

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Collins 18T-201**

Surface Location: Collins 4N64W18T Pad Sec.18-T4N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

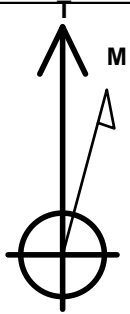
Ground Elevation: 4782.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1355535.61	3254534.15	40.305750	-104.587340	

Original Well Elev WELL @ 4797.0ft (Original Well Elev)

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 234'FSL & 910'FEL	1.0	0.0	0.0	Point
BHL 500'FNL & 1391'FEL	6842.0	4532.0	-451.8	Point



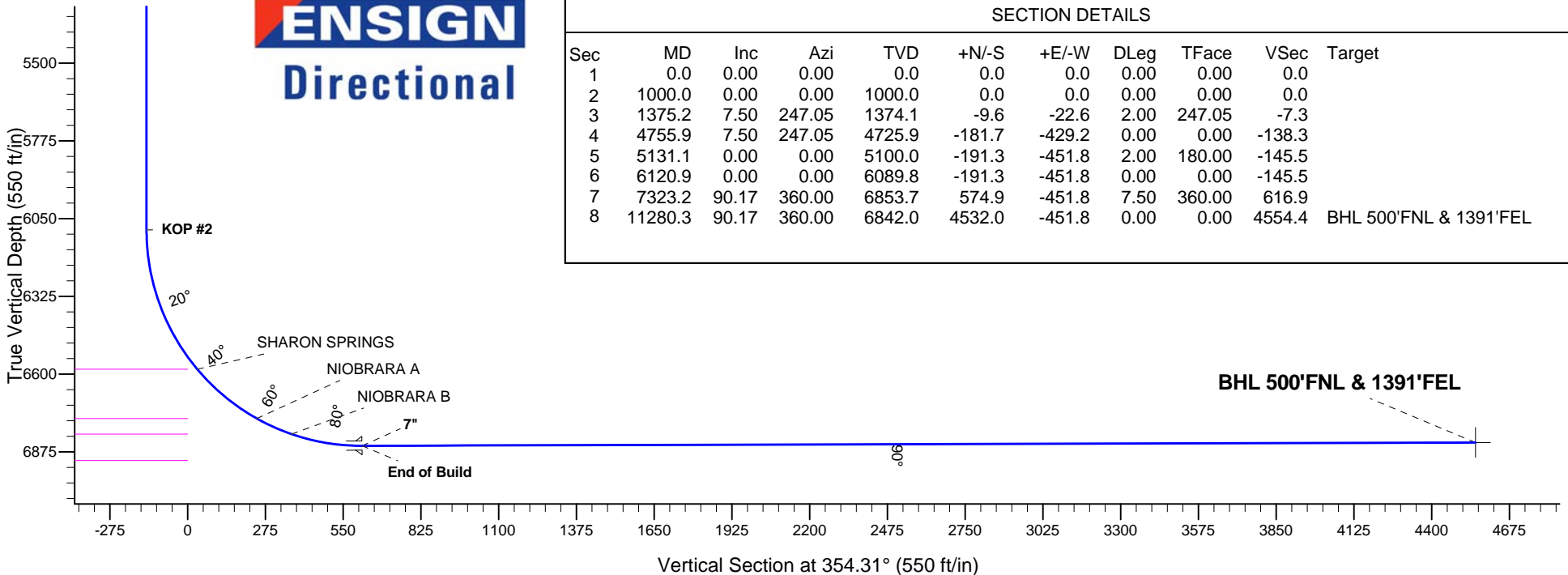
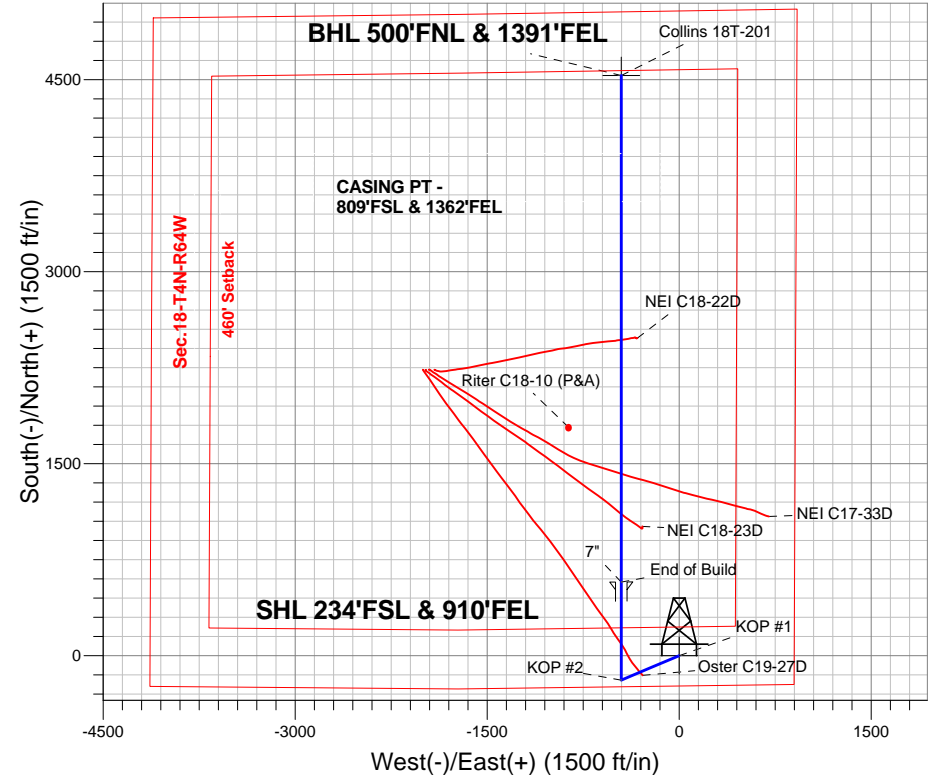
Azimuths to True North
Magnetic North: 8.30°

Magnetic Field
Strength: 52744.0nT
Dip Angle: 66.89°
Date: 11/3/2014
Model: IGRF2010

Collins 4N64W18T Pad Sec.18-T4N-R64W
Collins 18T-201
Plan #1 (11-3-14)

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6089.8	6120.9	KOP #2
6853.7	7323.2	End of Build





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.18-T4N-R64W

Collins 4N64W18T Pad Sec.18-T4N-R64W

Collins 18T-201

Wellbore #1

Plan: Plan #1 (11-3-14)

Standard Planning Report

06 November, 2014

Database:	landmark	Local Co-ordinate Reference:	Well Collins 18T-201
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Project:	SEC.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	North Reference:	True
Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-3-14)		

Project	SEC.18-T4N-R64W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Collins 4N64W18T Pad Sec.18-T4N-R64W					
Site Position:		Northing:	1,355,535.33ft	Latitude:	40.305750
From:	Lat/Long	Easting:	3,254,506.26ft	Longitude:	-104.587440
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.59 °

Well	Collins 18T-201					
Well Position	+N/-S	0.0 ft	Northing:	1,355,535.61 ft	Latitude:	40.305750
	+E/-W	27.9 ft	Easting:	3,254,534.15 ft	Longitude:	-104.587340
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,782.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/3/2014	8.30	66.89	52,744

Design	Plan #1 (11-3-14)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	354.31

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,375.2	7.50	247.05	1,374.1	-9.6	-22.6	2.00	2.00	0.00	247.05	
4,755.9	7.50	247.05	4,725.9	-181.7	-429.2	0.00	0.00	0.00	0.00	
5,131.1	0.00	0.00	5,100.0	-191.3	-451.8	2.00	-2.00	0.00	180.00	
6,120.9	0.00	0.00	6,089.8	-191.3	-451.8	0.00	0.00	0.00	0.00	
7,323.2	90.17	360.00	6,853.7	574.9	-451.8	7.50	7.50	0.00	360.00	
11,280.3	90.17	360.00	6,842.0	4,532.0	-451.8	0.00	0.00	0.00	0.00	BHL 500'FNL & 135°

Database:	landmark	Local Co-ordinate Reference:	Well Collins 18T-201
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Project:	SEC.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	North Reference:	True
Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-3-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,100.0	2.00	247.05	1,100.0	-0.7	-1.6	-0.5	2.00	2.00	0.00
1,200.0	4.00	247.05	1,199.8	-2.7	-6.4	-2.1	2.00	2.00	0.00
1,300.0	6.00	247.05	1,299.5	-6.1	-14.5	-4.7	2.00	2.00	0.00
1,375.2	7.50	247.05	1,374.1	-9.6	-22.6	-7.3	2.00	2.00	0.00
1,400.0	7.50	247.05	1,398.7	-10.8	-25.6	-8.2	0.00	0.00	0.00
1,500.0	7.50	247.05	1,497.9	-15.9	-37.6	-12.1	0.00	0.00	0.00
1,600.0	7.50	247.05	1,597.0	-21.0	-49.6	-16.0	0.00	0.00	0.00
1,700.0	7.50	247.05	1,696.1	-26.1	-61.7	-19.9	0.00	0.00	0.00
1,800.0	7.50	247.05	1,795.3	-31.2	-73.7	-23.7	0.00	0.00	0.00
1,900.0	7.50	247.05	1,894.4	-36.3	-85.7	-27.6	0.00	0.00	0.00
2,000.0	7.50	247.05	1,993.6	-41.4	-97.7	-31.5	0.00	0.00	0.00
2,100.0	7.50	247.05	2,092.7	-46.5	-109.8	-35.4	0.00	0.00	0.00
2,200.0	7.50	247.05	2,191.9	-51.6	-121.8	-39.2	0.00	0.00	0.00
2,300.0	7.50	247.05	2,291.0	-56.7	-133.8	-43.1	0.00	0.00	0.00
2,400.0	7.50	247.05	2,390.2	-61.8	-145.8	-47.0	0.00	0.00	0.00
2,500.0	7.50	247.05	2,489.3	-66.8	-157.9	-50.9	0.00	0.00	0.00
2,600.0	7.50	247.05	2,588.4	-71.9	-169.9	-54.7	0.00	0.00	0.00
2,700.0	7.50	247.05	2,687.6	-77.0	-181.9	-58.6	0.00	0.00	0.00
2,800.0	7.50	247.05	2,786.7	-82.1	-193.9	-62.5	0.00	0.00	0.00
2,900.0	7.50	247.05	2,885.9	-87.2	-206.0	-66.4	0.00	0.00	0.00
3,000.0	7.50	247.05	2,985.0	-92.3	-218.0	-70.2	0.00	0.00	0.00
3,100.0	7.50	247.05	3,084.2	-97.4	-230.0	-74.1	0.00	0.00	0.00
3,200.0	7.50	247.05	3,183.3	-102.5	-242.0	-78.0	0.00	0.00	0.00
3,300.0	7.50	247.05	3,282.4	-107.6	-254.1	-81.9	0.00	0.00	0.00
3,400.0	7.50	247.05	3,381.6	-112.7	-266.1	-85.7	0.00	0.00	0.00
3,500.0	7.50	247.05	3,480.7	-117.8	-278.1	-89.6	0.00	0.00	0.00
3,600.0	7.50	247.05	3,579.9	-122.9	-290.1	-93.5	0.00	0.00	0.00
3,700.0	7.50	247.05	3,679.0	-128.0	-302.2	-97.4	0.00	0.00	0.00
3,800.0	7.50	247.05	3,778.2	-133.1	-314.2	-101.2	0.00	0.00	0.00
3,848.3	7.50	247.05	3,826.0	-135.5	-320.0	-103.1	0.00	0.00	0.00
PARKMAN									
3,900.0	7.50	247.05	3,877.3	-138.1	-326.2	-105.1	0.00	0.00	0.00
4,000.0	7.50	247.05	3,976.4	-143.2	-338.3	-109.0	0.00	0.00	0.00
4,100.0	7.50	247.05	4,075.6	-148.3	-350.3	-112.9	0.00	0.00	0.00
4,200.0	7.50	247.05	4,174.7	-153.4	-362.3	-116.7	0.00	0.00	0.00
4,300.0	7.50	247.05	4,273.9	-158.5	-374.3	-120.6	0.00	0.00	0.00
4,326.3	7.50	247.05	4,300.0	-159.9	-377.5	-121.6	0.00	0.00	0.00
SUSSEX									
4,400.0	7.50	247.05	4,373.0	-163.6	-386.4	-124.5	0.00	0.00	0.00
4,500.0	7.50	247.05	4,472.2	-168.7	-398.4	-128.4	0.00	0.00	0.00
4,600.0	7.50	247.05	4,571.3	-173.8	-410.4	-132.2	0.00	0.00	0.00

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Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-3-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,700.0	7.50	247.05	4,670.5	-178.9	-422.4	-136.1	0.00	0.00	0.00
4,755.9	7.50	247.05	4,725.9	-181.7	-429.2	-138.3	0.00	0.00	0.00
4,800.0	6.62	247.05	4,769.6	-183.8	-434.2	-139.9	2.00	-2.00	0.00
4,900.0	4.62	247.05	4,869.2	-187.7	-443.2	-142.8	2.00	-2.00	0.00
4,930.9	4.00	247.05	4,900.0	-188.6	-445.3	-143.5	2.00	-2.00	0.00
SHANNON									
5,000.0	2.62	247.05	4,968.9	-190.1	-449.0	-144.7	2.00	-2.00	0.00
5,100.0	0.62	247.05	5,068.9	-191.2	-451.6	-145.5	2.00	-2.00	0.00
5,131.1	0.00	0.00	5,100.0	-191.3	-451.8	-145.5	2.00	-2.00	0.00
5,200.0	0.00	0.00	5,168.9	-191.3	-451.8	-145.5	0.00	0.00	0.00
5,300.0	0.00	0.00	5,268.9	-191.3	-451.8	-145.5	0.00	0.00	0.00
5,400.0	0.00	0.00	5,368.9	-191.3	-451.8	-145.5	0.00	0.00	0.00
5,500.0	0.00	0.00	5,468.9	-191.3	-451.8	-145.5	0.00	0.00	0.00
5,600.0	0.00	0.00	5,568.9	-191.3	-451.8	-145.5	0.00	0.00	0.00
5,700.0	0.00	0.00	5,668.9	-191.3	-451.8	-145.5	0.00	0.00	0.00
5,800.0	0.00	0.00	5,768.9	-191.3	-451.8	-145.5	0.00	0.00	0.00
5,900.0	0.00	0.00	5,868.9	-191.3	-451.8	-145.5	0.00	0.00	0.00
6,000.0	0.00	0.00	5,968.9	-191.3	-451.8	-145.5	0.00	0.00	0.00
6,100.0	0.00	0.00	6,068.9	-191.3	-451.8	-145.5	0.00	0.00	0.00
6,120.9	0.00	0.00	6,089.8	-191.3	-451.8	-145.5	0.00	0.00	0.00
KOP #2									
6,200.0	5.93	360.00	6,168.8	-187.2	-451.8	-141.5	7.50	7.50	0.00
6,300.0	13.43	360.00	6,267.3	-170.4	-451.8	-124.8	7.50	7.50	0.00
6,400.0	20.93	360.00	6,362.7	-140.9	-451.8	-95.4	7.50	7.50	0.00
6,500.0	28.43	360.00	6,453.5	-99.2	-451.8	-53.9	7.50	7.50	0.00
6,600.0	35.93	360.00	6,538.1	-45.9	-451.8	-0.9	7.50	7.50	0.00
6,657.0	40.21	360.00	6,583.0	-10.8	-451.8	34.1	7.50	7.50	0.00
SHARON SPRINGS									
6,700.0	43.43	360.00	6,615.0	17.9	-451.8	62.6	7.50	7.50	0.00
6,800.0	50.93	360.00	6,682.9	91.2	-451.8	135.5	7.50	7.50	0.00
6,900.0	58.43	360.00	6,740.7	172.7	-451.8	216.7	7.50	7.50	0.00
6,932.3	60.85	360.00	6,757.0	200.5	-451.8	244.4	7.50	7.50	0.00
NIOBRARA A									
7,000.0	65.93	360.00	6,787.3	261.1	-451.8	304.6	7.50	7.50	0.00
7,067.2	70.97	360.00	6,812.0	323.6	-451.8	366.8	7.50	7.50	0.00
NIOBRARA B									
7,100.0	73.43	360.00	6,822.0	354.8	-451.8	397.9	7.50	7.50	0.00
7,200.0	80.93	360.00	6,844.2	452.2	-451.8	494.8	7.50	7.50	0.00
7,300.0	88.43	360.00	6,853.5	551.7	-451.8	593.8	7.50	7.50	0.00
7,323.2	90.17	360.00	6,853.7	574.9	-451.8	616.9	7.49	7.49	0.00
End of Build - 7"									
7,400.0	90.17	360.00	6,853.5	651.7	-451.8	693.3	0.00	0.00	0.00
7,500.0	90.17	360.00	6,853.2	751.7	-451.8	792.8	0.00	0.00	0.00
7,600.0	90.17	360.00	6,852.9	851.7	-451.8	892.4	0.00	0.00	0.00
7,700.0	90.17	360.00	6,852.6	951.7	-451.8	991.9	0.00	0.00	0.00
7,800.0	90.17	360.00	6,852.3	1,051.7	-451.8	1,091.4	0.00	0.00	0.00
7,900.0	90.17	360.00	6,852.0	1,151.7	-451.8	1,190.9	0.00	0.00	0.00
8,000.0	90.17	360.00	6,851.7	1,251.7	-451.8	1,290.4	0.00	0.00	0.00
8,100.0	90.17	360.00	6,851.4	1,351.7	-451.8	1,389.9	0.00	0.00	0.00
8,200.0	90.17	360.00	6,851.1	1,451.7	-451.8	1,489.4	0.00	0.00	0.00
8,300.0	90.17	360.00	6,850.8	1,551.7	-451.8	1,588.9	0.00	0.00	0.00
8,400.0	90.17	360.00	6,850.5	1,651.7	-451.8	1,688.4	0.00	0.00	0.00

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Project:	SEC.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	North Reference:	True
Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-3-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,500.0	90.17	360.00	6,850.2	1,751.7	-451.8	1,787.9	0.00	0.00	0.00
8,600.0	90.17	360.00	6,850.0	1,851.7	-451.8	1,887.4	0.00	0.00	0.00
8,700.0	90.17	360.00	6,849.7	1,951.7	-451.8	1,986.9	0.00	0.00	0.00
8,800.0	90.17	360.00	6,849.4	2,051.7	-451.8	2,086.4	0.00	0.00	0.00
8,900.0	90.17	360.00	6,849.1	2,151.7	-451.8	2,185.9	0.00	0.00	0.00
9,000.0	90.17	360.00	6,848.8	2,251.7	-451.8	2,285.4	0.00	0.00	0.00
9,100.0	90.17	360.00	6,848.5	2,351.7	-451.8	2,384.9	0.00	0.00	0.00
9,200.0	90.17	360.00	6,848.2	2,451.7	-451.8	2,484.5	0.00	0.00	0.00
9,300.0	90.17	360.00	6,847.9	2,551.7	-451.8	2,584.0	0.00	0.00	0.00
9,400.0	90.17	360.00	6,847.6	2,651.7	-451.8	2,683.5	0.00	0.00	0.00
9,500.0	90.17	360.00	6,847.3	2,751.7	-451.8	2,783.0	0.00	0.00	0.00
9,600.0	90.17	360.00	6,847.0	2,851.7	-451.8	2,882.5	0.00	0.00	0.00
9,700.0	90.17	360.00	6,846.7	2,951.7	-451.8	2,982.0	0.00	0.00	0.00
9,800.0	90.17	360.00	6,846.4	3,051.7	-451.8	3,081.5	0.00	0.00	0.00
9,900.0	90.17	360.00	6,846.1	3,151.7	-451.8	3,181.0	0.00	0.00	0.00
10,000.0	90.17	360.00	6,845.8	3,251.7	-451.8	3,280.5	0.00	0.00	0.00
10,100.0	90.17	360.00	6,845.5	3,351.7	-451.8	3,380.0	0.00	0.00	0.00
10,200.0	90.17	360.00	6,845.2	3,451.7	-451.8	3,479.5	0.00	0.00	0.00
10,300.0	90.17	360.00	6,844.9	3,551.7	-451.8	3,579.0	0.00	0.00	0.00
10,400.0	90.17	360.00	6,844.6	3,651.7	-451.8	3,678.5	0.00	0.00	0.00
10,500.0	90.17	360.00	6,844.3	3,751.7	-451.8	3,778.0	0.00	0.00	0.00
10,600.0	90.17	360.00	6,844.0	3,851.7	-451.8	3,877.5	0.00	0.00	0.00
10,700.0	90.17	360.00	6,843.7	3,951.7	-451.8	3,977.1	0.00	0.00	0.00
10,800.0	90.17	360.00	6,843.4	4,051.7	-451.8	4,076.6	0.00	0.00	0.00
10,900.0	90.17	360.00	6,843.1	4,151.7	-451.8	4,176.1	0.00	0.00	0.00
11,000.0	90.17	360.00	6,842.8	4,251.7	-451.8	4,275.6	0.00	0.00	0.00
11,100.0	90.17	360.00	6,842.5	4,351.7	-451.8	4,375.1	0.00	0.00	0.00
11,200.0	90.17	360.00	6,842.2	4,451.7	-451.8	4,474.6	0.00	0.00	0.00
11,280.3	90.17	360.00	6,842.0	4,532.0	-451.8	4,554.4	0.00	0.00	0.00

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
BHL 500'FNL & 1391' - hit/miss target - Shape - Point	0.00	0.00	6,842.0	4,532.0	-451.8	1,360,062.51	3,254,035.80	40.318190	-104.588960
SHL 234'FSL & 910'F - plan hits target - Point	0.00	0.00	1.0	0.0	0.0	1,355,535.62	3,254,534.15	40.305750	-104.587340

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,323.2	6,853.7	7"	7	7-1/2	

Database:	landmark	Local Co-ordinate Reference:	Well Collins 18T-201
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Project:	SEC.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	North Reference:	True
Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-3-14)		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,848.3	3,826.0	PARKMAN		0.00	
4,326.3	4,300.0	SUSSEX		0.00	
4,930.9	4,900.0	SHANNON		0.00	
6,657.0	6,583.0	SHARON SPRINGS		0.00	
6,932.3	6,757.0	NIOBRARA A		0.00	
7,067.2	6,812.0	NIOBRARA B		0.00	
	6,906.0	NIOBRARA C		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP #1
6,120.9	6,089.8	-191.3	-451.8	KOP #2
7,323.2	6,853.7	574.9	-451.8	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.18-T4N-R64W

Collins 4N64W18T Pad Sec.18-T4N-R64W

Collins 18T-201

Wellbore #1

Plan #1 (11-3-14)

Anticollision Report

06 November, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (11-3-14)
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,000.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	11/6/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,280.3	Plan #1 (11-3-14) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Collins 4N64W18T Pad Sec.18-T4N-R64W						
Collins 18Q-221 - Wellbore #1 - Plan #1 (11-3-14)	366.3	367.3	58.7	57.3	41.204	CC
Collins 18Q-221 - Wellbore #1 - Plan #1 (11-3-14)	400.0	400.0	58.7	57.1	37.304	ES
Collins 18Q-221 - Wellbore #1 - Plan #1 (11-3-14)	11,280.3	11,402.4	828.3	650.5	4.659	SF
Collins 18Q-301 - Wellbore #1 - Plan #1 (11-3-14)	166.0	168.0	89.3	88.8	169.855	CC
Collins 18Q-301 - Wellbore #1 - Plan #1 (11-3-14)	200.0	201.9	89.3	88.6	131.665	ES
Collins 18Q-301 - Wellbore #1 - Plan #1 (11-3-14)	4,800.0	4,696.8	847.9	822.8	33.852	SF
Collins 18T-221 - Wellbore #1 - Plan #1 (11-3-14)	1,000.0	999.0	61.4	57.1	14.376	CC, ES
Collins 18T-221 - Wellbore #1 - Plan #1 (11-3-14)	11,280.3	11,253.6	585.6	408.1	3.298	SF
Collins 18T-321 - Wellbore #1 - Plan #1 (11-3-14)	1,000.0	1,000.0	30.7	26.4	7.184	CC, ES
Collins 18T-321 - Wellbore #1 - Plan #1 (11-3-14)	11,280.3	11,325.6	341.6	165.5	1.940	SF
Collins 18T-341 - Wellbore #1 - Plan #1 (10-27-14)	766.3	767.3	27.9	24.7	8.655	CC
Collins 18T-341 - Wellbore #1 - Plan #1 (10-27-14)	800.0	801.0	27.9	24.5	8.268	ES
Collins 18T-341 - Wellbore #1 - Plan #1 (10-27-14)	11,280.3	11,386.1	248.8	75.6	1.437	Level 3, SF
NEI C18-32D Pad Sec.18-T4N-R64W						
NEI C17-33D - Wellbore #1 - Wellbore #1						Out of range
NEI C17-33D - Wellbore #1 - Wellbore #1						Out of range
NEI C17-33D - Wellbore #1 - Wellbore #1						Out of range
NEI C18-22D - Wellbore #1 - Wellbore #1	9,227.9	7,173.1	120.6	51.8	1.754	CC, ES, SF
NEI C18-23D - Wellbore #1 - Wellbore #1	7,745.0	7,366.9	165.4	110.6	3.017	CC, ES, SF
Oster C19-27D - Wellbore #1 - Wellbore #1	6,540.3	7,198.1	93.0	27.8	1.426	Level 3, CC, ES, SF
Riter C18-10 (P&A) - Wellbore #1 - Design #1	8,533.4	6,869.2	412.8	359.6	7.756	CC, ES
Riter C18-10 (P&A) - Wellbore #1 - Design #1	8,600.0	6,869.0	418.1	363.7	7.686	SF

Offset Design	Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18Q-221 - Wellbore #1 - Plan #1 (11-3-14)												Offset Site Error:	0.0ft
Survey Program:	0-MWD												Offset Well Error:	0.0ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		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	-93.56	-3.6	-58.6	58.7	58.7	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-93.56	-3.6	-58.6	58.7	58.5	0.23	258.506		
200.0	200.0	201.0	201.0	0.3	0.3	-93.56	-3.6	-58.6	58.7	58.0	0.68	86.741		
300.0	300.0	301.0	301.0	0.6	0.6	-93.56	-3.6	-58.6	58.7	57.6	1.13	52.114		
366.3	366.3	367.3	367.3	0.7	0.7	-93.56	-3.6	-58.6	58.7	57.3	1.42	41.204	CC	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design		Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18Q-221 - Wellbore #1 - Plan #1 (11-3-14)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
400.0	400.0	400.0	400.0	0.8	0.8	-93.56	-3.6	-58.6	58.7	57.1	1.57	37.304 ES			
500.0	500.0	498.9	498.9	1.0	1.0	-93.72	-3.9	-60.3	60.4	58.4	2.01	30.106			
600.0	600.0	596.7	596.5	1.2	1.2	-94.14	-4.7	-65.2	65.6	63.1	2.44	26.891			
700.0	700.0	694.0	693.4	1.5	1.4	-94.72	-6.1	-73.4	74.1	71.2	2.89	25.651			
800.0	800.0	790.6	789.3	1.7	1.7	-95.33	-7.9	-84.8	86.0	82.6	3.36	25.562			
900.0	900.0	886.3	883.9	1.9	2.0	-95.90	-10.3	-99.2	101.2	97.3	3.87	26.147			
1,000.0	1,000.0	980.9	976.9	2.1	2.3	-96.40	-13.1	-116.5	119.7	115.3	4.41	27.116			
1,100.0	1,100.0	1,074.6	1,068.4	2.3	2.7	16.21	-16.3	-136.6	139.8	135.1	4.66	29.985			
1,200.0	1,199.8	1,170.9	1,161.8	2.5	3.2	16.24	-20.1	-159.7	159.1	154.1	5.09	31.274			
1,300.0	1,299.5	1,269.6	1,257.4	2.7	3.6	16.58	-24.0	-183.6	175.5	170.0	5.53	31.757			
1,400.0	1,398.7	1,368.7	1,353.5	3.0	4.1	17.18	-27.9	-207.7	188.6	182.6	5.98	31.527			
1,500.0	1,497.9	1,467.9	1,449.7	3.2	4.6	17.84	-31.8	-231.7	200.9	194.4	6.46	31.093			
1,600.0	1,597.0	1,567.1	1,545.9	3.5	5.1	18.42	-35.7	-255.7	213.1	206.2	6.95	30.643			
1,700.0	1,696.1	1,666.3	1,642.1	3.8	5.7	18.95	-39.6	-279.8	225.4	217.9	7.46	30.229			
1,800.0	1,795.3	1,765.6	1,738.2	4.1	6.2	19.41	-43.5	-303.8	237.7	229.7	7.96	29.841			
1,900.0	1,894.4	1,864.8	1,834.4	4.4	6.7	19.83	-47.4	-327.9	250.0	241.5	8.48	29.479			
2,000.0	1,993.6	1,964.0	1,930.6	4.7	7.2	20.22	-51.3	-351.9	262.3	253.3	9.00	29.141			
2,100.0	2,092.7	2,063.2	2,026.8	5.0	7.7	20.56	-55.3	-376.0	274.6	265.1	9.53	28.827			
2,200.0	2,191.9	2,162.5	2,123.0	5.3	8.3	20.88	-59.2	-400.0	287.0	276.9	10.06	28.534			
2,300.0	2,291.0	2,261.7	2,219.2	5.6	8.8	21.17	-63.1	-424.1	299.3	288.7	10.59	28.261			
2,400.0	2,390.2	2,360.9	2,315.4	5.9	9.3	21.44	-67.0	-448.1	311.7	300.6	11.13	28.007			
2,500.0	2,489.3	2,460.1	2,411.6	6.2	9.8	21.69	-70.9	-472.2	324.0	312.4	11.67	27.769			
2,600.0	2,588.4	2,559.4	2,507.7	6.6	10.4	21.92	-74.8	-496.2	336.4	324.2	12.21	27.547			
2,700.0	2,687.6	2,658.6	2,603.9	6.9	10.9	22.13	-78.7	-520.3	348.8	336.0	12.76	27.340			
2,800.0	2,786.7	2,757.8	2,700.1	7.2	11.4	22.33	-82.6	-544.3	361.2	347.8	13.30	27.145			
2,900.0	2,885.9	2,857.0	2,796.3	7.5	11.9	22.52	-86.5	-568.3	373.5	359.7	13.85	26.962			
3,000.0	2,985.0	2,956.2	2,892.5	7.9	12.5	22.69	-90.4	-592.4	385.9	371.5	14.40	26.791			
3,100.0	3,084.2	3,055.5	2,988.7	8.2	13.0	22.85	-94.4	-616.4	398.3	383.3	14.96	26.629			
3,200.0	3,183.3	3,154.7	3,084.9	8.5	13.5	23.01	-98.3	-640.5	410.7	395.2	15.51	26.477			
3,300.0	3,282.4	3,253.9	3,181.0	8.9	14.0	23.15	-102.2	-664.5	423.1	407.0	16.07	26.333			
3,400.0	3,381.6	3,353.1	3,277.2	9.2	14.6	23.29	-106.1	-688.6	435.5	418.8	16.62	26.198			
3,500.0	3,480.7	3,452.4	3,373.4	9.5	15.1	23.41	-110.0	-712.6	447.9	430.7	17.18	26.069			
3,600.0	3,579.9	3,551.6	3,469.6	9.9	15.6	23.54	-113.9	-736.7	460.3	442.5	17.74	25.948			
3,700.0	3,679.0	3,650.8	3,565.8	10.2	16.2	23.65	-117.8	-760.7	472.7	454.4	18.30	25.832			
3,800.0	3,778.2	3,750.0	3,662.0	10.5	16.7	23.76	-121.7	-784.8	485.1	466.2	18.86	25.722			
3,900.0	3,877.3	3,849.3	3,758.2	10.8	17.2	23.86	-125.6	-808.8	497.5	478.1	19.42	25.618			
4,000.0	3,976.4	3,948.5	3,854.4	11.2	17.8	23.96	-129.5	-832.9	509.9	489.9	19.98	25.519			
4,100.0	4,075.6	4,047.7	3,950.5	11.5	18.3	24.06	-133.5	-856.9	522.3	501.7	20.54	25.424			
4,200.0	4,174.7	4,146.9	4,046.7	11.9	18.8	24.15	-137.4	-881.0	534.7	513.6	21.11	25.334			
4,300.0	4,273.9	4,246.2	4,142.9	12.2	19.3	24.23	-141.3	-905.0	547.1	525.4	21.67	25.248			
4,400.0	4,373.0	4,345.4	4,239.1	12.5	19.9	24.31	-145.2	-929.0	559.5	537.3	22.23	25.165			
4,500.0	4,472.2	4,444.6	4,335.3	12.9	20.4	24.39	-149.1	-953.1	571.9	549.1	22.80	25.087			
4,600.0	4,571.3	4,543.8	4,431.5	13.2	20.9	24.47	-153.0	-977.1	584.3	561.0	23.36	25.011			
4,700.0	4,670.5	4,643.1	4,527.7	13.5	21.5	24.54	-156.9	-1,001.2	596.7	572.8	23.93	24.939			
4,800.0	4,769.6	4,742.2	4,623.8	13.8	22.0	24.64	-160.8	-1,025.2	609.5	585.0	24.47	24.907			
4,900.0	4,869.2	4,841.0	4,719.6	14.1	22.5	24.71	-164.7	-1,049.2	624.8	599.9	24.92	25.076			
5,000.0	4,968.9	4,939.3	4,814.8	14.2	23.1	24.68	-168.6	-1,073.0	643.3	618.0	25.32	25.409			
5,100.0	5,068.9	5,036.9	4,909.4	14.4	23.6	24.56	-172.4	-1,096.6	665.0	639.3	25.67	25.901			
5,200.0	5,168.9	5,133.8	5,003.4	14.6	24.1	-88.71	-176.3	-1,120.1	689.0	662.9	26.06	26.438			
5,300.0	5,268.9	5,230.8	5,097.4	14.7	24.6	-89.07	-180.1	-1,143.6	713.1	686.7	26.47	26.940			
5,400.0	5,368.9	5,327.7	5,191.4	14.9	25.1	-89.41	-183.9	-1,167.1	737.3	710.4	26.89	27.422			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18Q-221 - Wellbore #1 - Plan #1 (11-3-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,500.0	5,468.9	5,424.7	5,285.3	15.0	25.6	-89.72	-89.72	-187.7	-1,190.6	761.6	734.2	27.31	27.886	
5,600.0	5,568.9	5,553.2	5,410.5	15.2	26.2	-90.08	-90.08	-192.4	-1,219.5	784.1	756.3	27.76	28.244	
5,700.0	5,668.9	5,688.6	5,543.6	15.4	26.6	-90.37	-90.37	-196.4	-1,243.9	802.1	773.9	28.20	28.446	
5,800.0	5,768.9	5,826.0	5,679.8	15.5	27.0	-90.57	-90.57	-199.4	-1,262.3	815.5	786.9	28.63	28.488	
5,900.0	5,868.9	5,965.0	5,818.2	15.7	27.2	-90.70	-90.70	-201.3	-1,274.3	824.2	795.2	29.05	28.377	
6,000.0	5,968.9	6,104.8	5,957.9	15.9	27.4	-90.75	-90.75	-202.2	-1,279.7	828.1	798.6	29.45	28.117	
6,100.0	6,068.9	6,216.8	6,069.9	16.0	27.5	-90.76	-90.76	-202.2	-1,280.0	828.3	798.5	29.82	27.776	
6,200.0	6,168.8	6,317.9	6,170.9	16.2	27.6	-90.79	-90.79	-198.6	-1,280.0	828.3	798.2	30.14	27.486	
6,300.0	6,267.3	6,419.5	6,271.0	16.3	27.7	-90.82	-90.82	-181.9	-1,280.0	828.3	797.9	30.36	27.279	
6,400.0	6,362.7	6,521.1	6,368.0	16.4	27.7	-90.84	-90.84	-152.2	-1,280.0	828.3	797.8	30.53	27.130	
6,500.0	6,453.5	6,622.7	6,460.3	16.4	27.7	-90.84	-90.84	-109.8	-1,280.0	828.3	797.6	30.68	26.996	
6,600.0	6,538.1	6,724.3	6,546.1	16.5	27.8	-90.82	-90.82	-55.6	-1,280.0	828.3	797.4	30.88	26.819	
6,700.0	6,615.0	6,825.9	6,624.0	16.6	27.8	-90.80	-90.80	9.6	-1,280.0	828.3	797.1	31.21	26.537	
6,800.0	6,682.9	6,927.3	6,692.5	16.6	27.8	-90.76	-90.76	84.4	-1,280.0	828.3	796.6	31.74	26.095	
6,900.0	6,740.7	7,028.7	6,750.4	16.8	27.9	-90.70	-90.70	167.5	-1,280.0	828.3	795.7	32.54	25.450	
7,000.0	6,787.3	7,130.0	6,796.8	17.1	28.1	-90.64	-90.64	257.4	-1,280.0	828.3	794.6	33.67	24.602	
7,100.0	6,822.0	7,231.2	6,830.8	17.7	28.3	-90.56	-90.56	352.6	-1,280.0	828.3	793.1	35.13	23.578	
7,200.0	6,844.2	7,332.1	6,851.9	18.5	28.7	-90.47	-90.47	451.3	-1,280.0	828.3	791.3	36.92	22.435	
7,300.0	6,853.5	7,432.9	6,859.9	19.5	29.2	-90.38	-90.38	551.7	-1,280.0	828.2	789.2	38.99	21.241	
7,400.0	6,853.5	7,533.0	6,859.6	20.7	29.8	-90.35	-90.35	651.8	-1,280.0	828.2	786.9	41.32	20.047	
7,500.0	6,853.2	7,633.0	6,859.1	22.0	30.5	-90.34	-90.34	751.8	-1,280.0	828.2	784.4	43.84	18.892	
7,600.0	6,852.9	7,733.0	6,858.7	23.3	31.3	-90.33	-90.33	851.8	-1,280.0	828.2	781.7	46.55	17.794	
7,700.0	6,852.6	7,833.0	6,858.2	24.8	32.3	-90.32	-90.32	951.8	-1,280.0	828.2	778.8	49.40	16.765	
7,800.0	6,852.3	7,933.0	6,857.7	26.3	33.3	-90.31	-90.31	1,051.8	-1,280.0	828.2	775.9	52.38	15.811	
7,900.0	6,852.0	8,033.0	6,857.3	27.8	34.5	-90.29	-90.29	1,151.8	-1,280.0	828.2	772.8	55.47	14.931	
8,000.0	6,851.7	8,133.0	6,856.8	29.4	35.7	-90.28	-90.28	1,251.8	-1,280.0	828.2	769.6	58.65	14.123	
8,100.0	6,851.4	8,233.0	6,856.4	31.0	37.0	-90.27	-90.27	1,351.8	-1,280.0	828.2	766.3	61.90	13.381	
8,200.0	6,851.1	8,333.0	6,855.9	32.7	38.4	-90.26	-90.26	1,451.8	-1,280.0	828.2	763.0	65.21	12.701	
8,300.0	6,850.8	8,433.0	6,855.5	34.4	39.8	-90.25	-90.25	1,551.8	-1,280.0	828.2	759.6	68.58	12.077	
8,400.0	6,850.5	8,533.0	6,855.0	36.1	41.2	-90.24	-90.24	1,651.8	-1,280.0	828.2	756.2	72.00	11.504	
8,500.0	6,850.2	8,633.0	6,854.6	37.8	42.7	-90.23	-90.23	1,751.8	-1,280.0	828.2	752.8	75.46	10.976	
8,600.0	6,850.0	8,733.0	6,854.1	39.6	44.3	-90.22	-90.22	1,851.8	-1,280.0	828.2	749.3	78.95	10.491	
8,700.0	6,849.7	8,833.0	6,853.7	41.3	45.8	-90.21	-90.21	1,951.8	-1,280.0	828.2	745.8	82.47	10.043	
8,800.0	6,849.4	8,933.0	6,853.2	43.1	47.4	-90.20	-90.20	2,051.8	-1,280.0	828.2	742.2	86.02	9.628	
8,900.0	6,849.1	9,033.0	6,852.8	44.9	49.0	-90.19	-90.19	2,151.8	-1,280.0	828.2	738.6	89.60	9.244	
9,000.0	6,848.8	9,133.0	6,852.3	46.7	50.7	-90.18	-90.18	2,251.7	-1,280.0	828.2	735.0	93.19	8.887	
9,100.0	6,848.5	9,233.0	6,851.8	48.5	52.4	-90.16	-90.16	2,351.7	-1,280.0	828.2	731.4	96.81	8.555	
9,200.0	6,848.2	9,333.0	6,851.4	50.3	54.0	-90.15	-90.15	2,451.7	-1,280.0	828.2	727.8	100.44	8.246	
9,300.0	6,847.9	9,433.0	6,850.9	52.1	55.7	-90.14	-90.14	2,551.7	-1,280.0	828.2	724.1	104.08	7.957	
9,400.0	6,847.6	9,533.0	6,850.5	54.0	57.4	-90.13	-90.13	2,651.7	-1,280.0	828.2	720.5	107.74	7.687	
9,500.0	6,847.3	9,633.0	6,850.0	55.8	59.2	-90.12	-90.12	2,751.7	-1,280.0	828.2	716.8	111.41	7.434	
9,600.0	6,847.0	9,733.0	6,849.6	57.6	60.9	-90.11	-90.11	2,851.7	-1,280.0	828.2	713.1	115.10	7.196	
9,700.0	6,846.7	9,833.0	6,849.1	59.5	62.6	-90.10	-90.10	2,951.7	-1,280.0	828.2	709.4	118.79	6.972	
9,800.0	6,846.4	9,933.0	6,848.7	61.3	64.4	-90.09	-90.09	3,051.7	-1,280.0	828.2	705.7	122.49	6.761	
9,900.0	6,846.1	10,033.0	6,848.2	63.2	66.2	-90.08	-90.08	3,151.7	-1,280.0	828.2	702.0	126.20	6.563	
10,000.0	6,845.8	10,133.0	6,847.8	65.0	67.9	-90.07	-90.07	3,251.7	-1,280.0	828.2	698.3	129.92	6.375	
10,100.0	6,845.5	10,233.0	6,847.3	66.9	69.7	-90.06	-90.06	3,351.7	-1,280.0	828.2	694.6	133.64	6.197	
10,200.0	6,845.2	10,333.0	6,846.9	68.8	71.5	-90.04	-90.04	3,451.7	-1,280.0	828.2	690.8	137.37	6.029	
10,300.0	6,844.9	10,433.0	6,846.4	70.6	73.3	-90.03	-90.03	3,551.7	-1,280.0	828.2	687.1	141.11	5.869	
10,400.0	6,844.6	10,533.0	6,845.9	72.5	75.1	-90.02	-90.02	3,651.7	-1,280.0	828.2	683.4	144.85	5.718	
10,500.0	6,844.3	10,633.0	6,845.5	74.4	76.9	-90.01	-90.01	3,751.7	-1,280.0	828.2	679.6	148.60	5.574	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18Q-221 - Wellbore #1 - Plan #1 (11-3-14)													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	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,600.0	6,844.0	10,733.0	6,845.0	76.2	78.7	-90.00	3,851.7	-1,280.0	828.2	675.9	152.35	5.436		
10,612.4	6,844.0	10,745.4	6,845.0	76.5	79.0	-90.00	3,864.1	-1,280.0	828.2	675.4	152.81	5.420		
10,700.0	6,843.7	10,833.0	6,844.6	78.1	80.6	-89.99	3,951.7	-1,280.0	828.2	672.1	156.11	5.305		
10,800.0	6,843.4	10,933.0	6,844.1	80.0	82.4	-89.98	4,051.7	-1,280.0	828.2	668.4	159.87	5.181		
10,900.0	6,843.1	11,033.0	6,843.7	81.9	84.2	-89.97	4,151.7	-1,280.0	828.2	664.6	163.63	5.062		
11,000.0	6,842.8	11,133.0	6,843.2	83.8	86.0	-89.96	4,251.7	-1,280.0	828.2	660.8	167.40	4.948		
11,100.0	6,842.5	11,233.0	6,842.8	85.6	87.9	-89.95	4,351.7	-1,280.0	828.2	657.1	171.17	4.839		
11,200.0	6,842.2	11,333.0	6,842.3	87.5	89.7	-89.94	4,451.7	-1,280.0	828.2	653.3	174.94	4.734		
11,243.7	6,842.1	11,376.8	6,842.1	88.4	90.5	-89.93	4,495.5	-1,280.0	828.2	651.6	176.59	4.690		
11,280.3	6,842.0	11,402.4	6,842.0	89.0	91.0	-89.93	4,521.1	-1,280.0	828.3	650.5	177.77	4.659 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18Q-301 - Wellbore #1 - Plan #1 (11-3-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	2.0	2.0	0.0	0.0	-92.34	-3.6	-89.3	89.3	89.3	0.00	N/A		
100.0	100.0	102.0	102.0	0.1	0.1	-92.34	-3.6	-89.3	89.3	89.1	0.23	389.623		
166.0	166.0	168.0	168.0	0.3	0.3	-92.34	-3.6	-89.3	89.3	88.8	0.53	169.855 CC		
200.0	200.0	201.9	201.9	0.3	0.3	-92.34	-3.6	-89.3	89.3	88.6	0.68	131.665 ES		
300.0	300.0	300.0	300.0	0.6	0.6	-92.45	-3.9	-91.0	91.1	90.0	1.11	81.882		
400.0	400.0	395.6	395.5	0.8	0.8	-92.73	-4.6	-95.9	96.2	94.6	1.55	62.120		
500.0	500.0	491.9	491.4	1.0	1.0	-93.14	-5.7	-104.0	104.7	102.7	2.01	52.089		
600.0	600.0	587.5	586.3	1.2	1.3	-93.62	-7.3	-115.2	116.5	114.0	2.50	46.635		
700.0	700.0	682.3	680.0	1.5	1.6	-94.10	-9.3	-129.4	131.5	128.5	3.02	43.588		
800.0	800.0	776.0	772.1	1.7	1.9	-94.56	-11.7	-146.4	149.9	146.3	3.58	41.911		
900.0	900.0	868.5	862.4	1.9	2.4	-94.97	-14.4	-166.1	171.4	167.2	4.17	41.059		
1,000.0	1,000.0	959.6	950.7	2.1	2.8	-95.33	-17.6	-188.4	196.0	191.2	4.81	40.720		
1,100.0	1,100.0	1,050.9	1,038.5	2.3	3.3	17.28	-21.1	-213.4	222.1	217.3	4.76	46.641		
1,200.0	1,199.8	1,148.0	1,131.5	2.5	3.9	17.22	-25.0	-240.9	245.8	240.6	5.20	47.234		
1,300.0	1,299.5	1,245.9	1,225.3	2.7	4.4	17.39	-28.9	-268.7	266.4	260.7	5.67	47.018		
1,400.0	1,398.7	1,344.3	1,319.6	3.0	5.0	17.78	-32.8	-296.6	283.8	277.6	6.14	46.211		
1,500.0	1,497.9	1,442.9	1,414.1	3.2	5.6	18.25	-36.7	-324.6	300.2	293.6	6.64	45.201		
1,600.0	1,597.0	1,541.5	1,508.5	3.5	6.2	18.68	-40.6	-352.5	316.7	309.6	7.15	44.280		
1,700.0	1,696.1	1,640.1	1,603.0	3.8	6.8	19.06	-44.6	-380.5	333.2	325.6	7.67	43.438		
1,800.0	1,795.3	1,738.7	1,697.5	4.1	7.4	19.41	-48.5	-408.4	349.8	341.6	8.20	42.669		
1,900.0	1,894.4	1,837.3	1,792.0	4.4	8.0	19.72	-52.4	-436.4	366.3	357.6	8.73	41.966		
2,000.0	1,993.6	1,935.9	1,886.5	4.7	8.6	20.01	-56.4	-464.4	382.8	373.6	9.26	41.323		
2,100.0	2,092.7	2,034.6	1,980.9	5.0	9.2	20.27	-60.3	-492.3	399.4	389.6	9.80	40.732		
2,200.0	2,191.9	2,133.2	2,075.4	5.3	9.8	20.52	-64.2	-520.3	415.9	405.6	10.35	40.190		
2,300.0	2,291.0	2,231.8	2,169.9	5.6	10.4	20.74	-68.1	-548.2	432.5	421.6	10.90	39.690		
2,400.0	2,390.2	2,330.4	2,264.4	5.9	11.0	20.95	-72.1	-576.2	449.1	437.6	11.45	39.228		
2,500.0	2,489.3	2,429.0	2,358.8	6.2	11.6	21.14	-76.0	-604.2	465.6	453.6	12.00	38.801		
2,600.0	2,588.4	2,527.6	2,453.3	6.6	12.2	21.32	-79.9	-632.1	482.2	469.7	12.56	38.405		
2,700.0	2,687.6	2,626.2	2,547.8	6.9	12.8	21.49	-83.9	-660.1	498.8	485.7	13.11	38.036		
2,800.0	2,786.7	2,724.8	2,642.3	7.2	13.4	21.64	-87.8	-688.0	515.4	501.7	13.67	37.693		
2,900.0	2,885.9	2,823.4	2,736.7	7.5	14.1	21.79	-91.7	-716.0	532.0	517.7	14.23	37.373		
3,000.0	2,985.0	2,922.0	2,831.2	7.9	14.7	21.93	-95.6	-744.0	548.6	533.8	14.80	37.073		
3,100.0	3,084.2	3,020.6	2,925.7	8.2	15.3	22.06	-99.6	-771.9	565.2	549.8	15.36	36.793		
3,200.0	3,183.3	3,119.2	3,020.2	8.5	15.9	22.18	-103.5	-799.9	581.8	565.8	15.93	36.529		
3,300.0	3,282.4	3,217.8	3,114.6	8.9	16.5	22.30	-107.4	-827.8	598.4	581.9	16.49	36.281		
3,400.0	3,381.6	3,316.4	3,209.1	9.2	17.1	22.41	-111.4	-855.8	615.0	597.9	17.06	36.048		
3,500.0	3,480.7	3,415.0	3,303.6	9.5	17.7	22.51	-115.3	-883.8	631.6	613.9	17.63	35.828		
3,600.0	3,579.9	3,513.6	3,398.1	9.9	18.3	22.61	-119.2	-911.7	648.2	630.0	18.20	35.620		
3,700.0	3,679.0	3,612.2	3,492.6	10.2	18.9	22.70	-123.1	-939.7	664.8	646.0	18.77	35.423		
3,800.0	3,778.2	3,710.8	3,587.0	10.5	19.5	22.79	-127.1	-967.6	681.4	662.1	19.34	35.236		
3,900.0	3,877.3	3,809.4	3,681.5	10.8	20.1	22.88	-131.0	-995.6	698.0	678.1	19.91	35.059		
4,000.0	3,976.4	3,908.1	3,776.0	11.2	20.7	22.96	-134.9	-1,023.6	714.6	694.2	20.48	34.891		
4,100.0	4,075.6	4,006.7	3,870.5	11.5	21.3	23.04	-138.9	-1,051.5	731.2	710.2	21.05	34.731		
4,200.0	4,174.7	4,105.3	3,964.9	11.9	21.9	23.11	-142.8	-1,079.5	747.9	726.2	21.63	34.578		
4,300.0	4,273.9	4,203.9	4,059.4	12.2	22.6	23.18	-146.7	-1,107.4	764.5	742.3	22.20	34.433		
4,400.0	4,373.0	4,302.5	4,153.9	12.5	23.2	23.25	-150.6	-1,135.4	781.1	758.3	22.78	34.295		
4,500.0	4,472.2	4,401.1	4,248.4	12.9	23.8	23.31	-154.6	-1,163.4	797.7	774.4	23.35	34.162		
4,600.0	4,571.3	4,499.7	4,342.8	13.2	24.4	23.37	-158.5	-1,191.3	814.3	790.4	23.93	34.035		
4,700.0	4,670.5	4,598.3	4,437.3	13.5	25.0	23.43	-162.4	-1,219.3	831.0	806.5	24.50	33.914		
4,800.0	4,769.6	4,696.8	4,531.7	13.8	25.6	23.54	-166.4	-1,247.2	847.9	822.8	25.05	33.852 SF		
4,900.0	4,869.2	4,794.9	4,625.7	14.1	26.2	23.67	-170.3	-1,275.0	867.5	842.0	25.50	34.025		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18Q-301 - Wellbore #1 - Plan #1 (11-3-14)												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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.0	4,968.9	4,892.3	4,719.0	14.2	26.8	23.73	-174.1	-1,302.6	890.2	864.3	25.90	34.372	
5,100.0	5,068.9	4,988.8	4,811.5	14.4	27.4	23.74	-178.0	-1,330.0	916.0	889.8	26.26	34.885	
5,200.0	5,168.9	5,084.7	4,903.3	14.6	28.0	-89.40	-181.8	-1,357.2	944.2	917.5	26.66	35.412	
5,300.0	5,268.9	5,180.5	4,995.1	14.7	28.6	-89.65	-185.6	-1,384.4	972.5	945.4	27.10	35.890	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18T-221 - Wellbore #1 - Plan #1 (11-3-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	90.00	0.0	61.4	61.4				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	90.00	0.0	61.4	61.4	61.1	0.22	274.365	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	90.00	0.0	61.4	61.4	60.7	0.67	91.303	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	90.00	0.0	61.4	61.4	60.2	1.12	54.709	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	90.00	0.0	61.4	61.4	59.8	1.57	39.055	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	90.00	0.0	61.4	61.4	59.3	2.02	30.367	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	90.00	0.0	61.4	61.4	58.9	2.47	24.840	
700.0	700.0	699.0	699.0	1.5	1.5	90.00	90.00	0.0	61.4	61.4	58.4	2.92	21.016	
800.0	800.0	799.0	799.0	1.7	1.7	90.00	90.00	0.0	61.4	61.4	58.0	3.37	18.212	
900.0	900.0	899.0	899.0	1.9	1.9	90.00	90.00	0.0	61.4	61.4	57.5	3.82	16.068	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.00	90.00	0.0	61.4	61.4	57.1	4.27	14.376 CC, ES	
1,100.0	1,100.0	1,099.0	1,099.0	2.3	2.4	-157.66	-157.66	0.0	61.4	63.0	58.3	4.70	13.405	
1,200.0	1,199.8	1,198.8	1,198.8	2.5	2.6	-159.30	-159.30	0.0	61.4	67.8	62.7	5.11	13.279	
1,300.0	1,299.5	1,298.5	1,298.5	2.7	2.8	-161.57	-161.57	0.0	61.4	76.1	70.5	5.52	13.774	
1,400.0	1,398.7	1,397.7	1,397.7	3.0	3.0	-164.02	-164.02	0.0	61.4	87.6	81.7	5.94	14.753	
1,500.0	1,497.9	1,496.9	1,496.9	3.2	3.3	-166.07	-166.07	0.0	61.4	100.2	93.9	6.37	15.739	
1,600.0	1,597.0	1,596.0	1,596.0	3.5	3.5	-167.67	-167.67	0.0	61.4	113.0	106.2	6.80	16.603	
1,700.0	1,696.1	1,695.1	1,695.1	3.8	3.7	-168.94	-168.94	0.0	61.4	125.8	118.5	7.24	17.364	
1,800.0	1,795.3	1,794.3	1,794.3	4.1	3.9	-169.97	-169.97	0.0	61.4	138.6	130.9	7.68	18.037	
1,900.0	1,894.4	1,893.4	1,893.4	4.4	4.1	-170.83	-170.83	0.0	61.4	151.5	143.3	8.13	18.636	
2,000.0	1,993.6	1,992.6	1,992.6	4.7	4.4	-171.56	-171.56	0.0	61.4	164.4	155.8	8.57	19.170	
2,100.0	2,092.7	2,091.7	2,091.7	5.0	4.6	-172.18	-172.18	0.0	61.4	177.3	168.3	9.02	19.651	
2,200.0	2,191.9	2,190.9	2,190.9	5.3	4.8	-172.71	-172.71	0.0	61.4	190.3	180.8	9.47	20.084	
2,300.0	2,291.0	2,290.0	2,290.0	5.6	5.0	-173.18	-173.18	0.0	61.4	203.2	193.3	9.92	20.477	
2,400.0	2,390.2	2,389.2	2,389.2	5.9	5.3	-173.59	-173.59	0.0	61.4	216.2	205.8	10.38	20.835	
2,500.0	2,489.3	2,488.3	2,488.3	6.2	5.5	-173.96	-173.96	0.0	61.4	229.2	218.4	10.83	21.161	
2,600.0	2,588.4	2,586.9	2,586.9	6.6	5.7	-173.97	-173.97	-1.2	61.8	242.3	231.0	11.26	21.516	
2,700.0	2,687.6	2,685.2	2,685.2	6.9	5.9	-173.22	-173.22	-5.6	63.6	255.7	244.0	11.67	21.908	
2,800.0	2,786.7	2,783.1	2,782.6	7.2	6.0	-171.83	-171.83	-13.0	66.5	269.5	257.4	12.09	22.294	
2,900.0	2,885.9	2,880.6	2,879.4	7.5	6.2	-169.92	-169.92	-23.5	70.6	283.9	271.4	12.52	22.674	
3,000.0	2,985.0	2,978.9	2,977.0	7.9	6.4	-167.94	-167.94	-35.2	75.2	298.8	285.8	12.97	23.032	
3,100.0	3,084.2	3,077.3	3,074.6	8.2	6.6	-166.14	-166.14	-46.9	79.8	314.1	300.6	13.44	23.367	
3,200.0	3,183.3	3,175.7	3,172.1	8.5	6.8	-164.52	-164.52	-58.6	84.5	329.6	315.7	13.92	23.678	
3,300.0	3,282.4	3,274.0	3,269.7	8.9	7.0	-163.03	-163.03	-70.3	89.1	345.4	331.0	14.41	23.967	
3,400.0	3,381.6	3,372.4	3,367.2	9.2	7.3	-161.68	-161.68	-82.1	93.7	361.3	346.4	14.91	24.235	
3,500.0	3,480.7	3,470.8	3,464.8	9.5	7.5	-160.44	-160.44	-93.8	98.3	377.5	362.1	15.42	24.484	
3,600.0	3,579.9	3,569.1	3,562.4	9.9	7.8	-159.31	-159.31	-105.5	102.9	393.8	377.9	15.93	24.716	
3,700.0	3,679.0	3,667.5	3,659.9	10.2	8.0	-158.26	-158.26	-117.2	107.5	410.3	393.8	16.46	24.932	
3,800.0	3,778.2	3,765.9	3,757.5	10.5	8.3	-157.29	-157.29	-128.9	112.2	426.8	409.9	16.98	25.133	
3,900.0	3,877.3	3,864.2	3,855.0	10.8	8.5	-156.40	-156.40	-140.7	116.8	443.5	426.0	17.52	25.321	
4,000.0	3,976.4	3,962.6	3,952.6	11.2	8.8	-155.57	-155.57	-152.4	121.4	460.3	442.3	18.05	25.497	
4,100.0	4,075.6	4,062.2	4,051.4	11.5	9.1	-154.80	-154.80	-164.2	126.1	477.2	458.6	18.60	25.659	
4,200.0	4,174.7	4,168.1	4,156.7	11.9	9.3	-154.31	-154.31	-174.4	130.1	493.1	474.0	19.13	25.775	
4,300.0	4,273.9	4,274.6	4,263.0	12.2	9.6	-154.26	-154.26	-180.9	132.7	507.6	487.9	19.64	25.845	
4,400.0	4,373.0	4,381.5	4,369.8	12.5	9.8	-154.62	-154.62	-183.9	133.8	520.6	500.4	20.12	25.876	
4,500.0	4,472.2	4,482.9	4,471.2	12.9	10.0	-155.22	-155.22	-184.0	133.9	532.5	511.9	20.56	25.899	
4,600.0	4,571.3	4,582.0	4,570.3	13.2	10.2	-155.79	-155.79	-184.0	133.9	544.4	523.4	21.00	25.922	
4,700.0	4,670.5	4,681.2	4,669.5	13.5	10.4	-156.34	-156.34	-184.0	133.9	556.3	534.9	21.44	25.944	
4,800.0	4,769.6	4,780.3	4,768.6	13.8	10.6	-156.90	-156.90	-184.0	133.9	568.0	546.1	21.89	25.948	
4,900.0	4,869.2	4,879.9	4,868.2	14.1	10.8	-157.35	-157.35	-184.0	133.9	577.0	554.7	22.30	25.876	
5,000.0	4,968.9	4,979.7	4,967.9	14.2	11.0	-157.63	-157.63	-184.0	133.9	582.9	560.2	22.69	25.689	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18T-221 - Wellbore #1 - Plan #1 (11-3-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	5,068.9	5,079.6	5,067.9	14.4	11.2	-157.76	-184.0	133.9	585.5	562.4	23.06	25.393		
5,200.0	5,168.9	5,179.6	5,167.9	14.6	11.4	89.29	-184.0	133.9	585.7	562.2	23.44	24.985		
5,300.0	5,268.9	5,279.6	5,267.9	14.7	11.7	89.29	-184.0	133.9	585.7	561.8	23.83	24.575		
5,400.0	5,368.9	5,379.6	5,367.9	14.9	11.9	89.29	-184.0	133.9	585.7	561.4	24.22	24.176		
5,500.0	5,468.9	5,479.6	5,467.9	15.0	12.1	89.29	-184.0	133.9	585.7	561.0	24.62	23.788		
5,600.0	5,568.9	5,579.6	5,567.9	15.2	12.3	89.29	-184.0	133.9	585.7	560.6	25.02	23.411		
5,700.0	5,668.9	5,679.6	5,667.9	15.4	12.5	89.29	-184.0	133.9	585.7	560.2	25.41	23.044		
5,800.0	5,768.9	5,779.6	5,767.9	15.5	12.7	89.29	-184.0	133.9	585.7	559.8	25.81	22.687		
5,900.0	5,868.9	5,879.6	5,867.9	15.7	12.9	89.29	-184.0	133.9	585.7	559.4	26.22	22.340		
6,000.0	5,968.9	5,979.6	5,967.9	15.9	13.1	89.29	-184.0	133.9	585.7	559.0	26.62	22.001		
6,100.0	6,068.9	6,079.6	6,067.9	16.0	13.3	89.29	-184.0	133.9	585.7	558.6	27.02	21.672		
6,200.0	6,168.8	6,178.9	6,167.0	16.2	13.5	89.30	-180.1	133.9	585.7	558.3	27.39	21.380		
6,300.0	6,267.3	6,278.0	6,264.7	16.3	13.7	89.33	-163.7	133.9	585.7	558.0	27.67	21.166		
6,400.0	6,362.7	6,377.1	6,359.5	16.4	13.8	89.37	-134.8	133.9	585.7	557.8	27.88	21.006		
6,500.0	6,453.5	6,476.3	6,449.7	16.4	13.9	89.42	-93.9	133.9	585.6	557.6	28.07	20.861		
6,600.0	6,538.1	6,575.5	6,534.0	16.5	14.0	89.48	-41.6	133.9	585.6	557.3	28.32	20.678		
6,700.0	6,615.0	6,674.9	6,610.9	16.6	14.2	89.55	21.3	133.9	585.6	556.9	28.70	20.403		
6,800.0	6,682.9	6,774.3	6,679.0	16.6	14.5	89.62	93.6	133.9	585.6	556.3	29.30	19.987		
6,900.0	6,740.7	6,873.9	6,737.2	16.8	14.9	89.71	174.3	133.9	585.6	555.4	30.19	19.400		
7,000.0	6,787.3	6,973.6	6,784.4	17.1	15.6	89.80	262.0	133.9	585.6	554.2	31.41	18.647		
7,100.0	6,822.0	7,073.3	6,819.9	17.7	16.4	89.89	355.1	133.9	585.6	552.6	32.98	17.758		
7,200.0	6,844.2	7,173.2	6,843.0	18.5	17.3	89.98	452.3	133.9	585.6	550.7	34.88	16.789		
7,219.5	6,847.0	7,192.7	6,846.0	18.7	17.5	90.00	471.5	133.9	585.6	550.3	35.30	16.591		
7,300.0	6,853.5	7,273.3	6,853.2	19.5	18.4	90.08	551.7	133.9	585.6	548.5	37.08	15.795		
7,400.0	6,853.5	7,373.3	6,853.5	20.7	19.7	90.10	651.7	133.9	585.6	546.1	39.51	14.822		
7,500.0	6,853.2	7,473.3	6,853.2	22.0	21.0	90.10	751.7	133.9	585.6	543.5	42.14	13.896		
7,600.0	6,852.9	7,573.3	6,853.0	23.3	22.4	90.10	851.7	133.9	585.6	540.7	44.95	13.027		
7,700.0	6,852.6	7,673.3	6,852.7	24.8	23.9	90.10	951.7	133.9	585.6	537.7	47.90	12.225		
7,800.0	6,852.3	7,773.3	6,852.4	26.3	25.4	90.10	1,051.7	133.9	585.6	534.6	50.97	11.489		
7,900.0	6,852.0	7,873.3	6,852.1	27.8	27.0	90.10	1,151.7	133.9	585.6	531.5	54.14	10.816		
8,000.0	6,851.7	7,973.3	6,851.8	29.4	28.6	90.10	1,251.7	133.9	585.6	528.2	57.39	10.204		
8,100.0	6,851.4	8,073.3	6,851.5	31.0	30.3	90.10	1,351.7	133.9	585.6	524.9	60.71	9.646		
8,200.0	6,851.1	8,173.3	6,851.2	32.7	32.0	90.10	1,451.7	133.9	585.6	521.5	64.09	9.138		
8,300.0	6,850.8	8,273.3	6,850.9	34.4	33.7	90.10	1,551.7	133.9	585.6	518.1	67.52	8.674		
8,400.0	6,850.5	8,373.3	6,850.6	36.1	35.4	90.10	1,651.7	133.9	585.6	514.6	70.98	8.250		
8,500.0	6,850.2	8,473.3	6,850.3	37.8	37.2	90.10	1,751.7	133.9	585.6	511.1	74.49	7.862		
8,600.0	6,850.0	8,573.3	6,850.0	39.6	39.0	90.10	1,851.7	133.9	585.6	507.6	78.03	7.505		
8,700.0	6,849.7	8,673.3	6,849.7	41.3	40.7	90.10	1,951.7	133.9	585.6	504.0	81.59	7.177		
8,800.0	6,849.4	8,773.3	6,849.4	43.1	42.5	90.10	2,051.7	133.9	585.6	500.4	85.18	6.875		
8,900.0	6,849.1	8,873.3	6,849.1	44.9	44.3	90.10	2,151.7	133.9	585.6	496.8	88.79	6.596		
9,000.0	6,848.8	8,973.3	6,848.8	46.7	46.2	90.10	2,251.7	133.9	585.6	493.2	92.42	6.337		
9,100.0	6,848.5	9,073.3	6,848.5	48.5	48.0	90.10	2,351.7	133.9	585.6	489.6	96.06	6.096		
9,200.0	6,848.2	9,173.3	6,848.2	50.3	49.8	90.10	2,451.7	133.9	585.6	485.9	99.72	5.873		
9,300.0	6,847.9	9,273.3	6,847.9	52.1	51.7	90.10	2,551.7	133.9	585.6	482.2	103.39	5.664		
9,400.0	6,847.6	9,373.3	6,847.6	54.0	53.5	90.10	2,651.7	133.9	585.6	478.5	107.07	5.469		
9,500.0	6,847.3	9,473.3	6,847.3	55.8	55.3	90.10	2,751.7	133.9	585.6	474.8	110.77	5.287		
9,600.0	6,847.0	9,573.3	6,847.0	57.6	57.2	90.10	2,851.7	133.9	585.6	471.1	114.47	5.116		
9,700.0	6,846.7	9,673.3	6,846.7	59.5	59.1	90.10	2,951.7	133.9	585.6	467.4	118.18	4.955		
9,800.0	6,846.4	9,773.3	6,846.4	61.3	60.9	90.10	3,051.7	133.9	585.6	463.7	121.90	4.804		
9,900.0	6,846.1	9,873.3	6,846.1	63.2	62.8	90.10	3,151.7	133.9	585.6	460.0	125.63	4.661		
10,000.0	6,845.8	9,973.3	6,845.8	65.0	64.6	90.10	3,251.7	133.9	585.6	456.3	129.36	4.527		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18T-221 - Wellbore #1 - Plan #1 (11-3-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation		Separation Factor	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,100.0	6,845.5	10,073.3	6,845.5	66.9	66.5	90.10	3,351.7	133.9	585.6	452.5	133.10	4.400		
10,200.0	6,845.2	10,173.3	6,845.2	68.8	68.4	90.10	3,451.7	133.9	585.6	448.8	136.85	4.279		
10,300.0	6,844.9	10,273.3	6,844.9	70.6	70.3	90.10	3,551.7	133.9	585.6	445.0	140.60	4.165		
10,400.0	6,844.6	10,373.3	6,844.6	72.5	72.1	90.10	3,651.7	133.9	585.6	441.3	144.35	4.057		
10,500.0	6,844.3	10,473.3	6,844.3	74.4	74.0	90.10	3,751.7	133.9	585.6	437.5	148.11	3.954		
10,600.0	6,844.0	10,573.3	6,844.1	76.2	75.9	90.10	3,851.7	133.9	585.6	433.7	151.88	3.856		
10,700.0	6,843.7	10,673.3	6,843.8	78.1	77.8	90.10	3,951.7	133.9	585.6	430.0	155.64	3.763		
10,800.0	6,843.4	10,773.3	6,843.5	80.0	79.7	90.10	4,051.7	133.9	585.6	426.2	159.41	3.674		
10,900.0	6,843.1	10,873.3	6,843.2	81.9	81.6	90.10	4,151.7	133.9	585.6	422.4	163.19	3.589		
11,000.0	6,842.8	10,973.3	6,842.9	83.8	83.5	90.10	4,251.7	133.9	585.6	418.7	166.96	3.507		
11,100.0	6,842.5	11,073.3	6,842.6	85.6	85.3	90.10	4,351.7	133.9	585.6	414.9	170.74	3.430		
11,200.0	6,842.2	11,173.3	6,842.3	87.5	87.2	90.10	4,451.7	133.9	585.6	411.1	174.53	3.355		
11,280.3	6,842.0	11,253.6	6,842.0	89.0	88.8	90.10	4,532.0	133.9	585.6	408.1	177.56	3.298 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18T-321 - Wellbore #1 - Plan #1 (11-3-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	30.7	30.7					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	30.7	30.7	30.5	0.22	136.498		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	30.7	30.7	30.0	0.67	45.499		
300.0	300.0	300.0	300.0	0.6	0.6	90.00	0.0	30.7	30.7	29.6	1.12	27.300		
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	30.7	30.7	29.1	1.57	19.500		
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	30.7	30.7	28.7	2.02	15.166		
600.0	600.0	600.0	600.0	1.2	1.2	90.00	0.0	30.7	30.7	28.2	2.47	12.409		
700.0	700.0	700.0	700.0	1.5	1.5	90.00	0.0	30.7	30.7	27.8	2.92	10.500		
800.0	800.0	800.0	800.0	1.7	1.7	90.00	0.0	30.7	30.7	27.3	3.37	9.100		
900.0	900.0	900.0	900.0	1.9	1.9	90.00	0.0	30.7	30.7	26.9	3.82	8.029		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.00	0.0	30.7	30.7	26.4	4.27	7.184 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	-158.24	0.0	30.7	32.3	27.6	4.70	6.872		
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-161.20	0.0	30.7	37.2	32.1	5.11	7.280		
1,300.0	1,299.5	1,299.5	1,299.5	2.7	2.8	-164.69	0.0	30.7	45.5	40.0	5.52	8.246		
1,400.0	1,398.7	1,398.7	1,398.7	3.0	3.0	-167.85	0.0	30.7	57.3	51.3	5.94	9.647		
1,500.0	1,497.9	1,497.9	1,497.9	3.2	3.3	-170.09	0.0	30.7	70.1	63.7	6.37	11.011		
1,600.0	1,597.0	1,597.0	1,597.0	3.5	3.5	-171.64	0.0	30.7	83.0	76.2	6.80	12.205		
1,700.0	1,696.1	1,698.8	1,698.7	3.8	3.7	-172.19	-1.3	29.6	94.6	87.4	7.22	13.110		
1,800.0	1,795.3	1,801.2	1,801.0	4.1	3.9	-171.40	-5.6	26.4	103.4	95.8	7.62	13.577		
1,900.0	1,894.4	1,903.9	1,903.4	4.4	4.1	-169.54	-12.7	20.8	109.5	101.4	8.03	13.628		
2,000.0	1,993.6	2,004.4	2,003.2	4.7	4.3	-167.08	-21.7	13.9	113.8	105.3	8.46	13.441		
2,100.0	2,092.7	2,104.2	2,102.3	5.0	4.5	-164.79	-30.7	7.0	118.2	109.3	8.91	13.262		
2,200.0	2,191.9	2,204.0	2,201.5	5.3	4.7	-162.67	-39.7	0.0	122.8	113.4	9.37	13.096		
2,300.0	2,291.0	2,303.8	2,300.6	5.6	4.9	-160.70	-48.6	-6.9	127.5	117.7	9.85	12.942		
2,400.0	2,390.2	2,403.6	2,399.8	5.9	5.2	-158.88	-57.6	-13.8	132.4	122.1	10.35	12.797		
2,500.0	2,489.3	2,503.4	2,498.9	6.2	5.4	-157.18	-66.6	-20.8	137.4	126.6	10.85	12.661		
2,600.0	2,588.4	2,603.1	2,598.1	6.6	5.7	-155.61	-75.6	-27.7	142.6	131.2	11.37	12.534		
2,700.0	2,687.6	2,702.9	2,697.2	6.9	6.0	-154.15	-84.5	-34.6	147.8	135.9	11.90	12.415		
2,800.0	2,786.7	2,802.7	2,796.4	7.2	6.2	-152.79	-93.5	-41.6	153.1	140.7	12.44	12.304		
2,900.0	2,885.9	2,902.5	2,895.5	7.5	6.5	-151.52	-102.5	-48.5	158.5	145.5	12.99	12.199		
3,000.0	2,985.0	3,002.3	2,994.6	7.9	6.8	-150.33	-111.5	-55.4	164.0	150.4	13.55	12.101		
3,100.0	3,084.2	3,102.1	3,093.8	8.2	7.1	-149.23	-120.4	-62.4	169.5	155.4	14.11	12.010		
3,200.0	3,183.3	3,201.9	3,192.9	8.5	7.4	-148.19	-129.4	-69.3	175.1	160.4	14.68	11.924		
3,300.0	3,282.4	3,301.7	3,292.1	8.9	7.6	-147.21	-138.4	-76.2	180.7	165.5	15.26	11.844		
3,400.0	3,381.6	3,401.5	3,391.2	9.2	7.9	-146.30	-147.4	-83.2	186.4	170.6	15.84	11.769		
3,500.0	3,480.7	3,501.3	3,490.4	9.5	8.2	-145.44	-156.4	-90.1	192.2	175.7	16.43	11.698		
3,600.0	3,579.9	3,601.1	3,589.5	9.9	8.5	-144.63	-165.3	-97.0	198.0	180.9	17.02	11.632		
3,700.0	3,679.0	3,700.0	3,687.8	10.2	8.8	-143.88	-174.2	-103.9	203.8	186.2	17.61	11.575		
3,800.0	3,778.2	3,797.3	3,784.7	10.5	9.0	-143.70	-181.3	-109.4	210.5	192.4	18.11	11.623		
3,900.0	3,877.3	3,893.9	3,881.2	10.8	9.2	-144.32	-185.7	-112.8	218.7	200.1	18.57	11.779		
4,000.0	3,976.4	3,990.1	3,977.3	11.2	9.4	-145.62	-187.6	-114.3	228.3	209.4	18.96	12.043		
4,100.0	4,075.6	4,088.4	4,075.6	11.5	9.6	-147.35	-187.7	-114.3	239.2	219.9	19.33	12.376		
4,200.0	4,174.7	4,187.6	4,174.7	11.9	9.8	-148.96	-187.7	-114.3	250.3	230.6	19.70	12.708		
4,300.0	4,273.9	4,286.7	4,273.9	12.2	10.0	-150.43	-187.7	-114.3	261.6	241.6	20.08	13.032		
4,400.0	4,373.0	4,385.8	4,373.0	12.5	10.2	-151.78	-187.7	-114.3	273.1	252.6	20.46	13.349		
4,500.0	4,472.2	4,485.0	4,472.2	12.9	10.3	-153.02	-187.7	-114.3	284.7	263.8	20.84	13.658		
4,600.0	4,571.3	4,584.1	4,571.3	13.2	10.5	-154.17	-187.7	-114.3	296.4	275.2	21.24	13.958		
4,700.0	4,670.5	4,683.3	4,670.5	13.5	10.7	-155.22	-187.7	-114.3	308.2	286.6	21.63	14.249		
4,800.0	4,769.6	4,782.5	4,769.6	13.8	10.9	-156.22	-187.7	-114.3	319.8	297.8	22.03	14.519		
4,900.0	4,869.2	4,882.0	4,869.2	14.1	11.1	-156.98	-187.7	-114.3	328.8	306.5	22.39	14.685		
5,000.0	4,968.9	4,981.8	4,968.9	14.2	11.3	-157.44	-187.7	-114.3	334.7	311.9	22.75	14.712		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18T-321 - Wellbore #1 - Plan #1 (11-3-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,068.9	5,081.7	5,068.9	14.4	11.5	-157.65		-187.7	-114.3	337.3	314.2	23.09	14.608	
5,200.0	5,168.9	5,181.7	5,168.9	14.6	11.7	89.39		-187.7	-114.3	337.4	314.0	23.46	14.382	
5,300.0	5,268.9	5,281.7	5,268.9	14.7	11.9	89.39		-187.7	-114.3	337.4	313.6	23.85	14.149	
5,400.0	5,368.9	5,381.7	5,368.9	14.9	12.1	89.39		-187.7	-114.3	337.4	313.2	24.24	13.923	
5,500.0	5,468.9	5,481.7	5,468.9	15.0	12.3	89.39		-187.7	-114.3	337.4	312.8	24.63	13.702	
5,600.0	5,568.9	5,581.7	5,568.9	15.2	12.5	89.39		-187.7	-114.3	337.4	312.4	25.02	13.487	
5,700.0	5,668.9	5,681.7	5,668.9	15.4	12.7	89.39		-187.7	-114.3	337.4	312.0	25.41	13.278	
5,800.0	5,768.9	5,781.7	5,768.9	15.5	12.9	89.39		-187.7	-114.3	337.4	311.6	25.81	13.075	
5,900.0	5,868.9	5,881.7	5,868.9	15.7	13.1	89.39		-187.7	-114.3	337.4	311.2	26.21	12.876	
6,000.0	5,968.9	5,981.7	5,968.9	15.9	13.3	89.39		-187.7	-114.3	337.4	310.8	26.61	12.683	
6,100.0	6,068.9	6,081.7	6,068.9	16.0	13.5	89.39		-187.7	-114.3	337.4	310.4	27.01	12.495	
6,192.9	6,161.7	6,174.5	6,161.7	16.2	13.7	90.14		-187.7	-114.3	337.4	310.0	27.40	12.315	
6,200.0	6,168.8	6,181.6	6,168.8	16.2	13.7	90.07		-187.6	-114.3	337.4	310.0	27.42	12.305	
6,300.0	6,267.3	6,281.8	6,268.6	16.3	13.9	91.55		-179.4	-114.3	337.5	309.8	27.80	12.143	
6,400.0	6,362.7	6,383.2	6,367.6	16.4	14.0	93.01		-158.0	-114.3	337.9	309.8	28.08	12.033	
6,500.0	6,453.5	6,485.8	6,464.1	16.4	14.2	94.42		-123.1	-114.3	338.4	310.1	28.30	11.959	
6,600.0	6,538.1	6,589.6	6,556.0	16.5	14.3	95.76		-75.0	-114.3	339.1	310.6	28.52	11.893	
6,700.0	6,615.0	6,694.6	6,641.4	16.6	14.4	97.00		-14.2	-114.3	340.0	311.2	28.81	11.801	
6,800.0	6,682.9	6,800.6	6,718.4	16.6	14.5	98.12		58.5	-114.3	340.9	311.6	29.28	11.643	
6,900.0	6,740.7	6,907.6	6,785.2	16.8	14.8	99.09		142.0	-114.3	341.7	311.7	30.03	11.381	
7,000.0	6,787.3	7,015.4	6,840.0	17.1	15.5	99.89		234.8	-114.3	342.5	311.4	31.14	11.000	
7,100.0	6,822.0	7,124.0	6,881.5	17.7	16.3	100.52		335.0	-114.3	343.2	310.5	32.66	10.507	
7,200.0	6,844.2	7,233.1	6,908.4	18.5	17.3	100.95		440.7	-114.3	343.7	309.1	34.60	9.932	
7,300.0	6,853.5	7,342.6	6,920.1	19.5	18.5	101.18		549.4	-114.3	344.0	307.0	36.91	9.319	
7,400.0	6,853.5	7,445.4	6,920.1	20.7	19.8	101.16		652.2	-114.3	343.9	304.6	39.37	8.736	
7,500.0	6,853.2	7,545.4	6,919.5	22.0	21.1	101.11		752.2	-114.3	343.9	301.9	41.97	8.194	
7,600.0	6,852.9	7,645.4	6,918.8	23.3	22.5	101.05		852.2	-114.3	343.8	299.1	44.74	7.685	
7,700.0	6,852.6	7,745.4	6,918.2	24.8	24.0	100.99		952.2	-114.3	343.7	296.1	47.64	7.215	
7,800.0	6,852.3	7,845.4	6,917.5	26.3	25.5	100.94		1,052.2	-114.3	343.7	293.0	50.67	6.783	
7,900.0	6,852.0	7,945.4	6,916.9	27.8	27.1	100.88		1,152.2	-114.3	343.6	289.8	53.79	6.388	
8,000.0	6,851.7	8,045.4	6,916.2	29.4	28.7	100.82		1,252.2	-114.3	343.5	286.5	57.00	6.027	
8,100.0	6,851.4	8,145.4	6,915.6	31.0	30.4	100.76		1,352.2	-114.3	343.5	283.2	60.27	5.699	
8,200.0	6,851.1	8,245.4	6,914.9	32.7	32.1	100.71		1,452.2	-114.3	343.4	279.8	63.60	5.400	
8,300.0	6,850.8	8,345.4	6,914.3	34.4	33.8	100.65		1,552.2	-114.3	343.3	276.4	66.98	5.126	
8,400.0	6,850.5	8,445.4	6,913.6	36.1	35.5	100.59		1,652.1	-114.3	343.3	272.9	70.40	4.876	
8,500.0	6,850.2	8,545.4	6,913.0	37.8	37.3	100.53		1,752.1	-114.3	343.2	269.3	73.86	4.647	
8,600.0	6,850.0	8,645.4	6,912.4	39.6	39.1	100.48		1,852.1	-114.3	343.1	265.8	77.35	4.436	
8,700.0	6,849.7	8,745.4	6,911.7	41.3	40.8	100.42		1,952.1	-114.3	343.1	262.2	80.88	4.242	
8,800.0	6,849.4	8,845.4	6,911.1	43.1	42.6	100.36		2,052.1	-114.3	343.0	258.6	84.42	4.063	
8,900.0	6,849.1	8,945.4	6,910.4	44.9	44.4	100.31		2,152.1	-114.3	343.0	255.0	87.99	3.898	
9,000.0	6,848.8	9,045.4	6,909.8	46.7	46.2	100.25		2,252.1	-114.3	342.9	251.3	91.57	3.744	
9,100.0	6,848.5	9,145.4	6,909.1	48.5	48.1	100.19		2,352.1	-114.3	342.8	247.7	95.18	3.602	
9,200.0	6,848.2	9,245.4	6,908.5	50.3	49.9	100.13		2,452.1	-114.3	342.8	244.0	98.80	3.469	
9,300.0	6,847.9	9,345.4	6,907.8	52.1	51.7	100.08		2,552.1	-114.3	342.7	240.3	102.43	3.346	
9,400.0	6,847.6	9,445.4	6,907.2	54.0	53.6	100.02		2,652.1	-114.3	342.6	236.6	106.08	3.230	
9,500.0	6,847.3	9,545.4	6,906.5	55.8	55.4	99.96		2,752.1	-114.3	342.6	232.9	109.74	3.122	
9,600.0	6,847.0	9,645.4	6,905.9	57.6	57.3	99.90		2,852.1	-114.3	342.5	229.1	113.40	3.020	
9,700.0	6,846.7	9,745.4	6,905.2	59.5	59.1	99.85		2,952.1	-114.3	342.5	225.4	117.08	2.925	
9,800.0	6,846.4	9,845.4	6,904.6	61.3	61.0	99.79		3,052.1	-114.3	342.4	221.6	120.77	2.835	
9,900.0	6,846.1	9,945.4	6,904.0	63.2	62.9	99.73		3,152.1	-114.3	342.4	217.9	124.47	2.751	
10,000.0	6,845.8	10,045.4	6,903.3	65.0	64.7	99.67		3,252.1	-114.3	342.3	214.1	128.17	2.671	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18T-321 - Wellbore #1 - Plan #1 (11-3-14)												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	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,845.5	10,145.4	6,902.7	66.9	66.6	99.62	3,352.1	-114.3	342.2	210.4	131.88	2.595	
10,200.0	6,845.2	10,245.4	6,902.0	68.8	68.5	99.56	3,452.1	-114.3	342.2	206.6	135.59	2.524	
10,300.0	6,844.9	10,345.4	6,901.4	70.6	70.3	99.50	3,552.1	-114.3	342.1	202.8	139.32	2.456	
10,400.0	6,844.6	10,445.4	6,900.7	72.5	72.2	99.44	3,652.1	-114.3	342.1	199.0	143.04	2.391	
10,500.0	6,844.3	10,545.4	6,900.1	74.4	74.1	99.38	3,752.1	-114.3	342.0	195.2	146.78	2.330	
10,600.0	6,844.0	10,645.4	6,899.4	76.2	76.0	99.33	3,852.1	-114.3	341.9	191.4	150.52	2.272	
10,700.0	6,843.7	10,745.4	6,898.8	78.1	77.9	99.27	3,952.1	-114.3	341.9	187.6	154.26	2.216	
10,800.0	6,843.4	10,845.4	6,898.1	80.0	79.7	99.21	4,052.1	-114.3	341.8	183.8	158.01	2.163	
10,900.0	6,843.1	10,945.4	6,897.5	81.9	81.6	99.15	4,152.1	-114.3	341.8	180.0	161.76	2.113	
11,000.0	6,842.8	11,045.4	6,896.9	83.8	83.5	99.10	4,252.1	-114.3	341.7	176.2	165.51	2.065	
11,100.0	6,842.5	11,145.4	6,896.2	85.6	85.4	99.04	4,352.1	-114.3	341.7	172.4	169.27	2.018	
11,200.0	6,842.2	11,245.4	6,895.6	87.5	87.3	98.98	4,452.1	-114.3	341.6	168.6	173.03	1.974	
11,280.3	6,842.0	11,325.6	6,895.0	89.0	88.8	98.93	4,532.3	-114.3	341.6	165.5	176.05	1.940 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18T-341 - Wellbore #1 - Plan #1 (10-27-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	-90.01	0.0	-27.9	27.9	27.9	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-90.01	0.0	-27.9	27.9	27.7	0.23	122.860		
200.0	200.0	201.0	201.0	0.3	0.3	-90.01	0.0	-27.9	27.9	27.2	0.68	41.226		
300.0	300.0	301.0	301.0	0.6	0.6	-90.01	0.0	-27.9	27.9	26.8	1.13	24.768		
400.0	400.0	401.0	401.0	0.8	0.8	-90.01	0.0	-27.9	27.9	26.3	1.58	17.702		
500.0	500.0	501.0	501.0	1.0	1.0	-90.01	0.0	-27.9	27.9	25.9	2.03	13.772		
600.0	600.0	601.0	601.0	1.2	1.2	-90.01	0.0	-27.9	27.9	25.4	2.47	11.271		
700.0	700.0	701.0	701.0	1.5	1.5	-90.01	0.0	-27.9	27.9	25.0	2.92	9.538		
766.3	766.3	767.3	767.3	1.6	1.6	-90.01	0.0	-27.9	27.9	24.7	3.22	8.655 CC		
800.0	800.0	801.0	801.0	1.7	1.7	-90.01	0.0	-27.9	27.9	24.5	3.37	8.268 ES		
900.0	900.0	900.0	900.0	1.9	1.9	-90.96	-0.5	-29.6	29.6	25.8	3.80	7.777		
1,000.0	1,000.0	998.8	998.7	2.1	2.1	-93.22	-1.9	-34.5	34.6	30.4	4.23	8.195		
1,100.0	1,100.0	1,097.3	1,096.8	2.3	2.3	17.82	-4.3	-42.7	41.5	36.8	4.63	8.957		
1,200.0	1,199.8	1,195.5	1,194.3	2.5	2.5	16.91	-7.7	-54.1	48.3	43.3	5.02	9.630		
1,300.0	1,299.5	1,294.1	1,291.7	2.7	2.8	16.66	-11.9	-68.6	55.1	49.7	5.42	10.167		
1,400.0	1,398.7	1,394.0	1,390.2	3.0	3.1	17.25	-16.4	-84.1	59.5	53.7	5.84	10.197		
1,500.0	1,497.9	1,493.9	1,488.9	3.2	3.4	18.06	-21.0	-99.6	63.0	56.7	6.28	10.028		
1,600.0	1,597.0	1,593.9	1,587.5	3.5	3.8	18.77	-25.5	-115.1	66.5	59.8	6.74	9.866		
1,700.0	1,696.1	1,693.8	1,686.1	3.8	4.1	19.42	-30.1	-130.7	70.0	62.8	7.21	9.711		
1,800.0	1,795.3	1,793.7	1,784.7	4.1	4.5	20.01	-34.6	-146.2	73.5	65.8	7.68	9.565		
1,900.0	1,894.4	1,893.7	1,883.3	4.4	4.8	20.54	-39.2	-161.7	77.0	68.8	8.17	9.427		
2,000.0	1,993.6	1,993.6	1,982.0	4.7	5.2	21.02	-43.7	-177.2	80.5	71.9	8.66	9.298		
2,100.0	2,092.7	2,093.5	2,080.6	5.0	5.5	21.47	-48.2	-192.8	84.1	74.9	9.16	9.178		
2,200.0	2,191.9	2,193.5	2,179.2	5.3	5.9	21.88	-52.8	-208.3	87.6	77.9	9.66	9.065		
2,300.0	2,291.0	2,293.4	2,277.8	5.6	6.3	22.25	-57.3	-223.8	91.1	80.9	10.17	8.960		
2,400.0	2,390.2	2,393.3	2,376.4	5.9	6.7	22.60	-61.9	-239.3	94.7	84.0	10.68	8.862		
2,500.0	2,489.3	2,493.3	2,475.0	6.2	7.0	22.93	-66.4	-254.9	98.2	87.0	11.20	8.771		
2,600.0	2,588.4	2,593.2	2,573.7	6.6	7.4	23.23	-71.0	-270.4	101.7	90.0	11.71	8.685		
2,700.0	2,687.6	2,693.2	2,672.3	6.9	7.8	23.51	-75.5	-285.9	105.3	93.0	12.24	8.604		
2,800.0	2,786.7	2,793.1	2,770.9	7.2	8.2	23.77	-80.0	-301.4	108.8	96.1	12.76	8.529		
2,900.0	2,885.9	2,893.0	2,869.5	7.5	8.5	24.02	-84.6	-317.0	112.4	99.1	13.29	8.458		
3,000.0	2,985.0	2,993.0	2,968.1	7.9	8.9	24.25	-89.1	-332.5	115.9	102.1	13.82	8.391		
3,100.0	3,084.2	3,092.9	3,066.7	8.2	9.3	24.47	-93.7	-348.0	119.5	105.1	14.35	8.329		
3,200.0	3,183.3	3,192.8	3,165.4	8.5	9.7	24.67	-98.2	-363.5	123.0	108.2	14.88	8.270		
3,300.0	3,282.4	3,292.8	3,264.0	8.9	10.1	24.86	-102.8	-379.1	126.6	111.2	15.41	8.214		
3,400.0	3,381.6	3,392.7	3,362.6	9.2	10.4	25.05	-107.3	-394.6	130.2	114.2	15.95	8.161		
3,500.0	3,480.7	3,492.6	3,461.2	9.5	10.8	25.22	-111.8	-410.1	133.7	117.2	16.49	8.111		
3,600.0	3,579.9	3,592.6	3,559.8	9.9	11.2	25.38	-116.4	-425.7	137.3	120.3	17.02	8.064		
3,700.0	3,679.0	3,692.5	3,658.5	10.2	11.6	25.54	-120.9	-441.2	140.8	123.3	17.56	8.019		
3,800.0	3,778.2	3,792.4	3,757.1	10.5	12.0	25.69	-125.5	-456.7	144.4	126.3	18.10	7.976		
3,900.0	3,877.3	3,892.4	3,855.7	10.8	12.3	25.83	-130.0	-472.2	148.0	129.3	18.65	7.936		
4,000.0	3,976.4	3,992.3	3,954.3	11.2	12.7	25.96	-134.6	-487.8	151.5	132.3	19.19	7.897		
4,100.0	4,075.6	4,092.3	4,052.9	11.5	13.1	26.09	-139.1	-503.3	155.1	135.4	19.73	7.861		
4,200.0	4,174.7	4,192.2	4,151.5	11.9	13.5	26.21	-143.6	-518.8	158.7	138.4	20.28	7.826		
4,300.0	4,273.9	4,292.1	4,250.2	12.2	13.9	26.33	-148.2	-534.3	162.2	141.4	20.82	7.792		
4,400.0	4,373.0	4,392.1	4,348.8	12.5	14.3	26.44	-152.7	-549.9	165.8	144.4	21.37	7.760		
4,500.0	4,472.2	4,492.0	4,447.4	12.9	14.6	26.55	-157.3	-565.4	169.4	147.5	21.91	7.730		
4,600.0	4,571.3	4,591.9	4,546.0	13.2	15.0	26.65	-161.8	-580.9	172.9	150.5	22.46	7.700		
4,700.0	4,670.5	4,691.9	4,644.6	13.5	15.4	26.75	-166.4	-596.4	176.5	153.5	23.01	7.672		
4,800.0	4,769.6	4,791.8	4,743.2	13.8	15.8	26.81	-170.9	-612.0	180.4	156.8	23.53	7.664		
4,900.0	4,869.2	4,891.6	4,841.7	14.1	16.2	26.51	-175.4	-627.5	186.9	162.9	23.95	7.802		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18T-341 - Wellbore #1 - Plan #1 (10-27-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,968.9	4,991.1	4,939.9	14.2	16.6	25.80		-180.0	-642.9	196.5	172.2	24.30	8.088	
5,100.0	5,068.9	5,090.3	5,037.8	14.4	16.9	24.79		-184.5	-658.3	209.3	184.8	24.58	8.518	
5,200.0	5,168.9	5,196.9	5,143.4	14.6	17.2	-89.34		-188.7	-673.0	222.8	198.0	24.83	8.974	
5,300.0	5,268.9	5,304.6	5,250.4	14.7	17.5	-90.16		-191.9	-683.9	233.0	207.8	25.13	9.270	
5,400.0	5,368.9	5,413.0	5,358.5	14.9	17.7	-90.65		-194.0	-691.0	239.5	214.1	25.46	9.408	
5,500.0	5,468.9	5,521.7	5,467.2	15.0	17.8	-90.86		-195.0	-694.2	242.5	216.7	25.81	9.393	
5,600.0	5,568.9	5,624.4	5,569.9	15.2	18.0	-90.87		-195.0	-694.4	242.6	216.5	26.18	9.268	
5,700.0	5,668.9	5,724.4	5,669.9	15.4	18.1	-90.87		-195.0	-694.4	242.6	216.1	26.55	9.140	
5,800.0	5,768.9	5,824.4	5,769.9	15.5	18.2	-90.87		-195.0	-694.4	242.6	215.7	26.92	9.015	
5,900.0	5,868.9	5,924.4	5,869.9	15.7	18.4	-90.87		-195.0	-694.4	242.6	215.4	27.29	8.892	
6,000.0	5,968.9	6,024.4	5,969.9	15.9	18.5	-90.87		-195.0	-694.4	242.6	215.0	27.66	8.772	
6,100.0	6,068.9	6,124.4	6,069.9	16.0	18.7	-90.87		-195.0	-694.4	242.6	214.6	28.03	8.655	
6,114.3	6,083.2	6,138.7	6,084.2	16.1	18.7	-90.90		-195.0	-694.4	242.6	214.6	28.08	8.640	
6,200.0	6,168.8	6,224.3	6,169.8	16.2	18.8	-91.83		-195.0	-694.4	242.7	214.4	28.31	8.575	
6,300.0	6,267.3	6,325.4	6,270.6	16.3	19.0	-94.31		-188.6	-694.4	243.3	214.9	28.39	8.570	
6,400.0	6,362.7	6,428.1	6,371.2	16.4	19.1	-96.71		-168.6	-694.4	244.3	215.9	28.44	8.589	
6,500.0	6,453.5	6,532.2	6,469.6	16.4	19.1	-98.99		-134.7	-694.4	245.7	217.2	28.51	8.618	
6,600.0	6,538.1	6,637.7	6,563.6	16.5	19.2	-101.11		-87.0	-694.4	247.3	218.7	28.63	8.638	
6,700.0	6,615.0	6,744.7	6,651.3	16.6	19.2	-103.02		-25.9	-694.4	249.1	220.2	28.86	8.630	
6,800.0	6,682.9	6,852.9	6,730.5	16.6	19.3	-104.69		47.7	-694.4	250.8	221.6	29.26	8.574	
6,900.0	6,740.7	6,962.3	6,799.2	16.8	19.4	-106.08		132.7	-694.4	252.5	222.7	29.86	8.457	
7,000.0	6,787.3	7,072.7	6,855.5	17.1	19.6	-107.17		227.6	-694.4	254.0	223.2	30.73	8.265	
7,100.0	6,822.0	7,183.8	6,897.7	17.7	20.0	-107.95		330.2	-694.4	255.0	223.2	31.89	7.999	
7,200.0	6,844.2	7,295.4	6,924.7	18.5	20.6	-108.40		438.5	-694.4	255.7	222.3	33.35	7.666	
7,300.0	6,853.5	7,407.3	6,935.7	19.5	21.5	-108.53		549.7	-694.4	255.9	220.7	35.13	7.283	
7,400.0	6,853.5	7,510.1	6,935.2	20.7	22.5	-108.40		652.5	-694.4	255.7	218.3	37.37	6.843	
7,500.0	6,853.2	7,610.1	6,934.2	22.0	23.6	-108.26		752.5	-694.4	255.5	215.6	39.86	6.409	
7,600.0	6,852.9	7,710.1	6,933.3	23.3	24.9	-108.12		852.5	-694.4	255.3	212.7	42.54	6.001	
7,700.0	6,852.6	7,810.1	6,932.3	24.8	26.2	-107.97		952.5	-694.4	255.1	209.7	45.36	5.623	
7,800.0	6,852.3	7,910.1	6,931.4	26.3	27.6	-107.83		1,052.5	-694.4	254.9	206.5	48.31	5.276	
7,900.0	6,852.0	8,010.1	6,930.4	27.8	29.1	-107.69		1,152.5	-694.4	254.7	203.3	51.36	4.958	
8,000.0	6,851.7	8,110.1	6,929.4	29.4	30.6	-107.55		1,252.5	-694.4	254.5	200.0	54.50	4.669	
8,100.0	6,851.4	8,210.1	6,928.5	31.0	32.2	-107.40		1,352.5	-694.4	254.3	196.5	57.71	4.406	
8,200.0	6,851.1	8,310.1	6,927.5	32.7	33.8	-107.26		1,452.5	-694.4	254.1	193.1	60.98	4.166	
8,300.0	6,850.8	8,410.1	6,926.6	34.4	35.4	-107.12		1,552.5	-694.4	253.9	189.5	64.31	3.947	
8,400.0	6,850.5	8,510.1	6,925.6	36.1	37.1	-106.98		1,652.5	-694.4	253.7	186.0	67.69	3.748	
8,500.0	6,850.2	8,610.1	6,924.6	37.8	38.8	-106.83		1,752.4	-694.4	253.5	182.4	71.10	3.565	
8,600.0	6,850.0	8,710.1	6,923.7	39.6	40.5	-106.69		1,852.4	-694.4	253.3	178.7	74.55	3.397	
8,700.0	6,849.7	8,810.1	6,922.7	41.3	42.2	-106.55		1,952.4	-694.4	253.1	175.1	78.04	3.243	
8,800.0	6,849.4	8,910.1	6,921.8	43.1	43.9	-106.40		2,052.4	-694.4	252.9	171.4	81.55	3.101	
8,900.0	6,849.1	9,010.1	6,920.8	44.9	45.7	-106.26		2,152.4	-694.4	252.7	167.6	85.09	2.970	
9,000.0	6,848.8	9,110.1	6,919.8	46.7	47.4	-106.11		2,252.4	-694.4	252.5	163.9	88.65	2.849	
9,100.0	6,848.5	9,210.1	6,918.9	48.5	49.2	-105.97		2,352.4	-694.4	252.3	160.1	92.23	2.736	
9,200.0	6,848.2	9,310.1	6,917.9	50.3	51.0	-105.82		2,452.4	-694.4	252.2	156.3	95.82	2.632	
9,300.0	6,847.9	9,410.1	6,917.0	52.1	52.8	-105.68		2,552.4	-694.4	252.0	152.5	99.44	2.534	
9,400.0	6,847.6	9,510.1	6,916.0	54.0	54.6	-105.53		2,652.4	-694.4	251.8	148.7	103.07	2.443	
9,500.0	6,847.3	9,610.1	6,915.0	55.8	56.4	-105.39		2,752.4	-694.4	251.6	144.9	106.72	2.358	
9,600.0	6,847.0	9,710.1	6,914.1	57.6	58.2	-105.24		2,852.4	-694.4	251.5	141.1	110.38	2.278	
9,700.0	6,846.7	9,810.1	6,913.1	59.5	60.1	-105.10		2,952.4	-694.4	251.3	137.2	114.05	2.203	
9,800.0	6,846.4	9,910.1	6,912.2	61.3	61.9	-104.95		3,052.4	-694.4	251.1	133.4	117.73	2.133	
9,900.0	6,846.1	10,010.1	6,911.2	63.2	63.7	-104.80		3,152.3	-694.4	250.9	129.5	121.43	2.067	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design Collins 4N64W18T Pad Sec.18-T4N-R64W - Collins 18T-341 - Wellbore #1 - Plan #1 (10-27-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,845.8	10,110.1	6,910.2	65.0	65.6	-104.66		3,252.3	-694.4	250.8	125.6	125.13	2.004	
10,100.0	6,845.5	10,210.1	6,909.3	66.9	67.4	-104.51		3,352.3	-694.4	250.6	121.8	128.84	1.945	
10,200.0	6,845.2	10,310.1	6,908.3	68.8	69.3	-104.36		3,452.3	-694.4	250.4	117.9	132.57	1.889	
10,300.0	6,844.9	10,410.1	6,907.4	70.6	71.1	-104.22		3,552.3	-694.4	250.3	114.0	136.30	1.836	
10,400.0	6,844.6	10,510.1	6,906.4	72.5	73.0	-104.07		3,652.3	-694.4	250.1	110.1	140.04	1.786	
10,500.0	6,844.3	10,610.1	6,905.4	74.4	74.8	-103.92		3,752.3	-694.4	250.0	106.2	143.78	1.738	
10,600.0	6,844.0	10,710.1	6,904.5	76.2	76.7	-103.77		3,852.3	-694.4	249.8	102.3	147.54	1.693	
10,700.0	6,843.7	10,810.1	6,903.5	78.1	78.6	-103.63		3,952.3	-694.4	249.6	98.3	151.30	1.650	
10,800.0	6,843.4	10,910.1	6,902.6	80.0	80.4	-103.48		4,052.3	-694.4	249.5	94.4	155.07	1.609	
10,900.0	6,843.1	11,010.1	6,901.6	81.9	82.3	-103.33		4,152.3	-694.4	249.3	90.5	158.84	1.570	
11,000.0	6,842.8	11,110.1	6,900.7	83.8	84.2	-103.18		4,252.3	-694.4	249.2	86.6	162.62	1.532	
11,100.0	6,842.5	11,210.1	6,899.7	85.6	86.1	-103.03		4,352.3	-694.4	249.0	82.6	166.41	1.496 Level 3	
11,200.0	6,842.2	11,310.0	6,898.7	87.5	87.9	-102.88		4,452.3	-694.4	248.9	78.7	170.20	1.462 Level 3	
11,260.6	6,842.1	11,370.7	6,898.1	88.7	89.1	-102.79		4,512.9	-694.4	248.8	76.3	172.50	1.442 Level 3	
11,280.3	6,842.0	11,386.1	6,898.0	89.0	89.4	-102.77		4,528.3	-694.4	248.8	75.6	173.16	1.437 Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 134-Reference													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
8,300.0	6,850.8	7,173.5	6,897.0	34.4	33.8	89.46	2,479.7	-331.2	935.8	883.6	52.17	17.938		
8,400.0	6,850.5	7,173.4	6,896.9	36.1	33.8	89.44	2,479.7	-331.2	836.7	782.8	53.90	15.524		
8,500.0	6,850.2	7,173.4	6,896.9	37.8	33.8	89.42	2,479.7	-331.2	737.9	682.2	55.65	13.260		
8,600.0	6,850.0	7,173.4	6,896.8	39.6	33.8	89.40	2,479.7	-331.2	639.4	582.0	57.42	11.137		
8,700.0	6,849.7	7,173.3	6,896.8	41.3	33.8	89.38	2,479.7	-331.2	541.6	482.4	59.20	9.149		
8,800.0	6,849.4	7,173.3	6,896.7	43.1	33.8	89.36	2,479.7	-331.2	444.6	383.6	60.99	7.291		
8,900.0	6,849.1	7,173.2	6,896.7	44.9	33.8	89.34	2,479.7	-331.2	349.4	286.6	62.79	5.565		
9,000.0	6,848.8	7,173.2	6,896.7	46.7	33.8	89.32	2,479.7	-331.2	257.9	193.3	64.60	3.992		
9,100.0	6,848.5	7,173.2	6,896.6	48.5	33.8	89.31	2,479.7	-331.2	175.8	109.4	66.42	2.647		
9,200.0	6,848.2	7,173.1	6,896.6	50.3	33.8	89.29	2,479.7	-331.2	123.8	55.5	68.25	1.814		
9,227.9	6,848.1	7,173.1	6,896.6	50.8	33.8	89.28	2,479.7	-331.2	120.6	51.8	68.76	1.754 CC, ES, SF		
9,300.0	6,847.9	7,173.1	6,896.5	52.1	33.8	89.27	2,479.7	-331.2	140.5	70.4	70.09	2.004		
9,400.0	6,847.6	7,173.0	6,896.5	54.0	33.8	89.25	2,479.7	-331.2	210.1	138.2	71.93	2.921		
9,500.0	6,847.3	7,173.0	6,896.5	55.8	33.8	89.23	2,479.7	-331.2	297.6	223.8	73.77	4.033		
9,600.0	6,847.0	7,173.0	6,896.4	57.6	33.8	89.21	2,479.7	-331.2	391.1	315.5	75.62	5.171		
9,700.0	6,846.7	7,172.9	6,896.4	59.5	33.8	89.19	2,479.7	-331.2	487.2	409.7	77.48	6.288		
9,800.0	6,846.4	7,172.9	6,896.3	61.3	33.8	89.17	2,479.7	-331.2	584.6	505.3	79.34	7.368		
9,900.0	6,846.1	7,172.8	6,896.3	63.2	33.8	89.15	2,479.7	-331.2	682.8	601.6	81.20	8.408		
10,000.0	6,845.8	7,172.8	6,896.3	65.0	33.8	89.13	2,479.7	-331.2	781.4	698.3	83.07	9.407		
10,100.0	6,845.5	7,172.8	6,896.2	66.9	33.8	89.11	2,479.7	-331.2	880.3	795.4	84.94	10.364		
10,200.0	6,845.2	7,172.7	6,896.2	68.8	33.8	89.09	2,479.7	-331.2	979.5	892.7	86.81	11.283		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 726-Reference													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
6,700.0	6,615.0	7,116.2	6,652.0	16.6	43.4	12.79	992.4	-289.0	988.1	944.5	43.56	22.684		
6,800.0	6,682.9	7,182.9	6,718.6	16.6	43.4	15.74	993.3	-288.1	916.9	876.2	40.75	22.504		
6,900.0	6,740.7	7,241.3	6,777.0	16.8	43.4	20.37	994.2	-287.5	837.8	799.3	38.58	21.715		
7,000.0	6,787.3	7,287.9	6,823.7	17.1	43.5	27.79	994.9	-287.0	752.2	714.3	37.98	19.808		
7,100.0	6,822.0	7,322.0	6,857.8	17.7	43.5	39.92	995.6	-286.7	661.9	621.8	40.10	16.507		
7,200.0	6,844.2	7,345.1	6,880.8	18.5	43.5	58.84	996.1	-286.5	568.6	523.7	44.95	12.651		
7,300.0	6,853.5	7,356.3	6,892.0	19.5	43.5	81.54	996.4	-286.4	474.6	425.9	48.67	9.751		
7,400.0	6,853.5	7,358.8	6,894.6	20.7	43.5	86.92	996.5	-286.4	382.5	332.5	49.97	7.654		
7,500.0	6,853.2	7,361.1	6,896.8	22.0	43.5	87.70	996.5	-286.4	295.5	244.2	51.28	5.762		
7,600.0	6,852.9	7,363.4	6,899.2	23.3	43.5	88.50	996.6	-286.4	219.9	167.2	52.67	4.174		
7,700.0	6,852.6	7,365.8	6,901.5	24.8	43.5	89.32	996.7	-286.4	171.4	117.2	54.13	3.166		
7,745.0	6,852.5	7,366.9	6,902.6	25.4	43.5	89.70	996.7	-286.4	165.4	110.6	54.81	3.017 CC, ES, SF		
7,800.0	6,852.3	7,368.2	6,904.0	26.3	43.5	90.17	996.7	-286.4	174.3	118.6	55.64	3.132		
7,900.0	6,852.0	7,370.7	6,906.5	27.8	43.5	91.03	996.8	-286.4	226.7	169.5	57.19	3.963		
8,000.0	6,851.7	7,373.3	6,909.0	29.4	43.5	91.91	996.9	-286.4	303.9	245.1	58.76	5.172		
8,100.0	6,851.4	7,375.9	6,911.6	31.0	43.5	92.81	996.9	-286.3	391.6	331.2	60.35	6.488		
8,200.0	6,851.1	7,378.6	6,914.3	32.7	43.5	93.74	997.0	-286.3	484.0	422.1	61.96	7.812		
8,300.0	6,850.8	7,381.3	6,917.0	34.4	43.5	94.68	997.1	-286.3	579.0	515.4	63.57	9.108		
8,400.0	6,850.5	7,384.1	6,919.9	36.1	43.5	95.65	997.2	-286.3	675.4	610.2	65.18	10.362		
8,500.0	6,850.2	7,387.0	6,922.7	37.8	43.5	96.64	997.3	-286.3	772.7	705.9	66.79	11.570		
8,600.0	6,850.0	7,390.0	6,925.7	39.6	43.5	97.65	997.4	-286.3	870.6	802.2	68.38	12.732		
8,700.0	6,849.7	7,393.0	6,928.7	41.3	43.5	98.68	997.4	-286.3	968.9	899.0	69.96	13.850		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

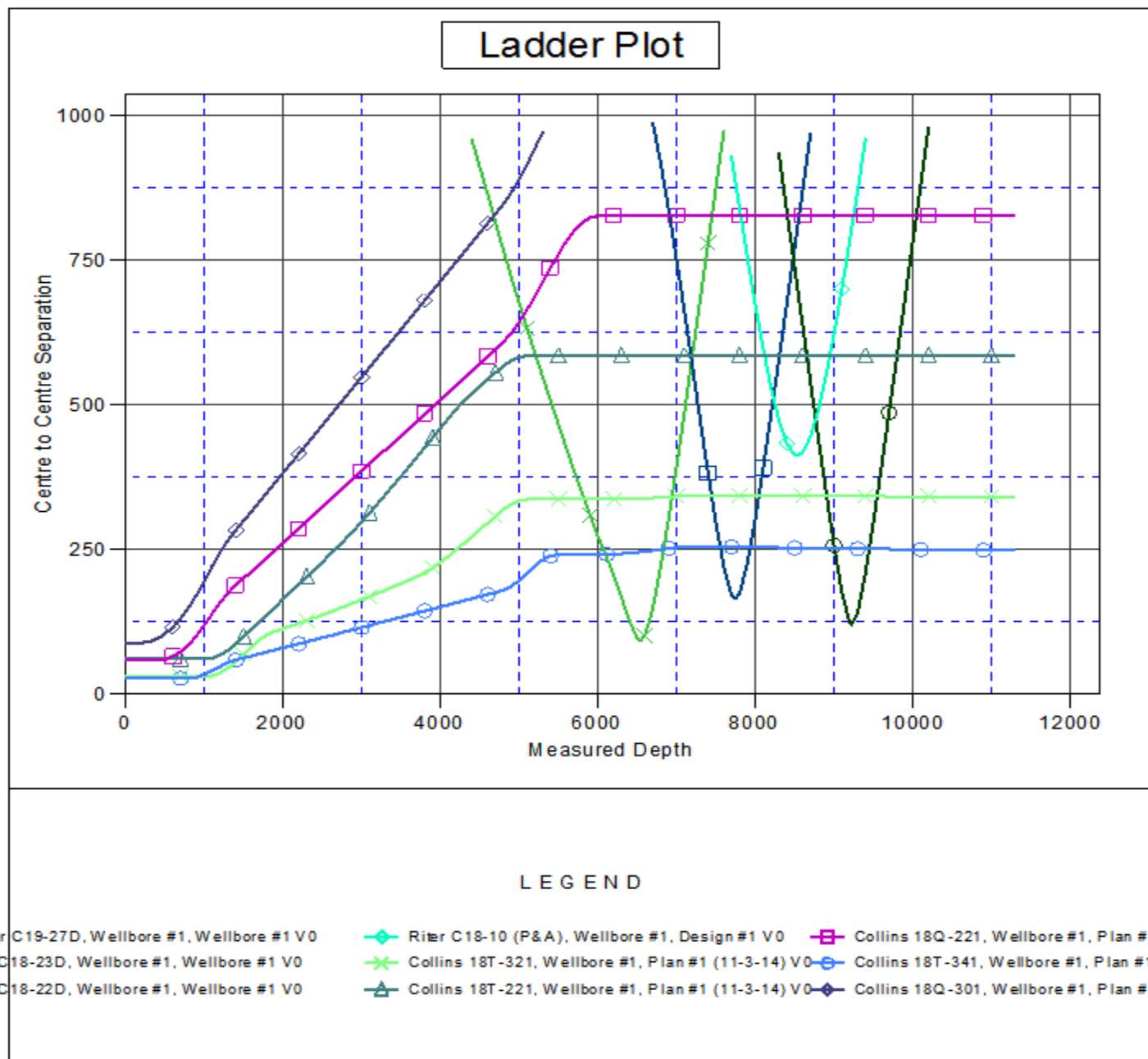
Offset Design NEI C18-32D Pad Sec.18-T4N-R64W - Oster C19-27D - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 260-Reference													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,400.0	4,373.0	5,362.9	4,868.3	12.5	40.6	88.62		584.3	-789.1	959.1	928.6	30.54	31.407	
4,500.0	4,472.2	5,452.0	4,947.1	12.9	41.4	89.83		549.7	-766.0	912.0	880.5	31.55	28.904	
4,600.0	4,571.3	5,554.3	5,037.1	13.2	42.3	91.32		508.9	-739.8	864.6	831.8	32.76	26.393	
4,700.0	4,670.5	5,644.9	5,116.1	13.5	43.2	92.94		472.1	-714.6	815.9	781.9	34.01	23.989	
4,800.0	4,769.6	5,722.8	5,184.1	13.8	43.9	94.00		441.0	-693.0	768.3	733.2	35.04	21.926	
4,900.0	4,869.2	5,800.8	5,252.6	14.1	44.6	94.43		410.4	-671.7	721.9	686.1	35.74	20.198	
5,000.0	4,968.9	5,879.2	5,321.9	14.2	45.4	94.78		380.3	-650.7	676.7	640.3	36.38	18.599	
5,100.0	5,068.9	5,956.1	5,390.4	14.4	46.0	95.03		352.0	-630.3	633.0	596.1	36.94	17.135	
5,200.0	5,168.9	6,040.3	5,466.0	14.6	46.7	-16.95		322.1	-608.3	590.9	553.1	37.83	15.618	
5,300.0	5,268.9	6,129.7	5,546.4	14.7	47.5	-15.47		290.6	-585.1	549.3	510.3	38.99	14.087	
5,400.0	5,368.9	6,221.8	5,629.2	14.9	48.3	-13.80		257.6	-562.0	507.9	467.6	40.29	12.607	
5,500.0	5,468.9	6,312.3	5,710.7	15.0	49.0	-12.02		224.7	-540.3	466.6	424.9	41.65	11.202	
5,600.0	5,568.9	6,401.2	5,790.9	15.2	49.8	-10.13		192.1	-520.2	425.7	382.6	43.10	9.877	
5,700.0	5,668.9	6,487.4	5,868.9	15.4	50.5	-7.90		161.1	-500.6	386.1	341.3	44.74	8.630	
5,800.0	5,768.9	6,577.8	5,950.7	15.5	51.2	-4.87		129.3	-479.1	347.7	300.9	46.86	7.420	
5,900.0	5,868.9	6,668.5	6,032.5	15.7	51.9	-0.81		97.6	-455.8	310.5	260.9	49.56	6.264	
6,000.0	5,968.9	6,760.8	6,116.2	15.9	52.7	3.73		64.8	-435.0	274.5	222.0	52.52	5.226	
6,100.0	6,068.9	6,848.9	6,196.8	16.0	53.4	8.62		33.7	-417.7	240.5	185.0	55.53	4.331	
6,200.0	6,168.8	6,933.5	6,275.0	16.2	53.9	14.92		5.3	-402.3	206.5	148.1	58.45	3.533	
6,300.0	6,267.3	7,018.0	6,354.7	16.3	54.5	24.41		-19.4	-389.0	167.7	106.0	61.71	2.718	
6,400.0	6,362.7	7,092.7	6,426.1	16.4	54.9	39.04		-38.3	-377.9	127.1	61.9	65.23	1.949	
6,500.0	6,453.5	7,168.4	6,498.9	16.4	55.3	64.48		-55.0	-365.8	96.7	29.8	66.96	1.445 Level 3	
6,540.3	6,488.5	7,198.1	6,527.6	16.5	55.4	77.02		-61.2	-361.1	93.0	27.8	65.24	1.426 Level 3, CC, ES, SF	
6,600.0	6,538.1	7,239.9	6,568.0	16.5	55.6	94.37		-69.7	-354.6	102.0	42.1	59.86	1.704	
6,700.0	6,615.0	7,304.0	6,630.1	16.6	55.9	114.51		-82.0	-345.2	150.2	100.4	49.76	3.019	
6,800.0	6,682.9	7,360.2	6,684.9	16.6	56.2	124.32		-92.0	-337.3	221.3	177.3	43.99	5.032	
6,900.0	6,740.7	7,406.8	6,730.4	16.8	56.4	127.09		-99.7	-331.0	304.0	260.8	43.21	7.036	
7,000.0	6,787.3	7,440.5	6,763.4	17.1	56.5	123.19		-105.0	-326.7	393.8	346.0	47.84	8.232	
7,100.0	6,822.0	7,461.6	6,784.1	17.7	56.6	110.50		-108.2	-324.0	488.3	430.6	57.69	8.464	
7,200.0	6,844.2	7,469.2	6,791.6	18.5	56.6	84.33		-109.4	-323.0	585.2	519.3	65.93	8.877	
7,300.0	6,853.5	7,462.7	6,785.2	19.5	56.6	51.93		-108.4	-323.9	682.7	627.2	55.49	12.304	
7,400.0	6,853.5	7,445.7	6,768.5	20.7	56.5	42.50		-105.8	-326.0	779.7	730.0	49.63	15.711	
7,500.0	6,853.2	7,427.8	6,751.0	22.0	56.5	38.59		-103.0	-328.3	876.9	829.3	47.58	18.429	
7,600.0	6,852.9	7,409.4	6,733.0	23.3	56.4	35.02		-100.1	-330.7	974.5	928.8	45.67	21.338	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-Reference													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis 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	
7,700.0	6,852.6	6,871.6	6,871.6	24.8	15.3	-90.34	1,785.1	-864.6	930.0	890.6	39.37	23.622		
7,800.0	6,852.3	6,871.3	6,871.3	26.3	15.3	-90.30	1,785.1	-864.6	841.6	800.7	40.90	20.576		
7,900.0	6,852.0	6,871.0	6,871.0	27.8	15.3	-90.26	1,785.1	-864.6	756.0	713.5	42.48	17.797		
8,000.0	6,851.7	6,870.7	6,870.7	29.4	15.3	-90.22	1,785.1	-864.6	674.5	630.4	44.10	15.293		
8,100.0	6,851.4	6,870.4	6,870.4	31.0	15.3	-90.18	1,785.1	-864.6	598.5	552.8	45.76	13.080		
8,200.0	6,851.1	6,870.1	6,870.1	32.7	15.3	-90.14	1,785.1	-864.6	530.6	483.2	47.44	11.184		
8,300.0	6,850.8	6,869.8	6,869.8	34.4	15.3	-90.10	1,785.1	-864.6	474.2	425.1	49.15	9.647		
8,400.0	6,850.5	6,869.5	6,869.5	36.1	15.3	-90.05	1,785.1	-864.6	433.8	382.9	50.89	8.525		
8,500.0	6,850.2	6,869.2	6,869.2	37.8	15.3	-90.01	1,785.1	-864.6	414.2	361.5	52.64	7.868		
8,533.4	6,850.2	6,869.2	6,869.2	38.4	15.3	-90.00	1,785.1	-864.6	412.8	359.6	53.23	7.756 CC, ES		
8,600.0	6,850.0	6,869.0	6,869.0	39.6	15.3	-89.97	1,785.1	-864.6	418.1	363.7	54.40	7.686 SF		
8,700.0	6,849.7	6,868.7	6,868.7	41.3	15.3	-89.93	1,785.1	-864.6	445.2	389.0	56.18	7.924		
8,800.0	6,849.4	6,868.4	6,868.4	43.1	15.3	-89.89	1,785.1	-864.6	491.4	433.5	57.97	8.477		
8,900.0	6,849.1	6,868.1	6,868.1	44.9	15.3	-89.85	1,785.1	-864.6	552.1	492.3	59.78	9.236		
9,000.0	6,848.8	6,867.8	6,867.8	46.7	15.3	-89.81	1,785.1	-864.6	623.0	561.4	61.59	10.116		
9,100.0	6,848.5	6,867.5	6,867.5	48.5	15.3	-89.77	1,785.1	-864.6	701.1	637.6	63.41	11.056		
9,200.0	6,848.2	6,867.2	6,867.2	50.3	15.3	-89.73	1,785.1	-864.6	784.1	718.9	65.24	12.019		
9,300.0	6,847.9	6,866.9	6,866.9	52.1	15.3	-89.68	1,785.1	-864.6	870.7	803.6	67.07	12.982		
9,400.0	6,847.6	6,866.6	6,866.6	54.0	15.3	-89.64	1,785.1	-864.6	959.9	891.0	68.91	13.930		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (11-3-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4797.0ft (Original Well Elev) Coordinates are relative to: Collins 18T-201
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.59°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Collins 18T-201
Project:	SEC.18-T4N-R64W	TVD Reference:	WELL @ 4797.0ft (Original Well Elev)
Reference Site:	Collins 4N64W18T Pad Sec.18-T4N-R64W	MD Reference:	WELL @ 4797.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Collins 18T-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
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