

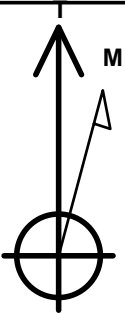
PETROLEUM DEVELOPMENT CORP
 Weld County CO

Well Name: R&R Farms 29Q-301

Surface Location: R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4574.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1377089.92 3289124.19 40.363870 -104.462420  
 RKB - 15' WELL @ 4589.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 215'FSL & 2003'FWL	1.0	0.0	0.0	Point
BHL 500'FNL & 2611'FWL	6462.0	4550.3	571.2	Point

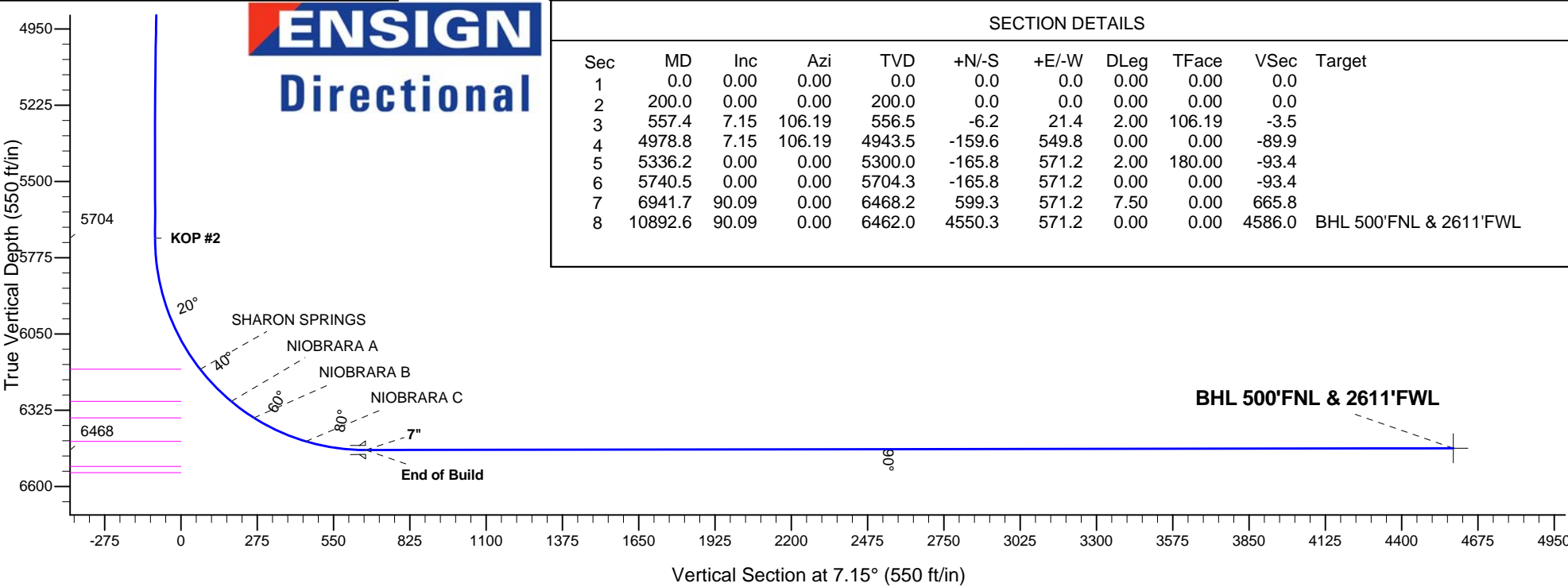
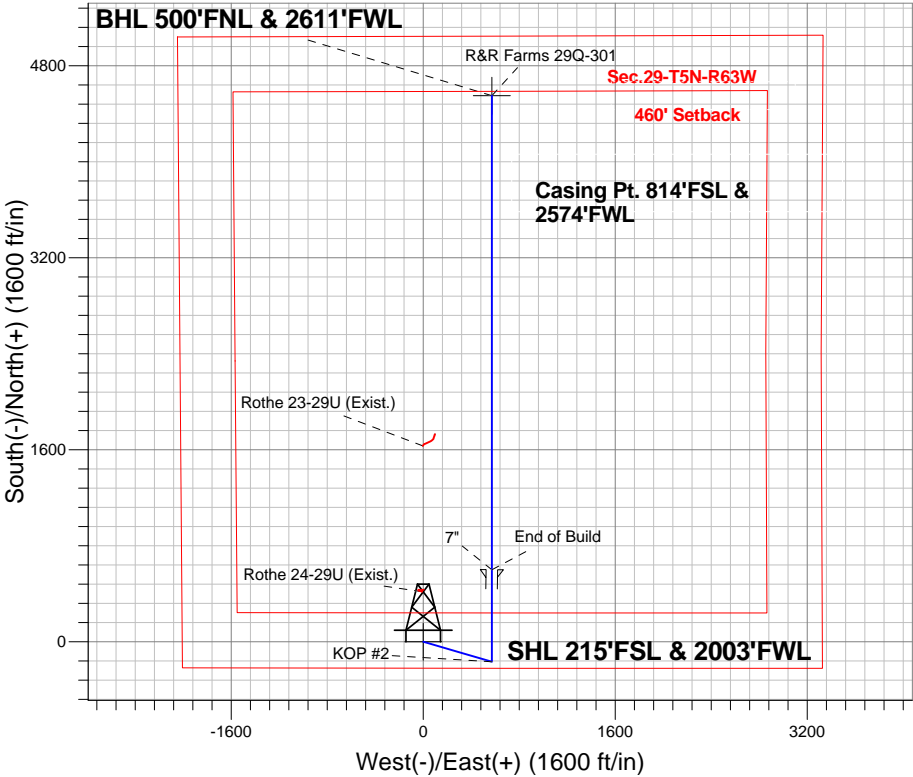


Azimuths to True North  
 Magnetic North: 8.26°  
 Magnetic Field  
 Strength: 52801.9srT  
 Dip Angle: 66.96°  
 Date: 9/19/2014  
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP #1
5704.3	5740.5	KOP #2
6468.2	6941.7	End of Build

R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W  
 R&R Farms 29Q-301  
 Plan #1 (9-19-14)





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.29-T5N-R63W**

**R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W**

**R&R Farms 29Q-301**

**Wellbore #1**

**Plan: Plan #1 (9-19-14)**

## **Standard Planning Report**

**24 September, 2014**

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Project:</b>	SEC.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-19-14)		

<b>Project</b>	SEC.29-T5N-R63W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site						R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W											
Site Position:						Northing:			1,377,210.14 ft			Latitude:			40.364200		
From:			Lat/Long			Easting:			3,289,122.78 ft			Longitude:			-104.462420		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.67 °		

Well	R&R Farms 29Q-301					
Well Position	+N/-S	-120.2 ft	Northing:	1,377,089.92 ft	Latitude:	40.363870
	+E/-W	0.0 ft	Easting:	3,289,124.19 ft	Longitude:	-104.462420
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,574.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	9/19/2014	8.26	66.96	52,802

<b>Design</b>	Plan #1 (9-19-14)				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	7.15	

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
557.4	7.15	106.19	556.5	-6.2	21.4	2.00	2.00	0.00	106.19	
4,978.8	7.15	106.19	4,943.5	-159.6	549.8	0.00	0.00	0.00	0.00	
5,336.2	0.00	0.00	5,300.0	-165.8	571.2	2.00	-2.00	0.00	180.00	
5,740.5	0.00	0.00	5,704.3	-165.8	571.2	0.00	0.00	0.00	0.00	
6,941.7	90.09	0.00	6,468.2	599.3	571.2	7.50	7.50	0.00	0.00	
10,892.6	90.09	0.00	6,462.0	4,550.3	571.2	0.00	0.00	0.00	0.00	BHL 500'FNL & 261

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Project:</b>	SEC.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-19-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>KOP #1</b>									
300.0	2.00	106.19	300.0	-0.5	1.7	-0.3	2.00	2.00	0.00
400.0	4.00	106.19	399.8	-1.9	6.7	-1.1	2.00	2.00	0.00
500.0	6.00	106.19	499.5	-4.4	15.1	-2.5	2.00	2.00	0.00
557.4	7.15	106.19	556.5	-6.2	21.4	-3.5	2.00	2.00	0.00
600.0	7.15	106.19	598.7	-7.7	26.5	-4.3	0.00	0.00	0.00
700.0	7.15	106.19	698.0	-11.2	38.4	-6.3	0.00	0.00	0.00
800.0	7.15	106.19	797.2	-14.6	50.4	-8.2	0.00	0.00	0.00
900.0	7.15	106.19	896.4	-18.1	62.3	-10.2	0.00	0.00	0.00
1,000.0	7.15	106.19	995.6	-21.6	74.3	-12.1	0.00	0.00	0.00
1,100.0	7.15	106.19	1,094.9	-25.0	86.2	-14.1	0.00	0.00	0.00
1,200.0	7.15	106.19	1,194.1	-28.5	98.2	-16.0	0.00	0.00	0.00
1,300.0	7.15	106.19	1,293.3	-32.0	110.1	-18.0	0.00	0.00	0.00
1,400.0	7.15	106.19	1,392.5	-35.4	122.1	-20.0	0.00	0.00	0.00
1,500.0	7.15	106.19	1,491.7	-38.9	134.0	-21.9	0.00	0.00	0.00
1,600.0	7.15	106.19	1,591.0	-42.4	146.0	-23.9	0.00	0.00	0.00
1,700.0	7.15	106.19	1,690.2	-45.8	157.9	-25.8	0.00	0.00	0.00
1,800.0	7.15	106.19	1,789.4	-49.3	169.9	-27.8	0.00	0.00	0.00
1,900.0	7.15	106.19	1,888.6	-52.8	181.8	-29.7	0.00	0.00	0.00
2,000.0	7.15	106.19	1,987.9	-56.3	193.8	-31.7	0.00	0.00	0.00
2,100.0	7.15	106.19	2,087.1	-59.7	205.7	-33.6	0.00	0.00	0.00
2,200.0	7.15	106.19	2,186.3	-63.2	217.7	-35.6	0.00	0.00	0.00
2,300.0	7.15	106.19	2,285.5	-66.7	229.6	-37.5	0.00	0.00	0.00
2,400.0	7.15	106.19	2,384.8	-70.1	241.6	-39.5	0.00	0.00	0.00
2,500.0	7.15	106.19	2,484.0	-73.6	253.5	-41.4	0.00	0.00	0.00
2,600.0	7.15	106.19	2,583.2	-77.1	265.5	-43.4	0.00	0.00	0.00
2,700.0	7.15	106.19	2,682.4	-80.5	277.4	-45.4	0.00	0.00	0.00
2,800.0	7.15	106.19	2,781.6	-84.0	289.4	-47.3	0.00	0.00	0.00
2,900.0	7.15	106.19	2,880.9	-87.5	301.3	-49.3	0.00	0.00	0.00
3,000.0	7.15	106.19	2,980.1	-90.9	313.3	-51.2	0.00	0.00	0.00
3,100.0	7.15	106.19	3,079.3	-94.4	325.2	-53.2	0.00	0.00	0.00
3,200.0	7.15	106.19	3,178.5	-97.9	337.2	-55.1	0.00	0.00	0.00
3,300.0	7.15	106.19	3,277.8	-101.4	349.2	-57.1	0.00	0.00	0.00
3,342.6	7.15	106.19	3,320.0	-102.8	354.2	-57.9	0.00	0.00	0.00
<b>PARKMAN</b>									
3,400.0	7.15	106.19	3,377.0	-104.8	361.1	-59.0	0.00	0.00	0.00
3,500.0	7.15	106.19	3,476.2	-108.3	373.1	-61.0	0.00	0.00	0.00
3,600.0	7.15	106.19	3,575.4	-111.8	385.0	-62.9	0.00	0.00	0.00
3,700.0	7.15	106.19	3,674.6	-115.2	397.0	-64.9	0.00	0.00	0.00
3,800.0	7.15	106.19	3,773.9	-118.7	408.9	-66.8	0.00	0.00	0.00
3,876.7	7.15	106.19	3,850.0	-121.4	418.1	-68.3	0.00	0.00	0.00
<b>SUSSEX</b>									
3,900.0	7.15	106.19	3,873.1	-122.2	420.9	-68.8	0.00	0.00	0.00
4,000.0	7.15	106.19	3,972.3	-125.6	432.8	-70.8	0.00	0.00	0.00
4,100.0	7.15	106.19	4,071.5	-129.1	444.8	-72.7	0.00	0.00	0.00
4,200.0	7.15	106.19	4,170.8	-132.6	456.7	-74.7	0.00	0.00	0.00
4,300.0	7.15	106.19	4,270.0	-136.0	468.7	-76.6	0.00	0.00	0.00
4,400.0	7.15	106.19	4,369.2	-139.5	480.6	-78.6	0.00	0.00	0.00
4,500.0	7.15	106.19	4,468.4	-143.0	492.6	-80.5	0.00	0.00	0.00

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Project:</b>	SEC.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-19-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,600.0	7.15	106.19	4,567.6	-146.5	504.5	-82.5	0.00	0.00	0.00
4,700.0	7.15	106.19	4,666.9	-149.9	516.5	-84.4	0.00	0.00	0.00
4,800.0	7.15	106.19	4,766.1	-153.4	528.4	-86.4	0.00	0.00	0.00
4,894.6	7.15	106.19	4,860.0	-156.7	539.7	-88.2	0.00	0.00	0.00
<b>SHANNON</b>									
4,900.0	7.15	106.19	4,865.3	-156.9	540.4	-88.3	0.00	0.00	0.00
4,978.8	7.15	106.19	4,943.5	-159.6	549.8	-89.9	0.00	0.00	0.00
5,000.0	6.72	106.19	4,964.5	-160.3	552.2	-90.3	2.00	-2.00	0.00
5,100.0	4.72	106.19	5,064.0	-163.1	561.8	-91.8	2.00	-2.00	0.00
5,200.0	2.72	106.19	5,163.8	-164.9	568.1	-92.9	2.00	-2.00	0.00
5,300.0	0.72	106.19	5,263.8	-165.7	571.0	-93.3	2.00	-2.00	0.00
5,336.2	0.00	0.00	5,300.0	-165.8	571.2	-93.4	2.00	-2.00	0.00
5,400.0	0.00	0.00	5,363.8	-165.8	571.2	-93.4	0.00	0.00	0.00
5,500.0	0.00	0.00	5,463.8	-165.8	571.2	-93.4	0.00	0.00	0.00
5,600.0	0.00	0.00	5,563.8	-165.8	571.2	-93.4	0.00	0.00	0.00
5,700.0	0.00	0.00	5,663.8	-165.8	571.2	-93.4	0.00	0.00	0.00
5,740.5	0.00	0.00	5,704.3	-165.8	571.2	-93.4	0.00	0.00	0.00
<b>KOP #2</b>									
5,800.0	4.46	0.00	5,763.7	-163.5	571.2	-91.1	7.50	7.50	0.00
5,900.0	11.96	0.00	5,862.6	-149.2	571.2	-76.9	7.50	7.50	0.00
6,000.0	19.46	0.00	5,958.8	-122.1	571.2	-50.1	7.50	7.50	0.00
6,100.0	26.96	0.00	6,050.7	-82.8	571.2	-11.0	7.50	7.50	0.00
6,200.0	34.46	0.00	6,136.6	-31.7	571.2	39.7	7.50	7.50	0.00
6,250.2	38.21	0.00	6,177.0	-2.0	571.2	69.2	7.47	7.47	0.00
<b>SHARON SPRINGS</b>									
6,300.0	41.96	0.00	6,215.1	30.1	571.2	101.0	7.53	7.53	0.00
6,400.0	49.46	0.00	6,284.9	101.6	571.2	172.0	7.50	7.50	0.00
6,412.7	50.41	0.00	6,293.0	111.3	571.2	181.6	7.50	7.50	0.00
<b>NIORARA A</b>									
6,500.0	56.96	0.00	6,344.7	181.7	571.2	251.4	7.50	7.50	0.00
6,513.6	57.98	0.00	6,352.0	193.1	571.2	262.8	7.50	7.50	0.00
<b>NIORARA B</b>									
6,600.0	64.46	0.00	6,393.6	268.8	571.2	337.9	7.50	7.50	0.00
6,700.0	71.96	0.00	6,430.7	361.6	571.2	429.9	7.50	7.50	0.00
6,721.4	73.57	0.00	6,437.0	382.0	571.2	450.2	7.50	7.50	0.00
<b>NIORARA C</b>									
6,800.0	79.46	0.00	6,455.3	458.4	571.2	526.0	7.50	7.50	0.00
6,900.0	86.96	0.00	6,467.1	557.7	571.2	624.5	7.50	7.50	0.00
6,941.7	90.09	0.00	6,468.2	599.4	571.2	665.8	7.50	7.50	0.00
<b>End of Build - 7"</b>									
7,000.0	90.09	0.00	6,468.1	657.7	571.2	723.7	0.00	0.00	0.00
7,100.0	90.09	0.00	6,468.0	757.7	571.2	822.9	0.00	0.00	0.00
7,200.0	90.09	0.00	6,467.8	857.7	571.2	922.1	0.00	0.00	0.00
7,300.0	90.09	0.00	6,467.6	957.7	571.2	1,021.3	0.00	0.00	0.00
7,400.0	90.09	0.00	6,467.5	1,057.7	571.2	1,120.6	0.00	0.00	0.00
7,500.0	90.09	0.00	6,467.3	1,157.7	571.2	1,219.8	0.00	0.00	0.00
7,600.0	90.09	0.00	6,467.2	1,257.7	571.2	1,319.0	0.00	0.00	0.00
7,700.0	90.09	0.00	6,467.0	1,357.7	571.2	1,418.2	0.00	0.00	0.00
7,800.0	90.09	0.00	6,466.9	1,457.7	571.2	1,517.4	0.00	0.00	0.00
7,900.0	90.09	0.00	6,466.7	1,557.7	571.2	1,616.7	0.00	0.00	0.00
8,000.0	90.09	0.00	6,466.5	1,657.7	571.2	1,715.9	0.00	0.00	0.00

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Project:</b>	SEC.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-19-14)		

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)
8,100.0	90.09	0.00	6,466.4	1,757.7	571.2	1,815.1	0.00	0.00	0.00
8,200.0	90.09	0.00	6,466.2	1,857.7	571.2	1,914.3	0.00	0.00	0.00
8,300.0	90.09	0.00	6,466.1	1,957.7	571.2	2,013.6	0.00	0.00	0.00
8,400.0	90.09	0.00	6,465.9	2,057.7	571.2	2,112.8	0.00	0.00	0.00
8,500.0	90.09	0.00	6,465.8	2,157.7	571.2	2,212.0	0.00	0.00	0.00
8,600.0	90.09	0.00	6,465.6	2,257.7	571.2	2,311.2	0.00	0.00	0.00
8,700.0	90.09	0.00	6,465.4	2,357.7	571.2	2,410.4	0.00	0.00	0.00
8,800.0	90.09	0.00	6,465.3	2,457.7	571.2	2,509.7	0.00	0.00	0.00
8,900.0	90.09	0.00	6,465.1	2,557.7	571.2	2,608.9	0.00	0.00	0.00
9,000.0	90.09	0.00	6,465.0	2,657.7	571.2	2,708.1	0.00	0.00	0.00
9,100.0	90.09	0.00	6,464.8	2,757.7	571.2	2,807.3	0.00	0.00	0.00
9,200.0	90.09	0.00	6,464.7	2,857.7	571.2	2,906.5	0.00	0.00	0.00
9,300.0	90.09	0.00	6,464.5	2,957.7	571.2	3,005.8	0.00	0.00	0.00
9,400.0	90.09	0.00	6,464.3	3,057.7	571.2	3,105.0	0.00	0.00	0.00
9,500.0	90.09	0.00	6,464.2	3,157.7	571.2	3,204.2	0.00	0.00	0.00
9,600.0	90.09	0.00	6,464.0	3,257.7	571.2	3,303.4	0.00	0.00	0.00
9,700.0	90.09	0.00	6,463.9	3,357.7	571.2	3,402.6	0.00	0.00	0.00
9,800.0	90.09	0.00	6,463.7	3,457.7	571.2	3,501.9	0.00	0.00	0.00
9,900.0	90.09	0.00	6,463.6	3,557.7	571.2	3,601.1	0.00	0.00	0.00
10,000.0	90.09	0.00	6,463.4	3,657.7	571.2	3,700.3	0.00	0.00	0.00
10,100.0	90.09	0.00	6,463.2	3,757.7	571.2	3,799.5	0.00	0.00	0.00
10,200.0	90.09	0.00	6,463.1	3,857.7	571.2	3,898.8	0.00	0.00	0.00
10,300.0	90.09	0.00	6,462.9	3,957.7	571.2	3,998.0	0.00	0.00	0.00
10,400.0	90.09	0.00	6,462.8	4,057.7	571.2	4,097.2	0.00	0.00	0.00
10,500.0	90.09	0.00	6,462.6	4,157.7	571.2	4,196.4	0.00	0.00	0.00
10,600.0	90.09	0.00	6,462.5	4,257.7	571.2	4,295.6	0.00	0.00	0.00
10,700.0	90.09	0.00	6,462.3	4,357.7	571.2	4,394.9	0.00	0.00	0.00
10,800.0	90.09	0.00	6,462.1	4,457.7	571.2	4,494.1	0.00	0.00	0.00
10,892.6	90.09	0.00	6,462.0	4,550.3	571.2	4,586.0	0.00	0.00	0.00

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL 215'FSL & 2003'I	0.00	0.00	1.0	0.0	0.0	1,377,089.93	3,289,124.19	40.363870	-104.462420
- plan hits target									
- Point									
BHL 500'FNL & 2611'	0.00	0.00	6,462.0	4,550.3	571.2	1,381,646.35	3,289,642.05	40.376360	-104.460370
- plan hits target									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
6,941.7	6,468.2	7"	7	7-1/2	

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Project:</b>	SEC.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-19-14)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,342.6	3,320.0	PARKMAN		0.00		
3,876.7	3,850.0	SUSSEX		0.00		
4,894.6	4,860.0	SHANNON		0.00		
6,250.2	6,177.0	SHARON SPRINGS		0.00		
6,412.7	6,293.0	NIOBRARA A		0.00		
6,513.6	6,352.0	NIOBRARA B		0.00		
6,721.4	6,437.0	NIOBRARA C		0.00		
3,590.0	6,527.0	FT HAYS		0.00		
3,590.0	6,550.0	CODELL		0.00		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP #1
5,740.5	5,704.3	-165.8	571.2	KOP #2
6,941.7	6,468.2	599.4	571.2	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.29-T5N-R63W**

**R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W**

**R&R Farms 29Q-301**

**Wellbore #1**

**Plan #1 (9-19-14)**

## **Anticollision Report**

**25 September, 2014**





<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (9-19-14)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.0ft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 9/24/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	10,891.8	Plan #1 (9-19-14) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Existing Wells Sec.29-T5N-R63W						
Rothe 23-29U (Exist.) - Wellbore #1 - Wellbore #1	7,976.1	6,447.7	574.9	526.7	11.938	CC, ES
Rothe 23-29U (Exist.) - Wellbore #1 - Wellbore #1	8,100.0	6,446.3	588.1	537.8	11.686	SF
Rothe 24-29U (Exist.) - Wellbore #1 - Wellbore #1	100.0	83.9	433.6	433.3	2,097.038	CC
Rothe 24-29U (Exist.) - Wellbore #1 - Wellbore #1	200.0	183.7	433.6	433.1	797.643	ES
Rothe 24-29U (Exist.) - Wellbore #1 - Wellbore #1	6,900.0	6,461.0	602.0	570.5	19.140	SF
R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W						
R&R Farms 29L-201 - Wellbore #1 - Plan #1 (9-19-14)	200.0	199.0	87.4	86.8	130.095	CC, ES
R&R Farms 29L-201 - Wellbore #1 - Plan #1 (9-19-14)	900.0	889.4	149.5	145.5	37.113	SF
R&R Farms 29L-321 - Wellbore #1 - Plan #1 (9-19-14)	200.0	199.0	149.4	148.7	222.294	CC, ES
R&R Farms 29L-321 - Wellbore #1 - Plan #1 (9-19-14)	10,892.6	10,872.6	691.0	515.4	3.935	SF
R&R Farms 29L-421 - Wellbore #1 - Plan #1 (9-19-14)	200.0	199.0	120.2	119.5	178.883	CC, ES
R&R Farms 29L-421 - Wellbore #1 - Plan #1 (9-19-14)	10,892.6	10,948.9	931.7	756.4	5.317	SF
R&R Farms 29Q-241 - Wellbore #1 - Plan #1 (9-19-14)	200.0	199.0	58.3	57.6	86.734	CC, ES
R&R Farms 29Q-241 - Wellbore #1 - Plan #1 (9-19-14)	10,892.6	10,792.6	454.3	279.7	2.601	SF
R&R Farms 29Q-441 - Wellbore #1 - Plan #1 (9-19-14)	200.0	199.0	29.1	28.5	43.361	CC, ES
R&R Farms 29Q-441 - Wellbore #1 - Plan #1 (9-19-14)	10,892.6	10,945.5	234.2	73.4	1.457	Level 3, SF

Offset Design Existing Wells Sec.29-T5N-R63W - Rothe 23-29U (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 600-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)		
7,200.0	6,467.8	6,456.7	6,454.4	23.7	13.1	-91.08	1,633.7	-3.7	965.8	930.3	35.54	27.178	
7,300.0	6,467.6	6,455.5	6,453.2	25.1	13.1	-90.96	1,633.7	-3.7	887.4	850.4	37.02	23.973	
7,400.0	6,467.5	6,454.4	6,452.1	26.6	13.1	-90.85	1,633.7	-3.7	813.9	775.3	38.56	21.107	
7,500.0	6,467.3	6,453.2	6,450.9	28.2	13.1	-90.73	1,633.7	-3.7	746.4	706.3	40.15	18.593	
7,600.0	6,467.2	6,452.0	6,449.7	29.7	13.1	-90.61	1,633.7	-3.7	687.0	645.2	41.77	16.445	
7,700.0	6,467.0	6,450.9	6,448.6	31.4	13.1	-90.50	1,633.7	-3.7	637.8	594.3	43.43	14.683	
7,800.0	6,466.9	6,449.7	6,447.4	33.0	13.1	-90.38	1,633.8	-3.7	601.3	556.1	45.12	13.325	
7,900.0	6,466.7	6,448.6	6,446.3	34.7	13.1	-90.27	1,633.8	-3.7	579.9	533.1	46.84	12.381	
7,976.1	6,466.6	6,447.7	6,445.4	36.0	13.1	-90.18	1,633.8	-3.7	574.9	526.7	48.16	11.938	CC, ES

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R63W - Rothe 23-29U (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 600-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
8,000.0	6,466.5	6,447.4	6,445.1	36.4	13.1	-90.15	1,633.8	-3.7	575.4	526.8	48.57	11.846		
8,100.0	6,466.4	6,446.3	6,443.9	38.1	13.1	-90.04	1,633.8	-3.7	588.1	537.8	50.32	11.686	SF	
8,200.0	6,466.2	6,445.1	6,442.8	39.9	13.1	-89.92	1,633.8	-3.7	616.9	564.9	52.09	11.844		
8,300.0	6,466.1	6,444.0	6,441.6	41.6	13.1	-89.81	1,633.8	-3.7	659.8	606.0	53.87	12.249		
8,400.0	6,465.9	6,442.8	6,440.5	43.4	13.1	-89.69	1,633.8	-3.7	714.3	658.6	55.66	12.832		
8,500.0	6,465.8	6,441.7	6,439.3	45.2	13.1	-89.58	1,633.8	-3.7	777.8	720.3	57.46	13.535		
8,600.0	6,465.6	6,440.5	6,438.2	47.0	13.1	-89.46	1,633.8	-3.7	848.3	789.1	59.27	14.312		
8,700.0	6,465.4	6,439.4	6,437.1	48.8	13.1	-89.35	1,633.9	-3.7	924.4	863.3	61.09	15.131		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R63W - Rothe 24-29U (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft	
Survey Program: 600-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
0.0	0.0	0.0	0.0	0.0	0.0	0.37	433.5	2.8	433.8							
100.0	100.0	83.9	83.9	0.1	0.1	0.37	433.5	2.8	433.6	433.3	0.21	2,097.038	CC			
200.0	200.0	183.7	183.7	0.3	0.2	0.36	433.6	2.7	433.6	433.1	0.54	797.643	ES			
300.0	300.0	283.5	283.5	0.5	0.3	-106.05	433.7	2.7	434.2	433.3	0.87	500.476				
400.0	399.8	383.2	383.2	0.8	0.4	-106.69	433.8	2.5	435.8	434.6	1.20	363.592				
500.0	499.5	482.6	482.6	1.0	0.5	-107.74	434.0	2.4	438.6	437.0	1.56	281.375				
600.0	598.7	581.7	581.7	1.3	0.7	-109.17	434.2	2.2	442.6	440.6	1.95	226.881				
700.0	698.0	682.1	682.1	1.6	0.8	-110.72	434.3	2.0	447.0	444.5	2.43	183.849				
800.0	797.2	781.9	781.9	1.9	1.0	-112.22	434.2	1.8	451.4	448.5	2.92	154.638				
900.0	896.4	881.0	881.0	2.2	1.2	-113.67	434.0	1.7	456.2	452.8	3.42	133.496				
1,000.0	995.6	979.7	979.7	2.6	1.5	-115.11	433.9	1.4	461.3	457.4	3.93	117.443				
1,100.0	1,094.9	1,078.6	1,078.6	2.9	1.7	-116.56	433.8	0.7	466.8	462.3	4.44	105.080				
1,200.0	1,194.1	1,177.6	1,177.6	3.2	1.9	-117.99	433.8	-0.1	472.6	467.6	4.95	95.379				
1,300.0	1,293.3	1,276.6	1,276.6	3.5	2.1	-119.40	433.7	-0.9	478.7	473.2	5.46	87.601				
1,400.0	1,392.5	1,375.6	1,375.5	3.8	2.3	-120.79	433.6	-1.9	485.2	479.2	5.97	81.244				
1,500.0	1,491.7	1,474.5	1,474.5	4.2	2.6	-122.15	433.5	-3.0	491.9	485.4	6.48	75.969				
1,600.0	1,591.0	1,573.8	1,573.8	4.5	2.8	-123.49	433.4	-4.2	499.0	492.0	6.98	71.534				
1,700.0	1,690.2	1,673.3	1,673.2	4.8	3.0	-124.81	433.2	-5.6	506.2	498.7	7.47	67.750				
1,800.0	1,789.4	1,772.7	1,772.6	5.1	3.2	-126.11	432.9	-7.0	513.6	505.7	7.96	64.490				
1,900.0	1,888.6	1,872.1	1,872.0	5.5	3.4	-127.39	432.4	-8.6	521.2	512.8	8.45	61.658				
2,000.0	1,987.9	1,971.5	1,971.4	5.8	3.7	-128.65	431.9	-10.3	529.1	520.1	8.94	59.180				
2,100.0	2,087.1	2,070.1	2,070.0	6.1	3.9	-129.88	431.2	-12.1	537.1	527.7	9.42	56.996				
2,200.0	2,186.3	2,168.4	2,168.3	6.5	4.1	-131.10	430.5	-14.2	545.5	535.6	9.90	55.079				
2,300.0	2,285.5	2,266.6	2,266.5	6.8	4.3	-132.31	429.9	-16.6	554.3	543.9	10.38	53.395				
2,400.0	2,384.8	2,364.7	2,364.5	7.1	4.5	-133.51	429.3	-19.3	563.4	552.6	10.85	51.911				
2,500.0	2,484.0	2,462.8	2,462.5	7.4	4.8	-134.68	428.6	-22.2	573.0	561.6	11.32	50.600				
2,600.0	2,583.2	2,561.5	2,561.2	7.8	5.0	-135.85	428.0	-25.3	582.9	571.1	11.78	49.478				
2,700.0	2,682.4	2,660.8	2,660.5	8.1	5.2	-136.95	427.5	-28.2	592.9	580.7	12.23	48.484				
2,800.0	2,781.6	2,760.2	2,759.8	8.4	5.4	-137.98	427.1	-30.7	603.1	590.4	12.68	47.573				
2,900.0	2,880.9	2,859.6	2,859.2	8.7	5.6	-138.94	426.8	-32.9	613.4	600.3	13.13	46.734				
3,000.0	2,980.1	2,959.2	2,958.8	9.1	5.8	-139.84	426.7	-34.7	623.8	610.2	13.57	45.957				
3,100.0	3,079.3	3,058.0	3,057.6	9.4	6.0	-140.68	426.7	-36.2	634.2	620.2	14.01	45.263				
3,200.0	3,178.5	3,156.2	3,155.8	9.7	6.2	-141.46	426.9	-37.6	644.9	630.5	14.45	44.644				
3,300.0	3,277.8	3,254.5	3,254.1	10.1	6.4	-142.20	427.3	-38.9	655.8	640.9	14.88	44.078				
3,400.0	3,377.0	3,352.8	3,352.4	10.4	6.6	-142.89	427.9	-40.0	667.0	651.6	15.31	43.558				
3,500.0	3,476.2	3,451.1	3,450.6	10.7	6.7	-143.55	428.8	-41.1	678.3	662.6	15.74	43.081				
3,600.0	3,575.4	3,551.0	3,550.5	11.0	6.9	-144.17	429.9	-42.0	689.8	673.6	16.18	42.621				
3,700.0	3,674.6	3,652.5	3,652.0	11.4	7.2	-144.79	430.7	-42.8	701.0	684.4	16.63	42.160				
3,800.0	3,773.9	3,754.1	3,753.6	11.7	7.4	-145.39	431.2	-43.4	712.0	695.0	17.07	41.708				
3,900.0	3,873.1	3,855.8	3,855.3	12.0	7.6	-145.98	431.4	-43.8	722.8	705.3	17.52	41.265				
4,000.0	3,972.3	3,957.5	3,957.0	12.3	7.8	-146.56	431.3	-44.1	733.2	715.3	17.96	40.831				
4,100.0	4,071.5	4,057.6	4,057.1	12.7	8.0	-147.11	431.0	-44.1	743.5	725.1	18.40	40.412				
4,200.0	4,170.8	4,156.5	4,156.0	13.0	8.2	-147.62	430.8	-44.1	753.8	734.9	18.84	40.018				
4,300.0	4,270.0	4,255.4	4,254.9	13.3	8.4	-148.11	430.8	-43.8	764.2	744.9	19.27	39.647				
4,400.0	4,369.2	4,354.3	4,353.8	13.7	8.6	-148.56	431.0	-43.5	774.7	755.0	19.71	39.296				
4,500.0	4,468.4	4,453.2	4,452.7	14.0	8.8	-148.98	431.4	-42.9	785.3	765.2	20.16	38.964				
4,600.0	4,567.6	4,552.6	4,552.1	14.3	9.0	-149.38	432.0	-42.3	796.0	775.4	20.60	38.643				
4,700.0	4,666.9	4,652.4	4,651.9	14.6	9.2	-149.78	432.5	-41.6	806.6	785.6	21.04	38.331				
4,800.0	4,766.1	4,752.2	4,751.8	15.0	9.4	-150.17	432.9	-41.0	817.3	795.8	21.49	38.032				
4,900.0	4,865.3	4,852.1	4,851.6	15.3	9.6	-150.55	433.2	-40.4	827.9	805.9	21.93	37.745				
5,000.0	4,964.5	4,951.9	4,951.4	15.6	9.8	-150.95	433.3	-39.8	838.4	816.0	22.38	37.468				

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R63W - Rothe 24-29U (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 600-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	5,064.0	5,053.8	5,053.3	15.8	10.0	-151.33	433.4	-39.1	846.7	823.9	22.78	37.169		
5,200.0	5,163.8	5,157.8	5,157.3	16.0	10.2	-151.56	433.1	-38.1	851.5	828.4	23.17	36.758		
5,300.0	5,263.8	5,261.9	5,261.4	16.2	10.4	-151.64	432.4	-36.8	852.8	829.3	23.53	36.244		
5,400.0	5,363.8	5,366.1	5,365.5	16.3	10.6	-45.43	431.4	-35.0	851.2	827.3	23.91	35.599		
5,500.0	5,463.8	5,470.2	5,469.6	16.4	10.9	-45.39	430.1	-33.0	848.9	824.6	24.30	34.932		
5,600.0	5,563.8	5,570.3	5,569.7	16.6	11.1	-45.36	428.6	-30.7	846.2	821.5	24.68	34.281		
5,700.0	5,663.8	5,668.7	5,668.1	16.7	11.3	-45.33	427.2	-28.6	843.7	818.6	25.07	33.658		
5,800.0	5,763.7	5,767.1	5,766.5	16.9	11.5	-45.56	426.0	-26.7	839.8	814.4	25.36	33.119		
5,900.0	5,862.6	5,864.4	5,863.7	17.0	11.7	-46.88	424.8	-24.8	827.7	802.3	25.41	32.571		
6,000.0	5,958.8	5,958.9	5,958.2	17.1	11.9	-49.38	423.9	-23.2	807.2	781.9	25.31	31.888		
6,100.0	6,050.7	6,049.8	6,049.1	17.1	12.1	-53.15	423.1	-21.6	779.4	754.2	25.19	30.935		
6,200.0	6,136.6	6,135.3	6,134.6	17.2	12.2	-58.22	422.3	-20.2	745.7	720.5	25.23	29.555		
6,300.0	6,215.1	6,213.3	6,212.6	17.3	12.4	-64.45	421.6	-18.9	708.3	682.7	25.58	27.686		
6,400.0	6,284.9	6,282.5	6,281.7	17.3	12.5	-71.44	421.0	-17.7	670.0	643.7	26.29	25.487		
6,500.0	6,344.7	6,341.7	6,340.9	17.5	12.7	-78.47	420.5	-16.7	634.6	607.4	27.23	23.307		
6,600.0	6,393.6	6,389.8	6,389.1	17.8	12.8	-84.66	420.0	-15.9	606.3	578.1	28.24	21.474		
6,700.0	6,430.7	6,426.2	6,425.4	18.3	12.8	-89.24	419.7	-15.2	589.4	560.1	29.24	20.155		
6,762.7	6,447.6	6,442.6	6,441.8	18.7	12.9	-91.02	419.6	-15.0	586.2	556.3	29.92	19.596		
6,800.0	6,455.3	6,450.0	6,449.2	19.0	12.9	-91.65	419.5	-14.8	587.4	557.1	30.30	19.384		
6,900.0	6,467.1	6,461.0	6,460.2	20.0	12.9	-91.60	419.4	-14.6	602.0	570.5	31.45	19.140 SF		
7,000.0	6,468.1	6,461.1	6,460.3	21.1	12.9	-90.76	419.4	-14.6	632.4	599.8	32.67	19.361		
7,100.0	6,468.0	6,460.1	6,459.3	22.4	12.9	-90.66	419.4	-14.7	676.5	642.5	33.99	19.900		
7,200.0	6,467.8	6,459.0	6,458.2	23.7	12.9	-90.56	419.4	-14.7	731.6	696.2	35.41	20.664		
7,300.0	6,467.6	6,458.0	6,457.2	25.1	12.9	-90.46	419.5	-14.7	795.6	758.7	36.89	21.567		
7,400.0	6,467.5	6,457.0	6,456.2	26.6	12.9	-90.36	419.5	-14.7	866.4	827.9	38.43	22.545		
7,500.0	6,467.3	6,456.0	6,455.2	28.2	12.9	-90.26	419.5	-14.7	942.4	902.4	40.02	23.552		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W - R&R Farms 29L-201 - Wellbore #1 - Plan #1 (9-19-1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	0.00	87.4	0.0	87.4					
100.0	100.0	99.0	99.0	0.1	0.1	0.00	87.4	0.0	87.4	87.2	0.22	390.935		
200.0	200.0	199.0	199.0	0.3	0.3	0.00	87.4	0.0	87.4	86.8	0.67	130.095 CC, ES		
300.0	300.0	298.9	298.9	0.5	0.6	-108.38	87.4	-1.7	88.0	86.9	1.10	80.079		
400.0	399.8	398.1	397.9	0.8	0.8	-114.71	87.4	-6.8	90.4	88.9	1.54	58.666		
500.0	499.5	497.4	496.9	1.0	1.0	-124.28	87.1	-15.2	96.4	94.3	2.03	47.471		
600.0	598.7	597.2	596.1	1.3	1.3	-135.41	84.1	-25.5	105.5	102.9	2.53	41.649		
700.0	698.0	695.0	693.1	1.6	1.6	-145.67	79.0	-36.7	117.4	114.3	3.04	38.650		
800.0	797.2	792.2	789.5	1.9	1.9	-153.90	73.7	-47.9	132.3	128.8	3.54	37.404		
900.0	896.4	889.4	886.0	2.2	2.2	-160.40	68.5	-59.1	149.5	145.5	4.03	37.113 SF		
1,000.0	995.6	986.7	982.4	2.6	2.5	-165.55	63.3	-70.4	168.1	163.6	4.51	37.271		
1,100.0	1,094.9	1,083.9	1,078.8	2.9	2.8	-169.66	58.1	-81.6	187.9	182.9	4.99	37.628		
1,200.0	1,194.1	1,181.1	1,175.3	3.2	3.1	-172.98	52.9	-92.8	208.3	202.9	5.47	38.063		
1,300.0	1,293.3	1,278.3	1,271.7	3.5	3.4	-175.71	47.6	-104.0	229.4	223.4	5.96	38.507		
1,400.0	1,392.5	1,375.6	1,368.1	3.8	3.8	-177.98	42.4	-115.2	250.8	244.4	6.44	38.950		
1,500.0	1,491.7	1,472.8	1,464.6	4.2	4.1	-179.90	37.2	-126.4	272.6	265.7	6.92	39.367		
1,600.0	1,591.0	1,570.0	1,561.0	4.5	4.4	178.47	32.0	-137.6	294.6	287.2	7.41	39.754		
1,700.0	1,690.2	1,667.2	1,657.4	4.8	4.7	177.07	26.8	-148.9	316.9	309.0	7.90	40.110		
1,800.0	1,789.4	1,764.4	1,753.9	5.1	5.0	175.85	21.5	-160.1	339.2	330.9	8.39	40.439		
1,900.0	1,888.6	1,861.7	1,850.3	5.5	5.4	174.78	16.3	-171.3	361.7	352.9	8.88	40.740		
2,000.0	1,987.9	1,958.9	1,946.7	5.8	5.7	173.83	11.1	-182.5	384.4	375.0	9.37	41.016		
2,100.0	2,087.1	2,056.1	2,043.2	6.1	6.0	172.99	5.9	-193.7	407.1	397.2	9.86	41.271		
2,200.0	2,186.3	2,153.3	2,139.6	6.5	6.3	172.24	0.7	-204.9	429.8	419.5	10.36	41.505		
2,300.0	2,285.5	2,250.6	2,236.0	6.8	6.7	171.57	-4.5	-216.1	452.7	441.8	10.85	41.721		
2,400.0	2,384.8	2,347.8	2,332.5	7.1	7.0	170.96	-9.8	-227.4	475.6	464.2	11.34	41.921		
2,500.0	2,484.0	2,445.0	2,428.9	7.4	7.3	170.40	-15.0	-238.6	498.5	486.7	11.84	42.106		
2,600.0	2,583.2	2,542.2	2,525.4	7.8	7.6	169.90	-20.2	-249.8	521.5	509.2	12.34	42.278		
2,700.0	2,682.4	2,639.5	2,621.8	8.1	8.0	169.43	-25.4	-261.0	544.5	531.7	12.83	42.438		
2,800.0	2,781.6	2,736.7	2,718.2	8.4	8.3	169.01	-30.6	-272.2	567.6	554.3	13.33	42.587		
2,900.0	2,880.9	2,833.9	2,814.7	8.7	8.6	168.61	-35.9	-283.4	590.7	576.8	13.82	42.726		
3,000.0	2,980.1	2,931.1	2,911.1	9.1	8.9	168.25	-41.1	-294.6	613.8	599.4	14.32	42.856		
3,100.0	3,079.3	3,028.4	3,007.5	9.4	9.3	167.91	-46.3	-305.9	636.9	622.1	14.82	42.978		
3,200.0	3,178.5	3,125.6	3,104.0	9.7	9.6	167.60	-51.5	-317.1	660.0	644.7	15.32	43.092		
3,300.0	3,277.8	3,222.8	3,200.4	10.1	9.9	167.31	-56.7	-328.3	683.2	667.4	15.81	43.200		
3,400.0	3,377.0	3,320.0	3,296.8	10.4	10.2	167.04	-62.0	-339.5	706.4	690.0	16.31	43.302		
3,500.0	3,476.2	3,417.3	3,393.3	10.7	10.6	166.78	-67.2	-350.7	729.5	712.7	16.81	43.397		
3,600.0	3,575.4	3,514.5	3,489.7	11.0	10.9	166.54	-72.4	-361.9	752.8	735.4	17.31	43.488		
3,700.0	3,674.6	3,611.7	3,586.1	11.4	11.2	166.32	-77.6	-373.1	776.0	758.2	17.81	43.573		
3,800.0	3,773.9	3,708.9	3,682.6	11.7	11.5	166.10	-82.8	-384.4	799.2	780.9	18.31	43.654		
3,900.0	3,873.1	3,806.2	3,779.0	12.0	11.9	165.90	-88.0	-395.6	822.4	803.6	18.81	43.731		
4,000.0	3,972.3	3,903.4	3,875.4	12.3	12.2	165.71	-93.3	-406.8	845.7	826.4	19.31	43.804		
4,100.0	4,071.5	4,000.6	3,971.9	12.7	12.5	165.53	-98.5	-418.0	868.9	849.1	19.81	43.874		
4,200.0	4,170.8	4,097.8	4,068.3	13.0	12.8	165.36	-103.7	-429.2	892.2	871.9	20.30	43.940		
4,300.0	4,270.0	4,195.0	4,164.7	13.3	13.2	165.20	-108.9	-440.4	915.4	894.6	20.80	44.002		
4,400.0	4,369.2	4,292.3	4,261.2	13.7	13.5	165.05	-114.1	-451.6	938.7	917.4	21.30	44.062		
4,500.0	4,468.4	4,389.5	4,357.6	14.0	13.8	164.90	-119.4	-462.9	962.0	940.2	21.80	44.119		
4,600.0	4,567.6	4,486.7	4,454.0	14.3	14.1	164.76	-124.6	-474.1	985.3	963.0	22.30	44.174		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W - R&R Farms 29L-321 - Wellbore #1 - Plan #1 (9-19-1										Offset Site Error:		0.0ft
Survey Program: 0-MWD												Offset Well Error:		0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
				(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	1.07	149.4	2.8	149.4					
100.0	100.0	99.0	99.0	0.1	0.1	1.07	149.4	2.8	149.4	149.2	0.22	667.994		
200.0	200.0	199.0	199.0	0.3	0.3	1.07	149.4	2.8	149.4	148.7	0.67	222.294	CC, ES	
300.0	300.0	299.0	299.0	0.5	0.6	-105.75	149.4	2.8	149.9	148.7	1.11	135.181		
400.0	399.8	398.8	398.8	0.8	0.8	-107.63	149.4	2.8	151.4	149.8	1.55	97.524		
500.0	499.5	498.5	498.5	1.0	1.0	-110.65	149.4	2.8	154.2	152.2	2.02	76.260		
600.0	598.7	597.7	597.7	1.3	1.2	-114.59	149.4	2.8	158.8	156.3	2.52	63.052		
700.0	698.0	697.0	697.0	1.6	1.5	-118.52	149.4	2.8	164.4	161.4	3.02	54.407		
800.0	797.2	796.2	796.2	1.9	1.7	-122.17	149.4	2.8	170.8	167.2	3.52	48.462		
900.0	896.4	895.4	895.4	2.2	1.9	-125.55	149.4	2.8	177.7	173.7	4.02	44.211		
1,000.0	995.6	994.6	994.6	2.6	2.1	-128.67	149.4	2.8	185.3	180.8	4.51	41.073		
1,100.0	1,094.9	1,093.9	1,093.9	2.9	2.3	-131.53	149.4	2.8	193.3	188.3	5.00	38.696		
1,200.0	1,194.1	1,193.1	1,193.1	3.2	2.6	-134.17	149.4	2.8	201.8	196.4	5.48	36.857		
1,300.0	1,293.3	1,292.3	1,292.3	3.5	2.8	-136.59	149.4	2.8	210.7	204.8	5.95	35.408		
1,400.0	1,392.5	1,391.5	1,391.5	3.8	3.0	-138.81	149.4	2.8	220.0	213.5	6.42	34.248		
1,500.0	1,491.7	1,490.7	1,490.7	4.2	3.2	-140.85	149.4	2.8	229.5	222.6	6.89	33.307		
1,600.0	1,591.0	1,590.0	1,590.0	4.5	3.5	-142.72	149.4	2.8	239.3	232.0	7.36	32.535		
1,700.0	1,690.2	1,689.2	1,689.2	4.8	3.7	-144.45	149.4	2.8	249.4	241.5	7.82	31.893		
1,800.0	1,789.4	1,788.4	1,788.4	5.1	3.9	-146.05	149.4	2.8	259.6	251.3	8.28	31.355		
1,900.0	1,888.6	1,887.6	1,887.6	5.5	4.1	-147.52	149.4	2.8	270.0	261.3	8.74	30.900		
2,000.0	1,987.9	1,986.9	1,986.9	5.8	4.4	-148.88	149.4	2.8	280.6	271.4	9.20	30.512		
2,100.0	2,087.1	2,089.9	2,089.8	6.1	4.6	-150.44	148.1	2.3	290.8	281.2	9.63	30.196		
2,200.0	2,186.3	2,193.1	2,193.0	6.5	4.7	-152.54	143.3	0.4	299.8	289.8	10.02	29.910		
2,300.0	2,285.5	2,295.8	2,295.3	6.8	4.9	-155.15	135.1	-2.7	308.0	297.6	10.41	29.587		
2,400.0	2,384.8	2,396.2	2,394.9	7.1	5.1	-158.11	124.2	-7.0	315.7	304.9	10.79	29.254		
2,500.0	2,484.0	2,494.5	2,492.6	7.4	5.3	-160.95	113.0	-11.4	324.2	313.0	11.19	28.971		
2,600.0	2,583.2	2,592.9	2,590.2	7.8	5.5	-163.65	101.8	-15.7	333.4	321.8	11.60	28.734		
2,700.0	2,682.4	2,691.2	2,687.8	8.1	5.8	-166.20	90.6	-20.1	343.3	331.3	12.03	28.536		
2,800.0	2,781.6	2,789.5	2,785.4	8.4	6.0	-168.61	79.4	-24.4	353.9	341.4	12.47	28.370		
2,900.0	2,880.9	2,887.9	2,883.0	8.7	6.2	-170.87	68.2	-28.8	365.0	352.1	12.93	28.231		
3,000.0	2,980.1	2,986.2	2,980.6	9.1	6.5	-173.00	57.1	-33.1	376.7	363.3	13.40	28.114		
3,100.0	3,079.3	3,084.6	3,078.2	9.4	6.7	-175.00	45.9	-37.5	388.9	375.0	13.88	28.018		
3,200.0	3,178.5	3,182.9	3,175.8	9.7	7.0	-176.89	34.7	-41.8	401.5	387.2	14.37	27.938		
3,300.0	3,277.8	3,281.3	3,273.4	10.1	7.3	-178.65	23.5	-46.2	414.6	399.7	14.87	27.874		
3,400.0	3,377.0	3,379.6	3,371.0	10.4	7.5	-179.69	12.3	-50.5	428.0	412.6	15.38	27.822		
3,500.0	3,476.2	3,478.0	3,468.7	10.7	7.8	-178.13	1.1	-54.9	441.7	425.8	15.90	27.782		
3,600.0	3,575.4	3,576.3	3,566.3	11.0	8.1	-176.67	-10.1	-59.2	455.8	439.4	16.42	27.752		
3,700.0	3,674.6	3,674.7	3,663.9	11.4	8.4	-175.29	-21.3	-63.6	470.1	453.2	16.95	27.732		
3,800.0	3,773.9	3,773.0	3,761.5	11.7	8.6	-174.00	-32.5	-67.9	484.7	467.2	17.49	27.719		
3,900.0	3,873.1	3,871.4	3,859.1	12.0	8.9	-172.78	-43.7	-72.3	499.5	481.5	18.03	27.713		
4,000.0	3,972.3	3,969.7	3,956.7	12.3	9.2	-171.63	-54.9	-76.6	514.6	496.0	18.57	27.713		
4,100.0	4,071.5	4,068.0	4,054.3	12.7	9.5	-170.54	-66.1	-81.0	529.8	510.7	19.11	27.718		
4,200.0	4,170.8	4,166.4	4,151.9	13.0	9.8	-169.52	-77.3	-85.4	545.2	525.5	19.66	27.729		
4,300.0	4,270.0	4,264.7	4,249.5	13.3	10.1	-168.55	-88.4	-89.7	560.7	540.5	20.21	27.743		
4,400.0	4,369.2	4,363.1	4,347.1	13.7	10.4	-167.63	-99.6	-94.1	576.4	555.7	20.76	27.761		
4,500.0	4,468.4	4,461.4	4,444.8	14.0	10.7	-166.77	-110.8	-98.4	592.3	571.0	21.32	27.782		
4,600.0	4,567.6	4,559.8	4,542.4	14.3	11.0	-165.94	-122.0	-102.8	608.3	586.4	21.88	27.806		
4,700.0	4,666.9	4,658.1	4,640.0	14.6	11.3	-165.16	-133.2	-107.1	624.3	601.9	22.43	27.832		
4,800.0	4,766.1	4,756.5	4,737.6	15.0	11.6	-164.42	-144.4	-111.5	640.5	617.6	22.99	27.860		
4,900.0	4,865.3	4,862.6	4,843.1	15.3	11.8	-163.78	-155.1	-115.6	656.3	632.8	23.52	27.901		
5,000.0	4,964.5	4,970.6	4,950.8	15.6	12.1	-163.51	-162.2	-118.4	670.8	646.7	24.02	27.925		

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W - R&R Farms 29L-321 - Wellbore #1 - Plan #1 (9-19-1)										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,100.0	5,064.0	5,079.4	5,059.5	15.8	12.3	163.54	-165.6	-119.7	681.5	657.1	24.45	27.877		
5,200.0	5,163.8	5,182.7	5,162.8	16.0	12.5	163.72	-165.8	-119.8	687.9	663.0	24.82	27.717		
5,300.0	5,263.8	5,282.6	5,262.8	16.2	12.7	163.80	-165.8	-119.8	690.8	665.6	25.15	27.469		
5,400.0	5,363.8	5,382.6	5,362.8	16.3	12.8	-90.00	-165.8	-119.8	691.0	665.5	25.49	27.103		
5,500.0	5,463.8	5,482.6	5,462.8	16.4	13.0	-90.00	-165.8	-119.8	691.0	665.1	25.85	26.730		
5,600.0	5,563.8	5,582.6	5,562.8	16.6	13.2	-90.00	-165.8	-119.8	691.0	664.8	26.21	26.363		
5,700.0	5,663.8	5,682.6	5,662.8	16.7	13.4	-90.00	-165.8	-119.8	691.0	664.4	26.57	26.004		
5,800.0	5,763.7	5,782.6	5,762.7	16.9	13.5	-90.01	-163.6	-119.8	691.0	664.1	26.91	25.675		
5,900.0	5,862.6	5,882.7	5,861.7	17.0	13.6	-90.02	-149.4	-119.8	691.0	663.8	27.14	25.455		
6,000.0	5,958.8	5,982.7	5,957.9	17.1	13.7	-90.03	-122.5	-119.8	691.0	663.7	27.28	25.326		
6,100.0	6,050.7	6,082.8	6,049.9	17.1	13.7	-90.04	-83.2	-119.8	691.0	663.6	27.38	25.239		
6,200.0	6,136.6	6,182.8	6,135.9	17.2	13.7	-90.05	-32.2	-119.8	691.0	663.5	27.50	25.127		
6,300.0	6,215.1	6,282.9	6,214.5	17.3	13.7	-90.06	29.6	-119.8	691.0	663.2	27.74	24.913		
6,400.0	6,284.9	6,383.0	6,284.4	17.3	13.7	-90.06	101.1	-119.8	691.0	662.8	28.17	24.526		
6,500.0	6,344.7	6,483.1	6,344.4	17.5	13.9	-90.07	181.2	-119.8	691.0	662.1	28.90	23.912		
6,600.0	6,393.6	6,583.2	6,393.4	17.8	14.3	-90.08	268.4	-119.8	691.0	661.0	29.96	23.060		
6,700.0	6,430.7	6,683.3	6,430.6	18.3	15.0	-90.08	361.3	-119.8	691.0	659.6	31.40	22.005		
6,800.0	6,455.3	6,783.5	6,455.3	19.0	15.8	-90.08	458.3	-119.8	691.0	657.8	33.20	20.814		
6,900.0	6,467.1	6,883.6	6,467.1	20.0	16.8	-90.08	557.6	-119.8	691.0	655.7	35.31	19.570		
6,994.4	6,469.7	6,978.0	6,468.1	21.0	17.9	-89.95	652.0	-119.8	691.0	653.4	37.54	18.407		
7,000.0	6,468.1	6,983.7	6,468.1	21.1	18.0	-90.08	657.7	-119.8	691.0	653.3	37.68	18.340		
7,100.0	6,468.0	7,083.7	6,468.0	22.4	19.2	-90.08	757.7	-119.8	691.0	650.7	40.27	17.159		
7,200.0	6,467.8	7,183.7	6,467.8	23.7	20.6	-90.08	857.7	-119.8	691.0	647.9	43.05	16.051		
7,300.0	6,467.6	7,283.7	6,467.6	25.1	22.0	-90.08	957.7	-119.8	691.0	645.0	45.98	15.028		
7,400.0	6,467.5	7,383.7	6,467.5	26.6	23.6	-90.08	1,057.7	-119.8	691.0	641.9	49.04	14.090		
7,500.0	6,467.3	7,483.7	6,467.3	28.2	25.1	-90.08	1,157.7	-119.8	691.0	638.8	52.20	13.237		
7,600.0	6,467.2	7,583.7	6,467.2	29.7	26.7	-90.08	1,257.7	-119.8	691.0	635.5	55.45	12.461		
7,700.0	6,467.0	7,683.7	6,467.0	31.4	28.4	-90.08	1,357.7	-119.8	691.0	632.2	58.77	11.757		
7,800.0	6,466.9	7,783.7	6,466.9	33.0	30.1	-90.08	1,457.7	-119.8	691.0	628.8	62.15	11.118		
7,900.0	6,466.7	7,883.7	6,466.7	34.7	31.8	-90.08	1,557.7	-119.8	691.0	625.4	65.58	10.536		
8,000.0	6,466.5	7,983.7	6,466.5	36.4	33.5	-90.08	1,657.7	-119.8	691.0	621.9	69.06	10.006		
8,100.0	6,466.4	8,083.7	6,466.4	38.1	35.3	-90.08	1,757.7	-119.8	691.0	618.4	72.57	9.522		
8,200.0	6,466.2	8,183.7	6,466.2	39.9	37.0	-90.08	1,857.7	-119.8	691.0	614.9	76.11	9.079		
8,300.0	6,466.1	8,283.7	6,466.1	41.6	38.8	-90.08	1,957.7	-119.8	691.0	611.3	79.68	8.672		
8,400.0	6,465.9	8,383.7	6,465.9	43.4	40.6	-90.08	2,057.7	-119.8	691.0	607.7	83.28	8.297		
8,500.0	6,465.8	8,483.7	6,465.8	45.2	42.4	-90.08	2,157.7	-119.8	691.0	604.1	86.89	7.952		
8,600.0	6,465.6	8,583.7	6,465.6	47.0	44.2	-90.08	2,257.7	-119.8	691.0	600.5	90.53	7.633		
8,700.0	6,465.4	8,683.7	6,465.4	48.8	46.1	-90.08	2,357.7	-119.8	691.0	596.8	94.18	7.337		
8,800.0	6,465.3	8,783.7	6,465.3	50.6	47.9	-90.08	2,457.7	-119.8	691.0	593.1	97.84	7.062		
8,900.0	6,465.1	8,883.7	6,465.1	52.4	49.7	-90.08	2,557.7	-119.8	691.0	589.5	101.52	6.806		
9,000.0	6,465.0	8,983.7	6,465.0	54.2	51.6	-90.08	2,657.7	-119.8	691.0	585.8	105.21	6.568		
9,100.0	6,464.8	9,083.7	6,464.8	56.1	53.4	-90.08	2,757.7	-119.8	691.0	582.1	108.91	6.344		
9,200.0	6,464.7	9,183.7	6,464.7	57.9	55.3	-90.08	2,857.7	-119.8	691.0	578.4	112.62	6.135		
9,300.0	6,464.5	9,283.7	6,464.5	59.7	57.2	-90.08	2,957.7	-119.8	691.0	574.6	116.34	5.939		
9,400.0	6,464.3	9,383.7	6,464.3	61.6	59.0	-90.08	3,057.7	-119.8	691.0	570.9	120.07	5.755		
9,500.0	6,464.2	9,483.7	6,464.2	63.4	60.9	-90.08	3,157.7	-119.8	691.0	567.2	123.80	5.581		
9,600.0	6,464.0	9,583.7	6,464.0	65.3	62.8	-90.08	3,257.7	-119.8	691.0	563.4	127.54	5.418		
9,700.0	6,463.9	9,683.7	6,463.9	67.2	64.6	-90.08	3,357.7	-119.8	691.0	559.7	131.28	5.263		
9,800.0	6,463.7	9,783.7	6,463.7	69.0	66.5	-90.08	3,457.7	-119.8	691.0	555.9	135.03	5.117		
9,900.0	6,463.6	9,883.7	6,463.6	70.9	68.4	-90.08	3,557.7	-119.8	691.0	552.2	138.79	4.979		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
10,000.0	6,463.4	9,983.7	6,463.4	72.8	70.3	-90.08	3,657.7	-119.8	691.0	548.4	142.55	4.847		
10,100.0	6,463.2	10,083.7	6,463.2	74.6	72.1	-90.08	3,757.7	-119.8	691.0	544.7	146.31	4.723		
10,200.0	6,463.1	10,183.7	6,463.1	76.5	74.0	-90.08	3,857.7	-119.8	691.0	540.9	150.08	4.604		
10,300.0	6,462.9	10,283.7	6,462.9	78.4	75.9	-90.08	3,957.7	-119.8	691.0	537.1	153.85	4.491		
10,400.0	6,462.8	10,383.7	6,462.8	80.3	77.8	-90.08	4,057.7	-119.8	691.0	533.3	157.63	4.384		
10,500.0	6,462.6	10,483.7	6,462.6	82.1	79.7	-90.08	4,157.7	-119.8	691.0	529.6	161.41	4.281		
10,600.0	6,462.5	10,583.7	6,462.5	84.0	81.6	-90.08	4,257.7	-119.8	691.0	525.8	165.19	4.183		
10,700.0	6,462.3	10,683.7	6,462.3	85.9	83.5	-90.08	4,357.7	-119.8	691.0	522.0	168.97	4.089		
10,800.0	6,462.1	10,783.7	6,462.1	87.8	85.4	-90.08	4,457.7	-119.8	691.0	518.2	172.76	4.000		
10,854.9	6,462.1	10,838.6	6,462.1	88.6	86.3	-90.08	4,512.6	-119.8	691.0	516.5	174.50	3.960		
10,892.6	6,462.0	10,872.6	6,462.0	89.2	86.8	-90.08	4,546.6	-119.8	691.0	515.4	175.60	3.935 SF		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W - R&R Farms 29L-421 - Wellbore #1 - Plan #1 (9-19-1										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	0.00	120.2	0.0	120.2					
100.0	100.0	99.0	99.0	0.1	0.1	0.00	120.2	0.0	120.2	120.0	0.22	537.542		
200.0	200.0	199.0	199.0	0.3	0.3	0.00	120.2	0.0	120.2	119.5	0.67	178.883	CC, ES	
300.0	300.0	299.0	299.0	0.5	0.6	-106.97	120.2	0.0	120.7	119.6	1.11	108.886		
400.0	399.8	398.8	398.8	0.8	0.8	-109.28	120.2	0.0	122.3	120.8	1.55	78.824		
500.0	499.5	498.5	498.5	1.0	1.0	-112.97	120.2	0.0	125.5	123.5	2.02	62.070		
600.0	598.7	597.7	597.7	1.3	1.2	-117.70	120.2	0.0	130.6	128.1	2.52	51.922		
700.0	698.0	697.0	697.0	1.6	1.5	-122.29	120.2	0.0	136.9	133.9	3.01	45.427		
800.0	797.2	796.2	796.2	1.9	1.7	-126.46	120.2	0.0	143.9	140.4	3.51	41.047		
900.0	896.4	895.4	895.4	2.2	1.9	-130.22	120.2	0.0	151.7	147.7	3.99	37.979		
1,000.0	995.6	994.6	994.6	2.6	2.1	-133.61	120.2	0.0	160.1	155.6	4.48	35.759		
1,100.0	1,094.9	1,093.9	1,093.9	2.9	2.3	-136.66	120.2	0.0	168.9	164.0	4.95	34.111		
1,200.0	1,194.1	1,193.1	1,193.1	3.2	2.6	-139.40	120.2	0.0	178.2	172.8	5.42	32.860		
1,300.0	1,293.3	1,292.3	1,292.3	3.5	2.8	-141.86	120.2	0.0	187.9	182.0	5.89	31.893		
1,400.0	1,392.5	1,391.5	1,391.5	3.8	3.0	-144.08	120.2	0.0	197.8	191.5	6.35	31.131		
1,500.0	1,491.7	1,490.7	1,490.7	4.2	3.2	-146.09	120.2	0.0	208.1	201.2	6.82	30.523		
1,600.0	1,591.0	1,590.0	1,590.0	4.5	3.5	-147.90	120.2	0.0	218.5	211.2	7.28	30.032		
1,700.0	1,690.2	1,688.6	1,688.6	4.8	3.7	-149.89	119.4	-1.1	229.3	221.6	7.71	29.748		
1,800.0	1,789.4	1,786.5	1,786.4	5.1	3.8	-152.47	116.4	-4.7	240.7	232.6	8.11	29.695		
1,900.0	1,888.6	1,883.5	1,883.0	5.5	4.0	-155.54	111.4	-10.9	253.2	244.7	8.50	29.794		
2,000.0	1,987.9	1,979.9	1,978.8	5.8	4.2	-158.96	104.5	-19.5	267.2	258.3	8.90	30.030		
2,100.0	2,087.1	2,077.4	2,075.6	6.1	4.5	-162.26	96.9	-28.9	282.3	273.0	9.31	30.318		
2,200.0	2,186.3	2,175.0	2,172.4	6.5	4.7	-165.22	89.3	-38.3	298.2	288.5	9.74	30.621		
2,300.0	2,285.5	2,272.6	2,269.2	6.8	4.9	-167.88	81.7	-47.7	314.9	304.7	10.18	30.930		
2,400.0	2,384.8	2,370.2	2,366.1	7.1	5.2	-170.28	74.1	-57.1	332.1	321.5	10.63	31.232		
2,500.0	2,484.0	2,467.7	2,462.9	7.4	5.4	-172.44	66.5	-66.5	349.9	338.8	11.10	31.535		
2,600.0	2,583.2	2,565.3	2,559.7	7.8	5.7	-174.39	58.9	-75.9	368.1	356.6	11.57	31.828		
2,700.0	2,682.4	2,662.9	2,656.5	8.1	6.0	-176.16	51.3	-85.3	386.8	374.7	12.04	32.111		
2,800.0	2,781.6	2,760.5	2,753.4	8.4	6.2	-177.76	43.7	-94.7	405.7	393.2	12.53	32.384		
2,900.0	2,880.9	2,858.1	2,850.2	8.7	6.5	-179.23	36.1	-104.1	424.9	411.9	13.01	32.647		
3,000.0	2,980.1	2,955.6	2,947.0	9.1	6.8	179.43	28.5	-113.5	444.4	430.9	13.51	32.900		
3,100.0	3,079.3	3,053.2	3,043.8	9.4	7.1	178.21	20.9	-122.9	464.0	450.0	14.00	33.142		
3,200.0	3,178.5	3,150.8	3,140.7	9.7	7.4	177.08	13.3	-132.3	483.9	469.4	14.50	33.374		
3,300.0	3,277.8	3,248.4	3,237.5	10.1	7.7	176.04	5.7	-141.7	503.9	488.9	15.00	33.596		
3,400.0	3,377.0	3,345.9	3,334.3	10.4	8.0	175.08	-1.9	-151.1	524.1	508.6	15.50	33.809		
3,500.0	3,476.2	3,443.5	3,431.1	10.7	8.3	174.20	-9.5	-160.5	544.4	528.4	16.01	34.014		
3,600.0	3,575.4	3,541.1	3,528.0	11.0	8.6	173.37	-17.1	-169.9	564.9	548.3	16.51	34.209		
3,700.0	3,674.6	3,638.7	3,624.8	11.4	8.9	172.60	-24.7	-179.3	585.4	568.4	17.02	34.396		
3,800.0	3,773.9	3,736.2	3,721.6	11.7	9.2	171.89	-32.3	-188.7	606.0	588.5	17.53	34.576		
3,900.0	3,873.1	3,833.8	3,818.4	12.0	9.5	171.22	-39.9	-198.1	626.7	608.7	18.04	34.748		
4,000.0	3,972.3	3,931.4	3,915.3	12.3	9.8	170.59	-47.5	-207.5	647.5	629.0	18.55	34.913		
4,100.0	4,071.5	4,029.0	4,012.1	12.7	10.1	170.01	-55.1	-216.9	668.4	649.3	19.06	35.072		
4,200.0	4,170.8	4,126.5	4,108.9	13.0	10.4	169.46	-62.7	-226.3	689.3	669.7	19.57	35.224		
4,300.0	4,270.0	4,224.1	4,205.7	13.3	10.7	168.94	-70.3	-235.7	710.3	690.2	20.08	35.370		
4,400.0	4,369.2	4,321.7	4,302.6	13.7	11.0	168.45	-77.9	-245.2	731.3	710.7	20.59	35.510		
4,500.0	4,468.4	4,419.3	4,399.4	14.0	11.3	167.98	-85.5	-254.6	752.4	731.3	21.11	35.645		
4,600.0	4,567.6	4,516.9	4,496.2	14.3	11.6	167.55	-93.1	-264.0	773.5	751.9	21.62	35.775		
4,700.0	4,666.9	4,614.4	4,593.0	14.6	11.9	167.13	-100.7	-273.4	794.7	772.6	22.14	35.900		
4,800.0	4,766.1	4,712.0	4,689.9	15.0	12.2	166.74	-108.3	-282.8	815.9	793.3	22.65	36.020		
4,900.0	4,865.3	4,809.6	4,786.7	15.3	12.6	166.37	-115.9	-292.2	837.1	814.0	23.17	36.136		
5,000.0	4,964.5	4,907.2	4,883.5	15.6	12.9	166.04	-123.5	-301.6	858.3	834.7	23.69	36.235		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W - R&R Farms 29L-421 - Wellbore #1 - Plan #1 (9-19-1													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.0	5,064.0	5,005.2	4,980.8	15.8	13.2	165.75	-131.2	-311.0	877.3	853.1	24.18	36.275		
5,200.0	5,163.8	5,103.8	5,078.6	16.0	13.5	165.41	-138.8	-320.5	892.9	868.3	24.65	36.221		
5,300.0	5,263.8	5,202.7	5,176.8	16.2	13.8	165.01	-146.5	-330.0	905.3	880.2	25.09	36.082		
5,400.0	5,363.8	5,311.9	5,285.2	16.3	14.1	-89.31	-154.9	-340.4	914.9	889.3	25.55	35.813		
5,500.0	5,463.8	5,444.4	5,417.1	16.4	14.4	-89.77	-162.1	-349.3	921.6	895.6	25.99	35.459		
5,600.0	5,563.8	5,577.7	5,550.3	16.6	14.7	-89.98	-165.5	-353.5	924.8	898.4	26.42	35.009		
5,700.0	5,663.8	5,690.2	5,662.8	16.7	14.9	-90.00	-165.8	-353.8	925.0	898.2	26.80	34.519		
5,747.1	5,710.9	5,737.3	5,709.9	16.8	14.9	-90.05	-165.8	-353.8	925.0	898.1	26.96	34.307		
5,800.0	5,763.7	5,790.1	5,762.7	16.9	15.0	-90.14	-165.8	-353.8	925.0	897.9	27.15	34.073		
5,900.0	5,862.6	5,890.6	5,863.0	17.0	15.2	-90.69	-160.4	-353.8	925.1	897.7	27.43	33.725		
6,000.0	5,958.8	5,992.2	5,962.8	17.1	15.2	-91.24	-141.6	-353.8	925.2	897.6	27.61	33.506		
6,100.0	6,050.7	6,095.2	6,060.5	17.1	15.3	-91.77	-109.3	-353.8	925.5	897.7	27.74	33.367		
6,200.0	6,136.6	6,199.3	6,153.9	17.2	15.3	-92.27	-63.6	-353.8	925.7	897.9	27.86	33.227		
6,300.0	6,215.1	6,304.6	6,241.2	17.3	15.2	-92.73	-4.8	-353.8	926.1	898.0	28.07	32.986		
6,400.0	6,284.9	6,411.0	6,320.4	17.3	15.2	-93.15	66.1	-353.8	926.4	897.9	28.47	32.535		
6,500.0	6,344.7	6,518.5	6,389.6	17.5	15.1	-93.51	148.2	-353.8	926.8	897.6	29.16	31.786		
6,600.0	6,393.6	6,626.7	6,446.9	17.8	15.1	-93.80	240.0	-353.8	927.1	896.9	30.20	30.700		
6,700.0	6,430.7	6,735.7	6,491.0	18.3	15.5	-94.03	339.5	-353.8	927.3	895.7	31.64	29.308		
6,800.0	6,455.3	6,845.2	6,520.6	19.0	16.4	-94.18	444.9	-353.8	927.5	894.0	33.48	27.700		
6,900.0	6,467.1	6,955.1	6,534.8	20.0	17.5	-94.25	553.7	-353.8	927.6	891.9	35.69	25.992		
7,000.0	6,468.1	7,058.4	6,536.7	21.1	18.7	-94.30	657.0	-353.8	927.6	889.5	38.10	24.345		
7,100.0	6,468.0	7,158.4	6,537.6	22.4	20.0	-94.37	757.0	-353.8	927.7	887.0	40.68	22.804		
7,200.0	6,467.8	7,258.4	6,538.5	23.7	21.4	-94.43	857.0	-353.8	927.8	884.3	43.44	21.356		
7,300.0	6,467.6	7,358.4	6,539.4	25.1	22.8	-94.50	957.0	-353.8	927.9	881.5	46.36	20.015		
7,400.0	6,467.5	7,458.4	6,540.3	26.6	24.3	-94.56	1,057.0	-353.8	928.0	878.6	49.40	18.785		
7,500.0	6,467.3	7,558.4	6,541.2	28.2	25.9	-94.63	1,157.0	-353.8	928.0	875.5	52.54	17.662		
7,600.0	6,467.2	7,658.4	6,542.1	29.7	27.4	-94.70	1,257.0	-353.8	928.1	872.4	55.77	16.642		
7,700.0	6,467.0	7,758.4	6,543.1	31.4	29.1	-94.76	1,357.0	-353.8	928.2	869.1	59.07	15.714		
7,800.0	6,466.9	7,858.4	6,544.0	33.0	30.8	-94.83	1,456.9	-353.8	928.3	865.9	62.43	14.869		
7,900.0	6,466.7	7,958.4	6,544.9	34.7	32.4	-94.89	1,556.9	-353.8	928.4	862.6	65.84	14.101		
8,000.0	6,466.5	8,058.4	6,545.8	36.4	34.2	-94.96	1,656.9	-353.8	928.5	859.2	69.29	13.399		
8,100.0	6,466.4	8,158.4	6,546.7	38.1	35.9	-95.02	1,756.9	-353.8	928.6	855.8	72.78	12.758		
8,200.0	6,466.2	8,258.4	6,547.6	39.9	37.7	-95.09	1,856.9	-353.8	928.7	852.4	76.30	12.171		
8,300.0	6,466.1	8,358.4	6,548.5	41.6	39.4	-95.15	1,956.9	-353.8	928.8	848.9	79.85	11.631		
8,400.0	6,465.9	8,458.4	6,549.4	43.4	41.2	-95.22	2,056.9	-353.8	928.9	845.4	83.42	11.135		
8,500.0	6,465.8	8,558.4	6,550.3	45.2	43.0	-95.28	2,156.9	-353.8	929.0	842.0	87.01	10.676		
8,600.0	6,465.6	8,658.3	6,551.2	47.0	44.8	-95.35	2,256.9	-353.8	929.1	838.4	90.62	10.252		
8,700.0	6,465.4	8,758.3	6,552.1	48.8	46.6	-95.41	2,356.9	-353.8	929.2	834.9	94.25	9.859		
8,800.0	6,465.3	8,858.3	6,553.0	50.6	48.5	-95.48	2,456.9	-353.8	929.3	831.4	97.89	9.493		
8,900.0	6,465.1	8,958.3	6,553.9	52.4	50.3	-95.55	2,556.8	-353.8	929.4	827.8	101.54	9.153		
9,000.0	6,465.0	9,058.3	6,554.8	54.2	52.1	-95.61	2,656.8	-353.8	929.5	824.3	105.20	8.835		
9,100.0	6,464.8	9,158.3	6,555.8	56.1	54.0	-95.68	2,756.8	-353.8	929.6	820.7	108.88	8.538		
9,200.0	6,464.7	9,258.3	6,556.7	57.9	55.8	-95.74	2,856.8	-353.8	929.7	817.1	112.56	8.260		
9,300.0	6,464.5	9,358.3	6,557.6	59.7	57.7	-95.81	2,956.8	-353.8	929.8	813.5	116.25	7.998		
9,400.0	6,464.3	9,458.3	6,558.5	61.6	59.5	-95.87	3,056.8	-353.8	929.9	810.0	119.94	7.753		
9,500.0	6,464.2	9,558.3	6,559.4	63.4	61.4	-95.94	3,156.8	-353.8	930.0	806.4	123.65	7.521		
9,600.0	6,464.0	9,658.3	6,560.3	65.3	63.2	-96.00	3,256.8	-353.8	930.1	802.8	127.35	7.303		
9,700.0	6,463.9	9,758.3	6,561.2	67.2	65.1	-96.07	3,356.8	-353.8	930.2	799.2	131.07	7.097		
9,800.0	6,463.7	9,858.3	6,562.1	69.0	67.0	-96.13	3,456.8	-353.8	930.3	795.6	134.79	6.902		
9,900.0	6,463.6	9,958.3	6,563.0	70.9	68.9	-96.20	3,556.7	-353.8	930.5	791.9	138.51	6.718		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W - R&R Farms 29L-421 - Wellbore #1 - Plan #1 (9-19-1)													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)			
10,000.0	6,463.4	10,058.3	6,563.9	72.8	70.7	-96.26	3,656.7	-353.8	930.6	788.3	142.23	6.543		
10,100.0	6,463.2	10,158.3	6,564.8	74.6	72.6	-96.33	3,756.7	-353.8	930.7	784.7	145.96	6.376		
10,200.0	6,463.1	10,258.3	6,565.7	76.5	74.5	-96.39	3,856.7	-353.8	930.8	781.1	149.69	6.218		
10,300.0	6,462.9	10,358.2	6,566.6	78.4	76.4	-96.46	3,956.7	-353.8	930.9	777.5	153.43	6.068		
10,400.0	6,462.8	10,458.2	6,567.6	80.3	78.2	-96.52	4,056.7	-353.8	931.0	773.9	157.16	5.924		
10,500.0	6,462.6	10,558.2	6,568.5	82.1	80.1	-96.59	4,156.7	-353.8	931.2	770.3	160.90	5.787		
10,600.0	6,462.5	10,658.2	6,569.4	84.0	82.0	-96.65	4,256.7	-353.8	931.3	766.6	164.64	5.656		
10,700.0	6,462.3	10,758.2	6,570.3	85.9	83.9	-96.72	4,356.7	-353.8	931.4	763.0	168.39	5.531		
10,800.0	6,462.1	10,858.2	6,571.2	87.8	85.8	-96.78	4,456.7	-353.8	931.5	759.4	172.13	5.412		
10,892.6	6,462.0	10,948.9	6,572.0	89.2	87.5	-96.84	4,547.3	-353.8	931.7	756.4	175.23	5.317 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W - R&R Farms 29Q-241 - Wellbore #1 - Plan #1 (9-19-1										Offset Site Error:		0.0 ft		
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
0.0	0.0	0.0	0.0	0.0	0.0	0.00	58.3	0.0	58.3							
100.0	100.0	99.0	99.0	0.1	0.1	0.00	58.3	0.0	58.3	58.1	0.22	260.635				
200.0	200.0	199.0	199.0	0.3	0.3	0.00	58.3	0.0	58.3	57.6	0.67	86.734	CC, ES			
300.0	300.0	299.0	299.0	0.5	0.6	-107.81	58.3	0.0	58.8	57.7	1.11	53.035				
400.0	399.8	398.8	398.8	0.8	0.8	-112.49	58.3	0.0	60.6	59.1	1.55	39.041				
500.0	499.5	498.5	498.5	1.0	1.0	-119.58	58.3	0.0	64.5	62.4	2.02	31.902				
600.0	598.7	597.7	597.7	1.3	1.2	-127.83	58.3	0.0	71.1	68.6	2.50	28.398				
700.0	698.0	697.0	697.0	1.6	1.5	-134.92	58.3	0.0	79.4	76.4	2.98	26.633				
800.0	797.2	796.2	796.2	1.9	1.7	-140.61	58.3	0.0	88.6	85.2	3.45	25.697				
900.0	896.4	895.4	895.4	2.2	1.9	-145.19	58.3	0.0	98.6	94.7	3.91	25.203				
1,000.0	995.6	994.6	994.6	2.6	2.1	-148.92	58.3	0.0	109.1	104.7	4.37	24.952				
1,100.0	1,094.9	1,093.9	1,093.9	2.9	2.3	-151.98	58.3	0.0	119.9	115.1	4.83	24.837				
1,200.0	1,194.1	1,193.1	1,193.1	3.2	2.6	-154.54	58.3	0.0	131.0	125.8	5.28	24.801				
1,300.0	1,293.3	1,292.3	1,292.3	3.5	2.8	-156.69	58.3	0.0	142.4	136.7	5.74	24.810				
1,400.0	1,392.5	1,391.5	1,391.5	3.8	3.0	-158.52	58.3	0.0	153.9	147.7	6.19	24.845				
1,500.0	1,491.7	1,490.7	1,490.7	4.2	3.2	-160.10	58.3	0.0	165.6	158.9	6.65	24.895				
1,600.0	1,591.0	1,590.0	1,590.0	4.5	3.5	-161.46	58.3	0.0	177.3	170.2	7.11	24.952				
1,700.0	1,690.2	1,694.7	1,694.7	4.8	3.7	-162.95	56.9	0.8	187.9	180.3	7.55	24.901				
1,800.0	1,789.4	1,800.4	1,800.3	5.1	3.9	-164.84	52.1	3.4	195.4	187.4	7.95	24.561				
1,900.0	1,888.6	1,906.3	1,905.7	5.5	4.1	-167.16	43.9	7.9	199.9	191.5	8.37	23.890				
2,000.0	1,987.9	2,008.8	2,007.5	5.8	4.3	-169.83	33.2	13.7	202.1	193.3	8.78	23.005				
2,100.0	2,087.1	2,108.3	2,106.2	6.1	4.5	-172.43	22.3	19.7	204.4	195.1	9.21	22.186				
2,200.0	2,186.3	2,207.9	2,205.0	6.5	4.7	-174.96	11.5	25.6	207.0	197.4	9.65	21.447				
2,300.0	2,285.5	2,307.4	2,303.8	6.8	5.0	-177.43	0.7	31.5	210.1	200.0	10.11	20.778				
2,400.0	2,384.8	2,407.0	2,402.6	7.1	5.2	-179.82	-10.2	37.5	213.6	203.0	10.59	20.171				
2,500.0	2,484.0	2,506.5	2,501.4	7.4	5.5	177.87	-21.0	43.4	217.4	206.3	11.08	19.619				
2,600.0	2,583.2	2,606.1	2,600.1	7.8	5.7	175.64	-31.8	49.3	221.6	210.0	11.59	19.116				
2,700.0	2,682.4	2,705.6	2,698.9	8.1	6.0	173.50	-42.7	55.2	226.1	214.0	12.12	18.659				
2,800.0	2,781.6	2,805.2	2,797.7	8.4	6.3	171.44	-53.5	61.2	230.9	218.2	12.66	18.242				
2,900.0	2,880.9	2,904.7	2,896.5	8.7	6.6	169.47	-64.3	67.1	236.0	222.8	13.21	17.862				
3,000.0	2,980.1	3,004.2	2,995.2	9.1	6.9	167.58	-75.2	73.0	241.3	227.6	13.78	17.517				
3,100.0	3,079.3	3,103.8	3,094.0	9.4	7.2	165.77	-86.0	78.9	247.0	232.6	14.36	17.202				
3,200.0	3,178.5	3,203.3	3,192.8	9.7	7.5	164.05	-96.8	84.9	252.8	237.9	14.94	16.916				
3,300.0	3,277.8	3,302.9	3,291.6	10.1	7.8	162.41	-107.7	90.8	258.9	243.3	15.54	16.655				
3,400.0	3,377.0	3,402.4	3,390.3	10.4	8.1	160.84	-118.5	96.7	265.1	249.0	16.15	16.418				
3,500.0	3,476.2	3,502.0	3,489.1	10.7	8.4	159.34	-129.3	102.6	271.6	254.8	16.76	16.203				
3,600.0	3,575.4	3,601.5	3,587.9	11.0	8.7	157.92	-140.2	108.6	278.2	260.8	17.38	16.007				
3,700.0	3,674.6	3,700.0	3,685.6	11.4	8.9	156.63	-150.6	114.3	285.1	267.1	17.99	15.852				
3,800.0	3,773.9	3,795.7	3,780.9	11.7	9.2	155.93	-158.4	118.6	293.2	274.7	18.51	15.840				
3,900.0	3,873.1	3,891.7	3,876.7	12.0	9.4	155.84	-163.5	121.3	302.4	283.4	18.98	15.935				
4,000.0	3,972.3	3,987.4	3,972.4	12.3	9.6	156.30	-165.7	122.5	312.9	293.5	19.40	16.130				
4,100.0	4,071.5	4,085.5	4,070.5	12.7	9.7	157.15	-165.8	122.6	324.3	304.5	19.79	16.387				
4,200.0	4,170.8	4,184.7	4,169.8	13.0	9.9	157.98	-165.8	122.6	335.8	315.6	20.18	16.639				
4,300.0	4,270.0	4,284.0	4,269.0	13.3	10.1	158.75	-165.8	122.6	347.3	326.8	20.57	16.883				
4,400.0	4,369.2	4,383.2	4,368.2	13.7	10.3	159.47	-165.8	122.6	359.0	338.0	20.97	17.117				
4,500.0	4,468.4	4,482.4	4,467.4	14.0	10.5	160.14	-165.8	122.6	370.7	349.3	21.37	17.342				
4,600.0	4,567.6	4,581.6	4,566.6	14.3	10.7	160.77	-165.8	122.6	382.4	360.6	21.78	17.558				
4,700.0	4,666.9	4,680.9	4,665.9	14.6	10.8	161.37	-165.8	122.6	394.2	372.0	22.19	17.767				
4,800.0	4,766.1	4,780.1	4,765.1	15.0	11.0	161.93	-165.8	122.6	406.0	383.4	22.60	17.967				
4,900.0	4,865.3	4,879.3	4,864.3	15.3	11.2	162.46	-165.8	122.6	417.9	394.9	23.01	18.160				
5,000.0	4,964.5	4,978.5	4,963.5	15.6	11.4	162.97	-165.8	122.6	429.7	406.3	23.42	18.344				

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W - R&R Farms 29Q-241 - Wellbore #1 - Plan #1 (9-19-1)										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
5,100.0	5,064.0	5,078.0	5,063.0	15.8	11.6	163.40	-165.8	122.6	439.2	415.4	23.79	18.462		
5,200.0	5,163.8	5,177.8	5,162.8	16.0	11.8	163.68	-165.8	122.6	445.5	421.3	24.14	18.454		
5,300.0	5,263.8	5,277.8	5,262.8	16.2	12.0	163.80	-165.8	122.6	448.4	423.9	24.47	18.325		
5,400.0	5,363.8	5,377.8	5,362.8	16.3	12.2	-90.00	-165.8	122.6	448.6	423.7	24.83	18.067		
5,500.0	5,463.8	5,477.8	5,462.8	16.4	12.4	-90.00	-165.8	122.6	448.6	423.4	25.20	17.797		
5,600.0	5,563.8	5,577.8	5,562.8	16.6	12.6	-90.00	-165.8	122.6	448.6	423.0	25.58	17.534		
5,660.1	5,623.8	5,637.8	5,622.8	16.7	12.7	-90.00	-165.8	122.6	448.6	422.8	25.81	17.379		
5,700.0	5,663.8	5,677.7	5,662.7	16.7	12.8	-89.91	-165.1	122.6	448.6	422.6	25.95	17.285		
5,800.0	5,763.7	5,776.8	5,761.1	16.9	12.9	-88.82	-154.3	122.6	448.7	422.5	26.21	17.117		
5,900.0	5,862.6	5,874.5	5,856.1	17.0	13.0	-87.62	-131.3	122.6	449.0	422.6	26.38	17.019		
6,000.0	5,958.8	5,971.2	5,946.3	17.1	13.1	-86.47	-96.9	122.6	449.4	422.9	26.51	16.956		
6,100.0	6,050.7	6,066.8	6,030.6	17.1	13.2	-85.39	-51.9	122.6	450.0	423.4	26.65	16.888		
6,200.0	6,136.6	6,161.5	6,107.9	17.2	13.2	-84.39	2.7	122.6	450.8	423.9	26.87	16.774		
6,300.0	6,215.1	6,255.3	6,177.2	17.3	13.3	-83.48	65.9	122.6	451.5	424.3	27.25	16.570		
6,400.0	6,284.9	6,350.0	6,238.8	17.3	13.6	-82.67	137.7	122.6	452.3	424.4	27.84	16.243		
6,500.0	6,344.7	6,441.0	6,289.2	17.5	14.0	-82.01	213.4	122.6	453.0	424.3	28.70	15.784		
6,600.0	6,393.6	6,533.0	6,330.6	17.8	14.6	-81.46	295.5	122.6	453.6	423.8	29.85	15.195		
6,700.0	6,430.7	6,624.7	6,361.8	18.3	15.4	-81.04	381.7	122.6	454.1	422.8	31.31	14.505		
6,800.0	6,455.3	6,716.1	6,382.4	19.0	16.3	-80.77	470.6	122.6	454.5	421.4	33.05	13.752		
6,900.0	6,467.1	6,807.3	6,392.2	20.0	17.3	-80.64	561.2	122.6	454.6	419.6	35.04	12.975		
7,000.0	6,468.1	6,903.6	6,393.1	21.1	18.5	-80.63	657.6	122.6	454.6	417.3	37.38	12.164		
7,100.0	6,468.0	7,003.6	6,393.0	22.4	19.8	-80.63	757.6	122.6	454.6	414.6	40.01	11.363		
7,200.0	6,467.8	7,103.6	6,392.9	23.7	21.3	-80.64	857.6	122.6	454.6	411.8	42.82	10.617		
7,300.0	6,467.6	7,203.6	6,392.8	25.1	22.8	-80.65	957.6	122.6	454.6	408.8	45.77	9.932		
7,400.0	6,467.5	7,303.6	6,392.7	26.6	24.3	-80.65	1,057.6	122.6	454.6	405.8	48.84	9.308		
7,500.0	6,467.3	7,403.6	6,392.5	28.2	25.9	-80.66	1,157.6	122.6	454.6	402.6	52.01	8.741		
7,600.0	6,467.2	7,503.6	6,392.4	29.7	27.6	-80.67	1,257.6	122.6	454.6	399.3	55.25	8.228		
7,700.0	6,467.0	7,603.6	6,392.3	31.4	29.2	-80.67	1,357.6	122.6	454.6	396.0	58.57	7.762		
7,800.0	6,466.9	7,703.6	6,392.2	33.0	31.0	-80.68	1,457.6	122.6	454.6	392.6	61.93	7.340		
7,900.0	6,466.7	7,803.6	6,392.1	34.7	32.7	-80.69	1,557.6	122.6	454.6	389.2	65.35	6.956		
8,000.0	6,466.5	7,903.6	6,392.0	36.4	34.4	-80.69	1,657.6	122.6	454.6	385.8	68.80	6.607		
8,100.0	6,466.4	8,003.6	6,391.9	38.1	36.2	-80.70	1,757.6	122.6	454.6	382.3	72.29	6.288		
8,200.0	6,466.2	8,103.6	6,391.8	39.9	38.0	-80.71	1,857.6	122.6	454.5	378.7	75.81	5.995		
8,300.0	6,466.1	8,203.6	6,391.7	41.6	39.8	-80.71	1,957.6	122.6	454.5	375.2	79.36	5.727		
8,400.0	6,465.9	8,303.6	6,391.6	43.4	41.6	-80.72	2,057.6	122.6	454.5	371.6	82.93	5.481		
8,500.0	6,465.8	8,403.6	6,391.5	45.2	43.4	-80.72	2,157.6	122.6	454.5	368.0	86.52	5.254		
8,600.0	6,465.6	8,503.6	6,391.4	47.0	45.2	-80.73	2,257.6	122.6	454.5	364.4	90.12	5.043		
8,700.0	6,465.4	8,603.6	6,391.3	48.8	47.1	-80.74	2,357.6	122.6	454.5	360.8	93.74	4.848		
8,800.0	6,465.3	8,703.6	6,391.2	50.6	48.9	-80.74	2,457.6	122.6	454.5	357.1	97.38	4.667		
8,900.0	6,465.1	8,803.6	6,391.1	52.4	50.8	-80.75	2,557.6	122.6	454.5	353.5	101.02	4.499		
9,000.0	6,465.0	8,903.6	6,391.0	54.2	52.6	-80.76	2,657.6	122.6	454.5	349.8	104.68	4.342		
9,100.0	6,464.8	9,003.6	6,390.9	56.1	54.5	-80.76	2,757.6	122.6	454.5	346.1	108.35	4.194		
9,200.0	6,464.7	9,103.6	6,390.8	57.9	56.3	-80.77	2,857.6	122.6	454.5	342.4	112.03	4.057		
9,300.0	6,464.5	9,203.6	6,390.7	59.7	58.2	-80.78	2,957.6	122.6	454.5	338.7	115.71	3.927		
9,400.0	6,464.3	9,303.6	6,390.6	61.6	60.1	-80.78	3,057.6	122.6	454.4	335.0	119.40	3.806		
9,500.0	6,464.2	9,403.6	6,390.5	63.4	61.9	-80.79	3,157.6	122.6	454.4	331.3	123.10	3.692		
9,600.0	6,464.0	9,503.6	6,390.3	65.3	63.8	-80.80	3,257.6	122.6	454.4	327.6	126.81	3.584		
9,700.0	6,463.9	9,603.6	6,390.2	67.2	65.7	-80.80	3,357.6	122.6	454.4	323.9	130.52	3.482		
9,800.0	6,463.7	9,703.6	6,390.1	69.0	67.6	-80.81	3,457.6	122.6	454.4	320.2	134.23	3.385		
9,900.0	6,463.6	9,803.6	6,390.0	70.9	69.4	-80.82	3,557.6	122.6	454.4	316.4	137.95	3.294		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,000.0	6,463.4	9,903.6	6,389.9	72.8	71.3	-80.82	3,657.6	122.6	454.4	312.7	141.68	3.207		
10,100.0	6,463.2	10,003.6	6,389.8	74.6	73.2	-80.83	3,757.6	122.6	454.4	309.0	145.41	3.125		
10,200.0	6,463.1	10,103.6	6,389.7	76.5	75.1	-80.84	3,857.6	122.6	454.4	305.2	149.14	3.047		
10,300.0	6,462.9	10,203.6	6,389.6	78.4	77.0	-80.84	3,957.6	122.6	454.4	301.5	152.87	2.972		
10,400.0	6,462.8	10,303.6	6,389.5	80.3	78.9	-80.85	4,057.6	122.6	454.4	297.7	156.61	2.901		
10,500.0	6,462.6	10,403.6	6,389.4	82.1	80.8	-80.86	4,157.6	122.6	454.4	294.0	160.36	2.833		
10,600.0	6,462.5	10,503.6	6,389.3	84.0	82.7	-80.86	4,257.6	122.6	454.3	290.2	164.10	2.769		
10,700.0	6,462.3	10,603.6	6,389.2	85.9	84.5	-80.87	4,357.6	122.6	454.3	286.5	167.85	2.707		
10,800.0	6,462.1	10,703.6	6,389.1	87.8	86.4	-80.87	4,457.6	122.6	454.3	282.7	171.60	2.648		
10,866.0	6,462.0	10,769.6	6,389.0	88.8	87.7	-80.88	4,523.6	122.6	454.3	280.5	173.84	2.613		
10,892.6	6,462.0	10,792.6	6,389.0	89.2	88.1	-80.88	4,546.6	122.6	454.3	279.7	174.68	2.601 SF		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W - R&R Farms 29Q-441 - Wellbore #1 - Plan #1 (9-19-1)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	0.00	29.1	0.0	29.2					
100.0	100.0	99.0	99.0	0.1	0.1	0.00	29.1	0.0	29.1	28.9	0.22	130.299		
200.0	200.0	199.0	199.0	0.3	0.3	0.00	29.1	0.0	29.1	28.5	0.67	43.361 CC, ES		
300.0	300.0	299.0	299.0	0.5	0.6	-109.41	29.1	0.0	29.7	28.6	1.11	26.762		
400.0	399.8	398.8	398.8	0.8	0.8	-118.29	29.1	0.0	31.8	30.2	1.55	20.478		
500.0	499.5	498.5	498.5	1.0	1.0	-130.24	29.1	0.0	36.7	34.7	2.02	18.215		
600.0	598.7	597.7	597.7	1.3	1.2	-141.68	29.1	0.0	45.4	42.9	2.49	18.248		
700.0	698.0	697.0	697.0	1.6	1.5	-149.63	29.1	0.0	55.7	52.7	2.94	18.923		
800.0	797.2	796.2	796.2	1.9	1.7	-155.03	29.1	0.0	66.7	63.3	3.40	19.649		
900.0	896.4	895.4	895.4	2.2	1.9	-158.88	29.1	0.0	78.2	74.4	3.85	20.316		
1,000.0	995.6	994.6	994.6	2.6	2.1	-161.74	29.1	0.0	89.9	85.6	4.30	20.899		
1,100.0	1,094.9	1,097.3	1,097.3	2.9	2.3	-163.93	28.4	1.5	100.2	95.5	4.74	21.139		
1,200.0	1,194.1	1,200.7	1,200.6	3.2	2.5	-165.64	25.8	6.2	107.1	101.9	5.17	20.726		
1,300.0	1,293.3	1,304.6	1,304.0	3.5	2.8	-167.10	21.5	14.3	110.4	104.8	5.60	19.705		
1,400.0	1,392.5	1,406.4	1,405.1	3.8	3.0	-168.46	15.8	24.9	110.7	104.6	6.04	18.313		
1,500.0	1,491.7	1,506.4	1,504.3	4.2	3.2	-169.79	10.0	35.8	110.6	104.1	6.49	17.055		
1,529.5	1,521.0	1,535.8	1,533.6	4.3	3.3	-170.18	8.3	38.9	110.6	104.0	6.62	16.714		
1,600.0	1,591.0	1,606.3	1,603.5	4.5	3.5	-171.12	4.3	46.6	110.6	103.7	6.93	15.956		
1,700.0	1,690.2	1,706.3	1,702.7	4.8	3.8	-172.45	-1.5	57.4	110.7	103.3	7.39	14.989		
1,800.0	1,789.4	1,806.3	1,801.9	5.1	4.1	-173.78	-7.3	68.2	110.8	103.0	7.84	14.133		
1,900.0	1,888.6	1,906.2	1,901.2	5.5	4.3	-175.11	-13.1	79.0	111.0	102.7	8.30	13.371		
2,000.0	1,987.9	2,006.2	2,000.4	5.8	4.6	-176.43	-18.9	89.8	111.3	102.5	8.77	12.688		
2,100.0	2,087.1	2,106.2	2,099.6	6.1	4.9	-177.74	-24.6	100.7	111.6	102.4	9.24	12.075		
2,200.0	2,186.3	2,206.1	2,198.8	6.5	5.2	-179.05	-30.4	111.5	112.0	102.2	9.72	11.521		
2,300.0	2,285.5	2,306.1	2,298.0	6.8	5.5	-179.66	-36.2	122.3	112.4	102.2	10.20	11.018		
2,400.0	2,384.8	2,406.1	2,397.2	7.1	5.8	-178.37	-42.0	133.1	112.9	102.2	10.69	10.560		
2,500.0	2,484.0	2,506.0	2,496.4	7.4	6.2	-177.10	-47.8	143.9	113.4	102.2	11.18	10.142		
2,600.0	2,583.2	2,606.0	2,595.6	7.8	6.5	-175.84	-53.5	154.8	114.0	102.3	11.68	9.759		
2,700.0	2,682.4	2,706.0	2,694.9	8.1	6.8	-174.59	-59.3	165.6	114.7	102.5	12.19	9.406		
2,800.0	2,781.6	2,805.9	2,794.1	8.4	7.1	-173.36	-65.1	176.4	115.4	102.7	12.70	9.081		
2,900.0	2,880.9	2,905.9	2,893.3	8.7	7.4	-172.14	-70.9	187.2	116.1	102.9	13.22	8.781		
3,000.0	2,980.1	3,005.9	2,992.5	9.1	7.7	-170.94	-76.7	198.0	116.9	103.2	13.75	8.503		
3,100.0	3,079.3	3,105.8	3,091.7	9.4	8.0	-169.75	-82.4	208.9	117.8	103.5	14.28	8.245		
3,200.0	3,178.5	3,205.8	3,190.9	9.7	8.3	-168.59	-88.2	219.7	118.7	103.9	14.83	8.005		
3,300.0	3,277.8	3,305.8	3,290.1	10.1	8.7	-167.44	-94.0	230.5	119.6	104.3	15.37	7.782		
3,400.0	3,377.0	3,405.7	3,389.3	10.4	9.0	-166.31	-99.8	241.3	120.6	104.7	15.93	7.574		
3,500.0	3,476.2	3,505.7	3,488.5	10.7	9.3	-165.20	-105.6	252.1	121.7	105.2	16.49	7.379		
3,600.0	3,575.4	3,605.7	3,587.8	11.0	9.6	-164.11	-111.3	262.9	122.8	105.7	17.06	7.198		
3,700.0	3,674.6	3,705.6	3,687.0	11.4	9.9	-163.03	-117.1	273.8	123.9	106.3	17.63	7.028		
3,800.0	3,773.9	3,805.6	3,786.2	11.7	10.3	-161.98	-122.9	284.6	125.1	106.9	18.22	6.868		
3,900.0	3,873.1	3,905.6	3,885.4	12.0	10.6	-160.95	-128.7	295.4	126.3	107.5	18.80	6.719		
4,000.0	3,972.3	4,005.5	3,984.6	12.3	10.9	-159.94	-134.5	306.2	127.6	108.2	19.40	6.578		
4,100.0	4,071.5	4,105.5	4,083.8	12.7	11.2	-158.95	-140.2	317.0	128.9	108.9	19.99	6.446		
4,200.0	4,170.8	4,205.5	4,183.0	13.0	11.5	-157.98	-146.0	327.9	130.2	109.6	20.60	6.322		
4,300.0	4,270.0	4,305.4	4,282.2	13.3	11.9	-157.02	-151.8	338.7	131.6	110.4	21.21	6.206		
4,400.0	4,369.2	4,404.2	4,380.3	13.7	12.2	-156.15	-157.4	349.2	133.2	111.4	21.80	6.108		
4,500.0	4,468.4	4,500.0	4,475.6	14.0	12.4	-155.94	-161.7	357.2	136.9	114.6	22.27	6.145		
4,600.0	4,567.6	4,596.4	4,571.9	14.3	12.6	-156.51	-164.5	362.5	143.3	120.6	22.66	6.324		
4,700.0	4,666.9	4,691.9	4,667.3	14.6	12.7	-157.71	-165.8	364.8	152.5	129.5	22.97	6.637		
4,800.0	4,766.1	4,789.7	4,765.1	15.0	12.9	-159.30	-165.9	365.0	163.9	140.6	23.26	7.046		
4,900.0	4,865.3	4,888.9	4,864.3	15.3	13.0	-160.74	-165.9	365.0	175.6	152.0	23.57	7.451		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W - R&R Farms 29Q-441 - Wellbore #1 - Plan #1 (9-19-1)										Offset Site Error:		0.0 ft		
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
5,000.0	4,964.5	4,988.1	4,963.5	15.6	13.2	162.00	-165.9	365.0	187.3	163.4	23.89	7.842				
5,100.0	5,064.0	5,087.6	5,063.0	15.8	13.4	162.95	-165.9	365.0	196.9	172.7	24.17	8.143				
5,200.0	5,163.8	5,187.4	5,162.8	16.0	13.5	163.52	-165.9	365.0	203.1	178.6	24.46	8.301				
5,300.0	5,263.8	5,287.4	5,262.8	16.2	13.7	163.78	-165.9	365.0	206.0	181.2	24.75	8.321				
5,400.0	5,363.8	5,387.4	5,362.8	16.3	13.9	-90.02	-165.9	365.0	206.2	181.1	25.10	8.216				
5,500.0	5,463.8	5,487.4	5,462.8	16.4	14.1	-90.02	-165.9	365.0	206.2	180.7	25.46	8.098				
5,600.0	5,563.8	5,587.4	5,562.8	16.6	14.2	-90.02	-165.9	365.0	206.2	180.3	25.83	7.982				
5,700.0	5,663.8	5,687.4	5,662.8	16.7	14.4	-90.02	-165.9	365.0	206.2	180.0	26.20	7.869				
5,746.5	5,710.2	5,733.8	5,709.2	16.8	14.5	-90.25	-165.9	365.0	206.2	179.8	26.39	7.813				
5,800.0	5,763.7	5,787.3	5,762.7	16.9	14.6	-90.66	-165.9	365.0	206.2	179.6	26.62	7.747				
5,900.0	5,862.6	5,887.8	5,863.0	17.0	14.7	-93.13	-160.4	365.0	206.5	179.4	27.11	7.615				
6,000.0	5,958.8	5,989.5	5,962.9	17.1	14.9	-95.57	-141.7	365.0	207.2	179.7	27.51	7.530				
6,100.0	6,050.7	6,092.4	6,060.5	17.1	14.9	-97.91	-109.4	365.0	208.2	180.4	27.80	7.488				
6,200.0	6,136.6	6,196.6	6,154.0	17.2	15.0	-100.10	-63.6	365.0	209.4	181.4	28.02	7.475				
6,300.0	6,215.1	6,301.9	6,241.3	17.3	15.0	-102.10	-4.9	365.0	210.9	182.6	28.24	7.468				
6,400.0	6,284.9	6,408.3	6,320.5	17.3	15.1	-103.87	66.1	365.0	212.4	183.8	28.57	7.434				
6,500.0	6,344.7	6,515.7	6,389.6	17.5	15.2	-105.39	148.2	365.0	213.9	184.7	29.15	7.337				
6,600.0	6,393.6	6,624.0	6,447.0	17.8	15.5	-106.62	239.9	365.0	215.2	185.1	30.09	7.152				
6,700.0	6,430.7	6,733.0	6,491.0	18.3	16.1	-107.55	339.5	365.0	216.3	184.8	31.48	6.869				
6,800.0	6,455.3	6,842.5	6,520.6	19.0	17.1	-108.17	444.9	365.0	217.0	183.6	33.37	6.503				
6,900.0	6,467.1	6,952.3	6,534.8	20.0	18.3	-108.46	553.7	365.0	217.4	181.6	35.72	6.086				
7,000.0	6,468.1	7,055.7	6,536.7	21.1	19.6	-108.65	657.0	365.0	217.6	179.4	38.20	5.696				
7,100.0	6,468.0	7,155.7	6,537.6	22.4	20.9	-108.91	757.0	365.0	217.9	177.2	40.71	5.353				
7,200.0	6,467.8	7,255.7	6,538.5	23.7	22.3	-109.18	857.0	365.0	218.3	174.9	43.38	5.032				
7,300.0	6,467.6	7,355.7	6,539.4	25.1	23.8	-109.44	957.0	365.0	218.6	172.5	46.17	4.736				
7,400.0	6,467.5	7,455.7	6,540.3	26.6	25.3	-109.70	1,057.0	365.0	219.0	169.9	49.06	4.464				
7,500.0	6,467.3	7,555.7	6,541.2	28.2	26.9	-109.97	1,157.0	365.0	219.4	167.3	52.03	4.216				
7,600.0	6,467.2	7,655.7	6,542.1	29.7	28.5	-110.23	1,257.0	365.0	219.7	164.7	55.07	3.990				
7,700.0	6,467.0	7,755.7	6,543.1	31.4	30.2	-110.49	1,357.0	365.0	220.1	161.9	58.16	3.784				
7,800.0	6,466.9	7,855.7	6,544.0	33.0	31.8	-110.75	1,456.9	365.0	220.5	159.2	61.30	3.597				
7,900.0	6,466.7	7,955.7	6,544.9	34.7	33.5	-111.00	1,556.9	365.0	220.9	156.4	64.47	3.426				
8,000.0	6,466.5	8,055.7	6,545.8	36.4	35.3	-111.26	1,656.9	365.0	221.2	153.6	67.67	3.270				
8,100.0	6,466.4	8,155.7	6,546.7	38.1	37.0	-111.52	1,756.9	365.0	221.6	150.7	70.89	3.126				
8,200.0	6,466.2	8,255.7	6,547.6	39.9	38.8	-111.77	1,856.9	365.0	222.0	147.9	74.13	2.995				
8,300.0	6,466.1	8,355.7	6,548.5	41.6	40.6	-112.03	1,956.9	365.0	222.4	145.0	77.38	2.874				
8,400.0	6,465.9	8,455.6	6,549.4	43.4	42.4	-112.28	2,056.9	365.0	222.8	142.2	80.65	2.763				
8,500.0	6,465.8	8,555.6	6,550.3	45.2	44.2	-112.54	2,156.9	365.0	223.2	139.3	83.92	2.660				
8,600.0	6,465.6	8,655.6	6,551.2	47.0	46.0	-112.79	2,256.9	365.0	223.6	136.4	87.20	2.565				
8,700.0	6,465.4	8,755.6	6,552.1	48.8	47.8	-113.04	2,356.9	365.0	224.0	133.6	90.48	2.476				
8,800.0	6,465.3	8,855.6	6,553.0	50.6	49.6	-113.29	2,456.9	365.0	224.5	130.7	93.77	2.394				
8,900.0	6,465.1	8,955.6	6,553.9	52.4	51.5	-113.54	2,556.8	365.0	224.9	127.8	97.05	2.317				
9,000.0	6,465.0	9,055.6	6,554.8	54.2	53.3	-113.79	2,656.8	365.0	225.3	125.0	100.33	2.246				
9,100.0	6,464.8	9,155.6	6,555.8	56.1	55.1	-114.03	2,756.8	365.0	225.8	122.1	103.61	2.179				
9,200.0	6,464.7	9,255.6	6,556.7	57.9	57.0	-114.28	2,856.8	365.0	226.2	119.3	106.89	2.116				
9,300.0	6,464.5	9,355.6	6,557.6	59.7	58.8	-114.52	2,956.8	365.0	226.6	116.5	110.17	2.057				
9,400.0	6,464.3	9,455.6	6,558.5	61.6	60.7	-114.77	3,056.8	365.0	227.1	113.6	113.43	2.002				
9,500.0	6,464.2	9,555.6	6,559.4	63.4	62.6	-115.01	3,156.8	365.0	227.5	110.8	116.70	1.950				
9,600.0	6,464.0	9,655.6	6,560.3	65.3	64.4	-115.25	3,256.8	365.0	228.0	108.0	119.95	1.900				
9,700.0	6,463.9	9,755.6	6,561.2	67.2	66.3	-115.50	3,356.8	365.0	228.4	105.2	123.20	1.854				
9,800.0	6,463.7	9,855.6	6,562.1	69.0	68.2	-115.74	3,456.8	365.0	228.9	102.4	126.45	1.810				

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	0.0 ft
<b>Reference</b>		<b>Offset</b>		<b>Semi Major Axis</b>			<b>Distance</b>							<b>Warning</b>
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>Offset Wellbore Centre +E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>		
9,900.0	6,463.6	9,955.6	6,563.0	70.9	70.0	-115.98	3,556.7	365.0	229.4	99.7	129.68	1.769		
10,000.0	6,463.4	10,055.6	6,563.9	72.8	71.9	-116.22	3,656.7	365.0	229.8	96.9	132.91	1.729		
10,100.0	6,463.2	10,155.6	6,564.8	74.6	73.8	-116.45	3,756.7	365.0	230.3	94.2	136.12	1.692		
10,200.0	6,463.1	10,255.5	6,565.7	76.5	75.7	-116.69	3,856.7	365.0	230.8	91.4	139.33	1.656		
10,300.0	6,462.9	10,355.5	6,566.6	78.4	77.6	-116.93	3,956.7	365.0	231.2	88.7	142.53	1.622		
10,400.0	6,462.8	10,455.5	6,567.6	80.3	79.4	-117.16	4,056.7	365.0	231.7	86.0	145.72	1.590		
10,500.0	6,462.6	10,555.5	6,568.5	82.1	81.3	-117.39	4,156.7	365.0	232.2	83.3	148.90	1.560		
10,600.0	6,462.5	10,655.5	6,569.4	84.0	83.2	-117.63	4,256.7	365.0	232.7	80.6	152.07	1.530		
10,700.0	6,462.3	10,755.5	6,570.3	85.9	85.1	-117.86	4,356.7	365.0	233.2	78.0	155.23	1.502		
10,800.0	6,462.1	10,855.5	6,571.2	87.8	87.0	-118.09	4,456.7	365.0	233.7	75.3	158.38	1.476	Level 3	
10,892.6	6,462.0	10,945.5	6,572.0	89.2	88.5	-118.30	4,546.6	365.0	234.2	73.4	160.76	1.457	Level 3, SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4589.0ft (RKB - 15')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: R&R Farms 29Q-301

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.67°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well R&R Farms 29Q-301
<b>Project:</b>	SEC.29-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Reference Site:</b>	R&R Farms 5N63W29Q Pad Sec.29-T5N-R63W	<b>MD Reference:</b>	WELL @ 4589.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	R&R Farms 29Q-301	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-19-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4589.0ft (RKB - 15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: R&R Farms 29Q-301  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.67°

