

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Schneider 19P-232**

Surface Location: Schneider 19Q-HZ Pad Sec.19-T5N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4652.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1382009.53	3253768.52	40.378440	-104.589110	

RKB - 15' WELL @ 4667.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 409'FSL, 1637'FEL, SEC.19	1.0	0.0	0.0	Point
BHL 1018'FSL, 500'FEL, SEC.20	6659.0	682.5	6407.8	Point



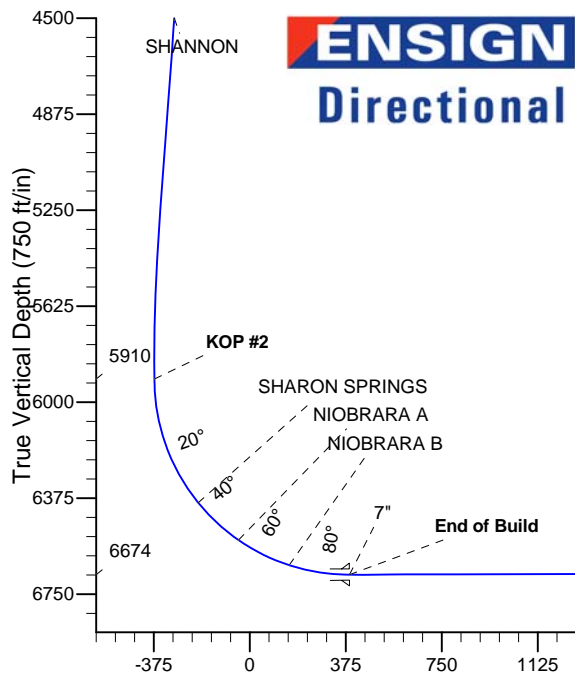
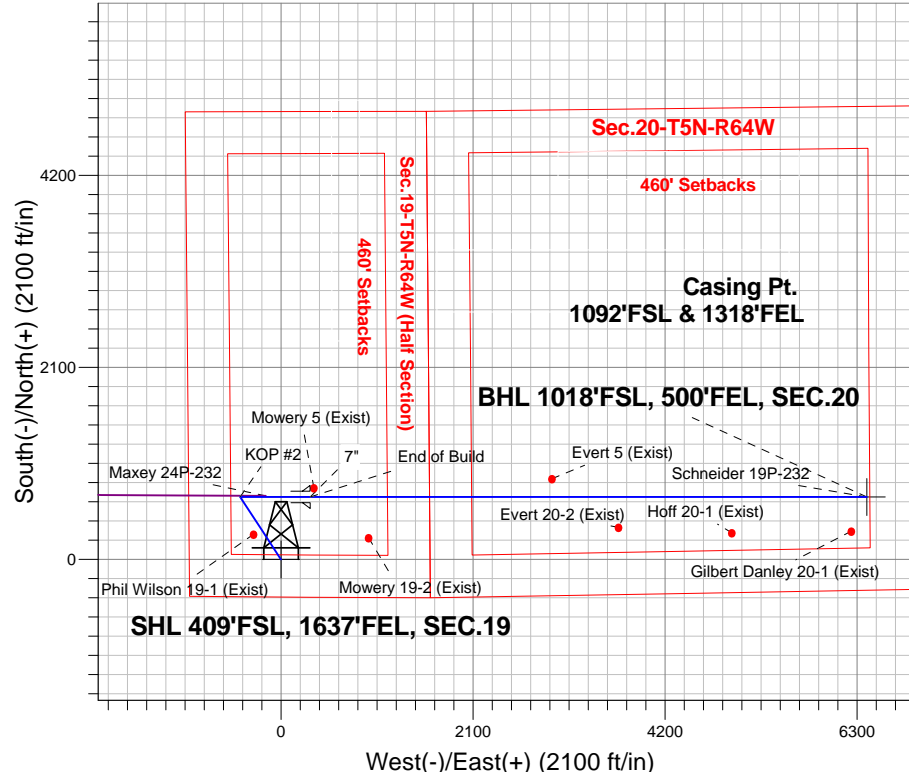
Azimuths to True North
Magnetic North: 8.41°

Magnetic Field
Strength: 52856.9snT
Dip Angle: 66.97°
Date: 2/20/2014
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP #1
5909.9	5972.3	KOP #2
6673.9	7174.2	End of Build

Schneider 19Q-HZ Pad Sec.19-T5N-R64W
Schneider 19P-232
Plan #1 (2-18-14)
11:31, February 24 2014



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	Target	VSec
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	650.2	9.00	326.78	648.3	29.5	-19.3	2.00	326.78	-16.1	
4	5412.2	9.00	326.78	5351.7	653.0	-427.7	0.00	0.00	-356.1	
5	5862.4	0.00	0.00	5800.0	682.5	-447.0	2.00	180.00	-372.2	
6	5972.3	0.00	0.00	5909.9	682.5	-447.0	0.00	0.00	-372.2	
7	7174.2	90.14	90.00	6673.9	682.5	318.8	7.50	90.00	389.3	
8	13263.2	90.14	90.00	6659.0	682.5	6407.8	0.00	0.00	6444.1	BHL 1018'FSL, 500'FEL, SEC.20

BHL 1018'FSL, 500'FEL, SEC.20

Vertical Section at 83.92° (750 ft/in)



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

Schneider 19Q-HZ Pad Sec.19-T5N-R64W

Schneider 19P-232

Wellbore #1

Plan: Plan #1 (2-18-14)

Standard Planning Report

21 February, 2014

Database:	Landmark	Local Co-ordinate Reference:	Well Schneider 19P-232
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Schneider 19P-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-18-14)		

Project	SEC.19-T5N-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

Site Schneider 19Q-HZ Pad Sec.19-T5N-R64W					
Site Position:		Northing:	1,382,009.88ft	Latitude:	40.378440
From:	Lat/Long	Easting:	3,253,799.16ft	Longitude:	-104.589000
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.59 °

Well	Schneider 19P-232					
Well Position	+N-S	0.0 ft	Northing:	1,382,009.53 ft	Latitude:	40.378440
	+E-W	-30.6 ft	Easting:	3,253,768.52 ft	Longitude:	-104.589110
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,652.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/20/2014	8.41	66.97	52,857

Design	Plan #1 (2-18-14)			
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	83.92

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
650.2	9.00	326.78	648.3	29.5	-19.3	2.00	2.00	0.00	326.78	
5,412.2	9.00	326.78	5,351.7	653.0	-427.7	0.00	0.00	0.00	0.00	
5,862.4	0.00	0.00	5,800.0	682.5	-447.0	2.00	-2.00	0.00	180.00	
5,972.3	0.00	0.00	5,909.9	682.5	-447.0	0.00	0.00	0.00	0.00	
7,174.2	90.14	90.00	6,673.9	682.5	318.8	7.50	7.50	0.00	90.00	
13,263.2	90.14	90.00	6,659.0	682.5	6,407.8	0.00	0.00	0.00	0.00	BHL 1018'FSL, 500

Database:	Landmark	Local Co-ordinate Reference:	Well Schneider 19P-232
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Schneider 19P-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-18-14)		

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
SHL 409'FSL, 1577'FEL, SEC.19									
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 409'FSL, 1637'FEL, SEC.19									
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
KOP #1									
300.0	2.00	326.78	300.0	1.5	-1.0	-0.8	2.00	2.00	0.00
400.0	4.00	326.78	399.8	5.8	-3.8	-3.2	2.00	2.00	0.00
500.0	6.00	326.78	499.5	13.1	-8.6	-7.2	2.00	2.00	0.00
600.0	8.00	326.78	598.7	23.3	-15.3	-12.7	2.00	2.00	0.00
650.2	9.00	326.78	648.3	29.5	-19.3	-16.1	2.00	2.00	0.00
700.0	9.00	326.78	697.5	36.1	-23.6	-19.7	0.00	0.00	0.00
800.0	9.00	326.78	796.3	49.1	-32.2	-26.8	0.00	0.00	0.00
900.0	9.00	326.78	895.1	62.2	-40.8	-33.9	0.00	0.00	0.00
1,000.0	9.00	326.78	993.8	75.3	-49.3	-41.1	0.00	0.00	0.00
1,100.0	9.00	326.78	1,092.6	88.4	-57.9	-48.2	0.00	0.00	0.00
1,200.0	9.00	326.78	1,191.4	101.5	-66.5	-55.4	0.00	0.00	0.00
1,300.0	9.00	326.78	1,290.1	114.6	-75.1	-62.5	0.00	0.00	0.00
1,400.0	9.00	326.78	1,388.9	127.7	-83.6	-69.6	0.00	0.00	0.00
1,500.0	9.00	326.78	1,487.7	140.8	-92.2	-76.8	0.00	0.00	0.00
1,600.0	9.00	326.78	1,586.4	153.9	-100.8	-83.9	0.00	0.00	0.00
1,700.0	9.00	326.78	1,685.2	167.0	-109.4	-91.1	0.00	0.00	0.00
1,800.0	9.00	326.78	1,784.0	180.1	-117.9	-98.2	0.00	0.00	0.00
1,900.0	9.00	326.78	1,882.7	193.2	-126.5	-105.3	0.00	0.00	0.00
2,000.0	9.00	326.78	1,981.5	206.2	-135.1	-112.5	0.00	0.00	0.00
2,100.0	9.00	326.78	2,080.3	219.3	-143.7	-119.6	0.00	0.00	0.00
2,200.0	9.00	326.78	2,179.1	232.4	-152.2	-126.8	0.00	0.00	0.00
2,300.0	9.00	326.78	2,277.8	245.5	-160.8	-133.9	0.00	0.00	0.00
2,400.0	9.00	326.78	2,376.6	258.6	-169.4	-141.0	0.00	0.00	0.00
2,500.0	9.00	326.78	2,475.4	271.7	-178.0	-148.2	0.00	0.00	0.00
2,600.0	9.00	326.78	2,574.1	284.8	-186.5	-155.3	0.00	0.00	0.00
2,700.0	9.00	326.78	2,672.9	297.9	-195.1	-162.5	0.00	0.00	0.00
2,800.0	9.00	326.78	2,771.7	311.0	-203.7	-169.6	0.00	0.00	0.00
2,900.0	9.00	326.78	2,870.4	324.1	-212.3	-176.7	0.00	0.00	0.00
3,000.0	9.00	326.78	2,969.2	337.2	-220.8	-183.9	0.00	0.00	0.00
3,100.0	9.00	326.78	3,068.0	350.3	-229.4	-191.0	0.00	0.00	0.00
3,200.0	9.00	326.78	3,166.7	363.4	-238.0	-198.2	0.00	0.00	0.00
3,300.0	9.00	326.78	3,265.5	376.4	-246.5	-205.3	0.00	0.00	0.00
3,400.0	9.00	326.78	3,364.3	389.5	-255.1	-212.4	0.00	0.00	0.00
3,500.0	9.00	326.78	3,463.0	402.6	-263.7	-219.6	0.00	0.00	0.00
3,552.6	9.00	326.78	3,515.0	409.5	-268.2	-223.3	0.00	0.00	0.00
PARKMAN									
3,600.0	9.00	326.78	3,561.8	415.7	-272.3	-226.7	0.00	0.00	0.00
3,700.0	9.00	326.78	3,660.6	428.8	-280.8	-233.9	0.00	0.00	0.00
3,800.0	9.00	326.78	3,759.3	441.9	-289.4	-241.0	0.00	0.00	0.00
3,900.0	9.00	326.78	3,858.1	455.0	-298.0	-248.1	0.00	0.00	0.00
4,000.0	9.00	326.78	3,956.9	468.1	-306.6	-255.3	0.00	0.00	0.00
4,100.0	9.00	326.78	4,055.6	481.2	-315.1	-262.4	0.00	0.00	0.00
4,200.0	9.00	326.78	4,154.4	494.3	-323.7	-269.6	0.00	0.00	0.00
4,300.0	9.00	326.78	4,253.2	507.4	-332.3	-276.7	0.00	0.00	0.00
4,359.6	9.00	326.78	4,312.0	515.2	-337.4	-280.9	0.00	0.00	0.00
SUSSEX									

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Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Schneider 19P-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-18-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,400.0	9.00	326.78	4,351.9	520.5	-340.9	-283.8	0.00	0.00	0.00
4,500.0	9.00	326.78	4,450.7	533.5	-349.4	-291.0	0.00	0.00	0.00
4,549.9	9.00	326.78	4,500.0	540.1	-353.7	-294.5	0.00	0.00	0.00
SHANNON									
4,600.0	9.00	326.78	4,549.5	546.6	-358.0	-298.1	0.00	0.00	0.00
4,700.0	9.00	326.78	4,648.2	559.7	-366.6	-305.2	0.00	0.00	0.00
4,800.0	9.00	326.78	4,747.0	572.8	-375.2	-312.4	0.00	0.00	0.00
4,900.0	9.00	326.78	4,845.8	585.9	-383.7	-319.5	0.00	0.00	0.00
5,000.0	9.00	326.78	4,944.6	599.0	-392.3	-326.7	0.00	0.00	0.00
5,100.0	9.00	326.78	5,043.3	612.1	-400.9	-333.8	0.00	0.00	0.00
5,200.0	9.00	326.78	5,142.1	625.2	-409.5	-340.9	0.00	0.00	0.00
5,300.0	9.00	326.78	5,240.9	638.3	-418.0	-348.1	0.00	0.00	0.00
5,400.0	9.00	326.78	5,339.6	651.4	-426.6	-355.2	0.00	0.00	0.00
5,412.2	9.00	326.78	5,351.7	653.0	-427.7	-356.1	0.00	0.00	0.00
5,500.0	7.25	326.78	5,438.6	663.4	-434.5	-361.8	2.00	-2.00	0.00
5,600.0	5.25	326.78	5,538.0	672.5	-440.4	-366.7	2.00	-2.00	0.00
5,700.0	3.25	326.78	5,637.7	678.7	-444.5	-370.1	2.00	-2.00	0.00
5,800.0	1.25	326.78	5,737.6	681.9	-446.6	-371.9	2.00	-2.00	0.00
5,862.4	0.00	0.00	5,800.0	682.5	-447.0	-372.2	2.00	-2.00	0.00
5,900.0	0.00	0.00	5,837.6	682.5	-447.0	-372.2	0.00	0.00	0.00
5,972.3	0.00	0.00	5,909.9	682.5	-447.0	-372.2	0.00	0.00	0.00
KOP #2									
6,000.0	2.08	90.00	5,937.6	682.5	-446.5	-371.7	7.50	7.50	0.00
6,100.0	9.58	90.00	6,037.0	682.5	-436.4	-361.6	7.50	7.50	0.00
6,200.0	17.08	90.00	6,134.3	682.5	-413.3	-338.7	7.50	7.50	0.00
6,300.0	24.58	90.00	6,227.7	682.5	-377.8	-303.4	7.50	7.50	0.00
6,400.0	32.08	90.00	6,315.6	682.5	-330.4	-256.2	7.50	7.50	0.00
6,495.3	39.22	90.00	6,393.0	682.5	-274.9	-201.1	7.50	7.50	0.00
SHARON SPRINGS									
6,500.0	39.58	90.00	6,396.6	682.5	-271.9	-198.1	7.50	7.50	0.00
6,600.0	47.08	90.00	6,469.3	682.5	-203.3	-129.9	7.50	7.50	0.00
6,700.0	54.58	90.00	6,532.5	682.5	-125.9	-52.9	7.50	7.50	0.00
6,711.4	55.43	90.00	6,539.0	682.5	-116.5	-43.6	7.50	7.50	0.00
NIORARA A									
6,800.0	62.08	90.00	6,584.9	682.5	-40.8	31.7	7.50	7.50	0.00
6,900.0	69.58	90.00	6,625.9	682.5	50.4	122.4	7.50	7.50	0.00
6,934.0	72.12	90.00	6,637.0	682.5	82.4	154.3	7.50	7.50	0.00
NIORARA B									
7,000.0	77.08	90.00	6,654.5	682.5	146.1	217.5	7.50	7.50	0.00
7,100.0	84.58	90.00	6,670.5	682.5	244.7	315.6	7.50	7.50	0.00
7,174.2	90.14	90.00	6,673.9	682.5	318.8	389.3	7.50	7.50	0.00
End of Build - 7"									
7,200.0	90.14	90.00	6,673.8	682.5	344.6	415.0	0.00	0.00	0.00
7,300.0	90.14	90.00	6,673.6	682.5	444.6	514.4	0.00	0.00	0.00
7,400.0	90.14	90.00	6,673.3	682.5	544.6	613.8	0.00	0.00	0.00
7,500.0	90.14	90.00	6,673.1	682.5	644.6	713.3	0.00	0.00	0.00
7,600.0	90.14	90.00	6,672.8	682.5	744.6	812.7	0.00	0.00	0.00
7,700.0	90.14	90.00	6,672.6	682.5	844.6	912.2	0.00	0.00	0.00
7,800.0	90.14	90.00	6,672.3	682.5	944.6	1,011.6	0.00	0.00	0.00
7,900.0	90.14	90.00	6,672.1	682.5	1,044.6	1,111.0	0.00	0.00	0.00
8,000.0	90.14	90.00	6,671.9	682.5	1,144.6	1,210.5	0.00	0.00	0.00
8,100.0	90.14	90.00	6,671.6	682.5	1,244.6	1,309.9	0.00	0.00	0.00

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Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Schneider 19P-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-18-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,200.0	90.14	90.00	6,671.4	682.5	1,344.6	1,409.3	0.00	0.00	0.00
8,300.0	90.14	90.00	6,671.1	682.5	1,444.6	1,508.8	0.00	0.00	0.00
8,400.0	90.14	90.00	6,670.9	682.5	1,544.6	1,608.2	0.00	0.00	0.00
8,500.0	90.14	90.00	6,670.6	682.5	1,644.6	1,707.7	0.00	0.00	0.00
8,600.0	90.14	90.00	6,670.4	682.5	1,744.6	1,807.1	0.00	0.00	0.00
8,700.0	90.14	90.00	6,670.2	682.5	1,844.6	1,906.5	0.00	0.00	0.00
8,800.0	90.14	90.00	6,669.9	682.5	1,944.6	2,006.0	0.00	0.00	0.00
8,900.0	90.14	90.00	6,669.7	682.5	2,044.6	2,105.4	0.00	0.00	0.00
9,000.0	90.14	90.00	6,669.4	682.5	2,144.6	2,204.8	0.00	0.00	0.00
9,100.0	90.14	90.00	6,669.2	682.5	2,244.6	2,304.3	0.00	0.00	0.00
9,200.0	90.14	90.00	6,668.9	682.5	2,344.6	2,403.7	0.00	0.00	0.00
9,300.0	90.14	90.00	6,668.7	682.5	2,444.6	2,503.2	0.00	0.00	0.00
9,400.0	90.14	90.00	6,668.4	682.5	2,544.6	2,602.6	0.00	0.00	0.00
9,500.0	90.14	90.00	6,668.2	682.5	2,644.6	2,702.0	0.00	0.00	0.00
9,600.0	90.14	90.00	6,668.0	682.5	2,744.6	2,801.5	0.00	0.00	0.00
9,700.0	90.14	90.00	6,667.7	682.5	2,844.6	2,900.9	0.00	0.00	0.00
9,800.0	90.14	90.00	6,667.5	682.5	2,944.6	3,000.3	0.00	0.00	0.00
9,900.0	90.14	90.00	6,667.2	682.5	3,044.6	3,099.8	0.00	0.00	0.00
10,000.0	90.14	90.00	6,667.0	682.5	3,144.6	3,199.2	0.00	0.00	0.00
10,100.0	90.14	90.00	6,666.7	682.5	3,244.6	3,298.7	0.00	0.00	0.00
10,200.0	90.14	90.00	6,666.5	682.5	3,344.6	3,398.1	0.00	0.00	0.00
10,300.0	90.14	90.00	6,666.2	682.5	3,444.6	3,497.5	0.00	0.00	0.00
10,400.0	90.14	90.00	6,666.0	682.5	3,544.6	3,597.0	0.00	0.00	0.00
10,500.0	90.14	90.00	6,665.8	682.5	3,644.6	3,696.4	0.00	0.00	0.00
10,600.0	90.14	90.00	6,665.5	682.5	3,744.6	3,795.8	0.00	0.00	0.00
10,700.0	90.14	90.00	6,665.3	682.5	3,844.6	3,895.3	0.00	0.00	0.00
10,800.0	90.14	90.00	6,665.0	682.5	3,944.6	3,994.7	0.00	0.00	0.00
10,900.0	90.14	90.00	6,664.8	682.5	4,044.6	4,094.2	0.00	0.00	0.00
11,000.0	90.14	90.00	6,664.5	682.5	4,144.6	4,193.6	0.00	0.00	0.00
11,100.0	90.14	90.00	6,664.3	682.5	4,244.6	4,293.0	0.00	0.00	0.00
11,200.0	90.14	90.00	6,664.0	682.5	4,344.6	4,392.5	0.00	0.00	0.00
11,300.0	90.14	90.00	6,663.8	682.5	4,444.6	4,491.9	0.00	0.00	0.00
11,400.0	90.14	90.00	6,663.6	682.5	4,544.6	4,591.3	0.00	0.00	0.00
11,500.0	90.14	90.00	6,663.3	682.5	4,644.6	4,690.8	0.00	0.00	0.00
11,600.0	90.14	90.00	6,663.1	682.5	4,744.6	4,790.2	0.00	0.00	0.00
11,700.0	90.14	90.00	6,662.8	682.5	4,844.6	4,889.7	0.00	0.00	0.00
11,800.0	90.14	90.00	6,662.6	682.5	4,944.6	4,989.1	0.00	0.00	0.00
11,900.0	90.14	90.00	6,662.3	682.5	5,044.6	5,088.5	0.00	0.00	0.00
12,000.0	90.14	90.00	6,662.1	682.5	5,144.6	5,188.0	0.00	0.00	0.00
12,100.0	90.14	90.00	6,661.8	682.5	5,244.6	5,287.4	0.00	0.00	0.00
12,200.0	90.14	90.00	6,661.6	682.5	5,344.6	5,386.8	0.00	0.00	0.00
12,300.0	90.14	90.00	6,661.4	682.5	5,444.6	5,486.3	0.00	0.00	0.00
12,400.0	90.14	90.00	6,661.1	682.5	5,544.6	5,585.7	0.00	0.00	0.00
12,500.0	90.14	90.00	6,660.9	682.5	5,644.6	5,685.1	0.00	0.00	0.00
12,600.0	90.14	90.00	6,660.6	682.5	5,744.6	5,784.6	0.00	0.00	0.00
12,700.0	90.14	90.00	6,660.4	682.5	5,844.6	5,884.0	0.00	0.00	0.00
12,800.0	90.14	90.00	6,660.1	682.5	5,944.6	5,983.5	0.00	0.00	0.00
12,900.0	90.14	90.00	6,659.9	682.5	6,044.6	6,082.9	0.00	0.00	0.00
13,000.0	90.14	90.00	6,659.6	682.5	6,144.6	6,182.3	0.00	0.00	0.00
13,100.0	90.14	90.00	6,659.4	682.5	6,244.6	6,281.8	0.00	0.00	0.00
13,200.0	90.14	90.00	6,659.2	682.5	6,344.6	6,381.2	0.00	0.00	0.00
13,263.2	90.14	90.00	6,659.0	682.5	6,407.8	6,444.1	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Schneider 19P-232
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Schneider 19P-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-18-14)		

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)
BHL 1018'FSL, 500'FEL, SEC.20									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,174.2	6,673.9	7"	7	7-1/2	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,552.6	3,515.0	PARKMAN				
4,359.6	4,312.0	SUSSEX				
4,549.9	4,500.0	SHANNON				
6,495.3	6,393.0	SHARON SPRINGS				
6,711.4	6,539.0	NIOBRARA A				
6,934.0	6,637.0	NIOBRARA B				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N-S (ft)	+E-W (ft)	Comment	
200.0	200.0	0.0	0.0	KOP #1	
5,972.3	5,909.9	682.5	-447.0	KOP #2	
7,174.2	6,673.9	682.5	318.8	End of Build	



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

Schneider 19Q-HZ Pad Sec.19-T5N-R64W

Schneider 19P-232

Wellbore #1

Plan #1 (2-18-14)

Anticollision Report

21 February, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (2-18-14)
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	2/20/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,263.2	Plan #1 (2-18-14) (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						
Maxe 24Q-HZ Pad Sec.24-T5N-R65W						
Maxe 24P-232 - Wellbore #1 - Plan #3 (1-22-14)	6,770.0	12,498.6	200.0	147.6	3.816	CC, ES, SF
Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W						
Evert 20-2 (Exist) - Wellbore #1 - Wellbore #1	10,546.9	6,657.6	332.5	88.7	1.364	Level 3, CC, ES, SF
Evert 5 (Exist) - Wellbore #1 - Wellbore #1	9,819.7	6,638.4	199.3	-24.0	0.893	Level 1, CC, ES, SF
Gilbert Danley 20-1 (Exist) - Wellbore #1 - Wellbore #1	13,093.4	6,647.4	375.7	61.1	1.194	Level 2, CC
Gilbert Danley 20-1 (Exist) - Wellbore #1 - Wellbore #1	13,100.0	6,647.4	375.7	60.9	1.194	Level 2, ES, SF
Hoff 20-1 (Exist) - Wellbore #1 - Wellbore #1	11,786.7	6,668.6	390.5	112.0	1.402	Level 3, CC
Hoff 20-1 (Exist) - Wellbore #1 - Wellbore #1	11,800.0	6,668.6	390.8	111.9	1.401	Level 3, ES, SF
Mowery 19-2 (Exist) - Wellbore #1 - Wellbore #1	7,813.8	6,658.3	445.7	275.7	2.622	CC, ES, SF
Mowery 5 (Exist) - Wellbore #1 - Wellbore #1	7,214.8	6,632.8	100.8	-55.1	0.647	Level 1, CC, ES, SF
Phil Wilson 19-1 (Exist) - Wellbore #1 - Wellbore #1	2,938.7	2,882.7	102.0	34.6	1.513	CC
Phil Wilson 19-1 (Exist) - Wellbore #1 - Wellbore #1	3,000.0	2,943.2	102.4	33.6	1.488	Level 3, ES
Phil Wilson 19-1 (Exist) - Wellbore #1 - Wellbore #1	3,100.0	3,042.0	105.1	34.0	1.479	Level 3, SF
Schneider 19Q-HZ Pad Sec.19-T5N-R64W						
Schneider 19P-432 - Wellbore #1 - Plan #1 (2-18-14)	200.0	200.0	30.6	30.0	45.451	CC
Schneider 19P-432 - Wellbore #1 - Plan #1 (2-18-14)	13,263.2	13,295.1	302.8	9.1	1.031	Level 2, ES, SF
Schneider 19Q-312 - Wellbore #1 - Plan #1 (2-18-14)	200.0	201.0	89.2	88.5	131.780	CC, ES
Schneider 19Q-312 - Wellbore #1 - Plan #1 (2-18-14)	13,263.2	13,065.0	615.9	251.1	1.688	SF
Schneider 19Q-402 - Wellbore #1 - Plan #1 (2-18-14)	200.0	201.0	61.3	60.6	90.599	CC, ES
Schneider 19Q-402 - Wellbore #1 - Plan #1 (2-18-14)	13,263.2	13,226.3	963.7	602.3	2.667	SF

Offset Design		Maxey 24Q-HZ Pad Sec.24-T5N-R65W - Maxey 24P-232 - Wellbore #1 - Plan #3 (1-22-14)										Offset Site Error:		0.0 ft	
Survey Program:		0-MWVD										Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,900.0	5,837.6	12,221.9	6,726.9	19.9	158.3	12.98	695.1	-444.1	906.3	843.1	63.20	14.341			
6,000.0	5,937.6	12,222.0	6,726.9	20.0	158.3	-154.58	695.1	-443.9	806.4	714.5	91.90	8.774			
6,100.0	6,037.0	12,231.9	6,726.8	20.1	158.6	-173.77	695.1	-434.1	706.9	657.9	48.98	14.434			
6,200.0	6,134.3	12,254.6	6,726.8	20.1	159.3	-175.97	695.0	-411.3	609.6	563.6	46.01	13.251			
6,300.0	6,227.7	12,289.8	6,726.7	20.0	160.2	-176.70	694.8	-376.1	516.1	469.8	46.35	11.135			
6,400.0	6,315.6	12,337.0	6,726.5	19.9	161.6	-176.95	694.5	-329.0	428.1	380.4	47.65	8.984			

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 Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Maxey 24Q-HZ Pad Sec.24-T5N-R65W - Maxey 24P-232 - Wellbore #1 - Plan #3 (1-22-14)													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)	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	
6,500.0	6,396.6	12,395.2	6,726.3	19.7	163.2	-176.95	694.2	-270.7	346.9	297.6	49.26	7.041		
6,600.0	6,469.3	12,463.5	6,726.1	19.6	165.1	-176.75	693.9	-202.4	274.0	223.1	50.94	5.379		
6,700.0	6,532.5	12,498.6	6,726.0	19.5	166.1	-176.73	693.7	-167.3	214.9	162.9	52.02	4.131		
6,770.0	6,570.4	12,498.6	6,726.0	19.4	166.1	-176.80	693.7	-167.3	200.0	147.6	52.40	3.816 CC, ES, SF		
6,800.0	6,584.9	12,498.6	6,726.0	19.3	166.1	-176.79	693.7	-167.3	202.8	150.2	52.55	3.859		
6,900.0	6,625.9	12,498.6	6,726.0	19.2	166.1	-176.56	693.7	-167.3	247.5	194.5	52.98	4.671		
7,000.0	6,654.5	12,498.6	6,726.0	19.6	166.1	-175.91	693.7	-167.3	325.9	272.3	53.52	6.088		
7,100.0	6,670.5	12,498.6	6,726.0	21.2	166.1	-174.26	693.7	-167.3	418.6	363.7	54.86	7.630		
7,200.0	6,673.8	12,498.6	6,726.0	23.1	166.1	-170.67	693.7	-167.3	516.7	457.7	59.05	8.752		
7,300.0	6,673.6	12,498.6	6,726.0	25.1	166.1	-170.67	693.7	-167.3	616.0	556.4	59.59	10.338		
7,400.0	6,673.3	12,498.6	6,726.0	27.3	166.1	-170.67	693.7	-167.3	715.5	655.3	60.17	11.890		
7,500.0	6,673.1	12,498.6	6,726.0	29.5	166.1	-170.67	693.7	-167.3	815.0	754.3	60.79	13.407		
7,600.0	6,672.8	12,498.6	6,726.0	31.8	166.1	-170.67	693.7	-167.3	914.7	853.3	61.45	14.886		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Evert 20-2 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7025-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,700.0	6,667.7	6,659.7	6,659.7	87.4	133.2	90.36	350.0	3,691.5	909.8	689.4	220.42	4.128	
9,800.0	6,667.5	6,659.5	6,659.5	90.2	133.2	90.31	350.0	3,691.5	817.6	594.4	223.17	3.663	
9,900.0	6,667.2	6,659.2	6,659.2	92.9	133.2	90.27	350.0	3,691.5	727.3	501.4	225.92	3.219	
10,000.0	6,667.0	6,659.0	6,659.0	95.7	133.2	90.23	350.0	3,691.5	640.0	411.4	228.68	2.799	
10,100.0	6,666.7	6,658.7	6,658.7	98.4	133.2	90.19	350.0	3,691.5	557.0	325.6	231.44	2.407	
10,200.0	6,666.5	6,658.5	6,658.5	101.2	133.2	90.15	350.0	3,691.5	480.5	246.3	234.20	2.052	
10,300.0	6,666.2	6,658.2	6,658.2	104.0	133.2	90.10	350.0	3,691.5	414.1	177.2	236.96	1.748	
10,400.0	6,666.0	6,658.0	6,658.0	106.7	133.2	90.06	350.0	3,691.5	363.5	123.7	239.73	1.516	
10,500.0	6,665.8	6,657.8	6,657.8	109.5	133.2	90.02	350.0	3,691.5	335.8	93.3	242.50	1.385	Level 3
10,546.9	6,665.6	6,657.6	6,657.6	110.8	133.2	90.00	350.0	3,691.5	332.5	88.7	243.80	1.364	Level 3, CC, ES, SF
10,600.0	6,665.5	6,657.5	6,657.5	112.3	133.2	89.98	350.0	3,691.5	336.7	91.4	245.27	1.373	Level 3
10,700.0	6,665.3	6,657.3	6,657.3	115.0	133.1	89.94	350.0	3,691.5	366.0	118.0	248.04	1.476	Level 3
10,800.0	6,665.0	6,657.0	6,657.0	117.8	133.1	89.89	350.0	3,691.5	417.8	167.0	250.81	1.666	
10,900.0	6,664.8	6,656.8	6,656.8	120.6	133.1	89.85	350.0	3,691.5	485.0	231.4	253.58	1.912	
11,000.0	6,664.5	6,656.5	6,656.5	123.4	133.1	89.81	350.0	3,691.5	562.0	305.6	256.35	2.192	
11,100.0	6,664.3	6,656.3	6,656.3	126.2	133.1	89.77	350.0	3,691.5	645.3	386.2	259.13	2.490	
11,200.0	6,664.0	6,656.0	6,656.0	128.9	133.1	89.72	350.0	3,691.5	732.8	470.9	261.91	2.798	
11,300.0	6,663.8	6,655.8	6,655.8	131.7	133.1	89.68	350.0	3,691.5	823.2	558.5	264.68	3.110	
11,400.0	6,663.6	6,655.6	6,655.6	134.5	133.1	89.64	350.0	3,691.5	915.6	648.1	267.46	3.423	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Evert 5 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7077-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,900.0	6,669.7	6,640.7	6,640.7	65.6	132.8	-90.65	881.8	2,964.3	941.0	742.9	198.12	4.750	
9,000.0	6,669.4	6,640.4	6,640.4	68.3	132.8	-90.58	881.8	2,964.3	843.6	642.7	200.83	4.200	
9,100.0	6,669.2	6,640.2	6,640.2	71.0	132.8	-90.51	881.8	2,964.3	746.8	543.2	203.55	3.669	
9,200.0	6,668.9	6,639.9	6,639.9	73.7	132.8	-90.44	881.8	2,964.3	651.0	444.7	206.28	3.156	
9,300.0	6,668.7	6,639.7	6,639.7	76.4	132.8	-90.36	881.8	2,964.3	556.6	347.6	209.01	2.663	
9,400.0	6,668.4	6,639.4	6,639.4	79.2	132.8	-90.29	881.8	2,964.3	464.6	252.9	211.75	2.194	
9,500.0	6,668.2	6,639.2	6,639.2	81.9	132.8	-90.22	881.8	2,964.3	376.7	162.3	214.49	1.756	
9,600.0	6,668.0	6,639.0	6,639.0	84.7	132.8	-90.15	881.8	2,964.3	296.6	79.4	217.24	1.366	Level 3
9,700.0	6,667.7	6,638.7	6,638.7	87.4	132.8	-90.08	881.8	2,964.3	232.5	12.5	219.99	1.057	Level 2
9,800.0	6,667.5	6,638.5	6,638.5	90.2	132.8	-90.01	881.8	2,964.3	200.3	-22.4	222.74	0.899	Level 1
9,819.7	6,667.4	6,638.4	6,638.4	90.7	132.8	-90.00	881.8	2,964.3	199.3	-24.0	223.29	0.893	Level 1, CC, ES, SF
9,900.0	6,667.2	6,638.2	6,638.2	92.9	132.8	-89.94	881.8	2,964.3	214.9	-10.6	225.50	0.953	Level 1
10,000.0	6,667.0	6,638.0	6,638.0	95.7	132.8	-89.87	881.8	2,964.3	268.8	40.5	228.26	1.178	Level 2
10,100.0	6,666.7	6,637.7	6,637.7	98.4	132.8	-89.80	881.8	2,964.3	344.0	112.9	231.02	1.489	Level 3
10,200.0	6,666.5	6,637.5	6,637.5	101.2	132.7	-89.73	881.8	2,964.3	429.4	195.6	233.78	1.837	
10,300.0	6,666.2	6,637.2	6,637.2	104.0	132.7	-89.66	881.8	2,964.3	520.0	283.5	236.55	2.198	
10,400.0	6,666.0	6,637.0	6,637.0	106.7	132.7	-89.59	881.8	2,964.3	613.6	374.3	239.31	2.564	
10,500.0	6,665.8	6,636.8	6,636.8	109.5	132.7	-89.52	881.8	2,964.3	708.9	466.8	242.08	2.928	
10,600.0	6,665.5	6,636.5	6,636.5	112.3	132.7	-89.45	881.8	2,964.3	805.4	560.5	244.85	3.289	
10,700.0	6,665.3	6,636.3	6,636.3	115.0	132.7	-89.38	881.8	2,964.3	902.6	655.0	247.62	3.645	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Gilbert Danley 20-1 (Exist) - Wellbore #1 - Wellb													Offset Site Error:	0.0 ft
Survey Program: 6971-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Reference	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,200.0	6,661.6	6,649.6	6,649.6	156.8	133.0	90.33	306.8	6,238.0	969.2	679.5	289.68	3.346		
12,300.0	6,661.4	6,649.4	6,649.4	159.6	133.0	90.30	306.8	6,238.0	877.8	585.4	292.46	3.002		
12,400.0	6,661.1	6,649.1	6,649.1	162.4	133.0	90.26	306.8	6,238.0	788.6	493.4	295.25	2.671		
12,500.0	6,660.9	6,648.9	6,648.9	165.2	133.0	90.22	306.8	6,238.0	702.3	404.3	298.04	2.356		
12,600.0	6,660.6	6,648.6	6,648.6	168.0	133.0	90.18	306.8	6,238.0	620.1	319.3	300.83	2.061		
12,700.0	6,660.4	6,648.4	6,648.4	170.8	133.0	90.15	306.8	6,238.0	544.0	240.3	303.62	1.792		
12,800.0	6,660.1	6,648.1	6,648.1	173.5	133.0	90.11	306.8	6,238.0	476.7	170.3	306.41	1.556		
12,900.0	6,659.9	6,647.9	6,647.9	176.3	133.0	90.07	306.8	6,238.0	422.5	113.3	309.20	1.367	Level 3	
13,000.0	6,659.6	6,647.6	6,647.6	179.1	133.0	90.03	306.8	6,238.0	387.1	75.1	311.99	1.241	Level 2	
13,093.4	6,659.4	6,647.4	6,647.4	181.7	132.9	90.00	306.8	6,238.0	375.7	61.1	314.59	1.194	Level 2, CC	
13,100.0	6,659.4	6,647.4	6,647.4	181.9	132.9	90.00	306.8	6,238.0	375.7	60.9	314.78	1.194	Level 2, ES, SF	
13,200.0	6,659.2	6,647.2	6,647.2	184.7	132.9	89.96	306.8	6,238.0	390.5	72.9	317.57	1.230	Level 2	
13,263.2	6,659.0	6,647.0	6,647.0	186.5	132.9	89.94	306.8	6,238.0	412.3	92.9	319.33	1.291	Level 3	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Hoff 20-1 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7010-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,900.0	6,664.8	6,670.8	6,670.8	120.6	133.4	90.32	292.0	4,931.4	968.9	715.1	253.87	3.817	
11,000.0	6,664.5	6,670.5	6,670.5	123.4	133.4	90.28	292.0	4,931.4	878.3	621.7	256.65	3.422	
11,100.0	6,664.3	6,670.3	6,670.3	126.2	133.4	90.25	292.0	4,931.4	790.0	530.6	259.42	3.045	
11,200.0	6,664.0	6,670.0	6,670.0	128.9	133.4	90.21	292.0	4,931.4	704.8	442.6	262.20	2.688	
11,300.0	6,663.8	6,669.8	6,669.8	131.7	133.4	90.17	292.0	4,931.4	624.0	359.1	264.98	2.355	
11,400.0	6,663.6	6,669.6	6,669.6	134.5	133.4	90.14	292.0	4,931.4	549.6	281.9	267.76	2.053	
11,500.0	6,663.3	6,669.3	6,669.3	137.3	133.4	90.10	292.0	4,931.4	484.5	214.0	270.54	1.791	
11,600.0	6,663.1	6,669.1	6,669.1	140.1	133.4	90.07	292.0	4,931.4	432.9	159.6	273.32	1.584	
11,700.0	6,662.8	6,668.8	6,668.8	142.9	133.4	90.03	292.0	4,931.4	400.1	123.9	276.11	1.449	Level 3
11,786.7	6,662.6	6,668.6	6,668.6	145.3	133.4	90.00	292.0	4,931.4	390.5	112.0	278.52	1.402	Level 3, CC
11,800.0	6,662.6	6,668.6	6,668.6	145.6	133.4	90.00	292.0	4,931.4	390.8	111.9	278.89	1.401	Level 3, ES, SF
11,900.0	6,662.3	6,668.3	6,668.3	148.4	133.4	89.96	292.0	4,931.4	406.6	125.0	281.67	1.444	Level 3
12,000.0	6,662.1	6,668.1	6,668.1	151.2	133.4	89.92	292.0	4,931.4	445.0	160.5	284.46	1.564	
12,100.0	6,661.8	6,667.8	6,667.8	154.0	133.4	89.89	292.0	4,931.4	500.6	213.4	287.24	1.743	
12,200.0	6,661.6	6,667.6	6,667.6	156.8	133.4	89.85	292.0	4,931.4	568.6	278.6	290.03	1.961	
12,300.0	6,661.4	6,667.4	6,667.4	159.6	133.3	89.82	292.0	4,931.4	644.9	352.1	292.81	2.203	
12,400.0	6,661.1	6,667.1	6,667.1	162.4	133.3	89.78	292.0	4,931.4	727.1	431.5	295.60	2.460	
12,500.0	6,660.9	6,666.9	6,666.9	165.2	133.3	89.74	292.0	4,931.4	813.2	514.8	298.38	2.725	
12,600.0	6,660.6	6,666.6	6,666.6	168.0	133.3	89.71	292.0	4,931.4	902.2	601.0	301.17	2.996	
12,700.0	6,660.4	6,666.4	6,666.4	170.8	133.3	89.67	292.0	4,931.4	993.3	689.3	303.96	3.268	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Mowery 19-2 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7035-UNKNOWN												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	76.12	236.8	958.4	987.3				
100.0	100.0	86.0	86.0	0.1	1.7	76.12	236.8	958.4	987.2	985.4	1.83	538.718	
200.0	200.0	186.0	186.0	0.3	3.7	76.12	236.8	958.4	987.2	983.2	4.06	243.323	
300.0	300.0	286.0	286.0	0.6	5.7	109.43	236.8	958.4	987.8	981.5	6.28	157.303	
400.0	399.8	385.8	385.8	0.8	7.7	109.68	236.8	958.4	989.6	981.1	8.50	116.361	
500.0	499.5	485.5	485.5	1.0	9.7	110.09	236.8	958.4	992.6	981.8	10.74	92.417	
600.0	598.7	584.7	584.7	1.3	11.7	110.67	236.8	958.4	996.8	983.8	12.99	76.720	
7,000.0	6,654.5	6,640.5	6,640.5	19.6	132.8	67.82	236.8	958.4	926.5	785.4	141.16	6.564	
7,100.0	6,670.5	6,656.5	6,656.5	21.2	133.1	81.39	236.8	958.4	841.4	689.1	152.31	5.524	
7,200.0	6,673.8	6,659.8	6,659.8	23.1	133.2	90.19	236.8	958.4	758.5	602.4	156.16	4.857	
7,300.0	6,673.6	6,659.6	6,659.6	25.1	133.2	90.16	236.8	958.4	680.1	522.0	158.11	4.302	
7,400.0	6,673.3	6,659.3	6,659.3	27.3	133.2	90.13	236.8	958.4	608.1	447.9	160.22	3.796	
7,500.0	6,673.1	6,659.1	6,659.1	29.5	133.2	90.10	236.8	958.4	545.0	382.6	162.44	3.355	
7,600.0	6,672.8	6,658.8	6,658.8	31.8	133.2	90.07	236.8	958.4	494.3	329.5	164.76	3.000	
7,700.0	6,672.6	6,658.6	6,658.6	34.2	133.2	90.04	236.8	958.4	460.0	292.8	167.15	2.752	
7,800.0	6,672.3	6,658.3	6,658.3	36.7	133.2	90.00	236.8	958.4	445.9	276.3	169.59	2.629	
7,813.8	6,672.3	6,658.3	6,658.3	37.0	133.2	90.00	236.8	958.4	445.7	275.7	169.94	2.622 CC, ES, SF	
7,900.0	6,672.1	6,658.1	6,658.1	39.2	133.2	89.97	236.8	958.4	453.9	281.8	172.09	2.638	
8,000.0	6,671.9	6,657.9	6,657.9	41.7	133.2	89.94	236.8	958.4	483.0	308.4	174.63	2.766	
8,100.0	6,671.6	6,657.6	6,657.6	44.3	133.2	89.91	236.8	958.4	529.6	352.5	177.19	2.989	
8,200.0	6,671.4	6,657.4	6,657.4	46.9	133.1	89.88	236.8	958.4	589.7	409.9	179.79	3.280	
8,300.0	6,671.1	6,657.1	6,657.1	49.5	133.1	89.85	236.8	958.4	659.6	477.1	182.41	3.616	
8,400.0	6,670.9	6,656.9	6,656.9	52.2	133.1	89.82	236.8	958.4	736.4	551.3	185.04	3.980	
8,500.0	6,670.6	6,656.6	6,656.6	54.8	133.1	89.78	236.8	958.4	818.2	630.5	187.70	4.359	
8,600.0	6,670.4	6,656.4	6,656.4	57.5	133.1	89.75	236.8	958.4	903.7	713.4	190.36	4.747	
8,700.0	6,670.2	6,656.2	6,656.2	60.2	133.1	89.72	236.8	958.4	992.0	798.9	193.04	5.139	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Mowery 5 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7012-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	24.65	24.65	783.3	359.4	862.8				
100.0	100.0	59.0	59.0	0.1	1.2	24.65	24.65	783.3	359.4	861.8	860.5	1.29	666.736	
200.0	200.0	159.0	159.0	0.3	3.2	24.65	24.65	783.3	359.4	861.8	858.3	3.52	245.017	
300.0	300.0	259.0	259.0	0.6	5.2	57.98	57.98	783.3	359.4	860.9	855.1	5.74	149.967	
400.0	399.8	358.8	358.8	0.8	7.2	58.33	58.33	783.3	359.4	858.1	850.2	7.96	107.744	
500.0	499.5	458.5	458.5	1.0	9.2	58.90	58.90	783.3	359.4	853.6	843.4	10.20	83.720	
600.0	598.7	557.7	557.7	1.3	11.2	59.71	59.71	783.3	359.4	847.3	834.9	12.44	68.109	
700.0	697.5	656.5	656.5	1.7	13.1	60.66	60.66	783.3	359.4	839.7	825.0	14.71	57.068	
800.0	796.3	755.3	755.3	2.0	15.1	61.60	61.60	783.3	359.4	832.1	815.0	17.01	48.913	
900.0	895.1	854.1	854.1	2.3	17.1	62.54	62.54	783.3	359.4	824.7	805.3	19.32	42.688	
1,000.0	993.8	952.8	952.8	2.7	19.1	63.51	63.51	783.3	359.4	817.5	795.9	21.63	37.788	
1,100.0	1,092.6	1,051.6	1,051.6	3.1	21.0	64.49	64.49	783.3	359.4	810.6	786.6	23.95	33.837	
1,200.0	1,191.4	1,150.4	1,150.4	3.4	23.0	65.48	65.48	783.3	359.4	803.9	777.6	26.28	30.587	
1,300.0	1,290.1	1,249.1	1,249.1	3.8	25.0	66.50	66.50	783.3	359.4	797.4	768.8	28.61	27.871	
1,400.0	1,388.9	1,347.9	1,347.9	4.1	27.0	67.52	67.52	783.3	359.4	791.3	760.3	30.95	25.568	
1,500.0	1,487.7	1,446.7	1,446.7	4.5	28.9	68.57	68.57	783.3	359.4	785.3	752.1	33.29	23.594	
1,600.0	1,586.4	1,545.4	1,545.4	4.9	30.9	69.63	69.63	783.3	359.4	779.7	744.1	35.63	21.885	
1,700.0	1,685.2	1,644.2	1,644.2	5.2	32.9	70.70	70.70	783.3	359.4	774.3	736.4	37.97	20.392	
1,800.0	1,784.0	1,743.0	1,743.0	5.6	34.9	71.79	71.79	783.3	359.4	769.2	728.9	40.32	19.079	
1,900.0	1,882.7	1,841.7	1,841.7	6.0	36.8	72.89	72.89	783.3	359.4	764.4	721.8	42.67	17.916	
2,000.0	1,981.5	1,940.5	1,940.5	6.3	38.8	74.01	74.01	783.3	359.4	759.9	714.9	45.02	16.880	
2,100.0	2,080.3	2,039.3	2,039.3	6.7	40.8	75.13	75.13	783.3	359.4	755.7	708.3	47.37	15.953	
2,200.0	2,179.1	2,138.1	2,138.1	7.1	42.8	76.27	76.27	783.3	359.4	751.8	702.1	49.73	15.119	
2,300.0	2,277.8	2,236.8	2,236.8	7.4	44.7	77.42	77.42	783.3	359.4	748.2	696.1	52.08	14.366	
2,400.0	2,376.6	2,335.6	2,335.6	7.8	46.7	78.58	78.58	783.3	359.4	744.9	690.5	54.44	13.684	
2,500.0	2,475.4	2,434.4	2,434.4	8.2	48.7	79.75	79.75	783.3	359.4	741.9	685.1	56.79	13.064	
2,600.0	2,574.1	2,533.1	2,533.1	8.5	50.7	80.93	80.93	783.3	359.4	739.3	680.1	59.15	12.499	
2,700.0	2,672.9	2,631.9	2,631.9	8.9	52.6	82.12	82.12	783.3	359.4	736.9	675.4	61.50	11.983	
2,800.0	2,771.7	2,730.7	2,730.7	9.3	54.6	83.31	83.31	783.3	359.4	734.9	671.1	63.85	11.510	
2,900.0	2,870.4	2,829.4	2,829.4	9.6	56.6	84.51	84.51	783.3	359.4	733.3	667.0	66.21	11.075	
3,000.0	2,969.2	2,928.2	2,928.2	10.0	58.6	85.72	85.72	783.3	359.4	731.9	663.4	68.56	10.676	
3,100.0	3,068.0	3,027.0	3,027.0	10.4	60.5	86.93	86.93	783.3	359.4	730.9	660.0	70.91	10.308	
3,200.0	3,166.7	3,125.7	3,125.7	10.7	62.5	88.14	88.14	783.3	359.4	730.2	657.0	73.25	9.969	
3,300.0	3,265.5	3,224.5	3,224.5	11.1	64.5	89.35	89.35	783.3	359.4	729.9	654.3	75.59	9.655	
3,353.4	3,318.2	3,277.2	3,277.2	11.3	65.5	90.00	90.00	783.3	359.4	729.8	653.0	76.85	9.497	
3,400.0	3,364.3	3,323.3	3,323.3	11.5	66.5	90.57	90.57	783.3	359.4	729.9	651.9	77.93	9.365	
3,500.0	3,463.0	3,422.0	3,422.0	11.8	68.4	91.78	91.78	783.3	359.4	730.2	649.9	80.27	9.096	
3,600.0	3,561.8	3,520.8	3,520.8	12.2	70.4	92.99	92.99	783.3	359.4	730.8	648.2	82.60	8.847	
3,700.0	3,660.6	3,619.6	3,619.6	12.6	72.4	94.20	94.20	783.3	359.4	731.8	646.9	84.93	8.617	
3,800.0	3,759.3	3,718.3	3,718.3	12.9	74.4	95.40	95.40	783.3	359.4	733.2	645.9	87.26	8.402	
3,900.0	3,858.1	3,817.1	3,817.1	13.3	76.3	96.60	96.60	783.3	359.4	734.8	645.2	89.58	8.203	
4,000.0	3,956.9	3,915.9	3,915.9	13.7	78.3	97.80	97.80	783.3	359.4	736.8	644.9	91.89	8.018	
4,100.0	4,055.6	4,014.6	4,014.6	14.0	80.3	98.99	98.99	783.3	359.4	739.1	644.9	94.20	7.846	
4,200.0	4,154.4	4,113.4	4,113.4	14.4	82.3	100.17	100.17	783.3	359.4	741.7	645.2	96.51	7.686	
4,300.0	4,253.2	4,212.2	4,212.2	14.8	84.2	101.34	101.34	783.3	359.4	744.7	645.9	98.80	7.537	
4,400.0	4,351.9	4,310.9	4,310.9	15.2	86.2	102.50	102.50	783.3	359.4	748.0	646.9	101.10	7.398	
4,500.0	4,450.7	4,409.7	4,409.7	15.5	88.2	103.65	103.65	783.3	359.4	751.6	648.2	103.39	7.269	
4,600.0	4,549.5	4,508.5	4,508.5	15.9	90.2	104.79	104.79	783.3	359.4	755.4	649.8	105.67	7.149	
4,700.0	4,648.2	4,607.2	4,607.2	16.3	92.1	105.92	105.92	783.3	359.4	759.6	651.7	107.95	7.037	
4,800.0	4,747.0	4,706.0	4,706.0	16.6	94.1	107.03	107.03	783.3	359.4	764.1	653.9	110.22	6.933	
4,900.0	4,845.8	4,804.8	4,804.8	17.0	96.1	108.14	108.14	783.3	359.4	768.9	656.4	112.48	6.836	

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 Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design		Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Mowery 5 (Exist) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft			
Survey Program: 7012-UNKNOWN														Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance										
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
5,000.0	4,944.6	4,903.6	4,903.6	17.4	98.1	109.23	783.3	359.4	774.0	659.2	114.74	6.745					
5,100.0	5,043.3	5,002.3	5,002.3	17.7	100.0	110.30	783.3	359.4	779.3	662.3	117.00	6.661					
5,200.0	5,142.1	5,101.1	5,101.1	18.1	102.0	111.36	783.3	359.4	784.9	665.7	119.25	6.582					
5,300.0	5,240.9	5,199.9	5,199.9	18.5	104.0	112.41	783.3	359.4	790.8	669.4	121.49	6.509					
5,400.0	5,339.6	5,298.6	5,298.6	18.8	106.0	113.43	783.3	359.4	797.0	673.3	123.73	6.441					
5,500.0	5,438.6	5,397.6	5,397.6	19.2	108.0	114.46	783.3	359.4	802.9	676.9	126.01	6.372					
5,600.0	5,538.0	5,497.0	5,497.0	19.4	109.9	115.24	783.3	359.4	807.5	679.2	128.23	6.297					
5,700.0	5,637.7	5,596.7	5,596.7	19.6	111.9	115.77	783.3	359.4	810.7	680.2	130.43	6.215					
5,800.0	5,737.6	5,696.6	5,696.6	19.7	113.9	116.05	783.3	359.4	812.4	679.8	132.59	6.127					
5,900.0	5,837.6	5,796.6	5,796.6	19.9	115.9	82.88	783.3	359.4	812.7	681.3	131.36	6.186					
6,000.0	5,937.6	5,896.6	5,896.6	20.0	117.9	-7.13	783.3	359.4	812.2	675.4	136.76	5.939					
6,100.0	6,037.0	5,996.0	5,996.0	20.1	119.9	-7.32	783.3	359.4	802.1	665.1	137.02	5.854					
6,200.0	6,134.3	6,093.3	6,093.3	20.1	121.9	-7.77	783.3	359.4	779.3	644.4	134.89	5.777					
6,300.0	6,227.7	6,186.7	6,186.7	20.0	123.7	-8.55	783.3	359.4	744.0	613.7	130.40	5.706					
6,400.0	6,315.6	6,274.6	6,274.6	19.9	125.5	-9.78	783.3	359.4	697.1	573.4	123.65	5.638					
6,500.0	6,396.6	6,355.6	6,355.6	19.7	127.1	-11.70	783.3	359.4	639.3	524.3	115.02	5.558					
6,600.0	6,469.3	6,428.3	6,428.3	19.6	128.6	-14.74	783.3	359.4	571.7	466.3	105.40	5.424					
6,700.0	6,532.5	6,491.5	6,491.5	19.5	129.8	-19.72	783.3	359.4	495.6	398.5	97.12	5.103					
6,800.0	6,584.9	6,543.9	6,543.9	19.3	130.9	-28.27	783.3	359.4	412.7	316.6	96.06	4.296					
6,900.0	6,625.9	6,584.9	6,584.9	19.2	131.7	-43.07	783.3	359.4	325.1	213.4	111.63	2.912					
7,000.0	6,654.5	6,613.5	6,613.5	19.6	132.3	-64.67	783.3	359.4	235.9	96.8	139.16	1.695					
7,100.0	6,670.5	6,629.5	6,629.5	21.2	132.6	-83.86	783.3	359.4	152.7	-0.5	153.12	0.997	Level 1				
7,200.0	6,673.8	6,632.8	6,632.8	23.1	132.7	-90.02	783.3	359.4	101.9	-53.7	155.61	0.655	Level 1				
7,214.8	6,673.8	6,632.8	6,632.8	23.4	132.7	-90.00	783.3	359.4	100.8	-55.1	155.90	0.647	Level 1, CC, ES, SF				
7,300.0	6,673.6	6,632.6	6,632.6	25.1	132.7	-89.88	783.3	359.4	132.0	-25.6	157.57	0.838	Level 1				
7,400.0	6,673.3	6,632.3	6,632.3	27.3	132.6	-89.74	783.3	359.4	210.9	51.2	159.68	1.321	Level 3				
7,500.0	6,673.1	6,632.1	6,632.1	29.5	132.6	-89.60	783.3	359.4	302.5	140.6	161.91	1.868					
7,600.0	6,672.8	6,631.8	6,631.8	31.8	132.6	-89.46	783.3	359.4	398.2	234.0	164.23	2.425					
7,700.0	6,672.6	6,631.6	6,631.6	34.2	132.6	-89.33	783.3	359.4	495.6	329.0	166.62	2.974					
7,800.0	6,672.3	6,631.3	6,631.3	36.7	132.6	-89.19	783.3	359.4	593.8	424.8	169.07	3.513					
7,900.0	6,672.1	6,631.1	6,631.1	39.2	132.6	-89.05	783.3	359.4	692.6	521.0	171.56	4.037					
8,000.0	6,671.9	6,630.9	6,630.9	41.7	132.6	-88.91	783.3	359.4	791.7	617.6	174.09	4.547					
8,100.0	6,671.6	6,630.6	6,630.6	44.3	132.6	-88.77	783.3	359.4	890.9	714.3	176.66	5.043					
8,200.0	6,671.4	6,630.4	6,630.4	46.9	132.6	-88.63	783.3	359.4	990.4	811.1	179.25	5.525					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7030-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-47.76		273.3	-300.9	407.3				
100.0	100.0	74.0	74.0	0.1	1.5	-47.76		273.3	-300.9	406.5	404.9	1.59	255.221	
200.0	200.0	174.0	174.0	0.3	3.5	-47.76		273.3	-300.9	406.5	402.6	3.82	106.477	
300.0	300.0	274.0	274.0	0.6	5.5	-14.60		273.3	-300.9	404.8	398.7	6.04	67.027	
400.0	399.8	373.8	373.8	0.8	7.5	-14.82		273.3	-300.9	399.7	391.5	8.25	48.462	
500.0	499.5	473.5	473.5	1.0	9.5	-15.19		273.3	-300.9	391.3	380.9	10.44	37.490	
600.0	598.7	572.7	572.7	1.3	11.5	-15.74		273.3	-300.9	379.5	366.9	12.60	30.120	
700.0	697.5	671.5	671.5	1.7	13.4	-16.42		273.3	-300.9	364.9	350.1	14.77	24.704	
800.0	796.3	770.3	770.3	2.0	15.4	-17.15		273.3	-300.9	349.9	332.9	16.98	20.612	
900.0	895.1	869.1	869.1	2.3	17.4	-17.94		273.3	-300.9	335.0	315.8	19.19	17.460	
1,000.0	993.8	967.8	967.8	2.7	19.4	-18.80		273.3	-300.9	320.1	298.7	21.40	14.958	
1,100.0	1,092.6	1,066.6	1,066.6	3.1	21.3	-19.74		273.3	-300.9	305.3	281.7	23.62	12.925	
1,200.0	1,191.4	1,165.4	1,165.4	3.4	23.3	-20.78		273.3	-300.9	290.6	264.8	25.85	11.244	
1,300.0	1,290.1	1,264.1	1,264.1	3.8	25.3	-21.93		273.3	-300.9	276.0	247.9	28.08	9.830	
1,400.0	1,388.9	1,362.9	1,362.9	4.1	27.3	-23.21		273.3	-300.9	261.5	231.2	30.32	8.626	
1,500.0	1,487.7	1,461.7	1,461.7	4.5	29.2	-24.64		273.3	-300.9	247.2	214.6	32.57	7.590	
1,600.0	1,586.4	1,560.4	1,560.4	4.9	31.2	-26.24		273.3	-300.9	233.0	198.2	34.83	6.691	
1,700.0	1,685.2	1,659.2	1,659.2	5.2	33.2	-28.04		273.3	-300.9	219.1	182.0	37.10	5.905	
1,800.0	1,784.0	1,758.0	1,758.0	5.6	35.2	-30.09		273.3	-300.9	205.3	165.9	39.39	5.213	
1,900.0	1,882.7	1,856.7	1,856.7	6.0	37.1	-32.43		273.3	-300.9	191.9	150.2	41.70	4.602	
2,000.0	1,981.5	1,955.5	1,955.5	6.3	39.1	-35.11		273.3	-300.9	178.8	134.8	44.04	4.061	
2,100.0	2,080.3	2,054.3	2,054.3	6.7	41.1	-38.19		273.3	-300.9	166.2	119.8	46.40	3.582	
2,200.0	2,179.1	2,153.1	2,153.1	7.1	43.1	-41.77		273.3	-300.9	154.2	105.4	48.81	3.159	
2,300.0	2,277.8	2,251.8	2,251.8	7.4	45.0	-45.93		273.3	-300.9	142.8	91.6	51.26	2.786	
2,400.0	2,376.6	2,350.6	2,350.6	7.8	47.0	-50.77		273.3	-300.9	132.3	78.6	53.76	2.462	
2,500.0	2,475.4	2,449.4	2,449.4	8.2	49.0	-56.38		273.3	-300.9	123.0	66.7	56.30	2.184	
2,600.0	2,574.1	2,548.1	2,548.1	8.5	51.0	-62.83		273.3	-300.9	114.9	56.1	58.88	1.952	
2,700.0	2,672.9	2,646.9	2,646.9	8.9	52.9	-70.11		273.3	-300.9	108.6	47.2	61.47	1.767	
2,800.0	2,771.7	2,745.7	2,745.7	9.3	54.9	-78.13		273.3	-300.9	104.3	40.3	64.03	1.629	
2,900.0	2,870.4	2,844.4	2,844.4	9.6	56.9	-86.64		273.3	-300.9	102.2	35.7	66.50	1.536	
2,938.7	2,908.7	2,882.7	2,882.7	9.8	57.7	-90.00		273.3	-300.9	102.0	34.6	67.43	1.513 CC	
3,000.0	2,969.2	2,943.2	2,943.2	10.0	58.9	-95.31		273.3	-300.9	102.4	33.6	68.85	1.488 Level 3, ES	
3,100.0	3,068.0	3,042.0	3,042.0	10.4	60.8	-103.73		273.3	-300.9	105.1	34.0	71.06	1.479 Level 3, SF	
3,200.0	3,166.7	3,140.7	3,140.7	10.7	62.8	-111.60		273.3	-300.9	109.9	36.8	73.14	1.502	
3,300.0	3,265.5	3,239.5	3,239.5	11.1	64.8	-118.70		273.3	-300.9	116.6	41.5	75.14	1.552	
3,400.0	3,364.3	3,338.3	3,338.3	11.5	66.8	-124.96		273.3	-300.9	125.0	47.9	77.09	1.621	
3,500.0	3,463.0	3,437.0	3,437.0	11.8	68.7	-130.38		273.3	-300.9	134.6	55.6	79.03	1.703	
3,600.0	3,561.8	3,535.8	3,535.8	12.2	70.7	-135.06		273.3	-300.9	145.3	64.3	80.97	1.794	
3,700.0	3,660.6	3,634.6	3,634.6	12.6	72.7	-139.08		273.3	-300.9	156.8	73.9	82.94	1.891	
3,800.0	3,759.3	3,733.3	3,733.3	12.9	74.7	-142.54		273.3	-300.9	169.0	84.1	84.93	1.990	
3,900.0	3,858.1	3,832.1	3,832.1	13.3	76.6	-145.53		273.3	-300.9	181.8	94.8	86.95	2.090	
4,000.0	3,956.9	3,930.9	3,930.9	13.7	78.6	-148.13		273.3	-300.9	194.9	105.9	88.98	2.190	
4,100.0	4,055.6	4,029.6	4,029.6	14.0	80.6	-150.39		273.3	-300.9	208.4	117.4	91.04	2.289	
4,200.0	4,154.4	4,128.4	4,128.4	14.4	82.6	-152.38		273.3	-300.9	222.2	129.1	93.12	2.386	
4,300.0	4,253.2	4,227.2	4,227.2	14.8	84.5	-154.14		273.3	-300.9	236.2	141.0	95.21	2.481	
4,400.0	4,351.9	4,325.9	4,325.9	15.2	86.5	-155.70		273.3	-300.9	250.4	153.1	97.32	2.573	
4,500.0	4,450.7	4,424.7	4,424.7	15.5	88.5	-157.09		273.3	-300.9	264.8	165.3	99.43	2.663	
4,600.0	4,549.5	4,523.5	4,523.5	15.9	90.5	-158.34		273.3	-300.9	279.3	177.7	101.56	2.750	
4,700.0	4,648.2	4,622.2	4,622.2	16.3	92.4	-159.46		273.3	-300.9	293.9	190.2	103.70	2.834	
4,800.0	4,747.0	4,721.0	4,721.0	16.6	94.4	-160.48		273.3	-300.9	308.6	202.8	105.84	2.916	
4,900.0	4,845.8	4,819.8	4,819.8	17.0	96.4	-161.40		273.3	-300.9	323.4	215.5	107.99	2.995	

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 Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design		Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Phil Wilson 19-1 (Exist) - Wellbore #1 - Wellbore										Offset Site Error:		0.0 ft	
Survey Program: 7030-UNKNOWN												Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,000.0	4,944.6	4,918.6	4,918.6	17.4	98.4	-162.25	273.3	-300.9	338.3	228.2	110.14	3.072			
5,100.0	5,043.3	5,017.3	5,017.3	17.7	100.3	-163.02	273.3	-300.9	353.3	241.0	112.30	3.146			
5,200.0	5,142.1	5,116.1	5,116.1	18.1	102.3	-163.73	273.3	-300.9	368.3	253.8	114.47	3.217			
5,300.0	5,240.9	5,214.9	5,214.9	18.5	104.3	-164.39	273.3	-300.9	383.4	266.7	116.63	3.287			
5,400.0	5,339.6	5,313.6	5,313.6	18.8	106.3	-164.99	273.3	-300.9	398.5	279.7	118.80	3.354			
5,500.0	5,438.6	5,412.6	5,412.6	19.2	108.3	-165.57	273.3	-300.9	412.3	290.9	121.39	3.397			
5,600.0	5,538.0	5,512.0	5,512.0	19.4	110.2	-165.99	273.3	-300.9	422.9	299.0	123.90	3.413			
5,700.0	5,637.7	5,611.7	5,611.7	19.6	112.2	-166.26	273.3	-300.9	430.1	303.8	126.29	3.405			
5,800.0	5,737.6	5,711.6	5,711.6	19.7	114.2	-166.40	273.3	-300.9	433.9	305.3	128.54	3.375			
5,900.0	5,837.6	5,811.6	5,811.6	19.9	116.2	-160.35	273.3	-300.9	434.5	298.8	135.77	3.201			
6,000.0	5,937.6	5,911.6	5,911.6	20.0	118.2	-70.43	273.3	-300.9	434.4	301.5	132.86	3.269			
6,100.0	6,037.0	6,011.0	6,011.0	20.1	120.2	-71.92	273.3	-300.9	431.1	296.2	134.85	3.197			
6,200.0	6,134.3	6,108.3	6,108.3	20.1	122.2	-75.29	273.3	-300.9	424.4	287.5	136.87	3.101			
6,300.0	6,227.7	6,201.7	6,201.7	20.0	124.0	-80.30	273.3	-300.9	416.4	277.2	139.18	2.992			
6,400.0	6,315.6	6,289.6	6,289.6	19.9	125.8	-86.51	273.3	-300.9	410.3	268.6	141.69	2.896			
6,452.7	6,359.2	6,333.2	6,333.2	19.8	126.7	-90.00	273.3	-300.9	409.2	266.3	142.92	2.863			
6,500.0	6,396.6	6,370.6	6,370.6	19.7	127.4	-93.13	273.3	-300.9	410.3	266.5	143.81	2.853			
6,600.0	6,469.3	6,443.3	6,443.3	19.6	128.9	-99.22	273.3	-300.9	420.7	275.9	144.84	2.905			
6,700.0	6,532.5	6,506.5	6,506.5	19.5	130.1	-103.92	273.3	-300.9	445.1	300.3	144.79	3.074			
6,800.0	6,584.9	6,558.9	6,558.9	19.3	131.2	-106.57	273.3	-300.9	484.9	340.3	144.55	3.355			
6,900.0	6,625.9	6,599.9	6,599.9	19.2	132.0	-106.67	273.3	-300.9	539.3	393.8	145.51	3.706			
7,000.0	6,654.5	6,628.5	6,628.5	19.6	132.6	-103.73	273.3	-300.9	606.0	457.4	148.61	4.078			
7,100.0	6,670.5	6,644.5	6,644.5	21.2	132.9	-97.18	273.3	-300.9	682.1	528.9	153.14	4.454			
7,200.0	6,673.8	6,647.8	6,647.8	23.1	133.0	-89.78	273.3	-300.9	764.3	608.4	155.90	4.903			
7,300.0	6,673.6	6,647.6	6,647.6	25.1	133.0	-89.74	273.3	-300.9	850.5	692.6	157.86	5.388			
7,400.0	6,673.3	6,647.3	6,647.3	27.3	132.9	-89.71	273.3	-300.9	939.4	779.4	159.96	5.872			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad Sec.19-T5N-R64W - Schneider 19P-432 - Wellbore #1 - Plan #1 (2-18-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+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	89.95	0.0	30.6	30.6					
100.0	100.0	100.0	100.0	0.1	0.1	89.95	0.0	30.6	30.6	30.4	0.22	136.352		
200.0	200.0	200.0	200.0	0.3	0.3	89.95	0.0	30.6	30.6	30.0	0.67	45.451 CC		
300.0	300.0	300.0	300.0	0.6	0.6	125.81	0.0	30.6	31.6	30.5	1.12	28.136		
400.0	399.8	399.8	399.8	0.8	0.8	132.73	0.0	30.6	35.0	33.4	1.58	22.111		
500.0	499.5	499.5	499.5	1.0	1.0	141.53	0.0	30.6	41.4	39.3	2.05	20.213		
600.0	598.7	598.7	598.7	1.3	1.2	149.88	0.0	30.6	51.5	49.0	2.52	20.456		
700.0	697.5	697.5	697.5	1.7	1.5	156.55	0.0	30.6	65.1	62.1	2.98	21.839		
800.0	796.3	796.3	796.3	2.0	1.7	161.02	0.0	30.6	79.8	76.3	3.44	23.175		
900.0	895.1	895.1	895.1	2.3	1.9	164.10	0.0	30.6	94.7	90.8	3.90	24.277		
1,000.0	993.8	993.8	993.8	2.7	2.1	166.33	0.0	30.6	109.9	105.5	4.36	25.184		
1,100.0	1,092.6	1,096.8	1,096.8	3.1	2.4	168.03	1.3	29.6	123.6	118.7	4.83	25.607		
1,200.0	1,191.4	1,200.9	1,200.7	3.4	2.6	169.28	5.4	26.1	133.8	128.5	5.29	25.294		
1,300.0	1,290.1	1,305.7	1,305.1	3.8	2.8	170.29	12.5	20.1	140.4	134.7	5.76	24.373		
1,400.0	1,388.9	1,409.3	1,407.9	4.1	3.1	171.14	22.2	11.9	143.6	137.3	6.24	23.021		
1,500.0	1,487.7	1,509.2	1,507.0	4.5	3.3	171.93	32.3	3.3	145.9	139.2	6.71	21.737		
1,600.0	1,586.4	1,609.2	1,606.0	4.9	3.6	172.69	42.4	-5.2	148.2	141.0	7.19	20.619		
1,700.0	1,685.2	1,709.1	1,705.1	5.2	3.9	173.42	52.4	-13.7	150.5	142.8	7.67	19.636		
1,800.0	1,784.0	1,809.1	1,804.2	5.6	4.2	174.13	62.5	-22.3	152.9	144.7	8.14	18.769		
1,900.0	1,882.7	1,909.0	1,903.3	6.0	4.5	174.82	72.6	-30.8	155.3	146.6	8.63	17.997		
2,000.0	1,981.5	2,009.0	2,002.3	6.3	4.8	175.49	82.7	-39.4	157.7	148.5	9.11	17.305		
2,100.0	2,080.3	2,108.9	2,101.4	6.7	5.1	176.14	92.8	-47.9	160.1	150.5	9.60	16.682		
2,200.0	2,179.1	2,208.9	2,200.5	7.1	5.4	176.77	102.9	-56.4	162.5	152.4	10.08	16.119		
2,300.0	2,277.8	2,308.8	2,299.6	7.4	5.7	177.38	113.0	-65.0	165.0	154.4	10.57	15.607		
2,400.0	2,376.6	2,408.8	2,398.7	7.8	6.0	177.97	123.1	-73.5	167.5	156.4	11.06	15.140		
2,500.0	2,475.4	2,508.8	2,497.7	8.2	6.4	178.55	133.2	-82.1	170.0	158.4	11.55	14.711		
2,600.0	2,574.1	2,608.7	2,596.8	8.5	6.7	179.11	143.2	-90.6	172.5	160.4	12.05	14.318		
2,700.0	2,672.9	2,708.7	2,695.9	8.9	7.0	179.65	153.3	-99.2	175.0	162.5	12.54	13.955		
2,800.0	2,771.7	2,808.6	2,795.0	9.3	7.3	-179.82	163.4	-107.7	177.6	164.5	13.04	13.619		
2,900.0	2,870.4	2,908.6	2,894.0	9.6	7.6	-179.31	173.5	-116.2	180.1	166.6	13.54	13.307		
3,000.0	2,969.2	3,008.5	2,993.1	10.0	8.0	-178.81	183.6	-124.8	182.7	168.7	14.04	13.017		
3,100.0	3,068.0	3,108.5	3,092.2	10.4	8.3	-178.33	193.7	-133.3	185.3	170.8	14.54	12.746		
3,200.0	3,166.7	3,208.4	3,191.3	10.7	8.6	-177.86	203.8	-141.9	187.9	172.9	15.04	12.493		
3,300.0	3,265.5	3,308.4	3,290.3	11.1	8.9	-177.40	213.9	-150.4	190.5	175.0	15.54	12.256		
3,400.0	3,364.3	3,408.3	3,389.4	11.5	9.3	-176.95	223.9	-158.9	193.1	177.1	16.05	12.033		
3,500.0	3,463.0	3,508.3	3,488.5	11.8	9.6	-176.52	234.0	-167.5	195.8	179.2	16.56	11.824		
3,600.0	3,561.8	3,608.3	3,587.6	12.2	9.9	-176.10	244.1	-176.0	198.4	181.4	17.07	11.627		
3,700.0	3,660.6	3,708.2	3,686.6	12.6	10.2	-175.69	254.2	-184.6	201.1	183.5	17.58	11.441		
3,800.0	3,759.3	3,808.2	3,785.7	12.9	10.6	-175.29	264.3	-193.1	203.8	185.7	18.09	11.265		
3,900.0	3,858.1	3,908.1	3,884.8	13.3	10.9	-174.90	274.4	-201.6	206.4	187.8	18.60	11.098		
4,000.0	3,956.9	4,008.1	3,983.9	13.7	11.2	-174.52	284.5	-210.2	209.1	190.0	19.12	10.940		
4,100.0	4,055.6	4,108.0	4,083.0	14.0	11.6	-174.15	294.6	-218.7	211.8	192.2	19.63	10.790		
4,200.0	4,154.4	4,208.0	4,182.0	14.4	11.9	-173.79	304.7	-227.3	214.5	194.4	20.15	10.647		
4,300.0	4,253.2	4,307.9	4,281.1	14.8	12.2	-173.44	314.7	-235.8	217.2	196.6	20.67	10.512		
4,400.0	4,351.9	4,407.9	4,380.2	15.2	12.5	-173.09	324.8	-244.4	220.0	198.8	21.19	10.382		
4,500.0	4,450.7	4,507.8	4,479.3	15.5	12.9	-172.76	334.9	-252.9	222.7	201.0	21.71	10.259		
4,600.0	4,549.5	4,607.8	4,578.3	15.9	13.2	-172.43	345.0	-261.4	225.4	203.2	22.23	10.141		
4,700.0	4,648.2	4,707.8	4,677.4	16.3	13.5	-172.11	355.1	-270.0	228.2	205.4	22.75	10.028		
4,800.0	4,747.0	4,807.7	4,776.5	16.6	13.9	-171.80	365.2	-278.5	230.9	207.6	23.28	9.921		
4,900.0	4,845.8	4,907.7	4,875.6	17.0	14.2	-171.50	375.3	-287.1	233.7	209.9	23.80	9.817		
5,000.0	4,944.6	5,007.6	4,974.6	17.4	14.5	-171.20	385.4	-295.6	236.4	212.1	24.33	9.719		

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 Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad Sec.19-T5N-R64W - Schneider 19P-432 - Wellbore #1 - Plan #1 (2-18-14)													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	
5,100.0	5,043.3	5,107.6	5,073.7	17.7	14.9	-170.91	395.4	-304.1	239.2	214.4	24.86	9.624		
5,200.0	5,142.1	5,207.5	5,172.8	18.1	15.2	-170.63	405.5	-312.7	242.0	216.6	25.39	9.532		
5,300.0	5,240.9	5,307.5	5,271.9	18.5	15.5	-170.35	415.6	-321.2	244.8	218.9	25.92	9.445		
5,400.0	5,339.6	5,407.4	5,370.9	18.8	15.8	-170.08	425.7	-329.8	247.6	221.1	26.45	9.361		
5,500.0	5,438.6	5,500.0	5,462.7	19.2	16.1	-169.82	434.8	-337.5	249.4	222.5	26.93	9.263		
5,600.0	5,538.0	5,595.9	5,558.2	19.4	16.4	-169.59	442.2	-343.7	250.5	223.2	27.30	9.177		
5,700.0	5,637.7	5,688.2	5,650.2	19.6	16.5	-169.44	447.0	-347.8	251.3	223.7	27.61	9.102		
5,800.0	5,737.6	5,780.5	5,742.4	19.7	16.7	-169.36	449.6	-350.0	251.7	223.8	27.87	9.031		
5,900.0	5,837.6	5,875.7	5,837.6	19.9	16.8	-157.43	450.0	-350.4	251.8	215.6	36.13	6.968		
6,000.0	5,937.6	5,975.7	5,937.6	20.0	17.0	67.54	450.0	-350.4	251.6	223.1	28.50	8.826		
6,100.0	6,037.0	6,075.1	6,037.0	20.1	17.2	69.96	450.0	-350.4	247.9	218.9	28.94	8.566		
6,200.0	6,134.3	6,166.7	6,128.6	20.1	17.3	74.48	450.0	-347.5	241.7	212.1	29.61	8.161		
6,300.0	6,227.7	6,257.7	6,218.6	20.0	17.3	79.44	450.0	-334.3	236.7	206.3	30.38	7.792		
6,400.0	6,315.6	6,351.1	6,308.6	19.9	17.4	84.78	450.0	-309.7	233.5	202.3	31.18	7.488		
6,493.7	6,391.8	6,440.9	6,391.8	19.8	17.3	90.00	450.0	-275.9	232.5	200.6	31.89	7.289		
6,500.0	6,396.6	6,447.1	6,397.3	19.7	17.3	90.36	450.0	-273.2	232.5	200.5	31.94	7.280		
6,600.0	6,469.3	6,546.0	6,483.2	19.6	17.2	95.99	450.0	-224.3	233.8	201.3	32.57	7.179		
6,700.0	6,532.5	6,648.1	6,564.4	19.5	17.2	101.51	450.0	-162.6	237.5	204.4	33.11	7.174		
6,800.0	6,584.9	6,753.7	6,639.1	19.3	17.1	106.73	450.0	-87.9	243.3	209.6	33.66	7.229		
6,900.0	6,625.9	6,863.2	6,704.8	19.2	17.1	111.53	450.0	-0.5	250.7	216.3	34.43	7.282		
7,000.0	6,654.5	6,976.5	6,758.9	19.6	17.6	115.78	450.0	98.9	259.2	223.5	35.65	7.271		
7,100.0	6,670.5	7,093.8	6,798.8	21.2	19.0	119.44	450.0	209.1	268.0	230.5	37.48	7.150		
7,200.0	6,673.8	7,215.0	6,821.9	23.1	21.0	122.49	450.0	327.9	276.1	236.2	39.93	6.916		
7,300.0	6,673.6	7,318.9	6,832.6	25.1	22.9	124.36	450.0	431.3	282.0	239.3	42.60	6.618		
7,400.0	6,673.3	7,431.9	6,836.6	27.3	25.3	125.08	450.0	544.2	284.1	238.1	45.97	6.180		
7,500.0	6,673.1	7,531.9	6,836.9	29.5	27.4	125.17	450.0	644.2	284.4	234.8	49.55	5.740		
7,600.0	6,672.8	7,631.9	6,837.2	31.8	29.7	125.26	450.0	744.2	284.7	231.4	53.28	5.343		
7,700.0	6,672.6	7,731.9	6,837.5	34.2	32.1	125.34	450.0	844.2	285.0	227.9	57.14	4.987		
7,800.0	6,672.3	7,831.9	6,837.7	36.7	34.5	125.43	450.0	944.2	285.3	224.2	61.10	4.669		
7,900.0	6,672.1	7,931.9	6,838.0	39.2	37.0	125.51	450.0	1,044.2	285.6	220.5	65.14	4.384		
8,000.0	6,671.9	8,031.9	6,838.3	41.7	39.5	125.60	450.0	1,144.2	285.9	216.7	69.25	4.129		
8,100.0	6,671.6	8,131.9	6,838.6	44.3	42.1	125.68	450.0	1,244.2	286.2	212.8	73.40	3.899		
8,200.0	6,671.4	8,231.9	6,838.9	46.9	44.6	125.77	450.0	1,344.2	286.5	208.9	77.60	3.692		
8,300.0	6,671.1	8,331.9	6,839.1	49.5	47.3	125.85	450.0	1,444.2	286.8	205.0	81.83	3.505		
8,400.0	6,670.9	8,431.9	6,839.4	52.2	49.9	125.94	450.0	1,544.2	287.1	201.1	86.08	3.336		
8,500.0	6,670.6	8,531.9	6,839.7	54.8	52.5	126.02	450.0	1,644.2	287.4	197.1	90.36	3.181		
8,600.0	6,670.4	8,631.9	6,840.0	57.5	55.2	126.11	450.0	1,744.2	287.8	193.1	94.66	3.040		
8,700.0	6,670.2	8,731.9	6,840.2	60.2	57.9	126.19	450.0	1,844.1	288.1	189.1	98.97	2.911		
8,800.0	6,669.9	8,831.9	6,840.5	62.9	60.6	126.28	450.0	1,944.1	288.4	185.1	103.29	2.792		
8,900.0	6,669.7	8,931.9	6,840.8	65.6	63.3	126.36	450.0	2,044.1	288.7	181.1	107.62	2.682		
9,000.0	6,669.4	9,031.9	6,841.1	68.3	66.0	126.44	450.0	2,144.1	289.0	177.0	111.96	2.581		
9,100.0	6,669.2	9,131.9	6,841.4	71.0	68.7	126.53	450.0	2,244.1	289.3	173.0	116.30	2.487		
9,200.0	6,668.9	9,231.9	6,841.6	73.7	71.4	126.61	450.0	2,344.1	289.6	169.0	120.65	2.400		
9,300.0	6,668.7	9,331.9	6,841.9	76.4	74.2	126.69	450.0	2,444.1	289.9	164.9	125.00	2.319		
9,400.0	6,668.4	9,431.9	6,842.2	79.2	76.9	126.78	450.0	2,544.1	290.2	160.9	129.35	2.244		
9,500.0	6,668.2	9,531.9	6,842.5	81.9	79.6	126.86	450.0	2,644.1	290.6	156.9	133.69	2.173		
9,600.0	6,668.0	9,631.9	6,842.8	84.7	82.4	126.94	450.0	2,744.1	290.9	152.8	138.04	2.107		
9,700.0	6,667.7	9,731.9	6,843.0	87.4	85.1	127.02	450.0	2,844.1	291.2	148.8	142.39	2.045		
9,800.0	6,667.5	9,831.9	6,843.3	90.2	87.9	127.11	450.0	2,944.1	291.5	144.8	146.73	1.987		
9,900.0	6,667.2	9,931.9	6,843.6	92.9	90.6	127.19	450.0	3,044.1	291.8	140.7	151.08	1.932		
10,000.0	6,667.0	10,031.9	6,843.9	95.7	93.4	127.27	450.0	3,144.1	292.1	136.7	155.41	1.880		

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 Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad Sec.19-T5N-R64W - Schneider 19P-432 - Wellbore #1 - Plan #1 (2-18-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,666.7	10,131.9	6,844.2	98.4	96.2	127.35	127.35	450.0	3,244.1	292.4	132.7	159.75	1.831	
10,200.0	6,666.5	10,231.9	6,844.4	101.2	98.9	127.43	127.43	450.0	3,344.1	292.8	128.7	164.08	1.784	
10,300.0	6,666.2	10,331.9	6,844.7	104.0	101.7	127.51	127.51	450.0	3,444.1	293.1	124.7	168.40	1.740	
10,400.0	6,666.0	10,431.9	6,845.0	106.7	104.5	127.59	127.59	450.0	3,544.1	293.4	120.7	172.72	1.699	
10,500.0	6,665.8	10,531.9	6,845.3	109.5	107.2	127.68	127.68	450.0	3,644.1	293.7	116.7	177.04	1.659	
10,600.0	6,665.5	10,631.9	6,845.6	112.3	110.0	127.76	127.76	450.0	3,744.1	294.0	112.7	181.35	1.621	
10,700.0	6,665.3	10,731.9	6,845.8	115.0	112.8	127.84	127.84	450.0	3,844.1	294.4	108.7	185.65	1.586	
10,800.0	6,665.0	10,831.8	6,846.1	117.8	115.6	127.92	127.92	450.0	3,944.1	294.7	104.7	189.95	1.551	
10,900.0	6,664.8	10,931.8	6,846.4	120.6	118.3	128.00	128.00	450.0	4,044.1	295.0	100.8	194.24	1.519	
11,000.0	6,664.5	11,031.8	6,846.7	123.4	121.1	128.08	128.08	450.0	4,144.1	295.3	96.8	198.53	1.488 Level 3	
11,100.0	6,664.3	11,131.8	6,846.9	126.2	123.9	128.16	128.16	450.0	4,244.1	295.7	92.8	202.81	1.458 Level 3	
11,200.0	6,664.0	11,231.8	6,847.2	128.9	126.7	128.24	128.24	450.0	4,344.1	296.0	88.9	207.08	1.429 Level 3	
11,300.0	6,663.8	11,331.8	6,847.5	131.7	129.5	128.32	128.32	450.0	4,444.1	296.3	85.0	211.35	1.402 Level 3	
11,400.0	6,663.6	11,431.8	6,847.8	134.5	132.3	128.40	128.40	450.0	4,544.1	296.6	81.0	215.61	1.376 Level 3	
11,500.0	6,663.3	11,531.8	6,848.1	137.3	135.0	128.48	128.48	450.0	4,644.1	297.0	77.1	219.86	1.351 Level 3	
11,600.0	6,663.1	11,631.8	6,848.3	140.1	137.8	128.55	128.55	450.0	4,744.1	297.3	73.2	224.11	1.326 Level 3	
11,700.0	6,662.8	11,731.8	6,848.6	142.9	140.6	128.63	128.63	450.0	4,844.1	297.6	69.3	228.35	1.303 Level 3	
11,800.0	6,662.6	11,831.8	6,848.9	145.6	143.4	128.71	128.71	450.0	4,944.1	297.9	65.4	232.58	1.281 Level 3	
11,900.0	6,662.3	11,931.8	6,849.2	148.4	146.2	128.79	128.79	450.0	5,044.1	298.3	61.5	236.80	1.260 Level 3	
12,000.0	6,662.1	12,031.8	6,849.5	151.2	149.0	128.87	128.87	450.0	5,144.1	298.6	57.6	241.02	1.239 Level 2	
12,100.0	6,661.8	12,131.8	6,849.7	154.0	151.8	128.95	128.95	450.0	5,244.1	298.9	53.7	245.23	1.219 Level 2	
12,200.0	6,661.6	12,231.8	6,850.0	156.8	154.6	129.02	129.02	450.0	5,344.1	299.2	49.8	249.43	1.200 Level 2	
12,300.0	6,661.4	12,331.8	6,850.3	159.6	157.4	129.10	129.10	450.0	5,444.1	299.6	46.0	253.63	1.181 Level 2	
12,400.0	6,661.1	12,431.8	6,850.6	162.4	160.2	129.18	129.18	450.0	5,544.1	299.9	42.1	257.81	1.163 Level 2	
12,500.0	6,660.9	12,531.8	6,850.9	165.2	162.9	129.26	129.26	450.0	5,644.1	300.2	38.2	261.99	1.146 Level 2	
12,600.0	6,660.6	12,631.8	6,851.1	168.0	165.7	129.33	129.33	450.0	5,744.1	300.6	34.4	266.17	1.129 Level 2	
12,700.0	6,660.4	12,731.8	6,851.4	170.8	168.5	129.41	129.41	450.0	5,844.1	300.9	30.6	270.33	1.113 Level 2	
12,800.0	6,660.1	12,831.8	6,851.7	173.5	171.3	129.49	129.49	450.0	5,944.1	301.2	26.7	274.49	1.097 Level 2	
12,900.0	6,659.9	12,931.8	6,852.0	176.3	174.1	129.57	129.57	450.0	6,044.1	301.6	22.9	278.64	1.082 Level 2	
13,000.0	6,659.6	13,031.8	6,852.3	179.1	176.9	129.64	129.64	450.0	6,144.1	301.9	19.1	282.78	1.068 Level 2	
13,100.0	6,659.4	13,131.8	6,852.5	181.9	179.7	129.72	129.72	450.0	6,244.1	302.2	15.3	286.91	1.053 Level 2	
13,200.0	6,659.2	13,231.8	6,852.8	184.7	182.5	129.80	129.80	450.0	6,344.1	302.6	11.5	291.04	1.040 Level 2	
13,263.2	6,659.0	13,295.1	6,853.0	186.5	184.3	129.84	129.84	450.0	6,407.3	302.8	9.1	293.64	1.031 Level 2, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad Sec.19-T5N-R64W - Schneider 19Q-312 - Wellbore #1 - Plan #1 (2-18-14)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	89.99	0.0	89.2	89.2	89.2	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	89.99	0.0	89.2	89.2	88.9	0.23	392.732	
200.0	200.0	201.0	201.0	0.3	0.3	89.99	0.0	89.2	89.2	88.5	0.68	131.780 CC, ES	
300.0	300.0	301.0	301.0	0.6	0.6	124.12	0.0	89.2	90.1	89.0	1.13	80.007	
400.0	399.8	400.8	400.8	0.8	0.8	126.74	0.0	89.2	93.2	91.6	1.58	58.886	
500.0	499.5	500.5	500.5	1.0	1.0	130.71	0.0	89.2	98.6	96.6	2.05	48.118	
600.0	598.7	599.7	599.7	1.3	1.2	135.52	0.0	89.2	107.0	104.5	2.53	42.279	
700.0	697.5	698.5	698.5	1.7	1.5	140.60	0.0	89.2	118.4	115.4	3.02	39.241	
800.0	796.3	797.3	797.3	2.0	1.7	144.93	0.0	89.2	130.9	127.4	3.50	37.435	
900.0	895.1	896.1	896.1	2.3	1.9	148.50	0.0	89.2	144.0	140.1	3.97	36.262	
1,000.0	993.8	994.8	994.8	2.7	2.1	151.46	0.0	89.2	157.6	153.2	4.44	35.472	
1,100.0	1,092.6	1,093.6	1,093.6	3.1	2.3	153.95	0.0	89.2	171.6	166.7	4.91	34.925	
1,200.0	1,191.4	1,192.4	1,192.4	3.4	2.6	156.07	0.0	89.2	185.8	180.4	5.38	34.535	
1,300.0	1,290.1	1,291.1	1,291.1	3.8	2.8	157.88	0.0	89.2	200.2	194.4	5.85	34.251	
1,400.0	1,388.9	1,389.9	1,389.9	4.1	3.0	159.45	0.0	89.2	214.8	208.5	6.31	34.040	
1,500.0	1,487.7	1,488.7	1,488.7	4.5	3.2	160.82	0.0	89.2	229.6	222.8	6.78	33.879	
1,600.0	1,586.4	1,587.4	1,587.4	4.9	3.5	162.02	0.0	89.2	244.4	237.2	7.24	33.756	
1,700.0	1,685.2	1,686.2	1,686.2	5.2	3.7	163.09	0.0	89.2	259.4	251.7	7.71	33.660	
1,800.0	1,784.0	1,785.0	1,785.0	5.6	3.9	164.04	0.0	89.2	274.4	266.2	8.17	33.584	
1,900.0	1,882.7	1,883.7	1,883.7	6.0	4.1	164.89	0.0	89.2	289.5	280.9	8.64	33.523	
2,000.0	1,981.5	1,982.5	1,982.5	6.3	4.3	165.66	0.0	89.2	304.7	295.6	9.10	33.474	
2,100.0	2,080.3	2,090.2	2,090.1	6.7	4.6	166.53	0.4	87.8	318.7	309.1	9.57	33.293	
2,200.0	2,179.1	2,200.4	2,200.2	7.1	4.8	167.69	1.9	82.4	329.6	319.5	10.04	32.840	
2,300.0	2,277.8	2,300.7	2,300.2	7.4	5.0	168.86	3.8	75.3	338.6	328.1	10.48	32.303	
2,400.0	2,376.6	2,400.0	2,399.3	7.8	5.2	169.97	5.8	68.3	347.7	336.8	10.93	31.808	
2,500.0	2,475.4	2,499.4	2,498.4	8.2	5.5	171.01	7.7	61.3	357.0	345.6	11.39	31.353	
2,600.0	2,574.1	2,598.8	2,597.5	8.5	5.7	172.01	9.6	54.3	366.4	354.5	11.84	30.933	
2,700.0	2,672.9	2,698.1	2,696.6	8.9	5.9	172.95	11.6	47.3	375.8	363.5	12.30	30.545	
2,800.0	2,771.7	2,797.5	2,795.7	9.3	6.2	173.85	13.5	40.3	385.4	372.7	12.77	30.184	
2,900.0	2,870.4	2,896.9	2,894.8	9.6	6.4	174.71	15.4	33.3	395.1	381.8	13.24	29.848	
3,000.0	2,969.2	2,996.2	2,993.9	10.0	6.6	175.52	17.4	26.3	404.8	391.1	13.71	29.534	
3,100.0	3,068.0	3,095.6	3,093.0	10.4	6.9	176.29	19.3	19.3	414.7	400.5	14.18	29.241	
3,200.0	3,166.7	3,194.9	3,192.1	10.7	7.1	177.03	21.2	12.2	424.6	409.9	14.66	28.966	
3,300.0	3,265.5	3,294.3	3,291.2	11.1	7.3	177.74	23.2	5.2	434.5	419.4	15.14	28.708	
3,400.0	3,364.3	3,393.7	3,390.3	11.5	7.6	178.41	25.1	-1.8	444.6	428.9	15.62	28.465	
3,500.0	3,463.0	3,493.0	3,489.4	11.8	7.8	179.06	27.0	-8.8	454.6	438.5	16.10	28.236	
3,600.0	3,561.8	3,592.4	3,588.5	12.2	8.1	179.67	29.0	-15.8	464.8	448.2	16.59	28.020	
3,700.0	3,660.6	3,691.8	3,687.6	12.6	8.3	-179.74	30.9	-22.8	475.0	457.9	17.08	27.816	
3,800.0	3,759.3	3,791.1	3,786.7	12.9	8.6	-179.17	32.8	-29.8	485.2	467.6	17.57	27.623	
3,900.0	3,858.1	3,890.5	3,885.8	13.3	8.8	-178.63	34.8	-36.8	495.5	477.4	18.06	27.439	
4,000.0	3,956.9	3,989.8	3,984.9	13.7	9.1	-178.11	36.7	-43.8	505.8	487.3	18.55	27.265	
4,100.0	4,055.6	4,089.2	4,084.0	14.0	9.3	-177.61	38.6	-50.9	516.2	497.1	19.05	27.099	
4,200.0	4,154.4	4,188.6	4,183.1	14.4	9.6	-177.13	40.6	-57.9	526.6	507.0	19.55	26.942	
4,300.0	4,253.2	4,287.9	4,282.2	14.8	9.8	-176.67	42.5	-64.9	537.0	517.0	20.04	26.792	
4,400.0	4,351.9	4,387.3	4,381.3	15.2	10.1	-176.23	44.4	-71.9	547.5	526.9	20.54	26.649	
4,500.0	4,450.7	4,486.7	4,480.4	15.5	10.3	-175.80	46.4	-78.9	558.0	536.9	21.05	26.512	
4,600.0	4,549.5	4,586.0	4,579.5	15.9	10.6	-175.39	48.3	-85.9	568.5	547.0	21.55	26.382	
4,700.0	4,648.2	4,685.4	4,678.6	16.3	10.8	-175.00	50.2	-92.9	579.1	557.0	22.05	26.257	
4,800.0	4,747.0	4,784.7	4,777.6	16.6	11.1	-174.62	52.2	-99.9	589.7	567.1	22.56	26.137	
4,900.0	4,845.8	4,884.1	4,876.7	17.0	11.3	-174.25	54.1	-107.0	600.3	577.2	23.07	26.023	
5,000.0	4,944.6	4,983.5	4,975.8	17.4	11.6	-173.89	56.0	-114.0	610.9	587.3	23.58	25.913	

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 Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad Sec.19-T5N-R64W - Schneider 19Q-312 - Wellbore #1 - Plan #1 (2-18-14)													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	
5,100.0	5,043.3	5,082.8	5,074.9	17.7	11.8	-173.55	58.0	-121.0	621.6	597.5	24.08	25.808		
5,200.0	5,142.1	5,182.2	5,174.0	18.1	12.1	-173.22	59.9	-128.0	632.3	607.7	24.59	25.707		
5,300.0	5,240.9	5,281.6	5,273.1	18.5	12.3	-172.90	61.8	-135.0	643.0	617.8	25.11	25.610		
5,400.0	5,339.6	5,380.9	5,372.2	18.8	12.6	-172.59	63.8	-142.0	653.7	628.1	25.62	25.516		
5,500.0	5,438.6	5,480.4	5,471.4	19.2	12.9	-172.29	65.7	-149.0	663.1	636.9	26.14	25.371		
5,600.0	5,538.0	5,580.1	5,570.9	19.4	13.1	-171.96	67.6	-156.1	669.1	642.5	26.60	25.158		
5,700.0	5,637.7	5,669.4	5,660.0	19.6	13.3	-171.68	69.2	-161.5	672.3	645.3	26.97	24.929		
5,800.0	5,737.6	5,756.2	5,746.7	19.7	13.5	-171.54	69.9	-164.4	674.0	646.7	27.27	24.719		
5,900.0	5,837.6	5,848.1	5,838.6	19.9	13.6	-155.26	70.1	-164.8	674.3	641.5	32.81	20.553		
6,000.0	5,937.6	5,948.1	5,938.6	20.0	13.8	-65.32	70.1	-164.8	674.1	646.2	27.92	24.142		
6,100.0	6,037.0	6,047.5	6,038.0	20.1	14.0	-66.39	70.1	-164.8	669.9	641.7	28.19	23.765		
6,200.0	6,134.3	6,122.5	6,112.9	20.1	14.2	-68.04	70.1	-161.8	662.4	634.1	28.37	23.348		
6,300.0	6,227.7	6,200.0	6,189.7	20.0	14.3	-70.04	70.1	-151.1	654.2	625.7	28.55	22.912		
6,400.0	6,315.6	6,271.7	6,259.3	19.9	14.3	-72.20	70.1	-134.2	645.6	616.9	28.77	22.445		
6,500.0	6,396.6	6,350.0	6,333.2	19.7	14.4	-74.75	70.1	-108.5	637.1	608.0	29.11	21.885		
6,600.0	6,469.3	6,426.9	6,402.9	19.6	14.4	-77.47	70.1	-76.0	629.2	599.5	29.64	21.226		
6,700.0	6,532.5	6,507.5	6,472.0	19.5	14.5	-80.45	70.1	-34.5	622.3	591.8	30.45	20.438		
6,800.0	6,584.9	6,590.7	6,538.3	19.3	14.7	-83.62	70.1	15.6	616.9	585.3	31.59	19.524		
6,900.0	6,625.9	6,676.9	6,600.9	19.2	15.0	-86.93	70.1	74.9	613.5	580.3	33.15	18.507		
6,990.3	6,652.3	6,758.0	6,653.3	19.5	15.5	-90.00	70.1	136.7	612.4	577.5	34.94	17.529		
7,000.0	6,654.5	6,766.9	6,658.6	19.6	15.5	-90.33	70.1	143.8	612.5	577.3	35.14	17.428		
7,100.0	6,670.5	6,861.3	6,710.1	21.2	16.3	-93.79	70.1	222.9	614.0	576.5	37.59	16.334		
7,200.0	6,673.8	6,961.2	6,753.5	23.1	17.5	-97.31	70.1	312.8	618.3	577.8	40.50	15.267		
7,300.0	6,673.6	7,070.8	6,787.1	25.1	19.2	-100.41	70.1	417.0	623.3	579.4	43.90	14.199		
7,400.0	6,673.3	7,188.7	6,806.3	27.3	21.3	-102.16	70.1	533.2	626.6	578.7	47.88	13.086		
7,500.0	6,673.1	7,302.2	6,808.5	29.5	23.6	-102.38	70.1	646.6	627.0	574.8	52.25	12.000		
7,600.0	6,672.8	7,402.2	6,807.1	31.8	25.7	-102.28	70.1	746.6	626.8	570.1	56.64	11.065		
7,700.0	6,672.6	7,502.1	6,805.7	34.2	28.0	-102.17	70.1	846.5	626.5	565.3	61.22	10.234		
7,800.0	6,672.3	7,602.1	6,804.2	36.7	30.4	-102.06	70.1	946.5	626.3	560.3	65.95	9.496		
7,900.0	6,672.1	7,702.1	6,802.8	39.2	32.8	-101.95	70.1	1,046.5	626.0	555.2	70.80	8.842		
8,000.0	6,671.9	7,802.1	6,801.3	41.7	35.3	-101.85	70.1	1,146.5	625.8	550.0	75.74	8.262		
8,100.0	6,671.6	7,902.1	6,799.9	44.3	37.8	-101.74	70.1	1,246.5	625.5	544.8	80.77	7.745		
8,200.0	6,671.4	8,002.1	6,798.4	46.9	40.4	-101.63	70.1	1,346.5	625.3	539.4	85.86	7.283		
8,300.0	6,671.1	8,102.1	6,797.0	49.5	43.0	-101.52	70.1	1,446.4	625.0	534.0	91.01	6.868		
8,400.0	6,670.9	8,202.1	6,795.5	52.2	45.6	-101.41	70.1	1,546.4	624.8	528.6	96.20	6.495		
8,500.0	6,670.6	8,302.1	6,794.1	54.8	48.3	-101.30	70.1	1,646.4	624.6	523.1	101.44	6.157		
8,600.0	6,670.4	8,402.1	6,792.6	57.5	50.9	-101.20	70.1	1,746.4	624.3	517.6	106.71	5.851		
8,700.0	6,670.2	8,502.1	6,791.2	60.2	53.6	-101.09	70.1	1,846.4	624.1	512.1	112.01	5.572		
8,800.0	6,669.9	8,602.1	6,789.7	62.9	56.3	-100.98	70.1	1,946.3	623.9	506.5	117.33	5.317		
8,900.0	6,669.7	8,702.1	6,788.3	65.6	59.0	-100.87	70.1	2,046.3	623.6	500.9	122.68	5.083		
9,000.0	6,669.4	8,802.1	6,786.8	68.3	61.7	-100.76	70.1	2,146.3	623.4	495.4	128.06	4.868		
9,100.0	6,669.2	8,902.0	6,785.4	71.0	64.4	-100.65	70.1	2,246.3	623.2	489.7	133.45	4.670		
9,200.0	6,668.9	9,002.0	6,783.9	73.7	67.2	-100.54	70.1	2,346.3	623.0	484.1	138.85	4.486		
9,300.0	6,668.7	9,102.0	6,782.5	76.4	69.9	-100.44	70.1	2,446.3	622.7	478.5	144.28	4.316		
9,400.0	6,668.4	9,202.0	6,781.0	79.2	72.6	-100.33	70.1	2,546.2	622.5	472.8	149.71	4.158		
9,500.0	6,668.2	9,302.0	6,779.6	81.9	75.4	-100.22	70.1	2,646.2	622.3	467.1	155.16	4.011		
9,600.0	6,668.0	9,402.0	6,778.1	84.7	78.1	-100.11	70.1	2,746.2	622.1	461.5	160.63	3.873		
9,700.0	6,667.7	9,502.0	6,776.7	87.4	80.9	-100.00	70.1	2,846.2	621.9	455.8	166.10	3.744		
9,800.0	6,667.5	9,602.0	6,775.2	90.2	83.6	-99.89	70.1	2,946.2	621.7	450.1	171.58	3.623		
9,900.0	6,667.2	9,702.0	6,773.8	92.9	86.4	-99.78	70.1	3,046.2	621.5	444.4	177.07	3.510		
10,000.0	6,667.0	9,802.0	6,772.3	95.7	89.1	-99.67	70.1	3,146.1	621.3	438.7	182.57	3.403		

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 Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad Sec.19-T5N-R64W - Schneider 19Q-312 - Wellbore #1 - Plan #1 (2-18-14)													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
10,100.0	6,666.7	9,902.0	6,770.9	98.4	91.9	99.56		70.1	3,246.1	621.1	433.0	188.08	3.302	
10,200.0	6,666.5	10,002.0	6,769.4	101.2	94.7	99.45		70.1	3,346.1	620.9	427.3	193.60	3.207	
10,300.0	6,666.2	10,102.0	6,768.0	104.0	97.4	99.34		70.1	3,446.1	620.7	421.6	199.12	3.117	
10,400.0	6,666.0	10,202.0	6,766.5	106.7	100.2	99.23		70.1	3,546.1	620.5	415.8	204.65	3.032	
10,500.0	6,665.8	10,301.9	6,765.1	109.5	103.0	99.12		70.1	3,646.0	620.3	410.1	210.19	2.951	
10,600.0	6,665.5	10,401.9	6,763.6	112.3	105.8	99.01		70.1	3,746.0	620.1	404.4	215.73	2.874	
10,700.0	6,665.3	10,501.9	6,762.2	115.0	108.5	98.90		70.1	3,846.0	619.9	398.6	221.28	2.801	
10,800.0	6,665.0	10,601.9	6,760.7	117.8	111.3	98.79		70.1	3,946.0	619.7	392.9	226.83	2.732	
10,900.0	6,664.8	10,701.9	6,759.3	120.6	114.1	98.68		70.1	4,046.0	619.5	387.1	232.39	2.666	
11,000.0	6,664.5	10,801.9	6,757.9	123.4	116.9	98.57		70.1	4,146.0	619.4	381.4	237.96	2.603	
11,100.0	6,664.3	10,901.9	6,756.4	126.2	119.7	98.46		70.1	4,245.9	619.2	375.7	243.53	2.543	
11,200.0	6,664.0	11,001.9	6,755.0	128.9	122.5	98.35		70.1	4,345.9	619.0	369.9	249.10	2.485	
11,300.0	6,663.8	11,101.9	6,753.5	131.7	125.2	98.24		70.1	4,445.9	618.8	364.2	254.68	2.430	
11,400.0	6,663.6	11,201.9	6,752.1	134.5	128.0	98.13		70.1	4,545.9	618.7	358.4	260.26	2.377	
11,500.0	6,663.3	11,301.9	6,750.6	137.3	130.8	98.02		70.1	4,645.9	618.5	352.6	265.84	2.327	
11,600.0	6,663.1	11,401.9	6,749.2	140.1	133.6	97.91		70.1	4,745.8	618.3	346.9	271.43	2.278	
11,700.0	6,662.8	11,501.9	6,747.7	142.9	136.4	97.80		70.1	4,845.8	618.2	341.1	277.02	2.231	
11,800.0	6,662.6	11,601.8	6,746.3	145.6	139.2	97.69		70.1	4,945.8	618.0	335.4	282.62	2.187	
11,900.0	6,662.3	11,701.8	6,744.8	148.4	142.0	97.58		70.1	5,045.8	617.8	329.6	288.22	2.144	
12,000.0	6,662.1	11,801.8	6,743.4	151.2	144.8	97.47		70.1	5,145.8	617.7	323.9	293.82	2.102	
12,100.0	6,661.8	11,901.8	6,741.9	154.0	147.6	97.36		70.1	5,245.8	617.5	318.1	299.43	2.062	
12,200.0	6,661.6	12,001.8	6,740.5	156.8	150.3	97.25		70.1	5,345.7	617.4	312.3	305.03	2.024	
12,300.0	6,661.4	12,101.8	6,739.0	159.6	153.1	97.14		70.1	5,445.7	617.2	306.6	310.64	1.987	
12,400.0	6,661.1	12,201.8	6,737.6	162.4	155.9	97.02		70.1	5,545.7	617.1	300.8	316.26	1.951	
12,500.0	6,660.9	12,301.8	6,736.1	165.2	158.7	96.91		70.1	5,645.7	616.9	295.1	321.87	1.917	
12,600.0	6,660.6	12,401.8	6,734.7	168.0	161.5	96.80		70.1	5,745.7	616.8	289.3	327.49	1.883	
12,700.0	6,660.4	12,501.8	6,733.2	170.8	164.3	96.69		70.1	5,845.7	616.6	283.5	333.11	1.851	
12,800.0	6,660.1	12,601.8	6,731.8	173.5	167.1	96.58		70.1	5,945.6	616.5	277.8	338.73	1.820	
12,900.0	6,659.9	12,701.8	6,730.3	176.3	169.9	96.47		70.1	6,045.6	616.4	272.0	344.35	1.790	
13,000.0	6,659.6	12,801.8	6,728.9	179.1	172.7	96.36		70.1	6,145.6	616.2	266.2	349.98	1.761	
13,100.0	6,659.4	12,901.8	6,727.4	181.9	175.5	96.25		70.1	6,245.6	616.1	260.5	355.61	1.733	
13,200.0	6,659.2	13,001.7	6,726.0	184.7	178.3	96.14		70.1	6,345.6	616.0	254.7	361.24	1.705	
13,263.2	6,659.0	13,065.0	6,725.1	186.5	180.1	96.06		70.1	6,408.8	615.9	251.1	364.80	1.688 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad Sec.19-T5N-R64W - Schneider 19Q-402 - Wellbore #1 - Plan #1 (2-18-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+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	89.98	0.0	61.3	61.3	61.3	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	89.98	0.0	61.3	61.3	61.1	0.23	270.003		
200.0	200.0	201.0	201.0	0.3	0.3	89.98	0.0	61.3	61.3	60.6	0.68	90.599 CC, ES		
300.0	300.0	301.0	301.0	0.6	0.6	124.53	0.0	61.3	62.3	61.1	1.13	55.275		
400.0	399.8	400.8	400.8	0.8	0.8	128.26	0.0	61.3	65.4	63.8	1.58	41.317		
500.0	499.5	500.5	500.5	1.0	1.0	133.69	0.0	61.3	71.1	69.1	2.05	34.697		
600.0	598.7	599.7	599.7	1.3	1.2	139.88	0.0	61.3	80.0	77.5	2.53	31.672		
700.0	697.5	698.5	698.5	1.7	1.5	145.89	0.0	61.3	92.2	89.2	3.00	30.696		
800.0	796.3	797.3	797.3	2.0	1.7	150.64	0.0	61.3	105.6	102.1	3.48	30.388		
900.0	895.1	896.1	896.1	2.3	1.9	154.32	0.0	61.3	119.5	115.6	3.94	30.320		
1,000.0	993.8	994.8	994.8	2.7	2.1	157.22	0.0	61.3	133.8	129.4	4.41	30.367		
1,100.0	1,092.6	1,093.6	1,093.6	3.1	2.3	159.55	0.0	61.3	148.4	143.5	4.87	30.466		
1,200.0	1,191.4	1,192.4	1,192.4	3.4	2.6	161.47	0.0	61.3	163.2	157.8	5.33	30.587		
1,300.0	1,290.1	1,292.0	1,292.0	3.8	2.8	163.56	-1.0	60.2	177.9	172.1	5.77	30.803		
1,400.0	1,388.9	1,391.3	1,391.2	4.1	3.0	166.34	-4.2	56.5	192.4	186.2	6.19	31.082		
1,500.0	1,487.7	1,489.9	1,489.5	4.5	3.2	169.58	-9.4	50.5	207.2	200.6	6.61	31.329		
1,600.0	1,586.4	1,588.1	1,587.3	4.9	3.4	172.53	-15.1	44.0	222.5	215.4	7.05	31.548		
1,700.0	1,685.2	1,686.3	1,685.1	5.2	3.6	175.10	-20.7	37.6	238.3	230.8	7.51	31.750		
1,800.0	1,784.0	1,784.5	1,782.9	5.6	3.8	177.35	-26.3	31.1	254.6	246.6	7.97	31.931		
1,900.0	1,882.7	1,882.7	1,880.8	6.0	4.0	179.33	-31.9	24.7	271.1	262.7	8.45	32.093		
2,000.0	1,981.5	1,980.9	1,978.6	6.3	4.3	-178.92	-37.5	18.2	288.0	279.1	8.93	32.239		
2,100.0	2,080.3	2,079.2	2,076.4	6.7	4.5	-177.36	-43.2	11.8	305.1	295.7	9.43	32.368		
2,200.0	2,179.1	2,177.4	2,174.3	7.1	4.7	-175.97	-48.8	5.3	322.4	312.5	9.92	32.486		
2,300.0	2,277.8	2,275.6	2,272.1	7.4	5.0	-174.72	-54.4	-1.2	339.8	329.4	10.43	32.593		
2,400.0	2,376.6	2,373.8	2,369.9	7.8	5.2	-173.59	-60.0	-7.6	357.4	346.5	10.93	32.690		
2,500.0	2,475.4	2,472.0	2,467.8	8.2	5.5	-172.57	-65.7	-14.1	375.2	363.7	11.45	32.779		
2,600.0	2,574.1	2,570.2	2,565.6	8.5	5.8	-171.64	-71.3	-20.5	393.0	381.0	11.96	32.861		
2,700.0	2,672.9	2,668.4	2,663.4	8.9	6.0	-170.79	-76.9	-27.0	410.9	398.4	12.48	32.936		
2,800.0	2,771.7	2,766.6	2,761.3	9.3	6.3	-170.01	-82.5	-33.4	428.9	415.9	13.00	33.006		
2,900.0	2,870.4	2,864.8	2,859.1	9.6	6.5	-169.30	-88.1	-39.9	447.0	433.5	13.52	33.071		
3,000.0	2,969.2	2,963.0	2,956.9	10.0	6.8	-168.64	-93.8	-46.3	465.1	451.1	14.04	33.131		
3,100.0	3,068.0	3,061.2	3,054.8	10.4	7.1	-168.03	-99.4	-52.8	483.3	468.7	14.56	33.187		
3,200.0	3,166.7	3,159.4	3,152.6	10.7	7.3	-167.46	-105.0	-59.2	501.6	486.5	15.09	33.240		
3,300.0	3,265.5	3,257.6	3,250.4	11.1	7.6	-166.93	-110.6	-65.7	519.8	504.2	15.62	33.290		
3,400.0	3,364.3	3,355.8	3,348.3	11.5	7.9	-166.44	-116.3	-72.1	538.2	522.0	16.14	33.336		
3,500.0	3,463.0	3,454.0	3,446.1	11.8	8.1	-165.98	-121.9	-78.6	556.5	539.8	16.67	33.380		
3,600.0	3,561.8	3,552.2	3,543.9	12.2	8.4	-165.55	-127.5	-85.0	574.9	557.7	17.20	33.422		
3,700.0	3,660.6	3,650.4	3,641.8	12.6	8.7	-165.15	-133.1	-91.5	593.3	575.6	17.73	33.461		
3,800.0	3,759.3	3,748.7	3,739.6	12.9	8.9	-164.77	-138.7	-97.9	611.8	593.5	18.26	33.498		
3,900.0	3,858.1	3,846.9	3,837.4	13.3	9.2	-164.42	-144.4	-104.4	630.2	611.4	18.79	33.534		
4,000.0	3,956.9	3,945.1	3,935.3	13.7	9.5	-164.08	-150.0	-110.8	648.7	629.4	19.33	33.567		
4,100.0	4,055.6	4,043.3	4,033.1	14.0	9.7	-163.76	-155.6	-117.3	667.2	647.4	19.86	33.599		
4,200.0	4,154.4	4,141.5	4,130.9	14.4	10.0	-163.46	-161.2	-123.7	685.8	665.4	20.39	33.629		
4,300.0	4,253.2	4,239.7	4,228.8	14.8	10.3	-163.18	-166.9	-130.2	704.3	683.4	20.93	33.658		
4,400.0	4,351.9	4,337.9	4,326.6	15.2	10.6	-162.91	-172.5	-136.6	722.9	701.4	21.46	33.686		
4,500.0	4,450.7	4,436.1	4,424.4	15.5	10.8	-162.65	-178.1	-143.1	741.5	719.5	21.99	33.712		
4,600.0	4,549.5	4,534.3	4,522.3	15.9	11.1	-162.41	-183.7	-149.5	760.1	737.5	22.53	33.738		
4,700.0	4,648.2	4,632.5	4,620.1	16.3	11.4	-162.17	-189.4	-156.0	778.7	755.6	23.06	33.762		
4,800.0	4,747.0	4,730.7	4,717.9	16.6	11.6	-161.95	-195.0	-162.4	797.3	773.7	23.60	33.785		
4,900.0	4,845.8	4,828.9	4,815.7	17.0	11.9	-161.74	-200.6	-168.9	815.9	791.8	24.13	33.807		
5,000.0	4,944.6	4,927.1	4,913.6	17.4	12.2	-161.54	-206.2	-175.3	834.6	809.9	24.67	33.828		

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 Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design		Schneider 19Q-HZ Pad Sec.19-T5N-R64W - Schneider 19Q-402 - Wellbore #1 - Plan #1 (2-18-14)											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	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			
5,100.0	5,043.3	5,025.3	5,011.4	17.7	12.5	-161.35	-211.8	-181.8	853.2	828.0	25.21	33.849			
5,200.0	5,142.1	5,123.5	5,109.2	18.1	12.7	-161.16	-217.5	-188.2	871.9	846.1	25.74	33.869			
5,300.0	5,240.9	5,221.7	5,207.1	18.5	13.0	-160.98	-223.1	-194.7	890.5	864.3	26.28	33.887			
5,400.0	5,339.6	5,319.9	5,304.9	18.8	13.3	-160.81	-228.7	-201.1	909.2	882.4	26.82	33.906			
5,500.0	5,438.6	5,418.4	5,403.0	19.2	13.6	-160.72	-234.3	-207.6	926.6	899.3	27.37	33.861			
5,600.0	5,538.0	5,517.3	5,501.5	19.4	13.8	-160.56	-240.0	-214.1	940.9	913.0	27.86	33.771			
5,700.0	5,637.7	5,616.5	5,600.3	19.6	14.1	-160.32	-245.7	-220.6	951.8	923.5	28.32	33.607			
5,800.0	5,737.6	5,716.0	5,699.5	19.7	14.4	-159.99	-251.4	-227.1	959.6	930.8	28.75	33.373			
5,900.0	5,837.6	5,824.8	5,807.9	19.9	14.7	167.22	-257.2	-233.8	964.1	931.7	32.42	29.738			
6,000.0	5,937.6	5,943.8	5,926.8	20.0	14.9	77.52	-260.9	-238.0	966.2	936.6	29.58	32.661			
6,100.0	6,037.0	6,055.1	6,038.0	20.1	15.1	78.33	-261.5	-238.7	964.4	934.5	29.89	32.266			
6,200.0	6,134.3	6,150.0	6,132.9	20.1	15.2	79.93	-261.5	-238.7	960.0	929.8	30.16	31.832			
6,300.0	6,227.7	6,229.3	6,212.0	20.0	15.3	81.68	-261.5	-233.7	955.1	924.7	30.33	31.485			
6,400.0	6,315.6	6,310.3	6,291.9	19.9	15.4	83.56	-261.5	-220.2	950.7	920.2	30.48	31.192			
6,500.0	6,396.6	6,393.8	6,372.2	19.7	15.4	85.54	-261.5	-197.5	947.2	916.6	30.65	30.909			
6,600.0	6,469.3	6,480.1	6,452.1	19.6	15.4	87.60	-261.5	-164.9	944.9	914.0	30.91	30.568			
6,700.0	6,532.5	6,570.0	6,530.9	19.5	15.4	89.72	-261.5	-121.7	944.0	912.6	31.38	30.083			
6,712.8	6,539.8	6,581.8	6,540.8	19.4	15.4	90.00	-261.5	-115.3	944.0	912.5	31.48	29.989			
6,800.0	6,584.9	6,664.1	6,607.2	19.3	15.4	91.88	-261.5	-66.9	944.6	912.4	32.16	29.369			
6,900.0	6,625.9	6,763.0	6,679.7	19.2	15.5	94.06	-261.5	0.4	946.8	913.4	33.38	28.364			
7,000.0	6,654.5	6,867.9	6,746.3	19.6	15.7	96.22	-261.5	81.3	950.5	915.4	35.15	27.044			
7,100.0	6,670.5	6,979.6	6,804.3	21.2	16.5	98.36	-261.5	176.6	955.7	918.1	37.56	25.448			
7,200.0	6,673.8	7,099.3	6,850.4	23.1	18.0	100.53	-261.5	287.0	961.9	921.3	40.63	23.674			
7,300.0	6,673.6	7,230.4	6,880.4	25.1	20.1	102.30	-261.5	414.5	966.6	922.2	44.47	21.738			
7,400.0	6,673.3	7,339.0	6,892.4	27.3	22.2	103.00	-261.5	522.4	969.1	920.6	48.44	20.004			
7,500.0	6,673.1	7,462.9	6,898.3	29.5	24.8	103.36	-261.5	646.1	970.2	917.1	53.08	18.278			
7,600.0	6,672.8	7,563.2	6,897.5	31.8	27.1	103.33	-261.5	746.3	970.1	912.6	57.53	16.863			
7,700.0	6,672.6	7,663.2	6,896.8	34.2	29.4	103.30	-261.5	846.3	970.0	907.9	62.13	15.612			
7,800.0	6,672.3	7,763.2	6,896.0	36.7	31.8	103.27	-261.5	946.3	969.9	903.0	66.87	14.505			
7,900.0	6,672.1	7,863.2	6,895.2	39.2	34.3	103.24	-261.5	1,046.3	969.7	898.0	71.71	13.523			
8,000.0	6,671.9	7,963.2	6,894.5	41.7	36.8	103.21	-261.5	1,146.3	969.6	893.0	76.64	12.651			
8,100.0	6,671.6	8,063.2	6,893.7	44.3	39.3	103.18	-261.5	1,246.3	969.5	887.9	81.65	11.874			
8,200.0	6,671.4	8,163.2	6,892.9	46.9	41.9	103.15	-261.5	1,346.3	969.4	882.7	86.72	11.179			
8,300.0	6,671.1	8,263.2	6,892.1	49.5	44.5	103.12	-261.5	1,446.3	969.3	877.4	91.83	10.555			
8,400.0	6,670.9	8,363.2	6,891.4	52.2	47.2	103.09	-261.5	1,546.3	969.2	872.2	96.99	9.992			
8,500.0	6,670.6	8,463.2	6,890.6	54.8	49.8	103.06	-261.5	1,646.3	969.0	866.8	102.19	9.483			
8,600.0	6,670.4	8,563.2	6,889.8	57.5	52.5	103.03	-261.5	1,746.3	968.9	861.5	107.41	9.021			
8,700.0	6,670.2	8,663.2	6,889.1	60.2	55.2	103.00	-261.5	1,846.3	968.8	856.1	112.66	8.599			
8,800.0	6,669.9	8,763.2	6,888.3	62.9	57.9	102.97	-261.5	1,946.3	968.7	850.7	117.94	8.213			
8,900.0	6,669.7	8,863.2	6,887.5	65.6	60.6	102.94	-261.5	2,046.3	968.6	845.3	123.24	7.859			
9,000.0	6,669.4	8,963.2	6,886.8	68.3	63.3	102.91	-261.5	2,146.3	968.4	839.9	128.55	7.534			
9,100.0	6,669.2	9,063.2	6,886.0	71.0	66.0	102.88	-261.5	2,246.3	968.3	834.4	133.88	7.233			
9,200.0	6,668.9	9,163.2	6,885.2	73.7	68.7	102.85	-261.5	2,346.3	968.2	829.0	139.23	6.954			
9,300.0	6,668.7	9,263.2	6,884.5	76.4	71.5	102.82	-261.5	2,446.3	968.1	823.5	144.59	6.696			
9,400.0	6,668.4	9,363.2	6,883.7	79.2	74.2	102.79	-261.5	2,546.3	968.0	818.0	149.96	6.455			
9,500.0	6,668.2	9,463.2	6,882.9	81.9	77.0	102.76	-261.5	2,646.3	967.9	812.5	155.34	6.231			
9,600.0	6,668.0	9,563.2	6,882.2	84.7	79.7	102.73	-261.5	2,746.3	967.7	807.0	160.73	6.021			
9,700.0	6,667.7	9,663.2	6,881.4	87.4	82.5	102.70	-261.5	2,846.3	967.6	801.5	166.13	5.825			
9,800.0	6,667.5	9,763.2	6,880.6	90.2	85.2	102.67	-261.5	2,946.3	967.5	796.0	171.53	5.640			
9,900.0	6,667.2	9,863.2	6,879.9	92.9	88.0	102.64	-261.5	3,046.2	967.4	790.5	176.95	5.467			
10,000.0	6,667.0	9,963.2	6,879.1	95.7	90.7	102.61	-261.5	3,146.2	967.3	784.9	182.37	5.304			

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 Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Offset Design		Schneider 19Q-HZ Pad Sec.19-T5N-R64W - Schneider 19Q-402 - Wellbore #1 - Plan #1 (2-18-14)											Offset Site Error:	0.0 ft
Survey Program:		0-MWD											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,100.0	6,666.7	10,063.2	6,878.3	98.4	93.5	102.58	-261.5	3,246.2	967.2	779.4	187.80	5.150		
10,200.0	6,666.5	10,163.2	6,877.6	101.2	96.3	102.55	-261.5	3,346.2	967.1	773.8	193.23	5.005		
10,300.0	6,666.2	10,263.2	6,876.8	104.0	99.0	102.52	-261.5	3,446.2	966.9	768.3	198.67	4.867		
10,400.0	6,666.0	10,363.1	6,876.0	106.7	101.8	102.49	-261.5	3,546.2	966.8	762.7	204.12	4.737		
10,500.0	6,665.8	10,463.1	6,875.3	109.5	104.6	102.46	-261.5	3,646.2	966.7	757.1	209.56	4.613		
10,600.0	6,665.5	10,563.1	6,874.5	112.3	107.4	102.43	-261.5	3,746.2	966.6	751.6	215.02	4.495		
10,700.0	6,665.3	10,663.1	6,873.7	115.0	110.1	102.40	-261.5	3,846.2	966.5	746.0	220.48	4.384		
10,800.0	6,665.0	10,763.1	6,872.9	117.8	112.9	102.36	-261.5	3,946.2	966.4	740.4	225.94	4.277		
10,900.0	6,664.8	10,863.1	6,872.2	120.6	115.7	102.33	-261.5	4,046.2	966.3	734.9	231.41	4.176		
11,000.0	6,664.5	10,963.1	6,871.4	123.4	118.5	102.30	-261.5	4,146.2	966.2	729.3	236.88	4.079		
11,100.0	6,664.3	11,063.1	6,870.6	126.2	121.3	102.27	-261.5	4,246.2	966.0	723.7	242.35	3.986		
11,200.0	6,664.0	11,163.1	6,869.9	128.9	124.1	102.24	-261.5	4,346.2	965.9	718.1	247.83	3.898		
11,300.0	6,663.8	11,263.1	6,869.1	131.7	126.8	102.21	-261.5	4,446.2	965.8	712.5	253.31	3.813		
11,400.0	6,663.6	11,363.1	6,868.3	134.5	129.6	102.18	-261.5	4,546.2	965.7	706.9	258.79	3.732		
11,500.0	6,663.3	11,463.1	6,867.6	137.3	132.4	102.15	-261.5	4,646.2	965.6	701.3	264.28	3.654		
11,600.0	6,663.1	11,563.1	6,866.8	140.1	135.2	102.12	-261.5	4,746.2	965.5	695.7	269.76	3.579		
11,700.0	6,662.8	11,663.1	6,866.0	142.9	138.0	102.09	-261.5	4,846.2	965.4	690.1	275.26	3.507		
11,800.0	6,662.6	11,763.1	6,865.3	145.6	140.8	102.06	-261.5	4,946.2	965.3	684.5	280.75	3.438		
11,900.0	6,662.3	11,863.1	6,864.5	148.4	143.6	102.03	-261.5	5,046.2	965.2	678.9	286.25	3.372		
12,000.0	6,662.1	11,963.1	6,863.7	151.2	146.4	102.00	-261.5	5,146.2	965.0	673.3	291.75	3.308		
12,100.0	6,661.8	12,063.1	6,863.0	154.0	149.2	101.97	-261.5	5,246.2	964.9	667.7	297.25	3.246		
12,200.0	6,661.6	12,163.1	6,862.2	156.8	152.0	101.94	-261.5	5,346.1	964.8	662.1	302.75	3.187		
12,300.0	6,661.4	12,263.1	6,861.4	159.6	154.7	101.91	-261.5	5,446.1	964.7	656.5	308.26	3.130		
12,400.0	6,661.1	12,363.1	6,860.7	162.4	157.5	101.88	-261.5	5,546.1	964.6	650.8	313.77	3.074		
12,500.0	6,660.9	12,463.1	6,859.9	165.2	160.3	101.85	-261.5	5,646.1	964.5	645.2	319.28	3.021		
12,600.0	6,660.6	12,563.1	6,859.1	168.0	163.1	101.82	-261.5	5,746.1	964.4	639.6	324.79	2.969		
12,700.0	6,660.4	12,663.1	6,858.4	170.8	165.9	101.79	-261.5	5,846.1	964.3	634.0	330.30	2.919		
12,800.0	6,660.1	12,763.1	6,857.6	173.5	168.7	101.76	-261.5	5,946.1	964.2	628.4	335.82	2.871		
12,900.0	6,659.9	12,863.1	6,856.8	176.3	171.5	101.73	-261.5	6,046.1	964.1	622.7	341.34	2.824		
13,000.0	6,659.6	12,963.1	6,856.1	179.1	174.3	101.70	-261.5	6,146.1	964.0	617.1	346.86	2.779		
13,100.0	6,659.4	13,063.1	6,855.3	181.9	177.1	101.67	-261.5	6,246.1	963.9	611.5	352.38	2.735		
13,200.0	6,659.2	13,163.1	6,854.5	184.7	179.9	101.64	-261.5	6,346.1	963.8	605.9	357.90	2.693		
13,263.2	6,659.0	13,226.3	6,854.0	186.5	181.7	101.62	-261.5	6,409.3	963.7	602.3	361.40	2.667 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Schneider 19P-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
Reference Site:	Schneider 19Q-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4667.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Schneider 19P-232	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 (2-18-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4667.0ft (RKB - 15')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Schneider 19P-232

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°



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Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4667.0ft (RKB - 15')
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