820.1	12.6	15.0	2.39	23.7	672.5	193.6	174.8	18.72	10.338			
4,000.0	3,960.0	3,985.3	3,917.8	12.9	15.5	2.39	24.5	693.3	198.2	178.9	19.24	10.298			
4,100.0	4,058.7	4,085.2	4,015.5	13.3	16.0	2.40	25.2	714.0	202.7	183.0	19.76	10.260			
4,200.0	4,157.3	4,185.1	4,113.2	13.7	16.4	2.41	26.0	734.8	207.3	187.0	20.28	10.224			
4,300.0	4,256.0	4,285.0	4,210.9	14.1	16.9	2.41	26.8	755.6	211.9	191.1	20.80	10.190			
4,400.0	4,354.7	4,384.9	4,308.6	14.5	17.3	2.42	27.5	776.4	216.5	195.2	21.31	10.157			
4,500.0	4,453.3	4,484.8	4,406.3	14.8	17.8	2.42	28.3	797.1	221.1	199.2	21.83	10.126			
4,600.0	4,552.0	4,584.7	4,504.0	15.2	18.3	2.43	29.1	817.9	225.7	203.3	22.35	10.096			
4,700.0	4,650.6	4,684.6	4,601.7	15.6	18.7	2.43	29.8	838.7	230.3	207.4	22.87	10.067			
4,800.0	4,749.3	4,784.5	4,699.5	16.0	19.2	2.44	30.6	859.5	234.8	211.4	23.39	10.040			
4,900.0	4,848.0	4,884.4	4,797.2	16.4	19.6	2.44	31.4	880.2	239.4	215.5	23.91	10.014			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design										Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20R-303 - Wellbore #1 - Plan #1 (8-12-14)				Offset Site Error:		0.0 ft
Survey Program: 0-MWWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance									
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor				
5,000.0	4,946.6	4,984.3	4,894.9	16.8	20.1	2.45	32.1	901.0	244.0	219.6	24.43	9.989				
5,100.0	5,045.3	5,084.2	4,992.6	17.1	20.5	2.45	32.9	921.8	248.6	223.6	24.95	9.965				
5,200.0	5,143.9	5,184.1	5,090.3	17.5	21.0	2.46	33.7	942.6	253.2	227.7	25.47	9.941				
5,300.0	5,242.6	5,284.0	5,188.0	17.9	21.5	2.46	34.4	963.3	257.8	231.8	25.99	9.919				
5,400.0	5,341.3	5,383.9	5,285.7	18.3	21.9	2.46	35.2	984.1	262.3	235.8	26.51	9.898				
5,500.0	5,439.9	5,483.8	5,383.4	18.7	22.4	2.47	36.0	1,004.9	266.9	239.9	27.03	9.877				
5,600.0	5,538.6	5,583.7	5,481.1	19.1	22.8	2.47	36.7	1,025.7	271.5	244.0	27.54	9.857				
5,700.0	5,637.2	5,683.6	5,578.8	19.4	23.3	2.47	37.5	1,046.4	276.1	248.0	28.06	9.838				
5,800.0	5,735.9	5,791.5	5,684.6	19.8	23.7	2.49	38.3	1,067.7	279.6	251.0	28.58	9.783				
5,898.2	5,832.8	5,900.3	5,792.0	20.2	24.1	2.53	38.9	1,085.2	279.4	250.4	29.06	9.616				
5,900.0	5,834.6	5,902.3	5,794.0	20.2	24.1	2.53	38.9	1,085.5	279.4	250.3	29.07	9.612				
6,000.0	5,933.5	6,013.0	5,903.9	20.5	24.3	2.58	39.4	1,099.1	277.1	247.7	29.47	9.404				
6,100.0	6,032.9	6,123.6	6,014.1	20.7	24.5	2.62	39.8	1,108.4	274.5	244.7	29.81	9.206				
6,200.0	6,132.6	6,234.1	6,124.4	20.9	24.7	2.66	40.0	1,113.4	271.4	241.3	30.11	9.016				
6,300.0	6,232.5	6,341.2	6,231.5	21.1	24.8	2.69	40.0	1,114.4	268.3	237.9	30.35	8.838				
6,367.5	6,300.0	6,408.7	6,299.0	21.1	24.9	90.00	40.0	1,114.4	267.5	237.0	30.50	8.770				
6,388.3	6,320.8	6,429.5	6,319.8	21.2	24.9	90.00	40.0	1,114.4	267.5	236.9	30.57	8.749				
6,400.0	6,332.5	6,441.2	6,331.5	21.2	24.9	90.03	39.9	1,114.4	267.5	236.8	30.61	8.737				
6,404.3	6,336.8	6,445.4	6,335.8	21.2	25.0	90.05	39.8	1,114.4	267.5	236.8	30.63	8.733				
6,471.7	6,404.2	6,512.5	6,402.6	21.3	25.0	91.05	35.1	1,114.4	267.5	236.6	30.88	8.663				
6,500.0	6,432.5	6,540.4	6,430.3	21.3	25.0	-88.27	31.5	1,114.4	267.6	236.6	31.00	8.633				
6,550.0	6,482.4	6,589.4	6,478.5	21.4	25.1	-87.09	22.6	1,114.4	267.8	236.6	31.21	8.581				
6,600.0	6,531.9	6,638.0	6,525.6	21.4	25.2	-85.91	10.8	1,114.4	268.1	236.7	31.43	8.531				
6,650.0	6,580.9	6,686.3	6,571.6	21.5	25.2	-84.77	-3.9	1,114.4	268.6	236.9	31.65	8.487				
6,700.0	6,629.1	6,734.3	6,616.4	21.6	25.3	-83.65	-21.4	1,114.4	269.1	237.3	31.86	8.447				
6,750.0	6,676.4	6,782.0	6,659.6	21.6	25.3	-82.56	-41.5	1,114.4	269.7	237.7	32.07	8.413				
6,800.0	6,722.5	6,829.5	6,701.3	21.7	25.4	-81.52	-64.1	1,114.4	270.4	238.2	32.26	8.383				
6,850.0	6,767.2	6,876.6	6,741.2	21.8	25.4	-80.51	-89.1	1,114.4	271.2	238.8	32.45	8.357				
6,900.0	6,810.4	6,923.5	6,779.4	21.9	25.5	-79.55	-116.3	1,114.4	272.0	239.4	32.64	8.333				
6,950.0	6,851.9	6,970.1	6,815.6	21.9	25.6	-78.64	-145.7	1,114.4	272.8	240.0	32.84	8.309				
7,000.0	6,891.4	7,016.6	6,849.8	22.0	25.7	-77.78	-177.1	1,114.4	273.7	240.7	33.05	8.282				
7,050.0	6,928.8	7,062.8	6,881.9	22.2	25.8	-76.97	-210.4	1,114.4	274.6	241.3	33.29	8.248				
7,100.0	6,964.0	7,108.8	6,911.7	22.3	25.9	-76.22	-245.3	1,114.4	275.4	241.9	33.57	8.203				
7,150.0	6,996.8	7,154.6	6,939.4	22.4	26.1	-75.52	-281.9	1,114.4	276.3	242.3	33.92	8.145				
7,200.0	7,027.1	7,200.0	6,964.5	22.6	26.2	-74.89	-319.7	1,114.4	277.1	242.7	34.34	8.069				
7,250.0	7,054.7	7,245.8	6,987.6	22.8	26.4	-74.31	-359.2	1,114.4	277.8	243.0	34.85	7.972				
7,300.0	7,079.5	7,291.2	7,008.0	23.1	26.6	-73.80	-399.7	1,114.4	278.5	243.1	35.47	7.853				
7,350.0	7,101.4	7,336.4	7,026.0	23.3	26.8	-73.35	-441.3	1,114.4	279.2	243.0	36.20	7.713				
7,400.0	7,120.3	7,381.6	7,041.5	23.6	27.1	-72.97	-483.7	1,114.4	279.7	242.7	37.04	7.552				
7,450.0	7,136.2	7,426.7	7,054.4	24.0	27.3	-72.64	-526.9	1,114.4	280.2	242.2	38.02	7.371				
7,500.0	7,148.9	7,471.7	7,064.7	24.3	27.6	-72.39	-570.7	1,114.4	280.6	241.5	39.11	7.175				
7,550.0	7,158.5	7,516.7	7,072.4	24.7	27.9	-72.19	-615.0	1,114.4	280.9	240.6	40.32	6.967				
7,600.0	7,164.8	7,561.6	7,077.5	25.2	28.3	-72.07	-659.6	1,114.4	281.1	239.5	41.64	6.751				
7,650.0	7,167.8	7,606.5	7,080.0	25.6	28.6	-72.01	-704.5	1,114.4	281.2	238.2	43.06	6.531				
7,670.8	7,168.1	7,625.2	7,080.2	25.9	28.8	-72.00	-723.1	1,114.4	281.2	237.5	43.67	6.439				
7,700.0	7,168.2	7,653.4	7,080.0	26.1	29.0	-71.95	-751.4	1,114.4	281.3	236.9	44.36	6.341				
7,800.0	7,168.3	7,753.4	7,079.0	27.2	30.0	-71.73	-851.4	1,114.4	281.7	234.8	46.87	6.010				
7,900.0	7,168.4	7,853.4	7,078.0	28.4	31.0	-71.51	-951.3	1,114.4	282.0	232.5	49.50	5.697				
8,000.0	7,168.5	7,953.4	7,077.0	29.7	32.2	-71.29	-1,051.3	1,114.4	282.4	230.1	52.25	5.404				
8,100.0	7,168.7	8,053.4	7,076.0	31.0	33.4	-71.07	-1,151.3	1,114.4	282.7	227.6	55.10	5.131				

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design										Hankins 5N67W20MR Pad Sec.20-T5N-R67W - Hankins 20R-303 - Wellbore #1 - Plan #1 (8-12-14)				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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
8,200.0	7,168.8	8,153.4	7,074.9	32.4	34.7	-70.86	-1,251.3	1,114.4	283.1	225.1	58.03	4.879				
8,300.0	7,168.9	8,253.4	7,073.9	33.8	36.0	-70.64	-1,351.3	1,114.4	283.5	222.5	61.03	4.645				
8,400.0	7,169.0	8,353.4	7,072.9	35.3	37.4	-70.42	-1,451.3	1,114.4	283.9	219.8	64.09	4.429				
8,500.0	7,169.2	8,453.4	7,071.9	36.8	38.8	-70.21	-1,551.3	1,114.4	284.2	217.1	67.19	4.230				
8,600.0	7,169.3	8,553.3	7,070.9	38.4	40.3	-69.99	-1,651.3	1,114.4	284.6	214.3	70.34	4.047				
8,700.0	7,169.4	8,653.3	7,069.9	40.0	41.8	-69.78	-1,751.2	1,114.4	285.0	211.5	73.52	3.877				
8,800.0	7,169.5	8,753.3	7,068.9	41.6	43.4	-69.57	-1,851.2	1,114.4	285.4	208.7	76.72	3.720				
8,900.0	7,169.6	8,853.3	7,067.9	43.3	45.0	-69.35	-1,951.2	1,114.4	285.8	205.9	79.95	3.575				
9,000.0	7,169.8	8,953.3	7,066.8	45.0	46.6	-69.14	-2,051.2	1,114.4	286.2	203.0	83.20	3.440				
9,100.0	7,169.9	9,053.3	7,065.8	46.7	48.2	-68.93	-2,151.2	1,114.4	286.6	200.2	86.47	3.315				
9,200.0	7,170.0	9,153.3	7,064.8	48.4	49.9	-68.72	-2,251.2	1,114.4	287.0	197.3	89.75	3.198				
9,300.0	7,170.1	9,253.3	7,063.8	50.1	51.6	-68.51	-2,351.2	1,114.4	287.4	194.4	93.04	3.090				
9,400.0	7,170.3	9,353.3	7,062.8	51.8	53.2	-68.30	-2,451.2	1,114.4	287.9	191.5	96.34	2.988				
9,500.0	7,170.4	9,453.3	7,061.8	53.6	54.9	-68.09	-2,551.2	1,114.4	288.3	188.6	99.64	2.893				
9,600.0	7,170.5	9,553.3	7,060.8	55.4	56.7	-67.88	-2,651.1	1,114.4	288.7	185.8	102.95	2.804				
9,700.0	7,170.6	9,653.3	7,059.8	57.1	58.4	-67.67	-2,751.1	1,114.4	289.1	182.9	106.27	2.721				
9,800.0	7,170.7	9,753.3	7,058.7	58.9	60.1	-67.46	-2,851.1	1,114.4	289.6	180.0	109.58	2.643				
9,900.0	7,170.9	9,853.3	7,057.7	60.7	61.9	-67.26	-2,951.1	1,114.4	290.0	177.1	112.90	2.569				
10,000.0	7,171.0	9,953.3	7,056.7	62.5	63.7	-67.05	-3,051.1	1,114.4	290.5	174.2	116.21	2.499				
10,100.0	7,171.1	10,053.3	7,055.7	64.3	65.4	-66.84	-3,151.1	1,114.4	290.9	171.4	119.53	2.434				
10,200.0	7,171.2	10,153.2	7,054.7	66.1	67.2	-66.64	-3,251.1	1,114.4	291.3	168.5	122.84	2.372				
10,300.0	7,171.4	10,253.2	7,053.7	67.9	69.0	-66.43	-3,351.1	1,114.4	291.8	165.6	126.15	2.313				
10,400.0	7,171.5	10,353.2	7,052.7	69.8	70.8	-66.23	-3,451.1	1,114.4	292.3	162.8	129.46	2.257				
10,500.0	7,171.6	10,453.2	7,051.7	71.6	72.6	-66.03	-3,551.0	1,114.4	292.7	159.9	132.77	2.205				
10,600.0	7,171.7	10,553.2	7,050.7	73.4	74.4	-65.82	-3,651.0	1,114.4	293.2	157.1	136.07	2.155				
10,700.0	7,171.8	10,653.2	7,049.6	75.3	76.2	-65.62	-3,751.0	1,114.4	293.6	154.3	139.36	2.107				
10,800.0	7,172.0	10,753.2	7,048.6	77.1	78.1	-65.42	-3,851.0	1,114.4	294.1	151.5	142.65	2.062				
10,900.0	7,172.1	10,853.2	7,047.6	79.0	79.9	-65.22	-3,951.0	1,114.4	294.6	148.6	145.94	2.019				
11,000.0	7,172.2	10,953.2	7,046.6	80.8	81.7	-65.02	-4,051.0	1,114.4	295.1	145.8	149.22	1.977				
11,100.0	7,172.3	11,053.2	7,045.6	82.7	83.5	-64.82	-4,151.0	1,114.4	295.5	143.1	152.49	1.938				
11,200.0	7,172.5	11,153.2	7,044.6	84.5	85.4	-64.62	-4,251.0	1,114.4	296.0	140.3	155.75	1.901				
11,300.0	7,172.6	11,253.2	7,043.6	86.4	87.2	-64.42	-4,350.9	1,114.4	296.5	137.5	159.01	1.865				
11,400.0	7,172.7	11,353.2	7,042.6	88.2	89.1	-64.23	-4,450.9	1,114.4	297.0	134.7	162.27	1.830				
11,500.0	7,172.8	11,453.2	7,041.5	90.1	90.9	-64.03	-4,550.9	1,114.4	297.5	132.0	165.51	1.797				
11,600.0	7,172.9	11,553.2	7,040.5	92.0	92.8	-63.83	-4,650.9	1,114.4	298.0	129.3	168.75	1.766				
11,647.3	7,173.0	11,600.5	7,040.1	92.8	93.6	-63.74	-4,698.2	1,114.4	298.2	128.0	170.28	1.751 SF				

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4973.0ft (RKB - 15')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Hankins 20R-403

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.38°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Hankins 20R-403
<b>Project:</b>	SEC.20-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Reference Site:</b>	Hankins 5N67W20MR Pad Sec.20-T5N-R67W	<b>MD Reference:</b>	WELL @ 4973.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hankins 20R-403	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-12-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4973.0ft (RKB - 15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Hankins 20R-403  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.38°

