

PETROLEUM DEVELOPMENT CORP Weld County CO

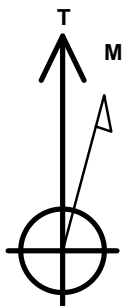
Well Name: **Becker Ranch 5J-103**

Surface Location: Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4819.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1339315.18	3256509.64	40.261170	-104.580860	
RKB - 15' WELL @ 4834.0ft (RKB - 15')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 223'FNL & 943'FWL	1.0	0.0	0.0	Point
BHL 500'FSL & 1115'FWL	6771.0	-4604.8	198.2	Point



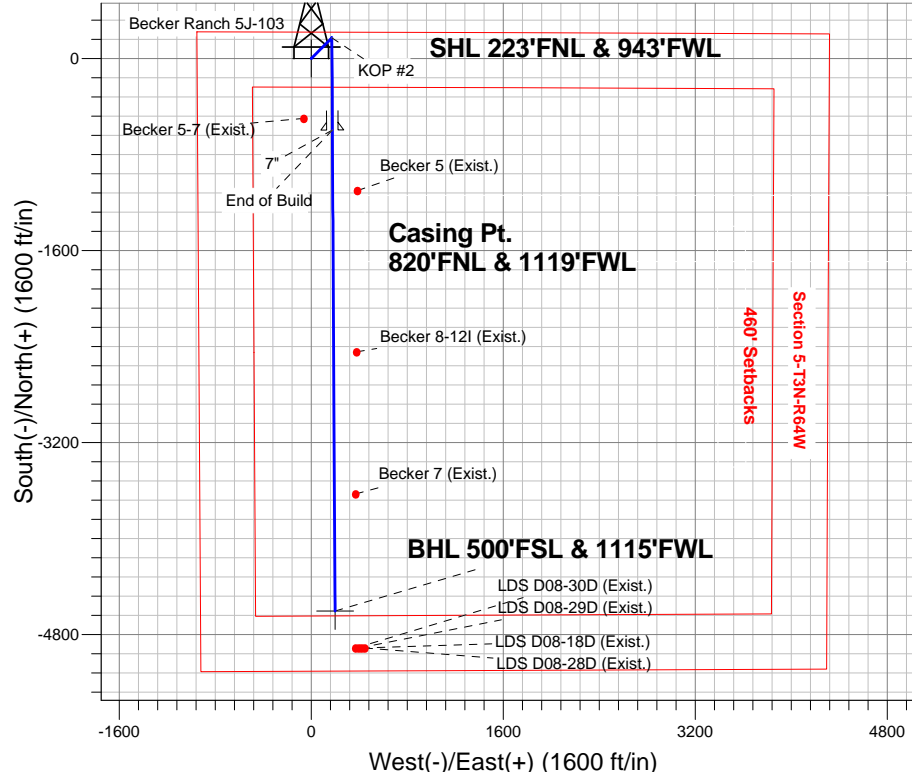
Azimuths to True North
Magnetic North: 8.42°

Magnetic Field
Strength: 52815.2snT
Dip Angle: 66.88°
Date: 12/12/2013
Model: IGRF2010

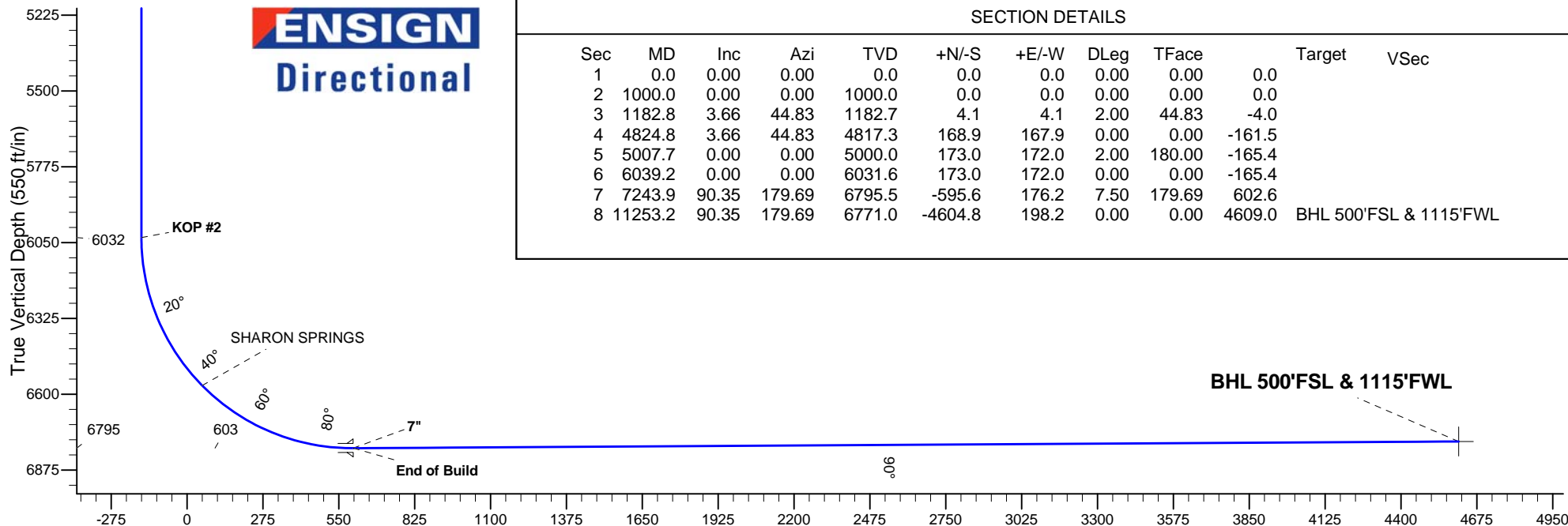
ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6031.5	6039.2	KOP #2
6795.5	7243.9	End of Build

Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W
Becker Ranch 5J-103
Plan #1 (11-22-13)
8:12, December 12 2013



ENSIGN
Directional



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	Target	VSec
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1182.8	3.66	44.83	1182.7	4.1	4.1	2.00	44.83	-4.0	
4	4824.8	3.66	44.83	4817.3	168.9	167.9	0.00	0.00	-161.5	
5	5007.7	0.00	0.00	5000.0	173.0	172.0	2.00	180.00	-165.4	
6	6039.2	0.00	0.00	6031.6	173.0	172.0	0.00	0.00	-165.4	
7	7243.9	90.35	179.69	6795.5	-595.6	176.2	7.50	179.69	602.6	
8	11253.2	90.35	179.69	6771.0	-4604.8	198.2	0.00	0.00	4609.0	BHL 500'FSL & 1115'FWL

BHL 500'FSL & 1115'FWL

Vertical Section at 177.54° (550 ft/in)



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.5-T3N-R64W

Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W

Becker Ranch 5J-103

Wellbore #1

Plan: Plan #1 (11-22-13)

Standard Planning Report

12 December, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-22-13)		

Project	SEC.5-T3N-R64W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site						Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W											
Site Position:						Northing:			1,339,314.26 ft			Latitude:			40.261170		
From:			Lat/Long			Easting:			3,256,420.34 ft			Longitude:			-104.581180		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.59 °		

Well	Becker Ranch 5J-103					
Well Position	+N/-S	0.0 ft	Northing:	1,339,315.18 ft	Latitude:	40.261170
	+E/-W	89.3 ft	Easting:	3,256,509.64 ft	Longitude:	-104.580860
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,819.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/12/2013	8.42	66.88	52,815

Design	Plan #1 (11-22-13)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	177.54

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,182.8	3.66	44.83	1,182.7	4.1	4.1	2.00	2.00	0.00	44.83	
4,824.8	3.66	44.83	4,817.3	168.9	167.9	0.00	0.00	0.00	0.00	
5,007.7	0.00	0.00	5,000.0	173.0	172.0	2.00	-2.00	0.00	180.00	
6,039.2	0.00	0.00	6,031.6	173.0	172.0	0.00	0.00	0.00	0.00	
7,243.9	90.35	179.69	6,795.5	-595.6	176.2	7.50	7.50	0.00	179.69	
11,253.2	90.35	179.69	6,771.0	-4,604.8	198.2	0.00	0.00	0.00	0.00	BHL 500'FSL & 111

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-22-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 223°FNL & 943°FWL									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,100.0	2.00	44.83	1,100.0	1.2	1.2	-1.2	2.00	2.00	0.00
1,182.8	3.66	44.83	1,182.7	4.1	4.1	-4.0	2.00	2.00	0.00
1,200.0	3.66	44.83	1,199.8	4.9	4.9	-4.7	0.00	0.00	0.00
1,300.0	3.66	44.83	1,299.6	9.4	9.4	-9.0	0.00	0.00	0.00
1,400.0	3.66	44.83	1,399.4	14.0	13.9	-13.3	0.00	0.00	0.00
1,500.0	3.66	44.83	1,499.2	18.5	18.4	-17.7	0.00	0.00	0.00
1,600.0	3.66	44.83	1,599.0	23.0	22.9	-22.0	0.00	0.00	0.00
1,700.0	3.66	44.83	1,698.8	27.5	27.4	-26.3	0.00	0.00	0.00
1,800.0	3.66	44.83	1,798.6	32.1	31.9	-30.7	0.00	0.00	0.00
1,900.0	3.66	44.83	1,898.4	36.6	36.4	-35.0	0.00	0.00	0.00
2,000.0	3.66	44.83	1,998.2	41.1	40.9	-39.3	0.00	0.00	0.00
2,100.0	3.66	44.83	2,098.0	45.6	45.4	-43.6	0.00	0.00	0.00
2,200.0	3.66	44.83	2,197.8	50.1	49.9	-48.0	0.00	0.00	0.00
2,300.0	3.66	44.83	2,297.6	54.7	54.3	-52.3	0.00	0.00	0.00
2,400.0	3.66	44.83	2,397.4	59.2	58.8	-56.6	0.00	0.00	0.00
2,500.0	3.66	44.83	2,497.2	63.7	63.3	-60.9	0.00	0.00	0.00
2,600.0	3.66	44.83	2,597.0	68.2	67.8	-65.3	0.00	0.00	0.00
2,700.0	3.66	44.83	2,696.8	72.8	72.3	-69.6	0.00	0.00	0.00
2,800.0	3.66	44.83	2,796.6	77.3	76.8	-73.9	0.00	0.00	0.00
2,900.0	3.66	44.83	2,896.4	81.8	81.3	-78.2	0.00	0.00	0.00
3,000.0	3.66	44.83	2,996.2	86.3	85.8	-82.6	0.00	0.00	0.00
3,100.0	3.66	44.83	3,096.0	90.8	90.3	-86.9	0.00	0.00	0.00
3,200.0	3.66	44.83	3,195.8	95.4	94.8	-91.2	0.00	0.00	0.00
3,300.0	3.66	44.83	3,295.6	99.9	99.3	-95.5	0.00	0.00	0.00
3,400.0	3.66	44.83	3,395.4	104.4	103.8	-99.9	0.00	0.00	0.00
3,500.0	3.66	44.83	3,495.2	108.9	108.3	-104.2	0.00	0.00	0.00
3,600.0	3.66	44.83	3,595.0	113.5	112.8	-108.5	0.00	0.00	0.00
3,700.0	3.66	44.83	3,694.8	118.0	117.3	-112.8	0.00	0.00	0.00
3,705.3	3.66	44.83	3,700.0	118.2	117.5	-113.1	0.00	0.00	0.00
PARKMAN									
3,800.0	3.66	44.83	3,794.5	122.5	121.8	-117.2	0.00	0.00	0.00
3,900.0	3.66	44.83	3,894.3	127.0	126.3	-121.5	0.00	0.00	0.00
4,000.0	3.66	44.83	3,994.1	131.6	130.8	-125.8	0.00	0.00	0.00
4,100.0	3.66	44.83	4,093.9	136.1	135.3	-130.1	0.00	0.00	0.00
4,200.0	3.66	44.83	4,193.7	140.6	139.8	-134.5	0.00	0.00	0.00
4,300.0	3.66	44.83	4,293.5	145.1	144.3	-138.8	0.00	0.00	0.00
4,400.0	3.66	44.83	4,393.3	149.6	148.8	-143.1	0.00	0.00	0.00
4,406.7	3.66	44.83	4,400.0	150.0	149.1	-143.4	0.00	0.00	0.00
SUSSEX									

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Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-22-13)		

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)
4,500.0	3.66	44.83	4,493.1	154.2	153.3	-147.4	0.00	0.00	0.00
4,600.0	3.66	44.83	4,592.9	158.7	157.8	-151.8	0.00	0.00	0.00
4,700.0	3.66	44.83	4,692.7	163.2	162.3	-156.1	0.00	0.00	0.00
4,800.0	3.66	44.83	4,792.5	167.7	166.8	-160.4	0.00	0.00	0.00
4,824.8	3.66	44.83	4,817.3	168.9	167.9	-161.5	0.00	0.00	0.00
4,900.0	2.15	44.83	4,892.4	171.6	170.6	-164.1	2.00	-2.00	0.00
5,000.0	0.15	44.83	4,992.3	173.0	172.0	-165.4	2.00	-2.00	0.00
5,007.7	0.00	0.00	5,000.0	173.0	172.0	-165.4	2.00	-2.00	0.00
5,100.0	0.00	0.00	5,092.3	173.0	172.0	-165.4	0.00	0.00	0.00
5,107.7	0.00	0.00	5,100.0	173.0	172.0	-165.4	0.00	0.00	0.00
SHANNON									
5,200.0	0.00	0.00	5,192.3	173.0	172.0	-165.4	0.00	0.00	0.00
5,300.0	0.00	0.00	5,292.3	173.0	172.0	-165.4	0.00	0.00	0.00
5,400.0	0.00	0.00	5,392.3	173.0	172.0	-165.4	0.00	0.00	0.00
5,500.0	0.00	0.00	5,492.3	173.0	172.0	-165.4	0.00	0.00	0.00
5,600.0	0.00	0.00	5,592.3	173.0	172.0	-165.4	0.00	0.00	0.00
5,700.0	0.00	0.00	5,692.3	173.0	172.0	-165.4	0.00	0.00	0.00
5,800.0	0.00	0.00	5,792.3	173.0	172.0	-165.4	0.00	0.00	0.00
5,900.0	0.00	0.00	5,892.3	173.0	172.0	-165.4	0.00	0.00	0.00
6,000.0	0.00	0.00	5,992.3	173.0	172.0	-165.4	0.00	0.00	0.00
6,039.2	0.00	0.00	6,031.5	173.0	172.0	-165.4	0.00	0.00	0.00
KOP #2									
6,100.0	4.56	179.69	6,092.3	170.6	172.0	-163.0	7.50	7.50	0.00
6,200.0	12.06	179.69	6,191.2	156.1	172.1	-148.6	7.50	7.50	0.00
6,300.0	19.56	179.69	6,287.3	128.9	172.2	-121.4	7.50	7.50	0.00
6,400.0	27.06	179.69	6,379.1	89.4	172.5	-81.9	7.50	7.50	0.00
6,500.0	34.56	179.69	6,464.9	38.2	172.7	-30.7	7.50	7.50	0.00
6,600.0	42.06	179.69	6,543.3	-23.7	173.1	31.2	7.50	7.50	0.00
6,633.9	44.60	179.69	6,568.0	-47.0	173.2	54.4	7.50	7.50	0.00
SHARON SPRINGS									
6,700.0	49.56	179.69	6,613.0	-95.4	173.5	102.8	7.50	7.50	0.00
6,800.0	57.06	179.69	6,672.7	-175.5	173.9	182.8	7.50	7.50	0.00
6,900.0	64.56	179.69	6,721.4	-262.8	174.4	270.0	7.50	7.50	0.00
7,000.0	72.06	179.69	6,758.4	-355.6	174.9	362.8	7.50	7.50	0.00
7,100.0	79.56	179.69	6,782.9	-452.5	175.4	459.6	7.50	7.50	0.00
7,200.0	87.06	179.69	6,794.5	-551.7	176.0	558.8	7.50	7.50	0.00
7,243.9	90.35	179.69	6,795.5	-595.6	176.2	602.6	7.50	7.50	0.00
End of Build - 7"									
7,300.0	90.35	179.69	6,795.1	-651.7	176.5	658.7	0.00	0.00	0.00
7,400.0	90.35	179.69	6,794.5	-751.7	177.1	758.6	0.00	0.00	0.00
7,500.0	90.35	179.69	6,793.9	-851.7	177.6	858.5	0.00	0.00	0.00
7,600.0	90.35	179.69	6,793.3	-951.7	178.2	958.5	0.00	0.00	0.00
7,700.0	90.35	179.69	6,792.7	-1,051.7	178.7	1,058.4	0.00	0.00	0.00
7,800.0	90.35	179.69	6,792.1	-1,151.7	179.3	1,158.3	0.00	0.00	0.00
7,900.0	90.35	179.69	6,791.5	-1,251.7	179.8	1,258.3	0.00	0.00	0.00
8,000.0	90.35	179.69	6,790.9	-1,351.7	180.4	1,358.2	0.00	0.00	0.00
8,100.0	90.35	179.69	6,790.3	-1,451.7	180.9	1,458.1	0.00	0.00	0.00
8,200.0	90.35	179.69	6,789.7	-1,551.7	181.5	1,558.0	0.00	0.00	0.00
8,300.0	90.35	179.69	6,789.0	-1,651.7	182.0	1,658.0	0.00	0.00	0.00
8,400.0	90.35	179.69	6,788.4	-1,751.7	182.6	1,757.9	0.00	0.00	0.00
8,500.0	90.35	179.69	6,787.8	-1,851.7	183.1	1,857.8	0.00	0.00	0.00
8,600.0	90.35	179.69	6,787.2	-1,951.7	183.6	1,957.8	0.00	0.00	0.00

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Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-22-13)		

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)
8,700.0	90.35	179.69	6,786.6	-2,051.7	184.2	2,057.7	0.00	0.00	0.00
8,800.0	90.35	179.69	6,786.0	-2,151.7	184.7	2,157.6	0.00	0.00	0.00
8,900.0	90.35	179.69	6,785.4	-2,251.7	185.3	2,257.5	0.00	0.00	0.00
9,000.0	90.35	179.69	6,784.8	-2,351.6	185.8	2,357.5	0.00	0.00	0.00
9,100.0	90.35	179.69	6,784.2	-2,451.6	186.4	2,457.4	0.00	0.00	0.00
9,200.0	90.35	179.69	6,783.5	-2,551.6	186.9	2,557.3	0.00	0.00	0.00
9,300.0	90.35	179.69	6,782.9	-2,651.6	187.5	2,657.2	0.00	0.00	0.00
9,400.0	90.35	179.69	6,782.3	-2,751.6	188.0	2,757.2	0.00	0.00	0.00
9,500.0	90.35	179.69	6,781.7	-2,851.6	188.6	2,857.1	0.00	0.00	0.00
9,600.0	90.35	179.69	6,781.1	-2,951.6	189.1	2,957.0	0.00	0.00	0.00
9,700.0	90.35	179.69	6,780.5	-3,051.6	189.7	3,057.0	0.00	0.00	0.00
9,800.0	90.35	179.69	6,779.9	-3,151.6	190.2	3,156.9	0.00	0.00	0.00
9,900.0	90.35	179.69	6,779.3	-3,251.6	190.8	3,256.8	0.00	0.00	0.00
10,000.0	90.35	179.69	6,778.7	-3,351.6	191.3	3,356.7	0.00	0.00	0.00
10,100.0	90.35	179.69	6,778.0	-3,451.6	191.9	3,456.7	0.00	0.00	0.00
10,200.0	90.35	179.69	6,777.4	-3,551.6	192.4	3,556.6	0.00	0.00	0.00
10,300.0	90.35	179.69	6,776.8	-3,651.6	193.0	3,656.5	0.00	0.00	0.00
10,400.0	90.35	179.69	6,776.2	-3,751.6	193.5	3,756.5	0.00	0.00	0.00
10,500.0	90.35	179.69	6,775.6	-3,851.6	194.1	3,856.4	0.00	0.00	0.00
10,600.0	90.35	179.69	6,775.0	-3,951.6	194.6	3,956.3	0.00	0.00	0.00
10,700.0	90.35	179.69	6,774.4	-4,051.6	195.2	4,056.2	0.00	0.00	0.00
10,800.0	90.35	179.69	6,773.8	-4,151.6	195.7	4,156.2	0.00	0.00	0.00
10,900.0	90.35	179.69	6,773.2	-4,251.6	196.3	4,256.1	0.00	0.00	0.00
11,000.0	90.35	179.69	6,772.5	-4,351.6	196.8	4,356.0	0.00	0.00	0.00
11,100.0	90.35	179.69	6,771.9	-4,451.6	197.4	4,455.9	0.00	0.00	0.00
11,200.0	90.35	179.69	6,771.3	-4,551.6	197.9	4,555.9	0.00	0.00	0.00
11,253.2	90.35	179.69	6,771.0	-4,604.8	198.2	4,609.0	0.00	0.00	0.00
BHL 500'FSL & 1115'FWL									

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
SHL 223'FNL & 943'F - hit/miss target - plan hits target center - Shape - Point	0.00	0.00	1.0	0.0	0.0	1,339,315.18	3,256,509.64	40.261170	-104.580860
BHL 500'FSL & 1115'I - plan hits target center - Point	0.00	0.00	6,771.0	-4,604.8	198.2	1,334,712.90	3,256,755.54	40.248530	-104.580150

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,243.9	6,795.5	7"	7	7-1/2

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-22-13)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,705.3	3,700.0	PARKMAN		0.00		
4,406.7	4,400.0	SUSSEX		0.00		
5,107.7	5,100.0	SHANNON		0.00		
6,633.9	6,568.0	SHARON SPRINGS		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,000.0	1,000.0	0.0	0.0	KOP #1	
6,039.2	6,031.5	173.0	172.0	KOP #2	
7,243.9	6,795.5	-595.6	176.2	End of Build	



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.5-T3N-R64W

Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W

Becker Ranch 5J-103

Wellbore #1

Plan #1 (11-22-13)

Anticollision Report

12 December, 2013



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (11-22-13)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	12/11/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,252.5	Plan #1 (11-22-13) (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
Offset Well - Wellbore - Design						
Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W						
Becker Ranch 5E-323 - Wellbore #1 - Plan #1 (11-22-13)	1,000.0	1,001.0	61.4	57.1	14.370	CC, ES
Becker Ranch 5E-323 - Wellbore #1 - Plan #1 (11-22-13)	11,253.2	11,418.5	670.2	492.8	3.779	SF
Becker Ranch 5E-403 - Wellbore #1 - Plan #1 (11-22-13)	766.3	767.3	89.3	86.1	27.715	CC
Becker Ranch 5E-403 - Wellbore #1 - Plan #1 (11-22-13)	800.0	800.0	89.3	85.9	26.491	ES
Becker Ranch 5E-403 - Wellbore #1 - Plan #1 (11-22-13)	1,100.0	1,091.0	105.5	100.8	22.593	SF
Becker Ranch 5J-443 - Wellbore #1 - Plan #1 (11-22-13)	1,000.0	1,001.0	30.7	26.4	7.185	CC, ES
Becker Ranch 5J-443 - Wellbore #1 - Plan #1 (11-22-13)	11,253.2	11,496.3	425.9	280.0	2.920	SF
Existing Wells Sec.5-T3N-R64W						
Becker 5 (Exist.) - Wellbore #1 - Wellbore #1	7,749.6	6,784.4	206.2	44.3	1.274	Level 3, CC, ES, SF
Becker 5-7 (Exist.) - Wellbore #1 - Wellbore #1	7,145.9	6,779.8	237.1	83.7	1.546	CC
Becker 5-7 (Exist.) - Wellbore #1 - Wellbore #1	7,150.0	6,780.3	237.1	83.7	1.545	ES, SF
Becker 7 (Exist.) - Wellbore #1 - Wellbore #1	10,277.8	6,701.0	178.4	-27.3	0.867	Level 1, CC, ES, SF
Becker 8-121 (Exist.) - Wellbore #1 - Wellbore #1	9,093.9	6,727.2	193.3	9.0	1.049	Level 2, CC
Becker 8-121 (Exist.) - Wellbore #1 - Wellbore #1	9,100.0	6,727.2	193.3	9.0	1.049	Level 2, ES, SF
LDS D08-18D (Exist.) - Wellbore #1 - Wellbore #1	11,253.2	6,688.0	378.9	155.1	1.694	CC, ES, SF
LDS D08-28D (Exist.) - Wellbore #1 - Wellbore #1	11,253.2	6,688.0	394.2	170.5	1.762	CC, ES, SF
LDS D08-29D (Exist.) - Wellbore #1 - Wellbore #1	11,253.2	6,688.0	364.6	140.9	1.630	CC, ES, SF
LDS D08-30D (Exist.) - Wellbore #1 - Wellbore #1	11,253.2	6,688.0	351.6	127.9	1.572	CC, ES, SF

Offset Design											
Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-323 - Wellbore #1 - Plan #1 (11-22-13)											
Survey Program: 0-MWD											
Reference											
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)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)
0.0	0.0	1.0	1.0	0.0	0.0	-90.00	0.0	-61.4	61.4	61.4	0.00
100.0	100.0	101.0	101.0	0.1	0.1	-90.00	0.0	-61.4	61.4	61.2	0.23
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	0.0	-61.4	61.4	60.7	0.68
300.0	300.0	301.0	301.0	0.6	0.6	-90.00	0.0	-61.4	61.4	60.3	1.13
400.0	400.0	401.0	401.0	0.8	0.8	-90.00	0.0	-61.4	61.4	59.8	1.58
500.0	500.0	501.0	501.0	1.0	1.0	-90.00	0.0	-61.4	61.4	59.4	2.03
600.0	600.0	601.0	601.0	1.2	1.2	-90.00	0.0	-61.4	61.4	58.9	2.47
700.0	700.0	701.0	701.0	1.5	1.5	-90.00	0.0	-61.4	61.4	58.5	2.92
											N/A
											270.471
											90.756
											54.526
											38.969
											30.319
											24.812
											20.997

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-323 - Wellbore #1 - Plan #1 (11-22-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
800.0	800.0	801.0	801.0	1.7	1.7	-90.00		0.0	-61.4	61.4	58.0	3.37	18.200	
900.0	900.0	901.0	901.0	1.9	1.9	-90.00		0.0	-61.4	61.4	57.6	3.82	16.060	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-90.00		0.0	-61.4	61.4	57.1	4.27	14.370 CC, ES	
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	-135.95		0.0	-61.4	62.6	57.9	4.72	13.280	
1,182.8	1,182.7	1,183.7	1,183.7	2.5	2.5	-138.39		0.0	-61.4	65.6	60.6	5.08	12.919	
1,200.0	1,199.8	1,200.8	1,200.8	2.6	2.6	-139.02		0.0	-61.4	66.5	61.3	5.16	12.889	
1,300.0	1,299.6	1,300.6	1,300.6	2.8	2.8	-142.37		0.0	-61.4	71.4	65.8	5.60	12.752	
1,400.0	1,399.4	1,400.4	1,400.4	3.0	3.0	-145.29		0.0	-61.4	76.6	70.5	6.05	12.665	
1,500.0	1,499.2	1,500.0	1,500.0	3.3	3.3	-147.82		0.0	-61.4	81.9	75.4	6.49	12.615	
1,600.0	1,599.0	1,597.6	1,597.6	3.5	3.5	-149.35		0.6	-62.9	88.7	81.8	6.93	12.808	
1,700.0	1,698.8	1,694.6	1,694.5	3.7	3.7	-149.47		2.5	-67.5	98.3	90.9	7.36	13.359	
1,800.0	1,798.6	1,791.0	1,790.5	4.0	3.9	-148.55		5.5	-75.1	110.6	102.8	7.79	14.188	
1,900.0	1,898.4	1,886.7	1,885.5	4.2	4.1	-146.96		9.8	-85.6	125.6	117.4	8.23	15.254	
2,000.0	1,998.2	1,985.2	1,983.2	4.5	4.4	-145.32		14.7	-97.8	142.1	133.4	8.68	16.358	
2,100.0	2,098.0	2,083.8	2,080.8	4.7	4.6	-144.02		19.7	-110.0	158.6	149.5	9.14	17.359	
2,200.0	2,197.8	2,182.4	2,178.5	4.9	4.9	-142.96		24.6	-122.3	175.2	165.6	9.59	18.265	
2,300.0	2,297.6	2,280.9	2,276.2	5.2	5.2	-142.09		29.6	-134.5	191.9	181.8	10.05	19.086	
2,400.0	2,397.4	2,379.5	2,373.9	5.4	5.4	-141.35		34.5	-146.8	208.5	198.0	10.51	19.835	
2,500.0	2,497.2	2,478.1	2,471.5	5.7	5.7	-140.73		39.5	-159.0	225.3	214.3	10.98	20.519	
2,600.0	2,597.0	2,576.6	2,569.2	5.9	6.0	-140.19		44.4	-171.3	242.0	230.6	11.44	21.145	
2,700.0	2,696.8	2,675.2	2,666.9	6.2	6.3	-139.72		49.4	-183.5	258.8	246.8	11.91	21.721	
2,800.0	2,796.6	2,773.8	2,764.6	6.4	6.6	-139.31		54.3	-195.8	275.5	263.2	12.38	22.251	
2,900.0	2,896.4	2,872.3	2,862.3	6.7	6.9	-138.94		59.2	-208.0	292.3	279.5	12.85	22.741	
3,000.0	2,996.2	2,970.9	2,959.9	6.9	7.2	-138.62		64.2	-220.2	309.1	295.8	13.33	23.195	
3,100.0	3,096.0	3,069.4	3,057.6	7.2	7.5	-138.33		69.1	-232.5	325.9	312.1	13.80	23.616	
3,200.0	3,195.8	3,168.0	3,155.3	7.4	7.8	-138.06		74.1	-244.7	342.7	328.5	14.28	24.009	
3,300.0	3,295.6	3,266.6	3,253.0	7.7	8.2	-137.82		79.0	-257.0	359.6	344.8	14.75	24.375	
3,400.0	3,395.4	3,365.1	3,350.6	7.9	8.5	-137.61		84.0	-269.2	376.4	361.1	15.23	24.717	
3,500.0	3,495.2	3,463.7	3,448.3	8.2	8.8	-137.41		88.9	-281.5	393.2	377.5	15.70	25.037	
3,600.0	3,595.0	3,562.3	3,546.0	8.4	9.1	-137.23		93.9	-293.7	410.0	393.9	16.18	25.338	
3,700.0	3,694.8	3,660.8	3,643.7	8.7	9.4	-137.06		98.8	-305.9	426.9	410.2	16.66	25.620	
3,800.0	3,794.5	3,759.4	3,741.3	8.9	9.7	-136.90		103.8	-318.2	443.7	426.6	17.14	25.886	
3,900.0	3,894.3	3,858.0	3,839.0	9.2	10.1	-136.76		108.7	-330.4	460.6	442.9	17.62	26.137	
4,000.0	3,994.1	3,956.5	3,936.7	9.4	10.4	-136.63		113.7	-342.7	477.4	459.3	18.10	26.375	
4,100.0	4,093.9	4,055.1	4,034.4	9.7	10.7	-136.50		118.6	-354.9	494.2	475.7	18.58	26.599	
4,200.0	4,193.7	4,153.7	4,132.0	9.9	11.0	-136.39		123.6	-367.2	511.1	492.0	19.06	26.811	
4,300.0	4,293.5	4,252.2	4,229.7	10.2	11.4	-136.28		128.5	-379.4	527.9	508.4	19.54	27.013	
4,400.0	4,393.3	4,350.8	4,327.4	10.4	11.7	-136.18		133.5	-391.7	544.8	524.8	20.03	27.205	
4,500.0	4,493.1	4,449.4	4,425.1	10.7	12.0	-136.08		138.4	-403.9	561.7	541.1	20.51	27.387	
4,600.0	4,592.9	4,547.9	4,522.8	10.9	12.3	-135.99		143.4	-416.1	578.5	557.5	20.99	27.560	
4,700.0	4,692.7	4,646.5	4,620.4	11.2	12.6	-135.90		148.3	-428.4	595.4	573.9	21.47	27.725	
4,800.0	4,792.5	4,745.1	4,718.1	11.4	13.0	-135.82		153.3	-440.6	612.2	590.3	21.96	27.883	
4,824.8	4,817.3	4,769.5	4,742.4	11.5	13.1	-135.80		154.5	-443.7	616.4	594.3	22.08	27.921	
4,900.0	4,892.4	4,843.7	4,815.9	11.6	13.3	-135.85		158.2	-452.9	628.4	606.0	22.44	28.002	
5,007.7	5,000.0	4,951.7	4,922.9	11.8	13.7	-90.84		163.7	-466.3	643.1	620.2	22.91	28.074	
5,100.0	5,092.3	5,067.7	5,038.2	12.0	13.9	-90.40		168.5	-478.3	652.6	629.3	23.32	27.987	
5,200.0	5,192.3	5,194.3	5,164.4	12.2	14.2	-90.11		171.8	-486.4	659.1	635.3	23.76	27.734	
5,300.0	5,292.3	5,321.4	5,291.5	12.4	14.4	-90.00		173.0	-489.4	661.4	637.2	24.20	27.333	
5,400.0	5,392.3	5,423.2	5,393.3	12.6	14.6	-90.00		173.0	-489.4	661.4	636.8	24.60	26.884	
5,500.0	5,492.3	5,523.2	5,493.3	12.8	14.7	-90.00		173.0	-489.4	661.4	636.4	25.02	26.439	
5,600.0	5,592.3	5,623.2	5,593.3	13.0	14.9	-90.00		173.0	-489.4	661.4	636.0	25.43	26.008	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-323 - Wellbore #1 - Plan #1 (11-22-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,700.0	5,692.3	5,723.2	5,693.3	13.2	15.1	-90.00		173.0	-489.4	661.4	635.6	25.85	25.589	
5,800.0	5,792.3	5,823.2	5,793.3	13.4	15.3	-90.00		173.0	-489.4	661.4	635.1	26.26	25.182	
5,900.0	5,892.3	5,923.2	5,893.3	13.6	15.5	-90.00		173.0	-489.4	661.4	634.7	26.68	24.788	
6,000.0	5,992.3	6,023.2	5,993.3	13.9	15.7	-90.00		173.0	-489.4	661.4	634.3	27.10	24.404	
6,039.2	6,031.6	6,062.5	6,032.6	13.9	15.7	-90.00		173.0	-489.4	661.4	634.1	27.27	24.257	
6,050.0	6,042.3	6,073.2	6,043.3	14.0	15.7	90.32		173.0	-489.4	661.4	634.1	27.31	24.214	
6,100.0	6,092.3	6,123.2	6,093.3	14.0	15.8	90.52		173.0	-489.4	661.4	633.9	27.49	24.059	
6,150.0	6,141.9	6,172.9	6,142.9	14.1	15.9	91.00		173.0	-489.4	661.5	633.8	27.65	23.923	
6,200.0	6,191.2	6,222.6	6,192.6	14.2	16.0	91.72		172.8	-489.4	661.7	633.9	27.79	23.811	
6,250.0	6,239.7	6,273.4	6,243.4	14.2	16.1	92.51		169.9	-489.4	662.0	634.1	27.90	23.727	
6,300.0	6,287.3	6,324.8	6,294.4	14.3	16.2	93.29		163.5	-489.3	662.5	634.5	27.99	23.667	
6,350.0	6,333.8	6,377.0	6,345.6	14.3	16.2	94.07		153.6	-489.3	663.1	635.0	28.07	23.622	
6,400.0	6,379.1	6,429.8	6,396.7	14.3	16.3	94.82		140.0	-489.2	663.8	635.7	28.14	23.588	
6,450.0	6,422.8	6,483.4	6,447.3	14.4	16.3	95.57		122.6	-489.1	664.6	636.4	28.21	23.556	
6,500.0	6,464.9	6,537.6	6,497.2	14.4	16.3	96.29		101.4	-489.0	665.5	637.2	28.29	23.519	
6,550.0	6,505.1	6,592.6	6,546.2	14.5	16.4	96.98		76.5	-488.8	666.4	638.0	28.39	23.469	
6,600.0	6,543.3	6,648.3	6,593.8	14.5	16.4	97.65		47.6	-488.6	667.4	638.9	28.53	23.396	
6,650.0	6,579.3	6,704.6	6,639.7	14.6	16.4	98.28		15.0	-488.4	668.4	639.7	28.70	23.289	
6,700.0	6,613.0	6,761.7	6,683.6	14.7	16.5	98.88		-21.5	-488.2	669.5	640.5	28.93	23.137	
6,750.0	6,644.1	6,819.4	6,725.2	14.9	16.6	99.44		-61.5	-488.0	670.5	641.2	29.23	22.938	
6,800.0	6,672.7	6,877.8	6,764.0	15.1	16.7	99.95		-105.1	-487.7	671.5	641.9	29.61	22.679	
6,850.0	6,698.5	6,936.7	6,799.7	15.4	16.8	100.42		-152.0	-487.4	672.4	642.3	30.07	22.358	
6,900.0	6,721.4	6,996.2	6,831.9	15.7	16.9	100.84		-201.9	-487.1	673.3	642.6	30.64	21.976	
6,950.0	6,741.4	7,056.2	6,860.4	16.1	17.2	101.20		-254.7	-486.8	674.1	642.8	31.31	21.530	
7,000.0	6,758.4	7,116.6	6,884.8	16.5	17.5	101.50		-310.0	-486.5	674.7	642.6	32.09	21.029	
7,050.0	6,772.2	7,177.4	6,904.9	17.0	17.9	101.75		-367.3	-486.1	675.3	642.3	32.97	20.482	
7,100.0	6,782.9	7,238.4	6,920.4	17.5	18.4	101.93		-426.3	-485.8	675.7	641.7	33.95	19.900	
7,150.0	6,790.3	7,299.7	6,931.2	18.0	19.0	102.06		-486.6	-485.4	675.9	640.9	35.03	19.293	
7,200.0	6,794.5	7,361.1	6,937.2	18.6	19.6	102.11		-547.7	-485.1	676.0	639.8	36.21	18.670	
7,243.9	6,795.5	7,414.5	6,938.3	19.1	20.2	102.11		-601.1	-484.7	676.0	638.7	37.30	18.125	
7,300.0	6,795.1	7,470.6	6,937.7	19.8	20.8	102.09		-657.2	-484.4	675.9	637.3	38.66	17.483	
7,400.0	6,794.5	7,570.6	6,936.6	21.1	22.1	102.05		-757.2	-483.8	675.8	634.5	41.24	16.387	
7,500.0	6,793.9	7,670.6	6,935.6	22.5	23.4	102.01		-857.2	-483.2	675.6	631.6	43.99	15.360	
7,600.0	6,793.3	7,770.6	6,934.5	24.0	24.9	101.98		-957.2	-482.6	675.5	628.6	46.88	14.409	
7,700.0	6,792.7	7,870.6	6,933.4	25.5	26.3	101.94		-1,057.2	-482.0	675.3	625.4	49.89	13.536	
7,800.0	6,792.1	7,970.6	6,932.3	27.1	27.9	101.90		-1,157.2	-481.4	675.2	622.2	53.00	12.739	
7,900.0	6,791.5	8,070.6	6,931.2	28.7	29.5	101.86		-1,257.2	-480.8	675.0	618.8	56.19	12.013	
8,000.0	6,790.9	8,170.6	6,930.1	30.4	31.1	101.82		-1,357.2	-480.2	674.9	615.4	59.46	11.351	
8,100.0	6,790.3	8,270.6	6,929.1	32.0	32.7	101.79		-1,457.2	-479.6	674.7	611.9	62.78	10.748	
8,200.0	6,789.7	8,370.6	6,928.0	33.8	34.4	101.75		-1,557.1	-479.0	674.6	608.4	66.15	10.198	
8,300.0	6,789.0	8,470.6	6,926.9	35.5	36.1	101.71		-1,657.1	-478.4	674.4	604.9	69.56	9.695	
8,400.0	6,788.4	8,570.6	6,925.8	37.2	37.8	101.67		-1,757.1	-477.8	674.3	601.3	73.01	9.235	
8,500.0	6,787.8	8,670.6	6,924.7	39.0	39.6	101.63		-1,857.1	-477.2	674.1	597.6	76.50	8.812	
8,600.0	6,787.2	8,770.6	6,923.7	40.8	41.3	101.59		-1,957.1	-476.6	674.0	594.0	80.01	8.424	
8,700.0	6,786.6	8,870.6	6,922.6	42.6	43.1	101.56		-2,057.1	-475.9	673.8	590.3	83.55	8.065	
8,800.0	6,786.0	8,970.6	6,921.5	44.4	44.9	101.52		-2,157.1	-475.3	673.7	586.6	87.10	7.734	
8,900.0	6,785.4	9,070.6	6,920.4	46.2	46.7	101.48		-2,257.1	-474.7	673.5	582.8	90.68	7.427	
9,000.0	6,784.8	9,170.6	6,919.3	48.0	48.5	101.44		-2,357.1	-474.1	673.4	579.1	94.28	7.143	
9,100.0	6,784.2	9,270.6	6,918.2	49.9	50.3	101.40		-2,457.1	-473.5	673.2	575.3	97.89	6.878	
9,200.0	6,783.5	9,370.6	6,917.2	51.7	52.1	101.36		-2,557.1	-472.9	673.1	571.6	101.51	6.631	
9,300.0	6,782.9	9,470.6	6,916.1	53.5	54.0	101.33		-2,657.0	-472.3	672.9	567.8	105.15	6.400	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-323 - Wellbore #1 - Plan #1 (11-22-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
9,400.0	6,782.3	9,570.6	6,915.0	55.4	55.8	101.29	-2,757.0	-471.7	672.8	564.0	108.79	6.184		
9,500.0	6,781.7	9,670.6	6,913.9	57.2	57.6	101.25	-2,857.0	-471.1	672.6	560.2	112.45	5.982		
9,600.0	6,781.1	9,770.6	6,912.8	59.1	59.5	101.21	-2,957.0	-470.5	672.5	556.4	116.12	5.791		
9,700.0	6,780.5	9,870.6	6,911.7	61.0	61.3	101.17	-3,057.0	-469.9	672.4	552.6	119.80	5.613		
9,800.0	6,779.9	9,970.6	6,910.7	62.8	63.2	101.13	-3,157.0	-469.3	672.2	548.7	123.48	5.444		
9,900.0	6,779.3	10,070.6	6,909.6	64.7	65.0	101.09	-3,257.0	-468.7	672.1	544.9	127.17	5.285		
10,000.0	6,778.7	10,170.6	6,908.5	66.6	66.9	101.06	-3,357.0	-468.1	671.9	541.1	130.87	5.134		
10,100.0	6,778.0	10,270.6	6,907.4	68.4	68.8	101.02	-3,457.0	-467.5	671.8	537.2	134.57	4.992		
10,200.0	6,777.4	10,370.6	6,906.3	70.3	70.6	100.98	-3,557.0	-466.9	671.6	533.3	138.28	4.857		
10,300.0	6,776.8	10,470.6	6,905.3	72.2	72.5	100.94	-3,657.0	-466.3	671.5	529.5	142.00	4.729		
10,400.0	6,776.2	10,570.6	6,904.2	74.1	74.4	100.90	-3,757.0	-465.7	671.3	525.6	145.72	4.607		
10,500.0	6,775.6	10,670.6	6,903.1	76.0	76.3	100.86	-3,856.9	-465.1	671.2	521.8	149.44	4.491		
10,600.0	6,775.0	10,770.6	6,902.0	77.8	78.1	100.82	-3,956.9	-464.5	671.1	517.9	153.17	4.381		
10,700.0	6,774.4	10,870.6	6,900.9	79.7	80.0	100.79	-4,056.9	-463.9	670.9	514.0	156.91	4.276		
10,800.0	6,773.8	10,970.6	6,899.8	81.6	81.9	100.75	-4,156.9	-463.3	670.8	510.1	160.64	4.176		
10,900.0	6,773.2	11,070.6	6,898.8	83.5	83.8	100.71	-4,256.9	-462.7	670.6	506.2	164.39	4.080		
11,000.0	6,772.5	11,170.6	6,897.7	85.4	85.7	100.67	-4,356.9	-462.1	670.5	502.4	168.13	3.988		
11,100.0	6,771.9	11,270.6	6,896.6	87.3	87.5	100.63	-4,456.9	-461.5	670.4	498.5	171.88	3.900		
11,200.0	6,771.3	11,370.6	6,895.5	89.2	89.4	100.59	-4,556.9	-460.9	670.2	494.6	175.63	3.816		
11,243.4	6,771.1	11,414.0	6,895.0	89.8	90.3	100.58	-4,600.2	-460.6	670.1	493.0	177.10	3.784		
11,253.2	6,771.0	11,418.5	6,895.0	90.0	90.3	100.57	-4,604.8	-460.6	670.2	492.8	177.34	3.779 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-403 - Wellbore #1 - Plan #1 (11-22-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	-90.00	0.0	-89.3	89.3	89.3	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-90.00	0.0	-89.3	89.3	89.1	0.23	393.412		
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	0.0	-89.3	89.3	88.6	0.68	132.009		
300.0	300.0	301.0	301.0	0.6	0.6	-90.00	0.0	-89.3	89.3	88.2	1.13	79.311		
400.0	400.0	401.0	401.0	0.8	0.8	-90.00	0.0	-89.3	89.3	87.7	1.58	56.683		
500.0	500.0	501.0	501.0	1.0	1.0	-90.00	0.0	-89.3	89.3	87.3	2.03	44.101		
600.0	600.0	601.0	601.0	1.2	1.2	-90.00	0.0	-89.3	89.3	86.8	2.47	36.090		
700.0	700.0	701.0	701.0	1.5	1.5	-90.00	0.0	-89.3	89.3	86.4	2.92	30.542		
766.3	766.3	767.3	767.3	1.6	1.6	-90.00	0.0	-89.3	89.3	86.1	3.22	27.715 CC		
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-89.3	89.3	85.9	3.37	26.491 ES		
900.0	900.0	898.0	898.0	1.9	1.9	-89.76	0.4	-90.9	91.0	87.2	3.81	23.902		
1,000.0	1,000.0	994.8	994.6	2.1	2.1	-89.08	1.5	-95.7	96.0	91.7	4.24	22.654		
1,100.0	1,100.0	1,091.0	1,090.5	2.4	2.3	-133.48	3.4	-103.7	105.5	100.8	4.67	22.593 SF		
1,182.8	1,182.7	1,170.0	1,168.9	2.5	2.5	-133.76	5.5	-112.5	117.6	112.5	5.03	23.396		
1,200.0	1,199.8	1,186.2	1,185.0	2.6	2.6	-133.90	6.0	-114.6	120.5	115.4	5.10	23.637		
1,300.0	1,299.6	1,281.8	1,279.5	2.8	2.8	-134.43	9.3	-128.4	139.4	133.9	5.54	25.173		
1,400.0	1,399.4	1,379.8	1,376.4	3.0	3.1	-134.79	12.8	-143.3	159.0	153.0	5.98	26.587		
1,500.0	1,499.2	1,477.9	1,473.3	3.3	3.4	-135.07	16.4	-158.1	178.5	172.1	6.43	27.783		
1,600.0	1,599.0	1,576.0	1,570.1	3.5	3.7	-135.30	19.9	-173.0	198.1	191.2	6.88	28.800		
1,700.0	1,698.8	1,674.0	1,667.0	3.7	4.1	-135.48	23.4	-187.8	217.7	210.4	7.34	29.675		
1,800.0	1,798.6	1,772.1	1,763.9	4.0	4.4	-135.64	26.9	-202.6	237.3	229.5	7.80	30.429		
1,900.0	1,898.4	1,870.1	1,860.7	4.2	4.7	-135.77	30.5	-217.5	256.8	248.6	8.26	31.090		
2,000.0	1,998.2	1,968.2	1,957.6	4.5	5.1	-135.88	34.0	-232.3	276.4	267.7	8.73	31.670		
2,100.0	2,098.0	2,066.3	2,054.5	4.7	5.4	-135.98	37.5	-247.2	296.0	286.8	9.20	32.184		
2,200.0	2,197.8	2,164.3	2,151.4	4.9	5.8	-136.06	41.0	-262.0	315.6	305.9	9.67	32.641		
2,300.0	2,297.6	2,262.4	2,248.2	5.2	6.1	-136.14	44.6	-276.8	335.2	325.0	10.14	33.050		
2,400.0	2,397.4	2,360.5	2,345.1	5.4	6.5	-136.20	48.1	-291.7	354.7	344.1	10.61	33.419		
2,500.0	2,497.2	2,458.5	2,442.0	5.7	6.8	-136.26	51.6	-306.5	374.3	363.2	11.09	33.752		
2,600.0	2,597.0	2,556.6	2,538.8	5.9	7.2	-136.32	55.1	-321.4	393.9	382.3	11.57	34.054		
2,700.0	2,696.8	2,654.7	2,635.7	6.2	7.5	-136.37	58.7	-336.2	413.5	401.4	12.04	34.330		
2,800.0	2,796.6	2,752.7	2,732.6	6.4	7.9	-136.41	62.2	-351.1	433.1	420.5	12.52	34.582		
2,900.0	2,896.4	2,850.8	2,829.4	6.7	8.2	-136.45	65.7	-365.9	452.6	439.6	13.00	34.814		
3,000.0	2,996.2	2,948.8	2,926.3	6.9	8.6	-136.49	69.3	-380.7	472.2	458.7	13.48	35.027		
3,100.0	3,096.0	3,046.9	3,023.2	7.2	9.0	-136.52	72.8	-395.6	491.8	477.8	13.96	35.224		
3,200.0	3,195.8	3,145.0	3,120.1	7.4	9.3	-136.55	76.3	-410.4	511.4	496.9	14.44	35.407		
3,300.0	3,295.6	3,243.0	3,216.9	7.7	9.7	-136.58	79.8	-425.3	531.0	516.0	14.92	35.576		
3,400.0	3,395.4	3,341.1	3,313.8	7.9	10.0	-136.61	83.4	-440.1	550.6	535.1	15.41	35.734		
3,500.0	3,495.2	3,439.2	3,410.7	8.2	10.4	-136.64	86.9	-454.9	570.1	554.2	15.89	35.881		
3,600.0	3,595.0	3,537.2	3,507.5	8.4	10.8	-136.66	90.4	-469.8	589.7	573.3	16.37	36.019		
3,700.0	3,694.8	3,635.3	3,604.4	8.7	11.1	-136.68	93.9	-484.6	609.3	592.4	16.86	36.148		
3,800.0	3,794.5	3,733.4	3,701.3	8.9	11.5	-136.70	97.5	-499.5	628.9	611.5	17.34	36.269		
3,900.0	3,894.3	3,831.4	3,798.1	9.2	11.8	-136.72	101.0	-514.3	648.5	630.6	17.82	36.383		
4,000.0	3,994.1	3,929.5	3,895.0	9.4	12.2	-136.74	104.5	-529.2	668.0	649.7	18.31	36.490		
4,100.0	4,093.9	4,027.5	3,991.9	9.7	12.6	-136.76	108.0	-544.0	687.6	668.8	18.79	36.592		
4,200.0	4,193.7	4,125.6	4,088.8	9.9	12.9	-136.78	111.6	-558.8	707.2	687.9	19.28	36.687		
4,300.0	4,293.5	4,223.7	4,185.6	10.2	13.3	-136.79	115.1	-573.7	726.8	707.0	19.76	36.778		
4,400.0	4,393.3	4,321.7	4,282.5	10.4	13.6	-136.81	118.6	-588.5	746.4	726.1	20.25	36.864		
4,500.0	4,493.1	4,419.8	4,379.4	10.7	14.0	-136.82	122.2	-603.4	766.0	745.2	20.73	36.945		
4,600.0	4,592.9	4,517.9	4,476.2	10.9	14.4	-136.83	125.7	-618.2	785.5	764.3	21.22	37.022		
4,700.0	4,692.7	4,615.9	4,573.1	11.2	14.7	-136.84	129.2	-633.0	805.1	783.4	21.70	37.096		
4,800.0	4,792.5	4,714.0	4,670.0	11.4	15.1	-136.86	132.7	-647.9	824.7	802.5	22.19	37.166		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-403 - Wellbore #1 - Plan #1 (11-22-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,824.8	4,817.3	4,738.3	4,694.0	11.5	15.2	-136.86		133.6	-651.6	829.6	807.3	22.31	37.183	
4,900.0	4,892.4	4,812.2	4,767.0	11.6	15.5	-137.02		136.3	-662.7	843.6	820.9	22.69	37.182	
5,007.7	5,000.0	4,918.3	4,871.8	11.8	15.9	-92.22		140.1	-678.8	861.2	838.0	23.17	37.169	
5,100.0	5,092.3	5,009.6	4,961.9	12.0	16.2	-91.96		143.4	-692.6	875.0	851.5	23.57	37.125	
5,200.0	5,192.3	5,108.3	5,059.5	12.2	16.6	-91.70		146.9	-707.6	890.1	866.0	24.02	37.049	
5,300.0	5,292.3	5,207.1	5,157.1	12.4	16.9	-91.44		150.5	-722.5	905.1	880.6	24.48	36.976	
5,400.0	5,392.3	5,305.9	5,254.7	12.6	17.3	-91.20		154.0	-737.5	920.2	895.2	24.93	36.906	
5,500.0	5,492.3	5,404.7	5,352.3	12.8	17.7	-90.96		157.6	-752.4	935.2	909.9	25.39	36.839	
5,600.0	5,592.3	5,503.5	5,449.8	13.0	18.0	-90.72		161.1	-767.4	950.3	924.5	25.84	36.774	
5,700.0	5,692.3	5,602.3	5,547.4	13.2	18.4	-90.50		164.7	-782.3	965.4	939.1	26.30	36.712	
5,800.0	5,792.3	5,746.7	5,690.6	13.4	18.8	-90.23		169.1	-801.0	978.4	951.6	26.81	36.488	
5,900.0	5,892.3	5,896.3	5,839.6	13.6	19.1	-90.06		172.0	-812.9	986.4	959.1	27.30	36.129	
6,000.0	5,992.3	6,046.7	5,990.0	13.9	19.3	-90.00		173.0	-817.3	989.3	961.5	27.77	35.621	
6,039.2	6,031.6	6,089.3	6,032.6	13.9	19.4	-90.00		173.0	-817.3	989.3	961.4	27.93	35.417	
6,050.0	6,042.3	6,100.1	6,043.3	14.0	19.4	90.32		173.0	-817.3	989.3	961.3	27.98	35.354	
6,100.0	6,092.3	6,150.0	6,093.3	14.0	19.5	90.45		173.0	-817.3	989.3	961.2	28.15	35.145	
6,150.0	6,141.9	6,199.7	6,142.9	14.1	19.5	90.77		173.0	-817.3	989.4	961.1	28.30	34.963	
6,200.0	6,191.2	6,248.9	6,192.2	14.2	19.6	91.26		173.0	-817.3	989.5	961.1	28.43	34.807	
6,250.0	6,239.7	6,297.4	6,240.7	14.2	19.7	91.91		173.0	-817.3	989.9	961.3	28.54	34.679	
6,300.0	6,287.3	6,346.0	6,289.3	14.3	19.8	92.71		172.8	-817.3	990.5	961.9	28.65	34.578	
6,350.0	6,333.8	6,397.3	6,340.5	14.3	19.8	93.57		170.1	-817.3	991.4	962.7	28.73	34.508	
6,400.0	6,379.1	6,449.8	6,392.6	14.3	19.9	94.43		163.7	-817.3	992.6	963.8	28.81	34.456	
6,450.0	6,422.8	6,503.6	6,445.4	14.4	19.9	95.28		153.5	-817.2	994.0	965.1	28.88	34.416	
6,500.0	6,464.9	6,558.7	6,498.6	14.4	20.0	96.12		139.2	-817.1	995.5	966.6	28.96	34.378	
6,550.0	6,505.1	6,615.2	6,551.9	14.5	20.0	96.95		120.5	-817.0	997.3	968.3	29.05	34.332	
6,600.0	6,543.3	6,673.2	6,605.1	14.5	20.0	97.75		97.4	-816.9	999.2	970.1	29.16	34.266	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5J-443 - Wellbore #1 - Plan #1 (11-22-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-90.01	-90.01	0.0	-30.7	30.7	30.7	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-90.01	-90.01	0.0	-30.7	30.7	30.5	0.23	135.235	
200.0	200.0	201.0	201.0	0.3	0.3	-90.01	-90.01	0.0	-30.7	30.7	30.0	0.68	45.378	
300.0	300.0	301.0	301.0	0.6	0.6	-90.01	-90.01	0.0	-30.7	30.7	29.6	1.13	27.263	
400.0	400.0	401.0	401.0	0.8	0.8	-90.01	-90.01	0.0	-30.7	30.7	29.1	1.58	19.485	
500.0	500.0	501.0	501.0	1.0	1.0	-90.01	-90.01	0.0	-30.7	30.7	28.7	2.03	15.160	
600.0	600.0	601.0	601.0	1.2	1.2	-90.01	-90.01	0.0	-30.7	30.7	28.2	2.47	12.406	
700.0	700.0	701.0	701.0	1.5	1.5	-90.01	-90.01	0.0	-30.7	30.7	27.8	2.92	10.499	
800.0	800.0	801.0	801.0	1.7	1.7	-90.01	-90.01	0.0	-30.7	30.7	27.3	3.37	9.100	
900.0	900.0	901.0	901.0	1.9	1.9	-90.01	-90.01	0.0	-30.7	30.7	26.9	3.82	8.030	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-90.01	-90.01	0.0	-30.7	30.7	26.4	4.27	7.185 CC, ES	
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	-137.04	-137.04	0.0	-30.7	32.0	27.2	4.72	6.774	
1,182.8	1,182.7	1,183.7	1,183.7	2.5	2.5	-141.56	-141.56	0.0	-30.7	35.1	30.0	5.08	6.900	
1,200.0	1,199.8	1,200.8	1,200.8	2.6	2.6	-142.64	-142.64	0.0	-30.7	35.9	30.8	5.16	6.966	
1,300.0	1,299.6	1,300.6	1,300.6	2.8	2.8	-148.03	-148.03	0.0	-30.7	41.2	35.6	5.60	7.354	
1,400.0	1,399.4	1,400.4	1,400.4	3.0	3.0	-152.18	-152.18	0.0	-30.7	46.7	40.7	6.04	7.729	
1,500.0	1,499.2	1,500.2	1,500.2	3.3	3.3	-155.43	-155.43	0.0	-30.7	52.4	46.0	6.49	8.081	
1,600.0	1,599.0	1,600.0	1,600.0	3.5	3.5	-158.04	-158.04	0.0	-30.7	58.3	51.4	6.94	8.406	
1,700.0	1,698.8	1,699.8	1,699.8	3.7	3.7	-160.16	-160.16	0.0	-30.7	64.3	56.9	7.38	8.704	
1,800.0	1,798.6	1,799.6	1,799.6	4.0	3.9	-161.93	-161.93	0.0	-30.7	70.3	62.5	7.83	8.976	
1,900.0	1,898.4	1,899.4	1,899.4	4.2	4.2	-163.41	-163.41	0.0	-30.7	76.4	68.1	8.28	9.225	
2,000.0	1,998.2	1,999.2	1,999.2	4.5	4.4	-164.68	-164.68	0.0	-30.7	82.5	73.8	8.73	9.453	
2,100.0	2,098.0	2,098.6	2,098.6	4.7	4.6	-164.67	-164.67	1.3	-31.7	88.9	79.7	9.18	9.688	
2,200.0	2,197.8	2,197.9	2,197.7	4.9	4.8	-162.62	-162.62	5.4	-34.8	95.8	86.1	9.62	9.952	
2,300.0	2,297.6	2,297.3	2,296.9	5.2	5.0	-159.48	-159.48	11.5	-39.4	103.2	93.2	10.07	10.249	
2,400.0	2,397.4	2,396.9	2,396.1	5.4	5.3	-156.70	-156.70	17.7	-44.1	111.0	100.5	10.53	10.544	
2,500.0	2,497.2	2,496.4	2,495.4	5.7	5.5	-154.30	-154.30	23.9	-48.8	119.0	108.0	10.99	10.830	
2,600.0	2,597.0	2,596.0	2,594.6	5.9	5.7	-152.20	-152.20	30.1	-53.5	127.2	115.8	11.45	11.107	
2,700.0	2,696.8	2,695.6	2,693.9	6.2	6.0	-150.35	-150.35	36.3	-58.2	135.6	123.6	11.92	11.372	
2,800.0	2,796.6	2,795.1	2,793.2	6.4	6.2	-148.72	-148.72	42.5	-62.8	144.0	131.6	12.39	11.625	
2,900.0	2,896.4	2,894.7	2,892.4	6.7	6.5	-147.28	-147.28	48.6	-67.5	152.6	139.7	12.86	11.866	
3,000.0	2,996.2	2,994.3	2,991.7	6.9	6.7	-145.98	-145.98	54.8	-72.2	161.2	147.9	13.33	12.095	
3,100.0	3,096.0	3,093.8	3,090.9	7.2	6.9	-144.82	-144.82	61.0	-76.9	170.0	156.2	13.81	12.312	
3,200.0	3,195.8	3,193.4	3,190.2	7.4	7.2	-143.78	-143.78	67.2	-81.6	178.8	164.5	14.28	12.518	
3,300.0	3,295.6	3,292.9	3,289.5	7.7	7.4	-142.83	-142.83	73.4	-86.3	187.6	172.8	14.76	12.713	
3,400.0	3,395.4	3,392.5	3,388.7	7.9	7.7	-141.96	-141.96	79.6	-90.9	196.5	181.3	15.23	12.899	
3,500.0	3,495.2	3,492.1	3,488.0	8.2	7.9	-141.17	-141.17	85.7	-95.6	205.4	189.7	15.71	13.075	
3,600.0	3,595.0	3,591.6	3,587.2	8.4	8.2	-140.45	-140.45	91.9	-100.3	214.4	198.2	16.19	13.242	
3,700.0	3,694.8	3,691.2	3,686.5	8.7	8.4	-139.79	-139.79	98.1	-105.0	223.4	206.7	16.67	13.402	
3,800.0	3,794.5	3,790.8	3,785.8	8.9	8.7	-139.17	-139.17	104.3	-109.7	232.4	215.3	17.15	13.553	
3,900.0	3,894.3	3,890.3	3,885.0	9.2	8.9	-138.61	-138.61	110.5	-114.4	241.5	223.8	17.63	13.697	
4,000.0	3,994.1	3,989.9	3,984.3	9.4	9.2	-138.08	-138.08	116.7	-119.0	250.5	232.4	18.11	13.834	
4,100.0	4,093.9	4,089.4	4,083.5	9.7	9.4	-137.59	-137.59	122.9	-123.7	259.6	241.0	18.59	13.965	
4,200.0	4,193.7	4,189.0	4,182.8	9.9	9.7	-137.13	-137.13	129.0	-128.4	268.7	249.6	19.07	14.090	
4,300.0	4,293.5	4,288.6	4,282.1	10.2	9.9	-136.71	-136.71	135.2	-133.1	277.8	258.3	19.55	14.209	
4,400.0	4,393.3	4,388.1	4,381.3	10.4	10.2	-136.31	-136.31	141.4	-137.8	287.0	266.9	20.04	14.323	
4,500.0	4,493.1	4,487.7	4,480.6	10.7	10.5	-135.93	-135.93	147.6	-142.5	296.1	275.6	20.52	14.433	
4,600.0	4,592.9	4,587.3	4,579.8	10.9	10.7	-135.58	-135.58	153.8	-147.2	305.3	284.3	21.00	14.537	
4,700.0	4,692.7	4,686.8	4,679.1	11.2	11.0	-135.25	-135.25	160.0	-151.8	314.5	293.0	21.48	14.637	
4,800.0	4,792.5	4,786.5	4,778.5	11.4	11.2	-134.94	-134.94	166.2	-156.5	323.6	301.7	21.97	14.733	
4,824.8	4,817.3	4,813.0	4,804.9	11.5	11.3	-134.87	-134.87	167.7	-157.7	325.8	303.8	22.08	14.757	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5J-443 - Wellbore #1 - Plan #1 (11-22-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,892.4	4,893.6	4,885.4	11.6	11.4	-134.85		171.2	-160.3	331.0	308.6	22.40	14.777	
5,007.7	5,000.0	5,009.2	5,001.0	11.8	11.6	-90.00		173.0	-161.7	333.7	310.9	22.80	14.638	
5,100.0	5,092.3	5,101.6	5,093.3	12.0	11.8	-90.00		173.0	-161.7	333.7	310.6	23.15	14.415	
5,200.0	5,192.3	5,201.6	5,193.3	12.2	12.0	-90.00		173.0	-161.7	333.7	310.1	23.57	14.157	
5,300.0	5,292.3	5,301.6	5,293.3	12.4	12.2	-90.00		173.0	-161.7	333.7	309.7	24.00	13.907	
5,400.0	5,392.3	5,401.6	5,393.3	12.6	12.4	-90.00		173.0	-161.7	333.7	309.3	24.42	13.665	
5,500.0	5,492.3	5,501.6	5,493.3	12.8	12.7	-90.00		173.0	-161.7	333.7	308.9	24.85	13.431	
5,600.0	5,592.3	5,601.6	5,593.3	13.0	12.9	-90.00		173.0	-161.7	333.7	308.4	25.27	13.204	
5,700.0	5,692.3	5,701.6	5,693.3	13.2	13.1	-90.00		173.0	-161.7	333.7	308.0	25.70	12.985	
5,800.0	5,792.3	5,801.6	5,793.3	13.4	13.3	-90.00		173.0	-161.7	333.7	307.6	26.13	12.772	
5,900.0	5,892.3	5,901.6	5,893.3	13.6	13.5	-90.00		173.0	-161.7	333.7	307.1	26.56	12.566	
6,000.0	5,992.3	6,001.6	5,993.3	13.9	13.7	-90.00		173.0	-161.7	333.7	306.7	26.98	12.366	
6,039.2	6,031.6	6,040.8	6,032.6	13.9	13.8	-90.00		173.0	-161.7	333.7	306.5	27.15	12.290	
6,050.0	6,042.3	6,051.6	6,043.3	14.0	13.8	90.33		173.0	-161.7	333.7	306.5	27.20	12.270	
6,100.0	6,092.3	6,101.5	6,093.3	14.0	13.9	90.73		173.0	-161.7	333.7	306.3	27.38	12.187	
6,150.0	6,141.9	6,151.2	6,142.9	14.1	14.0	91.67		173.0	-161.7	333.8	306.3	27.56	12.115	
6,200.0	6,191.2	6,200.4	6,192.2	14.2	14.1	93.13		173.0	-161.7	334.2	306.5	27.72	12.058	
6,250.0	6,239.7	6,248.9	6,240.7	14.2	14.2	95.06		173.0	-161.7	335.1	307.2	27.86	12.027	
6,300.0	6,287.3	6,297.5	6,289.2	14.3	14.3	97.41		172.8	-161.7	336.8	308.8	27.99	12.035	
6,350.0	6,333.8	6,348.5	6,340.2	14.3	14.4	99.93		170.1	-161.7	339.3	311.2	28.07	12.090	
6,400.0	6,379.1	6,400.8	6,392.1	14.3	14.5	102.39		163.8	-161.6	342.5	314.4	28.11	12.185	
6,450.0	6,422.8	6,454.3	6,444.6	14.4	14.6	104.80		153.6	-161.6	346.3	318.2	28.11	12.317	
6,500.0	6,464.9	6,509.2	6,497.6	14.4	14.6	107.13		139.4	-161.5	350.7	322.6	28.09	12.484	
6,550.0	6,505.1	6,565.4	6,550.7	14.5	14.7	109.38		121.0	-161.4	355.5	327.5	28.03	12.682	
6,600.0	6,543.3	6,623.1	6,603.7	14.5	14.7	111.52		98.0	-161.2	360.7	332.8	27.95	12.903	
6,650.0	6,579.3	6,682.4	6,656.0	14.6	14.8	113.55		70.4	-161.0	366.2	338.3	27.87	13.141	
6,700.0	6,613.0	6,743.1	6,707.4	14.7	14.8	115.45		37.9	-160.8	371.8	344.1	27.78	13.384	
6,750.0	6,644.1	6,805.5	6,757.2	14.9	14.9	117.23		0.5	-160.6	377.5	349.8	27.72	13.619	
6,800.0	6,672.7	6,869.4	6,805.0	15.1	14.9	118.86		-42.0	-160.3	383.1	355.4	27.70	13.828	
6,850.0	6,698.5	6,934.9	6,850.0	15.4	15.0	120.34		-89.5	-160.0	388.5	360.7	27.75	14.001	
6,900.0	6,721.4	7,001.9	6,891.7	15.7	15.3	121.66		-141.9	-159.7	393.5	365.7	27.88	14.115	
6,950.0	6,741.4	7,070.3	6,929.4	16.1	15.6	122.81		-198.9	-159.3	398.1	370.0	28.13	14.153	
7,000.0	6,758.4	7,139.9	6,962.3	16.5	16.0	123.79		-260.3	-158.9	402.2	373.7	28.51	14.107	
7,050.0	6,772.2	7,210.7	6,990.0	17.0	16.5	124.59		-325.4	-158.5	405.5	376.5	29.03	13.967	
7,100.0	6,782.9	7,282.4	7,011.7	17.5	17.2	125.20		-393.7	-158.1	408.2	378.4	29.73	13.732	
7,150.0	6,790.3	7,354.9	7,027.1	18.0	17.9	125.63		-464.5	-157.6	410.0	379.4	30.58	13.408	
7,200.0	6,794.5	7,419.6	7,035.3	18.6	18.5	125.86		-528.7	-157.2	411.2	379.6	31.53	13.041	
7,243.9	6,795.5	7,463.3	7,039.9	19.1	19.0	126.14		-572.1	-156.9	413.2	381.0	32.29	12.799	
7,300.0	6,795.1	7,531.1	7,045.6	19.8	19.9	126.83		-639.7	-156.5	416.3	383.0	33.33	12.491	
7,400.0	6,794.5	7,645.6	7,047.4	21.1	21.3	127.11		-754.2	-155.8	417.4	381.9	35.54	11.745	
7,500.0	6,793.9	7,745.6	7,047.2	22.5	22.7	127.17		-854.2	-155.1	417.6	379.8	37.81	11.044	
7,600.0	6,793.3	7,845.6	7,047.1	24.0	24.2	127.23		-954.2	-154.5	417.8	377.6	40.20	10.392	
7,700.0	6,792.7	7,945.6	7,047.0	25.5	25.7	127.29		-1,054.2	-153.9	418.0	375.3	42.70	9.791	
7,800.0	6,792.1	8,045.6	7,046.8	27.1	27.3	127.35		-1,154.2	-153.2	418.2	373.0	45.27	9.239	
7,900.0	6,791.5	8,145.6	7,046.7	28.7	28.9	127.41		-1,254.2	-152.6	418.5	370.6	47.91	8.735	
8,000.0	6,790.9	8,245.6	7,046.5	30.4	30.5	127.46		-1,354.2	-151.9	418.7	368.1	50.61	8.273	
8,100.0	6,790.3	8,345.6	7,046.4	32.0	32.2	127.52		-1,454.2	-151.3	418.9	365.5	53.35	7.852	
8,200.0	6,789.7	8,445.6	7,046.3	33.8	33.9	127.58		-1,554.2	-150.7	419.1	363.0	56.13	7.467	
8,300.0	6,789.0	8,545.6	7,046.1	35.5	35.6	127.64		-1,654.1	-150.0	419.3	360.4	58.95	7.114	
8,400.0	6,788.4	8,645.6	7,046.0	37.2	37.4	127.70		-1,754.1	-149.4	419.5	357.7	61.79	6.790	
8,500.0	6,787.8	8,745.6	7,045.8	39.0	39.1	127.76		-1,854.1	-148.8	419.8	355.1	64.66	6.492	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5J-443 - Wellbore #1 - Plan #1 (11-22-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,600.0	6,787.2	8,845.6	7,045.7	40.8	40.9	127.82	127.82	-1,954.1	-148.1	420.0	352.4	67.54	6.218	
8,700.0	6,786.6	8,945.6	7,045.6	42.6	42.7	127.87	127.87	-2,054.1	-147.5	420.2	349.7	70.45	5.964	
8,800.0	6,786.0	9,045.6	7,045.4	44.4	44.5	127.93	127.93	-2,154.1	-146.8	420.4	347.0	73.37	5.730	
8,900.0	6,785.4	9,145.6	7,045.3	46.2	46.3	127.99	127.99	-2,254.1	-146.2	420.6	344.3	76.30	5.513	
9,000.0	6,784.8	9,245.6	7,045.1	48.0	48.1	128.05	128.05	-2,354.1	-145.6	420.8	341.6	79.24	5.311	
9,100.0	6,784.2	9,345.6	7,045.0	49.9	49.9	128.11	128.11	-2,454.1	-144.9	421.1	338.9	82.19	5.123	
9,200.0	6,783.5	9,445.6	7,044.9	51.7	51.8	128.16	128.16	-2,554.1	-144.3	421.3	336.1	85.15	4.947	
9,300.0	6,782.9	9,545.6	7,044.7	53.5	53.6	128.22	128.22	-2,654.1	-143.6	421.5	333.4	88.12	4.783	
9,400.0	6,782.3	9,645.6	7,044.6	55.4	55.5	128.28	128.28	-2,754.1	-143.0	421.7	330.6	91.09	4.630	
9,500.0	6,781.7	9,745.6	7,044.4	57.2	57.3	128.34	128.34	-2,854.1	-142.4	421.9	327.9	94.06	4.486	
9,600.0	6,781.1	9,845.6	7,044.3	59.1	59.2	128.40	128.40	-2,954.1	-141.7	422.2	325.1	97.04	4.350	
9,700.0	6,780.5	9,945.6	7,044.2	61.0	61.0	128.45	128.45	-3,054.1	-141.1	422.4	322.4	100.02	4.223	
9,800.0	6,779.9	10,045.6	7,044.0	62.8	62.9	128.51	128.51	-3,154.1	-140.5	422.6	319.6	103.01	4.103	
9,900.0	6,779.3	10,145.6	7,043.9	64.7	64.7	128.57	128.57	-3,254.1	-139.8	422.8	316.8	105.99	3.989	
10,000.0	6,778.7	10,245.6	7,043.7	66.6	66.6	128.63	128.63	-3,354.1	-139.2	423.1	314.1	108.98	3.882	
10,100.0	6,778.0	10,345.6	7,043.6	68.4	68.5	128.68	128.68	-3,454.1	-138.5	423.3	311.3	111.97	3.780	
10,200.0	6,777.4	10,445.6	7,043.5	70.3	70.4	128.74	128.74	-3,554.1	-137.9	423.5	308.6	114.96	3.684	
10,300.0	6,776.8	10,545.6	7,043.3	72.2	72.2	128.80	128.80	-3,654.1	-137.3	423.7	305.8	117.95	3.593	
10,400.0	6,776.2	10,645.6	7,043.2	74.1	74.1	128.86	128.86	-3,754.1	-136.6	424.0	303.0	120.94	3.506	
10,500.0	6,775.6	10,745.6	7,043.0	76.0	76.0	128.91	128.91	-3,854.1	-136.0	424.2	300.3	123.93	3.423	
10,600.0	6,775.0	10,845.6	7,042.9	77.8	77.9	128.97	128.97	-3,954.1	-135.3	424.4	297.5	126.92	3.344	
10,700.0	6,774.4	10,945.6	7,042.8	79.7	79.8	129.03	129.03	-4,054.1	-134.7	424.6	294.7	129.90	3.269	
10,800.0	6,773.8	11,045.6	7,042.6	81.6	81.6	129.08	129.08	-4,154.1	-134.1	424.9	292.0	132.89	3.197	
10,900.0	6,773.2	11,145.6	7,042.5	83.5	83.5	129.14	129.14	-4,254.1	-133.4	425.1	289.2	135.87	3.129	
11,000.0	6,772.5	11,245.6	7,042.4	85.4	85.4	129.20	129.20	-4,354.1	-132.8	425.3	286.5	138.86	3.063	
11,100.0	6,771.9	11,345.6	7,042.2	87.3	87.3	129.25	129.25	-4,454.1	-132.2	425.5	283.7	141.84	3.000	
11,200.0	6,771.3	11,445.6	7,042.1	89.2	89.0	129.31	129.31	-4,554.1	-131.5	425.8	281.1	144.67	2.943	
11,253.2	6,771.0	11,496.3	7,042.0	90.0	89.8	129.34	129.34	-4,604.8	-131.2	425.9	280.0	145.87	2.920 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 5 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7199-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
6,750.0	6,644.1	6,636.1	6,636.1	14.9	132.7	-19.64	-1,100.2	385.2	988.6	890.7	97.92	10.096	
6,800.0	6,672.7	6,664.7	6,664.7	15.1	133.3	-22.27	-1,100.2	385.2	948.5	853.7	94.77	10.008	
6,850.0	6,698.5	6,690.5	6,690.5	15.4	133.8	-25.58	-1,100.2	385.2	906.8	813.4	93.33	9.716	
6,900.0	6,721.4	6,713.4	6,713.4	15.7	134.3	-29.78	-1,100.2	385.2	863.6	769.0	94.52	9.136	
6,950.0	6,741.4	6,733.4	6,733.4	16.1	134.7	-35.13	-1,100.2	385.2	819.1	719.9	99.28	8.251	
7,000.0	6,758.4	6,750.4	6,750.4	16.5	135.0	-41.91	-1,100.2	385.2	773.7	665.6	108.09	7.158	
7,050.0	6,772.2	6,764.2	6,764.2	17.0	135.3	-50.32	-1,100.2	385.2	727.5	607.1	120.38	6.044	
7,100.0	6,782.9	6,774.9	6,774.9	17.5	135.5	-60.30	-1,100.2	385.2	680.8	546.8	134.05	5.079	
7,150.0	6,790.3	6,782.3	6,782.3	18.0	135.6	-71.28	-1,100.2	385.2	633.9	488.1	145.80	4.348	
7,200.0	6,794.5	6,786.5	6,786.5	18.6	135.7	-82.21	-1,100.2	385.2	587.0	434.2	152.82	3.841	
7,243.9	6,795.5	6,787.5	6,787.5	19.1	135.7	-90.86	-1,100.2	385.2	546.1	391.5	154.65	3.532	
7,300.0	6,795.1	6,787.1	6,787.1	19.8	135.7	-90.76	-1,100.2	385.2	494.6	339.3	155.34	3.184	
7,400.0	6,794.5	6,786.5	6,786.5	21.1	135.7	-90.59	-1,100.2	385.2	405.9	249.2	156.66	2.591	
7,500.0	6,793.9	6,785.9	6,785.9	22.5	135.7	-90.42	-1,100.2	385.2	323.8	165.7	158.06	2.048	
7,600.0	6,793.3	6,785.3	6,785.3	24.0	135.7	-90.25	-1,100.2	385.2	254.8	95.2	159.54	1.597	
7,700.0	6,792.7	6,784.7	6,784.7	25.5	135.7	-90.08	-1,100.2	385.2	212.1	51.0	161.07	1.317	Level 3
7,749.6	6,792.4	6,784.4	6,784.4	26.3	135.7	-90.00	-1,100.2	385.2	206.2	44.3	161.85	1.274	Level 3, CC, ES, SF
7,800.0	6,792.1	6,784.1	6,784.1	27.1	135.7	-89.91	-1,100.2	385.2	212.2	49.6	162.64	1.305	Level 3
7,900.0	6,791.5	6,783.5	6,783.5	28.7	135.7	-89.74	-1,100.2	385.2	255.2	90.9	164.26	1.554	
8,000.0	6,790.9	6,782.9	6,782.9	30.4	135.7	-89.58	-1,100.2	385.2	324.3	158.4	165.91	1.955	
8,100.0	6,790.3	6,782.3	6,782.3	32.0	135.6	-89.41	-1,100.2	385.2	406.5	238.9	167.59	2.426	
8,200.0	6,789.7	6,781.7	6,781.7	33.8	135.6	-89.24	-1,100.2	385.2	495.3	326.0	169.29	2.926	
8,300.0	6,789.0	6,781.0	6,781.0	35.5	135.6	-89.07	-1,100.2	385.2	587.7	416.7	171.01	3.437	
8,400.0	6,788.4	6,780.4	6,780.4	37.2	135.6	-88.90	-1,100.2	385.2	682.3	509.5	172.75	3.949	
8,500.0	6,787.8	6,779.8	6,779.8	39.0	135.6	-88.73	-1,100.2	385.2	778.2	603.7	174.50	4.459	
8,600.0	6,787.2	6,779.2	6,779.2	40.8	135.6	-88.56	-1,100.2	385.2	875.0	698.7	176.26	4.964	
8,700.0	6,786.6	6,778.6	6,778.6	42.6	135.6	-88.39	-1,100.2	385.2	972.5	794.4	178.04	5.462	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 5-7 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 7200-UNKNOWN													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-172.99	-499.1	-61.4	503.0					
100.0	100.0	90.0	90.0	0.1	1.8	-172.99	-499.1	-61.4	502.9	500.9	1.91	262.921		
200.0	200.0	190.0	190.0	0.3	3.8	-172.99	-499.1	-61.4	502.9	498.7	4.14	121.541		
300.0	300.0	290.0	290.0	0.6	5.8	-172.99	-499.1	-61.4	502.9	496.5	6.36	79.040		
400.0	400.0	390.0	390.0	0.8	7.8	-172.99	-499.1	-61.4	502.9	494.3	8.59	58.561		
500.0	500.0	490.0	490.0	1.0	9.8	-172.99	-499.1	-61.4	502.9	492.0	10.81	46.511		
600.0	600.0	590.0	590.0	1.2	11.8	-172.99	-499.1	-61.4	502.9	489.8	13.04	38.573		
700.0	700.0	690.0	690.0	1.5	13.8	-172.99	-499.1	-61.4	502.9	487.6	15.26	32.950		
800.0	800.0	790.0	790.0	1.7	15.8	-172.99	-499.1	-61.4	502.9	485.4	17.49	28.758		
900.0	900.0	890.0	890.0	1.9	17.8	-172.99	-499.1	-61.4	502.9	483.1	19.71	25.512		
1,000.0	1,000.0	990.0	990.0	2.1	19.8	-172.99	-499.1	-61.4	502.9	480.9	21.94	22.924		
1,100.0	1,100.0	1,090.0	1,090.0	2.4	21.8	142.28	-499.1	-61.4	504.2	480.1	24.15	20.882		
1,182.8	1,182.7	1,172.7	1,172.7	2.5	23.5	142.53	-499.1	-61.4	507.5	481.5	25.96	19.548		
1,200.0	1,199.8	1,189.8	1,189.8	2.6	23.8	142.60	-499.1	-61.4	508.3	482.0	26.34	19.299		
1,300.0	1,299.6	1,289.6	1,289.6	2.8	25.8	143.03	-499.1	-61.4	513.4	484.9	28.56	17.979		
1,400.0	1,399.4	1,389.4	1,389.4	3.0	27.8	143.46	-499.1	-61.4	518.5	487.8	30.78	16.849		
1,500.0	1,499.2	1,489.2	1,489.2	3.3	29.8	143.87	-499.1	-61.4	523.7	490.7	33.00	15.871		
1,600.0	1,599.0	1,589.0	1,589.0	3.5	31.8	144.28	-499.1	-61.4	528.9	493.6	35.22	15.017		
1,700.0	1,698.8	1,688.8	1,688.8	3.7	33.8	144.68	-499.1	-61.4	534.1	496.6	37.44	14.264		
1,800.0	1,798.6	1,788.6	1,788.6	4.0	35.8	145.07	-499.1	-61.4	539.3	499.6	39.66	13.596		
1,900.0	1,898.4	1,888.4	1,888.4	4.2	37.8	145.45	-499.1	-61.4	544.5	502.6	41.89	13.000		
2,000.0	1,998.2	1,988.2	1,988.2	4.5	39.8	145.83	-499.1	-61.4	549.8	505.7	44.11	12.464		
2,100.0	2,098.0	2,088.0	2,088.0	4.7	41.8	146.20	-499.1	-61.4	555.1	508.7	46.34	11.980		
2,200.0	2,197.8	2,187.8	2,187.8	4.9	43.8	146.56	-499.1	-61.4	560.4	511.8	48.56	11.540		
2,300.0	2,297.6	2,287.6	2,287.6	5.2	45.8	146.92	-499.1	-61.4	565.7	514.9	50.79	11.140		
2,400.0	2,397.4	2,387.4	2,387.4	5.4	47.7	147.27	-499.1	-61.4	571.1	518.1	53.01	10.773		
2,500.0	2,497.2	2,487.2	2,487.2	5.7	49.7	147.61	-499.1	-61.4	576.5	521.2	55.24	10.436		
2,600.0	2,597.0	2,587.0	2,587.0	5.9	51.7	147.95	-499.1	-61.4	581.9	524.4	57.46	10.126		
2,700.0	2,696.8	2,686.8	2,686.8	6.2	53.7	148.28	-499.1	-61.4	587.3	527.6	59.69	9.839		
2,800.0	2,796.6	2,786.6	2,786.6	6.4	55.7	148.60	-499.1	-61.4	592.7	530.8	61.91	9.574		
2,900.0	2,896.4	2,886.4	2,886.4	6.7	57.7	148.92	-499.1	-61.4	598.2	534.0	64.14	9.327		
3,000.0	2,996.2	2,986.2	2,986.2	6.9	59.7	149.23	-499.1	-61.4	603.7	537.3	66.36	9.096		
3,100.0	3,096.0	3,086.0	3,086.0	7.2	61.7	149.54	-499.1	-61.4	609.1	540.6	68.59	8.881		
3,200.0	3,195.8	3,185.8	3,185.8	7.4	63.7	149.84	-499.1	-61.4	614.7	543.8	70.81	8.680		
3,300.0	3,295.6	3,285.6	3,285.6	7.7	65.7	150.14	-499.1	-61.4	620.2	547.1	73.04	8.491		
3,400.0	3,395.4	3,385.4	3,385.4	7.9	67.7	150.43	-499.1	-61.4	625.7	550.5	75.26	8.314		
3,500.0	3,495.2	3,485.2	3,485.2	8.2	69.7	150.71	-499.1	-61.4	631.3	553.8	77.49	8.147		
3,600.0	3,595.0	3,585.0	3,585.0	8.4	71.7	150.99	-499.1	-61.4	636.9	557.1	79.71	7.989		
3,700.0	3,694.8	3,684.8	3,684.8	8.7	73.7	151.27	-499.1	-61.4	642.4	560.5	81.94	7.841		
3,800.0	3,794.5	3,784.5	3,784.5	8.9	75.7	151.54	-499.1	-61.4	648.0	563.9	84.16	7.700		
3,900.0	3,894.3	3,884.3	3,884.3	9.2	77.7	151.81	-499.1	-61.4	653.7	567.3	86.39	7.567		
4,000.0	3,994.1	3,984.1	3,984.1	9.4	79.7	152.07	-499.1	-61.4	659.3	570.7	88.61	7.440		
4,100.0	4,093.9	4,083.9	4,083.9	9.7	81.7	152.32	-499.1	-61.4	664.9	574.1	90.83	7.320		
4,200.0	4,193.7	4,183.7	4,183.7	9.9	83.7	152.58	-499.1	-61.4	670.6	577.5	93.06	7.206		
4,300.0	4,293.5	4,283.5	4,283.5	10.2	85.7	152.83	-499.1	-61.4	676.3	581.0	95.28	7.097		
4,400.0	4,393.3	4,383.3	4,383.3	10.4	87.7	153.07	-499.1	-61.4	681.9	584.4	97.51	6.994		
4,500.0	4,493.1	4,483.1	4,483.1	10.7	89.7	153.31	-499.1	-61.4	687.6	587.9	99.73	6.895		
4,600.0	4,592.9	4,582.9	4,582.9	10.9	91.7	153.55	-499.1	-61.4	693.3	591.4	101.96	6.800		
4,700.0	4,692.7	4,682.7	4,682.7	11.2	93.7	153.78	-499.1	-61.4	699.1	594.9	104.18	6.710		
4,800.0	4,792.5	4,782.5	4,782.5	11.4	95.7	154.01	-499.1	-61.4	704.8	598.4	106.40	6.624		
4,824.8	4,817.3	4,807.3	4,807.3	11.5	96.1	154.07	-499.1	-61.4	706.2	599.3	106.95	6.603		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 5-7 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7200-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,892.4	4,882.4	4,882.4	11.6	97.6	154.23	-499.1	-61.4	709.6	600.9	108.71	6.528	
5,007.7	5,000.0	4,990.0	4,990.0	11.8	99.8	-160.85	-499.1	-61.4	711.5	600.4	111.09	6.405	
5,100.0	5,092.3	5,082.3	5,082.3	12.0	101.6	-160.85	-499.1	-61.4	711.5	598.4	113.11	6.290	
5,200.0	5,192.3	5,182.3	5,182.3	12.2	103.6	-160.85	-499.1	-61.4	711.5	596.1	115.33	6.169	
5,300.0	5,292.3	5,282.3	5,282.3	12.4	105.6	-160.85	-499.1	-61.4	711.5	593.9	117.54	6.053	
5,400.0	5,392.3	5,382.3	5,382.3	12.6	107.6	-160.85	-499.1	-61.4	711.5	591.7	119.76	5.941	
5,500.0	5,492.3	5,482.3	5,482.3	12.8	109.6	-160.85	-499.1	-61.4	711.5	589.5	121.97	5.833	
5,600.0	5,592.3	5,582.3	5,582.3	13.0	111.6	-160.85	-499.1	-61.4	711.5	587.3	124.19	5.729	
5,700.0	5,692.3	5,682.3	5,682.3	13.2	113.6	-160.85	-499.1	-61.4	711.5	585.1	126.41	5.628	
5,800.0	5,792.3	5,782.3	5,782.3	13.4	115.6	-160.85	-499.1	-61.4	711.5	582.8	128.62	5.531	
5,900.0	5,892.3	5,882.3	5,882.3	13.6	117.6	-160.85	-499.1	-61.4	711.5	580.6	130.84	5.438	
6,000.0	5,992.3	5,982.3	5,982.3	13.9	119.6	-160.85	-499.1	-61.4	711.5	578.4	133.06	5.347	
6,039.2	6,031.6	6,021.6	6,021.6	13.9	120.4	-160.85	-499.1	-61.4	711.5	577.5	133.93	5.312	
6,050.0	6,042.3	6,032.3	6,032.3	14.0	120.6	19.47	-499.1	-61.4	711.4	577.2	134.15	5.303	
6,100.0	6,092.3	6,082.3	6,082.3	14.0	121.6	19.59	-499.1	-61.4	709.2	574.3	134.85	5.259	
6,150.0	6,141.9	6,131.9	6,131.9	14.1	122.6	19.87	-499.1	-61.4	703.9	568.9	135.03	5.213	
6,200.0	6,191.2	6,181.2	6,181.2	14.2	123.6	20.34	-499.1	-61.4	695.6	560.9	134.70	5.164	
6,250.0	6,239.7	6,229.7	6,229.7	14.2	124.6	21.00	-499.1	-61.4	684.3	550.4	133.87	5.112	
6,300.0	6,287.3	6,277.3	6,277.3	14.3	125.5	21.87	-499.1	-61.4	670.1	537.5	132.57	5.054	
6,350.0	6,333.8	6,323.8	6,323.8	14.3	126.5	22.99	-499.1	-61.4	653.0	522.2	130.87	4.990	
6,400.0	6,379.1	6,369.1	6,369.1	14.3	127.4	24.39	-499.1	-61.4	633.2	504.4	128.83	4.915	
6,450.0	6,422.8	6,412.8	6,412.8	14.4	128.3	26.12	-499.1	-61.4	610.9	484.3	126.60	4.825	
6,500.0	6,464.9	6,454.9	6,454.9	14.4	129.1	28.24	-499.1	-61.4	586.1	461.7	124.36	4.713	
6,550.0	6,505.1	6,495.1	6,495.1	14.5	129.9	30.83	-499.1	-61.4	559.1	436.7	122.36	4.569	
6,600.0	6,543.3	6,533.3	6,533.3	14.5	130.7	33.96	-499.1	-61.4	530.0	409.1	120.95	4.382	
6,650.0	6,579.3	6,569.3	6,569.3	14.6	131.4	37.74	-499.1	-61.4	499.3	378.7	120.56	4.141	
6,700.0	6,613.0	6,603.0	6,603.0	14.7	132.1	42.25	-499.1	-61.4	467.1	345.5	121.60	3.841	
6,750.0	6,644.1	6,634.1	6,634.1	14.9	132.7	47.52	-499.1	-61.4	433.8	309.5	124.37	3.488	
6,800.0	6,672.7	6,662.7	6,662.7	15.1	133.3	53.53	-499.1	-61.4	400.1	271.3	128.82	3.106	
6,850.0	6,698.5	6,688.5	6,688.5	15.4	133.8	60.10	-499.1	-61.4	366.5	232.1	134.43	2.726	
6,900.0	6,721.4	6,711.4	6,711.4	15.7	134.2	66.93	-499.1	-61.4	333.9	193.6	140.26	2.380	
6,950.0	6,741.4	6,731.4	6,731.4	16.1	134.6	73.56	-499.1	-61.4	303.3	158.0	145.34	2.087	
7,000.0	6,758.4	6,748.4	6,748.4	16.5	135.0	79.53	-499.1	-61.4	276.5	127.4	149.05	1.855	
7,050.0	6,772.2	6,762.2	6,762.2	17.0	135.2	84.44	-499.1	-61.4	255.1	103.7	151.37	1.685	
7,100.0	6,782.9	6,772.9	6,772.9	17.5	135.5	88.02	-499.1	-61.4	241.4	88.7	152.66	1.581	
7,145.9	6,789.8	6,779.8	6,779.8	17.9	135.6	90.00	-499.1	-61.4	237.1	83.7	153.39	1.546 CC	
7,150.0	6,790.3	6,780.3	6,780.3	18.0	135.6	90.12	-499.1	-61.4	237.1	83.7	153.44	1.545 ES, SF	
7,200.0	6,794.5	6,784.5	6,784.5	18.6	135.7	90.67	-499.1	-61.4	243.1	89.1	154.09	1.578	
7,243.9	6,795.5	6,785.5	6,785.5	19.1	135.7	89.86	-499.1	-61.4	256.5	101.8	154.63	1.659	
7,300.0	6,795.1	6,785.1	6,785.1	19.8	135.7	89.77	-499.1	-61.4	282.7	127.3	155.32	1.820	
7,400.0	6,794.5	6,784.5	6,784.5	21.1	135.7	89.63	-499.1	-61.4	347.4	190.8	156.63	2.218	
7,500.0	6,793.9	6,783.9	6,783.9	22.5	135.7	89.48	-499.1	-61.4	426.0	268.0	158.02	2.696	
7,600.0	6,793.3	6,783.3	6,783.3	24.0	135.7	89.33	-499.1	-61.4	512.1	352.6	159.48	3.211	
7,700.0	6,792.7	6,782.7	6,782.7	25.5	135.7	89.18	-499.1	-61.4	602.5	441.5	161.00	3.742	
7,800.0	6,792.1	6,782.1	6,782.1	27.1	135.6	89.03	-499.1	-61.4	695.6	533.0	162.57	4.278	
7,900.0	6,791.5	6,781.5	6,781.5	28.7	135.6	88.89	-499.1	-61.4	790.3	626.1	164.18	4.814	
8,000.0	6,790.9	6,780.9	6,780.9	30.4	135.6	88.74	-499.1	-61.4	886.2	720.4	165.82	5.344	
8,100.0	6,790.3	6,780.3	6,780.3	32.0	135.6	88.59	-499.1	-61.4	982.9	815.4	167.49	5.869	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 7 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7150-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,300.0	6,782.9	6,706.9	6,706.9	53.5	134.1	-91.92	-3,628.5	371.2	994.0	806.5	187.50	5.301		
9,400.0	6,782.3	6,706.3	6,706.3	55.4	134.1	-91.72	-3,628.5	371.2	895.8	706.4	189.36	4.731		
9,500.0	6,781.7	6,705.7	6,705.7	57.2	134.1	-91.53	-3,628.5	371.2	798.0	606.8	191.22	4.173		
9,600.0	6,781.1	6,705.1	6,705.1	59.1	134.1	-91.33	-3,628.5	371.2	700.9	507.8	193.08	3.630		
9,700.0	6,780.5	6,704.5	6,704.5	61.0	134.1	-91.13	-3,628.5	371.2	604.7	409.8	194.95	3.102		
9,800.0	6,779.9	6,703.9	6,703.9	62.8	134.1	-90.94	-3,628.5	371.2	510.0	313.2	196.81	2.591		
9,900.0	6,779.3	6,703.3	6,703.3	64.7	134.1	-90.74	-3,628.5	371.2	417.8	219.1	198.68	2.103		
10,000.0	6,778.7	6,702.7	6,702.7	66.6	134.1	-90.55	-3,628.5	371.2	330.2	129.6	200.55	1.646		
10,100.0	6,778.0	6,702.0	6,702.0	68.4	134.0	-90.35	-3,628.5	371.2	251.9	49.5	202.42	1.244 Level 2		
10,200.0	6,777.4	6,701.4	6,701.4	70.3	134.0	-90.15	-3,628.5	371.2	194.6	-9.6	204.29	0.953 Level 1		
10,277.8	6,777.0	6,701.0	6,701.0	71.8	134.0	-90.00	-3,628.5	371.2	178.4	-27.3	205.75	0.867 Level 1, CC, ES, SF		
10,300.0	6,776.8	6,700.8	6,700.8	72.2	134.0	-89.96	-3,628.5	371.2	179.8	-26.4	206.16	0.872 Level 1		
10,400.0	6,776.2	6,700.2	6,700.2	74.1	134.0	-89.76	-3,628.5	371.2	216.2	8.2	208.03	1.039 Level 2		
10,500.0	6,775.6	6,699.6	6,699.6	76.0	134.0	-89.56	-3,628.5	371.2	284.9	75.0	209.90	1.357 Level 3		
10,600.0	6,775.0	6,699.0	6,699.0	77.8	134.0	-89.37	-3,628.5	371.2	368.3	156.5	211.77	1.739		
10,700.0	6,774.4	6,698.4	6,698.4	79.7	134.0	-89.17	-3,628.5	371.2	458.3	244.7	213.64	2.145		
10,800.0	6,773.8	6,697.8	6,697.8	81.6	134.0	-88.98	-3,628.5	371.2	551.8	336.3	215.51	2.560		
10,900.0	6,773.2	6,697.2	6,697.2	83.5	133.9	-88.78	-3,628.5	371.2	647.2	429.9	217.37	2.978		
11,000.0	6,772.5	6,696.5	6,696.5	85.4	133.9	-88.58	-3,628.5	371.2	743.9	524.6	219.24	3.393		
11,100.0	6,771.9	6,695.9	6,695.9	87.3	133.9	-88.39	-3,628.5	371.2	841.3	620.2	221.10	3.805		
11,200.0	6,771.3	6,695.3	6,695.3	89.2	133.9	-88.19	-3,628.5	371.2	939.3	716.3	222.96	4.213		
11,253.2	6,771.0	6,695.0	6,695.0	90.0	133.9	-88.09	-3,628.5	371.2	991.5	767.8	223.76	4.431		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 8-12I (Exist.) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft	
Survey Program: 7202-UNKNOWN										Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
8,200.0	6,789.7	6,732.7	6,732.7	33.8	134.7	-91.62	-2,444.5	379.6	914.5	746.3	168.24	5.436	
8,300.0	6,789.0	6,732.0	6,732.0	35.5	134.6	-91.44	-2,444.5	379.6	817.1	647.1	169.98	4.807	
8,400.0	6,788.4	6,731.4	6,731.4	37.2	134.6	-91.26	-2,444.5	379.6	720.3	548.5	171.74	4.194	
8,500.0	6,787.8	6,730.8	6,730.8	39.0	134.6	-91.08	-2,444.5	379.6	624.5	451.0	173.51	3.599	
8,600.0	6,787.2	6,730.2	6,730.2	40.8	134.6	-90.89	-2,444.5	379.6	530.3	355.0	175.29	3.025	
8,700.0	6,786.6	6,729.6	6,729.6	42.6	134.6	-90.71	-2,444.5	379.6	438.7	261.6	177.09	2.478	
8,800.0	6,786.0	6,729.0	6,729.0	44.4	134.6	-90.53	-2,444.5	379.6	351.7	172.8	178.89	1.966	
8,900.0	6,785.4	6,728.4	6,728.4	46.2	134.6	-90.35	-2,444.5	379.6	273.7	93.0	180.70	1.515	
9,000.0	6,784.8	6,727.8	6,727.8	48.0	134.6	-90.17	-2,444.5	379.6	214.8	32.3	182.52	1.177 Level 2	
9,093.9	6,784.2	6,727.2	6,727.2	49.8	134.5	-90.00	-2,444.5	379.6	193.3	9.0	184.23	1.049 Level 2, CC	
9,100.0	6,784.2	6,727.2	6,727.2	49.9	134.5	-89.99	-2,444.5	379.6	193.3	9.0	184.34	1.049 Level 2, ES, SF	
9,200.0	6,783.5	6,726.5	6,726.5	51.7	134.5	-89.81	-2,444.5	379.6	220.5	34.3	186.17	1.184 Level 2	
9,300.0	6,782.9	6,725.9	6,725.9	53.5	134.5	-89.63	-2,444.5	379.6	282.5	94.5	188.00	1.503	
9,400.0	6,782.3	6,725.3	6,725.3	55.4	134.5	-89.45	-2,444.5	379.6	362.0	172.2	189.83	1.907	
9,500.0	6,781.7	6,724.7	6,724.7	57.2	134.5	-89.26	-2,444.5	379.6	449.7	258.1	191.67	2.346	
9,600.0	6,781.1	6,724.1	6,724.1	59.1	134.5	-89.08	-2,444.5	379.6	541.7	348.2	193.51	2.800	
9,700.0	6,780.5	6,723.5	6,723.5	61.0	134.5	-88.90	-2,444.5	379.6	636.2	440.8	195.35	3.257	
9,800.0	6,779.9	6,722.9	6,722.9	62.8	134.5	-88.72	-2,444.5	379.6	732.1	534.9	197.20	3.712	
9,900.0	6,779.3	6,722.3	6,722.3	64.7	134.4	-88.54	-2,444.5	379.6	828.9	629.9	199.04	4.165	
10,000.0	6,778.7	6,721.7	6,721.7	66.6	134.4	-88.36	-2,444.5	379.6	926.5	725.6	200.88	4.612	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - LDS D08-18D (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7604-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
10,600.0	6,775.0	6,692.0	6,692.0	77.8	133.8	-91.52	-4,910.8	421.5	985.7	774.1	211.55	4.659	
10,700.0	6,774.4	6,691.4	6,691.4	79.7	133.8	-91.36	-4,910.8	421.5	888.5	675.1	213.44	4.163	
10,800.0	6,773.8	6,690.8	6,690.8	81.6	133.8	-91.20	-4,910.8	421.5	792.1	576.8	215.33	3.679	
10,900.0	6,773.2	6,690.2	6,690.2	83.5	133.8	-91.04	-4,910.8	421.5	696.7	479.4	217.22	3.207	
11,000.0	6,772.5	6,689.5	6,689.5	85.4	133.8	-90.88	-4,910.8	421.5	602.7	383.6	219.11	2.751	
11,100.0	6,771.9	6,688.9	6,688.9	87.3	133.8	-90.73	-4,910.8	421.5	511.0	290.0	221.00	2.312	
11,200.0	6,771.3	6,688.3	6,688.3	89.2	133.8	-90.57	-4,910.8	421.5	423.2	200.3	222.89	1.898	
11,253.2	6,771.0	6,688.0	6,688.0	90.0	133.8	-90.49	-4,910.8	421.5	378.9	155.1	223.71	1.694 CC, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - LDS D08-28D (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7284-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
10,600.0	6,775.0	6,692.0	6,692.0	77.8	133.8	-91.36	-4,910.8	446.6	991.8	780.2	211.57	4.688	
10,700.0	6,774.4	6,691.4	6,691.4	79.7	133.8	-91.22	-4,910.8	446.6	895.3	681.8	213.45	4.194	
10,800.0	6,773.8	6,690.8	6,690.8	81.6	133.8	-91.08	-4,910.8	446.6	799.6	584.3	215.34	3.713	
10,900.0	6,773.2	6,690.2	6,690.2	83.5	133.8	-90.94	-4,910.8	446.6	705.2	487.9	217.23	3.246	
11,000.0	6,772.5	6,689.5	6,689.5	85.4	133.8	-90.80	-4,910.8	446.6	612.5	393.4	219.12	2.795	
11,100.0	6,771.9	6,688.9	6,688.9	87.3	133.8	-90.65	-4,910.8	446.6	522.5	301.5	221.01	2.364	
11,200.0	6,771.3	6,688.3	6,688.3	89.2	133.8	-90.51	-4,910.8	446.6	436.9	214.0	222.89	1.960	
11,253.2	6,771.0	6,688.0	6,688.0	90.0	133.8	-90.44	-4,910.8	446.6	394.2	170.5	223.71	1.762 CC, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - LDS D08-29D (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7173-UNKNOWN													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance									Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,600.0	6,775.0	6,692.0	6,692.0	77.8	133.8	-91.71	-4,910.8	396.4	980.2	768.7	211.53	4.634		
10,700.0	6,774.4	6,691.4	6,691.4	79.7	133.8	-91.53	-4,910.8	396.4	882.5	669.0	213.42	4.135		
10,800.0	6,773.8	6,690.8	6,690.8	81.6	133.8	-91.35	-4,910.8	396.4	785.3	570.0	215.32	3.647		
10,900.0	6,773.2	6,690.2	6,690.2	83.5	133.8	-91.18	-4,910.8	396.4	688.9	471.7	217.21	3.172		
11,000.0	6,772.5	6,689.5	6,689.5	85.4	133.8	-91.00	-4,910.8	396.4	593.8	374.7	219.10	2.710		
11,100.0	6,771.9	6,688.9	6,688.9	87.3	133.8	-90.82	-4,910.8	396.4	500.5	279.5	221.00	2.265		
11,200.0	6,771.3	6,688.3	6,688.3	89.2	133.8	-90.64	-4,910.8	396.4	410.4	187.5	222.89	1.841		
11,253.2	6,771.0	6,688.0	6,688.0	90.0	133.8	-90.55	-4,910.8	396.4	364.6	140.9	223.70	1.630 CC, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - LDS D08-30D (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:		0.0 ft	
Survey Program: 7409-UNKNOWN												Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
10,600.0	6,775.0	6,692.0	6,692.0	77.8	133.8	-91.96	-4,910.8	371.3	975.3	763.8	211.50	4.612			
10,700.0	6,774.4	6,691.4	6,691.4	79.7	133.8	-91.76	-4,910.8	371.3	877.1	663.7	213.40	4.110			
10,800.0	6,773.8	6,690.8	6,690.8	81.6	133.8	-91.55	-4,910.8	371.3	779.3	564.0	215.30	3.619			
10,900.0	6,773.2	6,690.2	6,690.2	83.5	133.8	-91.35	-4,910.8	371.3	682.1	464.9	217.20	3.140			
11,000.0	6,772.5	6,689.5	6,689.5	85.4	133.8	-91.14	-4,910.8	371.3	585.8	366.7	219.09	2.674			
11,100.0	6,771.9	6,688.9	6,688.9	87.3	133.8	-90.94	-4,910.8	371.3	491.1	270.1	220.99	2.222			
11,200.0	6,771.3	6,688.3	6,688.3	89.2	133.8	-90.74	-4,910.8	371.3	398.9	176.0	222.88	1.790			
11,253.2	6,771.0	6,688.0	6,688.0	90.0	133.8	-90.63	-4,910.8	371.3	351.6	127.9	223.70	1.572 CC, ES, SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4834.0ft (RKB - 15')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Becker Ranch 5J-103

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-103
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4834.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4834.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5J-103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-22-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4834.0ft (RKB - 15')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Becker Ranch 5J-103

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°

