

PETROLEUM DEVELOPMENT CORP Weld County CO

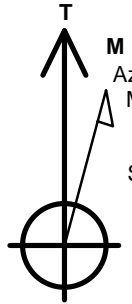
Well Name: **Becker Ranch 5E-403**

Surface Location: Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4820.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1339314.25	3256420.34	40.261170	-104.581180	
RKB - 15' WELL @ 4835.0ft (RKB - 15')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 223'FNL & 853'FWL	1.0	0.0	0.0	Point
BHL 500'FSL & 125'FWL	7042.0	-4608.4	-703.4	Point



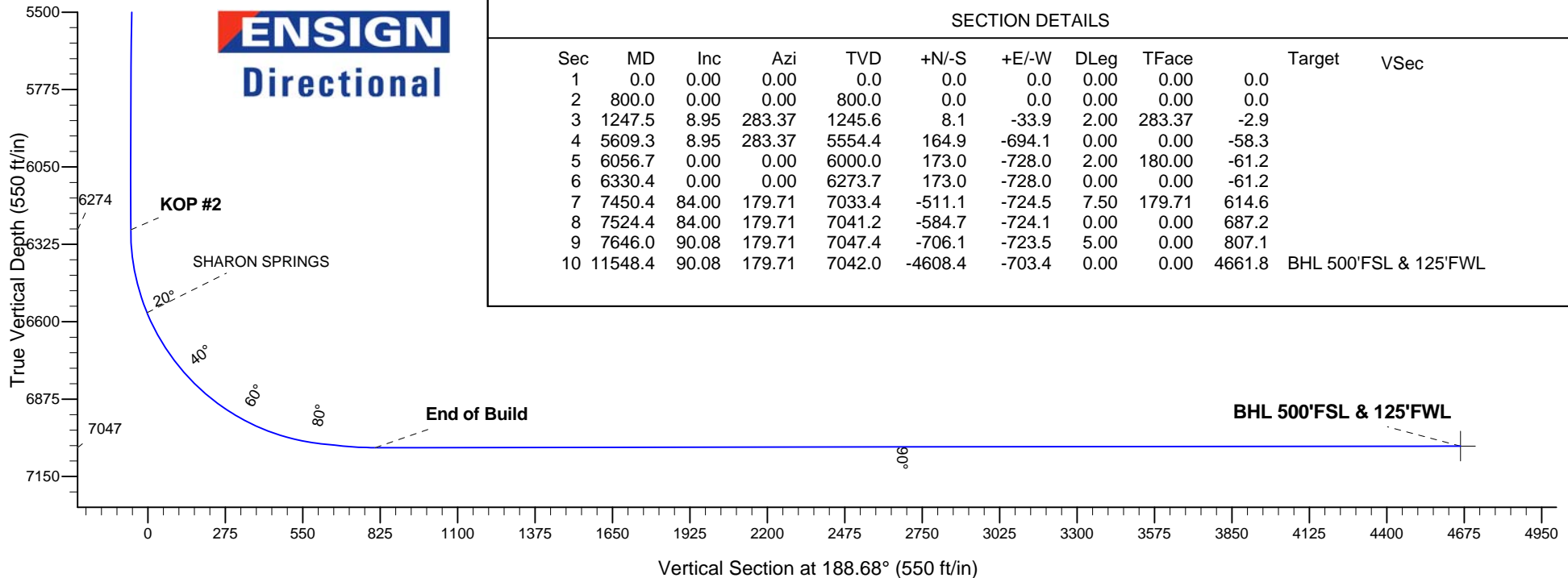
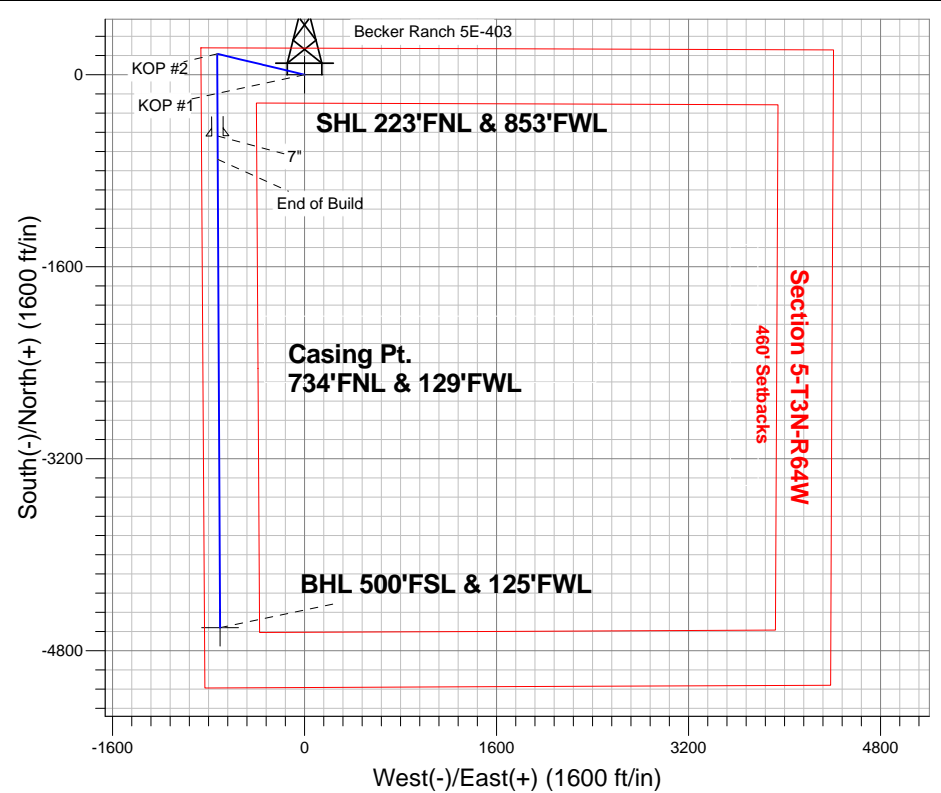
Azimuths to True North
Magnetic North: 8.42°

Magnetic Field
Strength: 52820.9snT
Dip Angle: 66.88°
Date: 11/22/2013
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
800.0	800.0	KOP #1
6273.7	6330.4	KOP #2
7047.4	7646.0	End of Build

Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W
Becker Ranch 5E-403
Plan #1 (11-22-13)
15:13, December 10 2013





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.5-T3N-R64W

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

Becker Ranch 5E-403

Wellbore #1

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

Standard Planning Report

10 December, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5E-403
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5E-403	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 5E-403					
Well Position	+N/-S	0.0 ft	Northing:	1,339,314.25 ft	Latitude:	40.261170
	+E/-W	0.0 ft	Easting:	3,256,420.34 ft	Longitude:	-104.581180
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,820.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/22/2013	8.43	66.88	52,821

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	188.68

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	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,247.5	8.95	283.37	1,245.6	8.1	-33.9	2.00	2.00	0.00	283.37	
5,609.3	8.95	283.37	5,554.4	164.9	-694.1	0.00	0.00	0.00	0.00	
6,056.7	0.00	0.00	6,000.0	173.0	-728.0	2.00	-2.00	0.00	180.00	
6,330.4	0.00	0.00	6,273.7	173.0	-728.0	0.00	0.00	0.00	0.00	
7,450.4	84.00	179.71	7,033.4	-511.1	-724.5	7.50	7.50	0.00	179.71	
7,524.4	84.00	179.71	7,041.2	-584.7	-724.1	0.00	0.00	0.00	0.00	
7,646.0	90.08	179.71	7,047.4	-706.1	-723.5	5.00	5.00	0.00	0.00	
11,548.4	90.08	179.71	7,042.0	-4,608.4	-703.4	0.00	0.00	0.00	0.00	BHL 500'FSL & 125

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Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5E-403	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 & 853'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
KOP #1									
900.0	2.00	283.37	900.0	0.4	-1.7	-0.1	2.00	2.00	0.00
1,000.0	4.00	283.37	999.8	1.6	-6.8	-0.6	2.00	2.00	0.00
1,100.0	6.00	283.37	1,099.5	3.6	-15.3	-1.3	2.00	2.00	0.00
1,200.0	8.00	283.37	1,198.7	6.4	-27.1	-2.3	2.00	2.00	0.00
1,247.5	8.95	283.37	1,245.6	8.1	-33.9	-2.9	2.00	2.00	0.00
1,300.0	8.95	283.37	1,297.5	10.0	-41.9	-3.5	0.00	0.00	0.00
1,400.0	8.95	283.37	1,396.3	13.5	-57.0	-4.8	0.00	0.00	0.00
1,500.0	8.95	283.37	1,495.1	17.1	-72.1	-6.1	0.00	0.00	0.00
1,600.0	8.95	283.37	1,593.9	20.7	-87.3	-7.3	0.00	0.00	0.00
1,700.0	8.95	283.37	1,692.7	24.3	-102.4	-8.6	0.00	0.00	0.00
1,800.0	8.95	283.37	1,791.5	27.9	-117.6	-9.9	0.00	0.00	0.00
1,900.0	8.95	283.37	1,890.2	31.5	-132.7	-11.1	0.00	0.00	0.00
2,000.0	8.95	283.37	1,989.0	35.1	-147.8	-12.4	0.00	0.00	0.00
2,100.0	8.95	283.37	2,087.8	38.7	-163.0	-13.7	0.00	0.00	0.00
2,200.0	8.95	283.37	2,186.6	42.3	-178.1	-15.0	0.00	0.00	0.00
2,300.0	8.95	283.37	2,285.4	45.9	-193.2	-16.2	0.00	0.00	0.00
2,400.0	8.95	283.37	2,384.2	49.5	-208.4	-17.5	0.00	0.00	0.00
2,500.0	8.95	283.37	2,482.9	53.1	-223.5	-18.8	0.00	0.00	0.00
2,600.0	8.95	283.37	2,581.7	56.7	-238.6	-20.0	0.00	0.00	0.00
2,700.0	8.95	283.37	2,680.5	60.3	-253.8	-21.3	0.00	0.00	0.00
2,800.0	8.95	283.37	2,779.3	63.9	-268.9	-22.6	0.00	0.00	0.00
2,900.0	8.95	283.37	2,878.1	67.5	-284.0	-23.9	0.00	0.00	0.00
3,000.0	8.95	283.37	2,976.8	71.1	-299.2	-25.1	0.00	0.00	0.00
3,100.0	8.95	283.37	3,075.6	74.7	-314.3	-26.4	0.00	0.00	0.00
3,200.0	8.95	283.37	3,174.4	78.3	-329.4	-27.7	0.00	0.00	0.00
3,300.0	8.95	283.37	3,273.2	81.9	-344.6	-29.0	0.00	0.00	0.00
3,400.0	8.95	283.37	3,372.0	85.5	-359.7	-30.2	0.00	0.00	0.00
3,500.0	8.95	283.37	3,470.8	89.1	-374.8	-31.5	0.00	0.00	0.00
3,600.0	8.95	283.37	3,569.5	92.7	-390.0	-32.8	0.00	0.00	0.00
3,700.0	8.95	283.37	3,668.3	96.3	-405.1	-34.0	0.00	0.00	0.00
3,732.1	8.95	283.37	3,700.0	97.4	-410.0	-34.4	0.00	0.00	0.00
PARKMAN									
3,800.0	8.95	283.37	3,767.1	99.9	-420.2	-35.3	0.00	0.00	0.00
3,900.0	8.95	283.37	3,865.9	103.5	-435.4	-36.6	0.00	0.00	0.00
4,000.0	8.95	283.37	3,964.7	107.1	-450.5	-37.9	0.00	0.00	0.00
4,100.0	8.95	283.37	4,063.5	110.7	-465.6	-39.1	0.00	0.00	0.00
4,200.0	8.95	283.37	4,162.2	114.3	-480.8	-40.4	0.00	0.00	0.00
4,300.0	8.95	283.37	4,261.0	117.8	-495.9	-41.7	0.00	0.00	0.00
4,400.0	8.95	283.37	4,359.8	121.4	-511.1	-42.9	0.00	0.00	0.00
4,440.7	8.95	283.37	4,400.0	122.9	-517.2	-43.5	0.00	0.00	0.00
SUSSEX									

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Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5E-403	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	8.95	283.37	4,458.6	125.0	-526.2	-44.2	0.00	0.00	0.00
4,600.0	8.95	283.37	4,557.4	128.6	-541.3	-45.5	0.00	0.00	0.00
4,700.0	8.95	283.37	4,656.2	132.2	-556.5	-46.8	0.00	0.00	0.00
4,800.0	8.95	283.37	4,754.9	135.8	-571.6	-48.0	0.00	0.00	0.00
4,900.0	8.95	283.37	4,853.7	139.4	-586.7	-49.3	0.00	0.00	0.00
5,000.0	8.95	283.37	4,952.5	143.0	-601.9	-50.6	0.00	0.00	0.00
5,100.0	8.95	283.37	5,051.3	146.6	-617.0	-51.8	0.00	0.00	0.00
5,149.3	8.95	283.37	5,100.0	148.4	-624.5	-52.5	0.00	0.00	0.00
SHANNON									
5,200.0	8.95	283.37	5,150.1	150.2	-632.1	-53.1	0.00	0.00	0.00
5,300.0	8.95	283.37	5,248.8	153.8	-647.3	-54.4	0.00	0.00	0.00
5,400.0	8.95	283.37	5,347.6	157.4	-662.4	-55.7	0.00	0.00	0.00
5,500.0	8.95	283.37	5,446.4	161.0	-677.5	-56.9	0.00	0.00	0.00
5,600.0	8.95	283.37	5,545.2	164.6	-692.7	-58.2	0.00	0.00	0.00
5,609.3	8.95	283.37	5,554.4	164.9	-694.1	-58.3	0.00	0.00	0.00
5,700.0	7.13	283.37	5,644.2	167.9	-706.4	-59.4	2.00	-2.00	0.00
5,800.0	5.13	283.37	5,743.6	170.3	-716.8	-60.2	2.00	-2.00	0.00
5,900.0	3.13	283.37	5,843.3	172.0	-723.8	-60.8	2.00	-2.00	0.00
6,000.0	1.13	283.37	5,943.3	172.9	-727.5	-61.1	2.00	-2.00	0.00
6,056.7	0.00	0.00	6,000.0	173.0	-728.0	-61.2	2.00	-2.00	0.00
6,100.0	0.00	0.00	6,043.3	173.0	-728.0	-61.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,143.3	173.0	-728.0	-61.2	0.00	0.00	0.00
6,300.0	0.00	0.00	6,243.3	173.0	-728.0	-61.2	0.00	0.00	0.00
6,330.4	0.00	0.00	6,273.7	173.0	-728.0	-61.2	0.00	0.00	0.00
KOP #2									
6,400.0	5.22	179.71	6,343.2	169.8	-728.0	-58.0	7.50	7.50	0.00
6,500.0	12.72	179.71	6,441.9	154.3	-727.9	-42.6	7.50	7.50	0.00
6,600.0	20.22	179.71	6,537.7	125.9	-727.8	-14.7	7.50	7.50	0.00
6,632.5	22.66	179.71	6,568.0	114.0	-727.7	-2.9	7.50	7.50	0.00
SHARON SPRINGS									
6,700.0	27.72	179.71	6,629.0	85.3	-727.5	25.4	7.50	7.50	0.00
6,800.0	35.22	179.71	6,714.2	33.2	-727.3	77.0	7.50	7.50	0.00
6,900.0	42.72	179.71	6,791.9	-29.7	-727.0	139.0	7.50	7.50	0.00
7,000.0	50.22	179.71	6,860.8	-102.1	-726.6	210.6	7.50	7.50	0.00
7,100.0	57.72	179.71	6,919.5	-182.9	-726.2	290.4	7.50	7.50	0.00
7,200.0	65.22	179.71	6,967.3	-270.7	-725.7	377.1	7.50	7.50	0.00
7,300.0	72.72	179.71	7,003.1	-364.0	-725.2	469.3	7.50	7.50	0.00
7,400.0	80.22	179.71	7,026.5	-461.2	-724.7	565.2	7.50	7.50	0.00
7,450.4	84.00	179.71	7,033.4	-511.1	-724.5	614.5	7.50	7.50	0.00
7"									
7,500.0	84.00	179.71	7,038.6	-560.4	-724.2	663.3	0.00	0.00	0.00
7,524.4	84.00	179.71	7,041.2	-584.7	-724.1	687.2	0.00	0.00	0.00
7,600.0	87.78	179.71	7,046.6	-660.1	-723.7	761.7	5.00	5.00	0.00
7,646.0	90.08	179.71	7,047.4	-706.0	-723.5	807.1	5.00	5.00	0.00
End of Build									
7,700.0	90.08	179.71	7,047.4	-760.0	-723.2	860.5	0.00	0.00	0.00
7,800.0	90.08	179.71	7,047.2	-860.0	-722.7	959.2	0.00	0.00	0.00
7,900.0	90.08	179.71	7,047.1	-960.0	-722.2	1,058.0	0.00	0.00	0.00
8,000.0	90.08	179.71	7,047.0	-1,060.0	-721.7	1,156.8	0.00	0.00	0.00
8,100.0	90.08	179.71	7,046.8	-1,160.0	-721.2	1,255.6	0.00	0.00	0.00
8,200.0	90.08	179.71	7,046.7	-1,260.0	-720.6	1,354.3	0.00	0.00	0.00
8,300.0	90.08	179.71	7,046.5	-1,360.0	-720.1	1,453.1	0.00	0.00	0.00

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Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5E-403	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)
8,400.0	90.08	179.71	7,046.4	-1,460.0	-719.6	1,551.9	0.00	0.00	0.00
8,500.0	90.08	179.71	7,046.3	-1,560.0	-719.1	1,650.7	0.00	0.00	0.00
8,600.0	90.08	179.71	7,046.1	-1,660.0	-718.6	1,749.5	0.00	0.00	0.00
8,700.0	90.08	179.71	7,046.0	-1,760.0	-718.1	1,848.2	0.00	0.00	0.00
8,800.0	90.08	179.71	7,045.8	-1,860.0	-717.6	1,947.0	0.00	0.00	0.00
8,900.0	90.08	179.71	7,045.7	-1,960.0	-717.0	2,045.8	0.00	0.00	0.00
9,000.0	90.08	179.71	7,045.6	-2,060.0	-716.5	2,144.6	0.00	0.00	0.00
9,100.0	90.08	179.71	7,045.4	-2,160.0	-716.0	2,243.3	0.00	0.00	0.00
9,200.0	90.08	179.71	7,045.3	-2,260.0	-715.5	2,342.1	0.00	0.00	0.00
9,300.0	90.08	179.71	7,045.1	-2,360.0	-715.0	2,440.9	0.00	0.00	0.00
9,400.0	90.08	179.71	7,045.0	-2,460.0	-714.5	2,539.7	0.00	0.00	0.00
9,500.0	90.08	179.71	7,044.9	-2,560.0	-714.0	2,638.4	0.00	0.00	0.00
9,600.0	90.08	179.71	7,044.7	-2,660.0	-713.5	2,737.2	0.00	0.00	0.00
9,700.0	90.08	179.71	7,044.6	-2,760.0	-712.9	2,836.0	0.00	0.00	0.00
9,800.0	90.08	179.71	7,044.4	-2,860.0	-712.4	2,934.8	0.00	0.00	0.00
9,900.0	90.08	179.71	7,044.3	-2,960.0	-711.9	3,033.5	0.00	0.00	0.00
10,000.0	90.08	179.71	7,044.2	-3,060.0	-711.4	3,132.3	0.00	0.00	0.00
10,100.0	90.08	179.71	7,044.0	-3,160.0	-710.9	3,231.1	0.00	0.00	0.00
10,200.0	90.08	179.71	7,043.9	-3,260.0	-710.4	3,329.9	0.00	0.00	0.00
10,300.0	90.08	179.71	7,043.7	-3,360.0	-709.9	3,428.6	0.00	0.00	0.00
10,400.0	90.08	179.71	7,043.6	-3,460.0	-709.3	3,527.4	0.00	0.00	0.00
10,500.0	90.08	179.71	7,043.5	-3,560.0	-708.8	3,626.2	0.00	0.00	0.00
10,600.0	90.08	179.71	7,043.3	-3,660.0	-708.3	3,725.0	0.00	0.00	0.00
10,700.0	90.08	179.71	7,043.2	-3,760.0	-707.8	3,823.8	0.00	0.00	0.00
10,800.0	90.08	179.71	7,043.0	-3,860.0	-707.3	3,922.5	0.00	0.00	0.00
10,900.0	90.08	179.71	7,042.9	-3,960.0	-706.8	4,021.3	0.00	0.00	0.00
11,000.0	90.08	179.71	7,042.8	-4,060.0	-706.3	4,120.1	0.00	0.00	0.00
11,100.0	90.08	179.71	7,042.6	-4,160.0	-705.7	4,218.9	0.00	0.00	0.00
11,200.0	90.08	179.71	7,042.5	-4,260.0	-705.2	4,317.6	0.00	0.00	0.00
11,300.0	90.08	179.71	7,042.3	-4,360.0	-704.7	4,416.4	0.00	0.00	0.00
11,400.0	90.08	179.71	7,042.2	-4,460.0	-704.2	4,515.2	0.00	0.00	0.00
11,500.0	90.08	179.71	7,042.1	-4,560.0	-703.7	4,614.0	0.00	0.00	0.00
11,548.4	90.08	179.71	7,042.0	-4,608.4	-703.4	4,661.8	0.00	0.00	0.00
BHL 500'FSL & 125'FWL									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,450.4	7,033.4	7"	7	7-1/2	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,732.1	3,700.0	PARKMAN		0.00	
4,440.7	4,400.0	SUSSEX		0.00	
5,149.3	5,100.0	SHANNON		0.00	
6,632.5	6,568.0	SHARON SPRINGS		0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5E-403
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5E-403	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-22-13)		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
800.0	800.0	0.0	0.0	KOP #1
6,330.4	6,273.7	173.0	-728.0	KOP #2
7,646.0	7,047.4	-706.0	-723.5	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.5-T3N-R64W

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

Becker Ranch 5E-403

Wellbore #1

Plan #1 (11-22-13)

Anticollision Report

10 December, 2013



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5E-403
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5E-403	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:	MD Interval 100.0ft	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	12/5/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,548.4	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)	800.0	800.0	27.9	24.5	8.278	CC, ES
Becker Ranch 5E-323 - Wellbore #1 - Plan #1 (11-22-13)	11,548.4	11,409.3	363.3	197.2	2.187	SF
Becker Ranch 5J-103 - Wellbore #1 - Plan #1 (11-22-13)	800.0	799.0	89.3	85.9	26.507	CC, ES
Becker Ranch 5J-103 - Wellbore #1 - Plan #1 (11-22-13)	1,000.0	998.8	96.1	91.9	22.677	SF
Becker Ranch 5J-443 - Wellbore #1 - Plan #1 (11-22-13)	800.0	800.0	58.6	55.2	17.384	CC, ES
Becker Ranch 5J-443 - Wellbore #1 - Plan #1 (11-22-13)	11,548.4	11,482.1	661.6	481.1	3.666	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		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
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	27.9	27.9			
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	27.9	27.9	27.7	0.22	124.171
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	27.9	27.9	27.2	0.67	41.390
300.0	300.0	300.0	300.0	0.6	0.6	90.01	0.0	27.9	27.9	26.8	1.12	24.834
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	27.9	27.9	26.3	1.57	17.739
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	27.9	27.9	25.9	2.02	13.797
600.0	600.0	600.0	600.0	1.2	1.2	90.01	0.0	27.9	27.9	25.4	2.47	11.288
700.0	700.0	700.0	700.0	1.5	1.5	90.01	0.0	27.9	27.9	25.0	2.92	9.552
800.0	800.0	800.0	800.0	1.7	1.7	90.01	0.0	27.9	27.9	24.5	3.37	8.278 CC, ES
900.0	900.0	900.0	900.0	1.9	1.9	167.41	0.0	27.9	29.6	25.8	3.81	7.771
1,000.0	999.8	999.8	999.8	2.1	2.1	169.28	0.0	27.9	34.7	30.5	4.24	8.192
1,100.0	1,099.5	1,099.5	1,099.5	2.3	2.4	171.39	0.0	27.9	43.3	38.7	4.67	9.278
1,200.0	1,198.7	1,198.7	1,198.7	2.6	2.6	173.25	0.0	27.9	55.4	50.3	5.10	10.868
1,300.0	1,297.5	1,297.5	1,297.5	2.9	2.8	174.69	0.0	27.9	70.5	65.0	5.53	12.742
1,400.0	1,396.3	1,396.3	1,396.3	3.2	3.0	175.65	0.0	27.9	86.0	80.0	5.98	14.389
1,500.0	1,495.1	1,495.1	1,495.1	3.5	3.2	176.31	0.0	27.9	101.5	95.1	6.42	15.802
1,600.0	1,593.9	1,597.8	1,597.7	3.8	3.5	176.65	0.6	26.4	115.5	108.6	6.87	16.803
1,700.0	1,692.7	1,701.5	1,701.3	4.2	3.7	176.57	2.7	21.3	125.9	118.6	7.32	17.214
1,800.0	1,791.5	1,805.9	1,805.3	4.5	3.9	176.15	6.1	12.8	132.9	125.1	7.77	17.103
1,900.0	1,890.2	1,909.4	1,908.0	4.8	4.2	175.45	10.9	0.9	136.4	128.1	8.23	16.574
2,000.0	1,989.0	2,009.4	2,007.1	5.2	4.4	174.70	15.9	-11.5	138.9	130.2	8.69	15.987

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 5E-403
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5E-403	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
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)					
2,100.0	2,087.8	2,109.3	2,106.1	5.5	4.7	173.97	20.9	-23.9	141.4	132.2	9.15	15.451				
2,200.0	2,186.6	2,209.3	2,205.2	5.9	5.0	173.27	26.0	-36.3	143.9	134.3	9.62	14.962				
2,300.0	2,285.4	2,309.2	2,304.2	6.3	5.2	172.60	31.0	-48.7	146.5	136.4	10.09	14.515				
2,400.0	2,384.2	2,409.2	2,403.3	6.6	5.5	171.94	36.0	-61.2	149.1	138.5	10.57	14.103				
2,500.0	2,482.9	2,509.1	2,502.3	7.0	5.8	171.31	41.0	-73.6	151.7	140.6	11.05	13.723				
2,600.0	2,581.7	2,609.1	2,601.4	7.3	6.1	170.71	46.0	-86.0	154.3	142.7	11.54	13.372				
2,700.0	2,680.5	2,709.0	2,700.4	7.7	6.4	170.12	51.1	-98.4	156.9	144.9	12.03	13.047				
2,800.0	2,779.3	2,809.0	2,799.5	8.1	6.7	169.55	56.1	-110.8	159.6	147.0	12.52	12.745				
2,900.0	2,878.1	2,908.9	2,898.5	8.4	7.0	169.00	61.1	-123.2	162.2	149.2	13.02	12.463				
3,000.0	2,976.8	3,008.9	2,997.6	8.8	7.3	168.47	66.1	-135.6	164.9	151.4	13.52	12.201				
3,100.0	3,075.6	3,108.8	3,096.6	9.1	7.7	167.95	71.1	-148.1	167.6	153.6	14.02	11.955				
3,200.0	3,174.4	3,208.8	3,195.7	9.5	8.0	167.45	76.1	-160.5	170.3	155.8	14.52	11.725				
3,300.0	3,273.2	3,308.7	3,294.8	9.9	8.3	166.97	81.2	-172.9	173.0	158.0	15.03	11.509				
3,400.0	3,372.0	3,408.7	3,393.8	10.2	8.6	166.50	86.2	-185.3	175.8	160.2	15.55	11.306				
3,500.0	3,470.8	3,508.7	3,492.9	10.6	8.9	166.05	91.2	-197.7	178.5	162.4	16.06	11.114				
3,600.0	3,569.5	3,608.6	3,591.9	11.0	9.3	165.61	96.2	-210.1	181.2	164.7	16.58	10.934				
3,700.0	3,668.3	3,708.6	3,691.0	11.4	9.6	165.18	101.2	-222.6	184.0	166.9	17.10	10.763				
3,800.0	3,767.1	3,808.5	3,790.0	11.7	9.9	164.77	106.3	-235.0	186.8	169.2	17.62	10.602				
3,900.0	3,865.9	3,908.5	3,889.1	12.1	10.2	164.37	111.3	-247.4	189.6	171.4	18.14	10.448				
4,000.0	3,964.7	4,008.4	3,988.1	12.5	10.6	163.98	116.3	-259.8	192.4	173.7	18.67	10.303				
4,100.0	4,063.5	4,108.4	4,087.2	12.8	10.9	163.60	121.3	-272.2	195.2	176.0	19.20	10.165				
4,200.0	4,162.2	4,208.3	4,186.2	13.2	11.2	163.23	126.3	-284.6	198.0	178.2	19.73	10.034				
4,300.0	4,261.0	4,308.3	4,285.3	13.6	11.5	162.87	131.3	-297.1	200.8	180.5	20.26	9.909				
4,400.0	4,359.8	4,408.2	4,384.3	13.9	11.9	162.52	136.4	-309.5	203.6	182.8	20.80	9.790				
4,500.0	4,458.6	4,508.2	4,483.4	14.3	12.2	162.18	141.4	-321.9	206.4	185.1	21.33	9.676				
4,600.0	4,557.4	4,608.1	4,582.4	14.7	12.5	161.86	146.4	-334.3	209.3	187.4	21.87	9.568				
4,700.0	4,656.2	4,708.1	4,681.5	15.0	12.9	161.53	151.4	-346.7	212.1	189.7	22.41	9.464				
4,800.0	4,754.9	4,808.0	4,780.5	15.4	13.2	161.22	156.4	-359.1	215.0	192.0	22.96	9.365				
4,900.0	4,853.7	4,908.0	4,879.6	15.8	13.5	160.92	161.5	-371.6	217.8	194.3	23.50	9.269				
5,000.0	4,952.5	5,003.9	4,974.7	16.2	13.8	160.71	166.1	-382.9	221.3	197.3	24.01	9.215				
5,100.0	5,051.3	5,100.0	5,070.3	16.5	14.0	160.86	169.5	-391.5	227.4	203.0	24.46	9.299				
5,200.0	5,150.1	5,190.2	5,160.3	16.9	14.2	161.32	171.7	-396.9	236.4	211.6	24.85	9.513				
5,300.0	5,248.8	5,282.4	5,252.5	17.3	14.3	162.07	172.8	-399.7	248.3	223.1	25.21	9.848				
5,400.0	5,347.6	5,377.5	5,347.6	17.6	14.5	163.04	173.0	-400.1	262.8	237.2	25.56	10.280				
5,500.0	5,446.4	5,476.3	5,446.4	18.0	14.7	163.97	173.0	-400.1	277.7	251.8	25.94	10.706				
5,600.0	5,545.2	5,575.1	5,545.2	18.4	14.8	164.81	173.0	-400.1	292.7	266.4	26.33	11.117				
5,700.0	5,644.2	5,674.1	5,644.2	18.7	15.0	165.57	173.0	-400.1	306.4	279.6	26.72	11.464				
5,800.0	5,743.6	5,773.5	5,743.6	18.9	15.2	166.10	173.0	-400.1	316.7	289.7	27.08	11.695				
5,900.0	5,843.3	5,873.3	5,843.3	19.1	15.4	166.44	173.0	-400.1	323.7	296.3	27.42	11.805				
6,000.0	5,943.3	5,973.2	5,943.3	19.3	15.6	166.61	173.0	-400.1	327.4	299.6	27.74	11.800				
6,100.0	6,043.3	6,073.2	6,043.3	19.4	15.7	90.00	173.0	-400.1	327.9	299.8	28.06	11.685				
6,200.0	6,143.3	6,173.2	6,143.3	19.5	15.9	90.00	173.0	-400.1	327.9	299.5	28.46	11.522				
6,224.4	6,167.7	6,197.6	6,167.7	19.6	16.0	90.00	173.0	-400.1	327.9	299.4	28.56	11.483				
6,300.0	6,243.3	6,272.7	6,242.7	19.7	16.1	90.70	169.0	-400.1	328.0	299.2	28.77	11.399				
6,400.0	6,343.2	6,370.2	6,338.7	19.8	16.2	-86.70	152.9	-400.0	328.5	299.5	28.93	11.353				
6,500.0	6,441.9	6,466.0	6,430.4	19.9	16.3	-84.36	125.3	-399.8	329.6	300.5	29.03	11.354				
6,600.0	6,537.7	6,560.3	6,516.6	20.0	16.3	-82.14	87.2	-399.6	331.1	302.0	29.14	11.366				
6,700.0	6,629.0	6,653.2	6,596.3	20.0	16.4	-80.08	39.4	-399.3	333.1	303.8	29.29	11.370				
6,800.0	6,714.2	6,744.9	6,668.7	20.1	16.5	-78.21	-16.8	-398.9	335.2	305.7	29.54	11.350				
6,900.0	6,791.9	6,835.6	6,733.1	20.2	16.6	-76.55	-80.5	-398.6	337.5	307.6	29.89	11.291				
7,000.0	6,860.8	6,925.5	6,789.1	20.3	16.7	-75.11	-150.7	-398.1	339.7	309.3	30.38	11.181				

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 5E-403
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5E-403	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 Survey Program: 0-MWD											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	
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		
7,100.0	6,919.5	7,014.5	6,836.0	20.5	17.0	-73.91	-226.3	-397.7	341.7	310.7	31.03	11.012		
7,200.0	6,967.3	7,103.0	6,873.7	20.8	17.5	-72.96	-306.3	-397.2	343.4	311.6	31.86	10.779		
7,300.0	7,003.1	7,191.0	6,901.7	21.2	18.1	-72.27	-389.7	-396.7	344.8	311.9	32.90	10.479		
7,400.0	7,026.5	7,278.7	6,919.9	21.8	18.8	-71.83	-475.5	-396.2	345.7	311.6	34.16	10.120		
7,500.0	7,038.6	7,373.6	6,930.7	22.6	19.8	-71.72	-569.8	-395.6	346.0	310.1	35.95	9.626		
7,600.0	7,046.6	7,466.3	6,937.7	23.5	20.9	-71.66	-662.1	-395.1	346.2	308.3	37.91	9.133		
7,700.0	7,047.4	7,561.0	6,938.0	24.6	22.1	-71.59	-756.8	-394.5	346.5	306.3	40.13	8.634		
7,800.0	7,047.2	7,661.0	6,936.9	25.8	23.4	-71.45	-856.8	-393.9	346.9	304.2	42.71	8.122		
7,900.0	7,047.1	7,761.0	6,935.8	27.1	24.8	-71.30	-956.8	-393.3	347.3	301.8	45.42	7.645		
8,000.0	7,047.0	7,861.0	6,934.6	28.4	26.3	-71.15	-1,056.8	-392.7	347.7	299.4	48.26	7.204		
8,100.0	7,046.8	7,961.0	6,933.5	29.9	27.9	-71.00	-1,156.8	-392.1	348.1	296.9	51.19	6.799		
8,200.0	7,046.7	8,061.0	6,932.4	31.4	29.5	-70.86	-1,256.8	-391.5	348.5	294.3	54.20	6.429		
8,300.0	7,046.5	8,161.0	6,931.3	32.9	31.1	-70.71	-1,356.8	-390.9	348.9	291.6	57.28	6.091		
8,400.0	7,046.4	8,261.0	6,930.2	34.5	32.7	-70.56	-1,456.7	-390.3	349.3	288.9	60.41	5.782		
8,500.0	7,046.3	8,361.0	6,929.0	36.1	34.4	-70.42	-1,556.7	-389.7	349.7	286.1	63.59	5.499		
8,600.0	7,046.1	8,461.0	6,927.9	37.7	36.1	-70.27	-1,656.7	-389.1	350.1	283.3	66.80	5.241		
8,700.0	7,046.0	8,561.0	6,926.8	39.3	37.8	-70.12	-1,756.7	-388.4	350.5	280.5	70.05	5.004		
8,800.0	7,045.8	8,661.0	6,925.7	41.0	39.6	-69.98	-1,856.7	-387.8	350.9	277.6	73.33	4.786		
8,900.0	7,045.7	8,761.0	6,924.6	42.7	41.3	-69.84	-1,956.7	-387.2	351.4	274.7	76.62	4.585		
9,000.0	7,045.6	8,861.0	6,923.5	44.5	43.1	-69.69	-2,056.7	-386.6	351.8	271.8	79.94	4.400		
9,100.0	7,045.4	8,961.0	6,922.3	46.2	44.9	-69.55	-2,156.7	-386.0	352.2	268.9	83.27	4.229		
9,200.0	7,045.3	9,060.9	6,921.2	47.9	46.7	-69.40	-2,256.6	-385.4	352.6	266.0	86.62	4.071		
9,300.0	7,045.1	9,160.9	6,920.1	49.7	48.5	-69.26	-2,356.6	-384.8	353.1	263.1	89.98	3.924		
9,400.0	7,045.0	9,260.9	6,919.0	51.5	50.3	-69.12	-2,456.6	-384.2	353.5	260.1	93.35	3.787		
9,500.0	7,044.9	9,360.9	6,917.9	53.3	52.1	-68.97	-2,556.6	-383.6	353.9	257.2	96.72	3.659		
9,600.0	7,044.7	9,460.9	6,916.8	55.1	54.0	-68.83	-2,656.6	-383.0	354.4	254.3	100.10	3.540		
9,700.0	7,044.6	9,560.9	6,915.6	56.9	55.8	-68.69	-2,756.6	-382.4	354.8	251.3	103.49	3.428		
9,800.0	7,044.4	9,660.9	6,914.5	58.7	57.6	-68.55	-2,856.6	-381.8	355.2	248.4	106.88	3.324		
9,900.0	7,044.3	9,760.9	6,913.4	60.5	59.5	-68.41	-2,956.6	-381.2	355.7	245.4	110.27	3.226		
10,000.0	7,044.2	9,860.9	6,912.3	62.3	61.3	-68.27	-3,056.5	-380.6	356.1	242.5	113.66	3.133		
10,100.0	7,044.0	9,960.9	6,911.2	64.1	63.2	-68.13	-3,156.5	-380.0	356.6	239.5	117.06	3.046		
10,200.0	7,043.9	10,060.9	6,910.1	66.0	65.0	-67.99	-3,256.5	-379.4	357.0	236.6	120.46	2.964		
10,300.0	7,043.7	10,160.9	6,908.9	67.8	66.9	-67.85	-3,356.5	-378.8	357.5	233.6	123.85	2.886		
10,400.0	7,043.6	10,260.9	6,907.8	69.7	68.8	-67.71	-3,456.5	-378.2	357.9	230.7	127.25	2.813		
10,500.0	7,043.5	10,360.9	6,906.7	71.5	70.6	-67.57	-3,556.5	-377.6	358.4	227.7	130.64	2.743		
10,600.0	7,043.3	10,460.9	6,905.6	73.3	72.5	-67.43	-3,656.5	-377.0	358.8	224.8	134.04	2.677		
10,700.0	7,043.2	10,560.9	6,904.5	75.2	74.4	-67.29	-3,756.5	-376.4	359.3	221.9	137.43	2.614		
10,800.0	7,043.0	10,660.9	6,903.4	77.1	76.2	-67.15	-3,856.4	-375.8	359.8	218.9	140.82	2.555		
10,900.0	7,042.9	10,760.9	6,902.2	78.9	78.1	-67.01	-3,956.4	-375.2	360.2	216.0	144.20	2.498		
11,000.0	7,042.8	10,860.9	6,901.1	80.8	80.0	-66.88	-4,056.4	-374.6	360.7	213.1	147.59	2.444		
11,100.0	7,042.6	10,960.9	6,900.0	82.7	81.9	-66.74	-4,156.4	-374.0	361.1	210.2	150.97	2.392		
11,200.0	7,042.5	11,060.8	6,898.9	84.5	83.8	-66.60	-4,256.4	-373.4	361.6	207.3	154.34	2.343		
11,300.0	7,042.3	11,160.8	6,897.8	86.4	85.7	-66.47	-4,356.4	-372.8	362.1	204.4	157.72	2.296		
11,400.0	7,042.2	11,260.8	6,896.7	88.3	87.5	-66.33	-4,456.4	-372.2	362.6	201.5	161.09	2.251		
11,500.0	7,042.1	11,360.8	6,895.5	90.1	89.4	-66.20	-4,556.3	-371.6	363.0	198.6	164.45	2.208		
11,548.4	7,042.0	11,409.3	6,895.0	91.0	90.3	-66.13	-4,604.8	-371.3	363.3	197.2	166.08	2.187 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5E-403
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5E-403	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-103 - Wellbore #1 - Plan #1 (11-22-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWDD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	90.00	0.0	89.3	89.3				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	90.00	0.0	89.3	89.3	89.1	0.22	399.339	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	90.00	0.0	89.3	89.3	88.6	0.67	132.892	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	90.00	0.0	89.3	89.3	88.2	1.12	79.628	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	90.00	0.0	89.3	89.3	87.7	1.57	56.845	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	90.00	0.0	89.3	89.3	87.3	2.02	44.199	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	90.00	0.0	89.3	89.3	86.8	2.47	36.155	
700.0	700.0	699.0	699.0	1.5	1.5	90.00	90.00	0.0	89.3	89.3	86.4	2.92	30.589	
800.0	800.0	799.0	799.0	1.7	1.7	90.00	90.00	0.0	89.3	89.3	85.9	3.37	26.507 CC, ES	
900.0	900.0	899.0	899.0	1.9	1.9	166.88	166.88	0.0	89.3	91.0	87.2	3.81	23.897	
1,000.0	999.8	998.8	998.8	2.1	2.1	167.56	167.56	0.0	89.3	96.1	91.9	4.24	22.677 SF	
1,100.0	1,099.5	1,096.0	1,096.0	2.3	2.3	167.89	167.89	1.1	90.4	105.8	101.1	4.66	22.692	
1,200.0	1,198.7	1,192.5	1,192.3	2.6	2.6	167.32	167.32	4.6	93.9	121.1	116.0	5.09	23.810	
1,300.0	1,297.5	1,290.6	1,290.3	2.9	2.8	166.77	166.77	9.0	98.3	140.3	134.8	5.52	25.427	
1,400.0	1,396.3	1,388.7	1,388.1	3.2	3.0	166.42	166.42	13.4	102.7	159.9	153.9	5.96	26.826	
1,500.0	1,495.1	1,486.7	1,486.0	3.5	3.2	166.14	166.14	17.9	107.1	179.4	173.0	6.41	28.002	
1,600.0	1,593.9	1,584.8	1,583.9	3.8	3.5	165.91	165.91	22.3	111.5	199.0	192.1	6.86	29.001	
1,700.0	1,692.7	1,682.9	1,681.7	4.2	3.7	165.73	165.73	26.8	115.9	218.6	211.2	7.32	29.859	
1,800.0	1,791.5	1,780.9	1,779.6	4.5	3.9	165.58	165.58	31.2	120.3	238.1	230.4	7.78	30.600	
1,900.0	1,890.2	1,879.0	1,877.5	4.8	4.2	165.45	165.45	35.6	124.7	257.7	249.5	8.25	31.246	
2,000.0	1,889.0	1,877.1	1,875.3	5.2	4.4	165.34	165.34	40.1	129.1	277.3	268.6	8.72	31.815	
2,100.0	2,087.8	2,075.1	2,073.2	5.5	4.6	165.24	165.24	44.5	133.5	296.9	287.7	9.19	32.317	
2,200.0	2,186.6	2,173.2	2,171.0	5.9	4.9	165.16	165.16	48.9	138.0	316.5	306.8	9.66	32.764	
2,300.0	2,285.4	2,271.3	2,268.9	6.3	5.1	165.08	165.08	53.4	142.4	336.0	325.9	10.13	33.164	
2,400.0	2,384.2	2,369.3	2,366.8	6.6	5.4	165.01	165.01	57.8	146.8	355.6	345.0	10.61	33.524	
2,500.0	2,482.9	2,467.4	2,464.6	7.0	5.6	164.96	164.96	62.2	151.2	375.2	364.1	11.08	33.849	
2,600.0	2,581.7	2,565.4	2,562.5	7.3	5.8	164.90	164.90	66.7	155.6	394.8	383.2	11.56	34.145	
2,700.0	2,680.5	2,663.5	2,660.4	7.7	6.1	164.85	164.85	71.1	160.0	414.4	402.3	12.04	34.414	
2,800.0	2,779.3	2,761.6	2,758.2	8.1	6.3	164.81	164.81	75.5	164.4	433.9	421.4	12.52	34.660	
2,900.0	2,878.1	2,859.6	2,856.1	8.4	6.6	164.77	164.77	80.0	168.8	453.5	440.5	13.00	34.886	
3,000.0	2,976.8	2,957.7	2,954.0	8.8	6.8	164.73	164.73	84.4	173.2	473.1	459.6	13.48	35.094	
3,100.0	3,075.6	3,055.8	3,051.8	9.1	7.1	164.70	164.70	88.8	177.6	492.7	478.7	13.96	35.286	
3,200.0	3,174.4	3,153.8	3,149.7	9.5	7.3	164.67	164.67	93.3	182.1	512.3	497.8	14.44	35.464	
3,300.0	3,273.2	3,251.9	3,247.5	9.9	7.5	164.64	164.64	97.7	186.5	531.8	516.9	14.93	35.629	
3,400.0	3,372.0	3,349.9	3,345.4	10.2	7.8	164.61	164.61	102.2	190.9	551.4	536.0	15.41	35.783	
3,500.0	3,470.8	3,448.0	3,443.3	10.6	8.0	164.58	164.58	106.6	195.3	571.0	555.1	15.89	35.926	
3,600.0	3,569.5	3,546.1	3,541.1	11.0	8.3	164.56	164.56	111.0	199.7	590.6	574.2	16.38	36.061	
3,700.0	3,668.3	3,644.1	3,639.0	11.4	8.5	164.54	164.54	115.5	204.1	610.2	593.3	16.86	36.186	
3,800.0	3,767.1	3,742.2	3,736.9	11.7	8.8	164.52	164.52	119.9	208.5	629.8	612.4	17.35	36.304	
3,900.0	3,865.9	3,840.3	3,834.7	12.1	9.0	164.50	164.50	124.3	212.9	649.3	631.5	17.83	36.415	
4,000.0	3,964.7	3,938.3	3,932.6	12.5	9.3	164.48	164.48	128.8	217.3	668.9	650.6	18.32	36.520	
4,100.0	4,063.5	4,036.4	4,030.5	12.8	9.5	164.46	164.46	133.2	221.7	688.5	669.7	18.80	36.618	
4,200.0	4,162.2	4,134.5	4,128.3	13.2	9.7	164.45	164.45	137.6	226.2	708.1	688.8	19.29	36.711	
4,300.0	4,261.0	4,232.5	4,226.2	13.6	10.0	164.43	164.43	142.1	230.6	727.7	707.9	19.77	36.799	
4,400.0	4,359.8	4,330.6	4,324.1	13.9	10.2	164.42	164.42	146.5	235.0	747.3	727.0	20.26	36.883	
4,500.0	4,458.6	4,428.6	4,421.9	14.3	10.5	164.40	164.40	150.9	239.4	766.8	746.1	20.75	36.962	
4,600.0	4,557.4	4,526.7	4,519.8	14.7	10.7	164.39	164.39	155.4	243.8	786.4	765.2	21.23	37.037	
4,700.0	4,656.2	4,624.8	4,617.6	15.0	11.0	164.38	164.38	159.8	248.2	806.0	784.3	21.72	37.109	
4,800.0	4,754.9	4,722.8	4,715.5	15.4	11.2	164.36	164.36	164.3	252.6	825.6	803.4	22.21	37.177	
4,900.0	4,853.7	4,820.9	4,813.4	15.8	11.5	164.35	164.35	168.7	257.0	845.2	822.5	22.69	37.242	
5,000.0	4,952.5	4,945.5	4,937.8	16.2	11.7	164.46	164.46	172.5	260.8	863.3	840.1	23.19	37.228	

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 5E-403
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5E-403	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-103 - Wellbore #1 - Plan #1 (11-22-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				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)	Minimum Separation (ft)	Separation Factor		
5,100.0	5,051.3	5,057.9	5,050.3	16.5	11.9	164.73	173.0	261.3	878.7	855.1	23.64	37.169		
5,200.0	5,150.1	5,156.7	5,149.1	16.9	12.1	165.00	173.0	261.3	893.7	869.6	24.09	37.104		
5,300.0	5,248.8	5,255.5	5,247.8	17.3	12.3	165.25	173.0	261.3	908.8	884.2	24.54	37.029		
5,400.0	5,347.6	5,354.3	5,346.6	17.6	12.5	165.50	173.0	261.3	923.8	898.8	25.00	36.957		
5,500.0	5,446.4	5,453.1	5,445.4	18.0	12.7	165.73	173.0	261.3	938.9	913.5	25.45	36.887		
5,600.0	5,545.2	5,551.9	5,544.2	18.4	12.9	165.96	173.0	261.3	954.0	928.1	25.91	36.820		
5,700.0	5,644.2	5,650.9	5,643.2	18.7	13.1	166.23	173.0	261.3	967.7	941.3	26.40	36.660		
5,800.0	5,743.6	5,750.3	5,742.6	18.9	13.3	166.42	173.0	261.3	978.1	951.3	26.84	36.448		
5,900.0	5,843.3	5,850.0	5,842.3	19.1	13.5	166.56	173.0	261.3	985.1	957.9	27.24	36.163		
6,000.0	5,943.3	5,949.9	5,942.3	19.3	13.8	166.62	173.0	261.3	988.8	961.1	27.61	35.806		
6,100.0	6,043.3	6,049.8	6,042.1	19.4	14.0	90.02	172.7	261.3	989.3	961.3	27.97	35.371		
6,200.0	6,143.3	6,148.1	6,139.9	19.5	14.1	90.54	163.7	261.4	989.4	961.1	28.28	34.987		
6,300.0	6,243.3	6,242.6	6,232.2	19.7	14.2	91.72	143.2	261.5	990.0	961.4	28.53	34.700		
6,400.0	6,343.2	6,331.9	6,316.3	19.8	14.3	-86.33	113.6	261.6	991.6	962.8	28.73	34.514		
6,500.0	6,441.9	6,418.3	6,394.0	19.9	14.3	-84.70	75.8	261.8	994.0	965.1	28.88	34.418		
6,600.0	6,537.7	6,500.0	6,463.0	20.0	14.4	-83.19	32.2	262.1	997.0	968.0	29.03	34.343		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5E-403
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5E-403	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 (ft)	Offset (ft)	Semi Major Axis (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	0.0	0.0	0.0	0.0	90.00	90.00	0.0	58.6	58.6				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	90.00	0.0	58.6	58.6	58.4	0.22	260.758	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	90.00	0.0	58.6	58.6	57.9	0.67	86.919	
300.0	300.0	300.0	300.0	0.6	0.6	90.00	90.00	0.0	58.6	58.6	57.5	1.12	52.152	
400.0	400.0	400.0	400.0	0.8	0.8	90.00	90.00	0.0	58.6	58.6	57.0	1.57	37.251	
500.0	500.0	500.0	500.0	1.0	1.0	90.00	90.00	0.0	58.6	58.6	56.6	2.02	28.973	
600.0	600.0	600.0	600.0	1.2	1.2	90.00	90.00	0.0	58.6	58.6	56.1	2.47	23.705	
700.0	700.0	700.0	700.0	1.5	1.5	90.00	90.00	0.0	58.6	58.6	55.7	2.92	20.058	
800.0	800.0	800.0	800.0	1.7	1.7	90.00	90.00	0.0	58.6	58.6	55.2	3.37	17.384 CC, ES	
900.0	900.0	900.0	900.0	1.9	1.9	167.01	167.01	0.0	58.6	60.3	56.5	3.81	15.827	
1,000.0	999.8	999.8	999.8	2.1	2.1	168.02	168.02	0.0	58.6	65.4	61.2	4.24	15.427	
1,100.0	1,099.5	1,099.5	1,099.5	2.3	2.4	169.39	169.39	0.0	58.6	74.0	69.3	4.67	15.837	
1,200.0	1,198.7	1,198.7	1,198.7	2.6	2.6	170.85	170.85	0.0	58.6	86.0	80.9	5.10	16.861	
1,300.0	1,297.5	1,297.5	1,297.5	2.9	2.8	172.20	172.20	0.0	58.6	101.0	95.4	5.53	18.250	
1,400.0	1,396.3	1,396.3	1,396.3	3.2	3.0	173.24	173.24	0.0	58.6	116.4	110.4	5.98	19.476	
1,500.0	1,495.1	1,495.1	1,495.1	3.5	3.2	174.03	174.03	0.0	58.6	131.9	125.5	6.43	20.525	
1,600.0	1,593.9	1,593.9	1,593.9	3.8	3.5	174.66	174.66	0.0	58.6	147.4	140.5	6.88	21.430	
1,700.0	1,692.7	1,692.7	1,692.7	4.2	3.7	175.17	175.17	0.0	58.6	162.9	155.5	7.33	22.219	
1,800.0	1,791.5	1,791.5	1,791.5	4.5	3.9	175.59	175.59	0.0	58.6	178.4	170.6	7.79	22.911	
1,900.0	1,890.2	1,890.2	1,890.2	4.8	4.1	175.94	175.94	0.0	58.6	193.9	185.6	8.24	23.522	
2,000.0	1,889.0	1,889.0	1,889.0	5.2	4.4	176.25	176.25	0.0	58.6	209.4	200.7	8.70	24.066	
2,100.0	2,087.8	2,093.1	2,093.1	5.5	4.6	176.25	176.25	1.2	57.7	223.9	214.7	9.17	24.420	
2,200.0	2,186.6	2,198.5	2,198.4	5.9	4.8	175.62	175.62	5.5	54.5	235.7	226.1	9.64	24.467	
2,300.0	2,285.4	2,299.4	2,299.0	6.3	5.1	174.64	174.64	11.7	49.8	245.8	235.7	10.10	24.340	
2,400.0	2,384.2	2,398.8	2,398.1	6.6	5.3	173.73	173.73	17.8	45.1	255.8	245.2	10.56	24.215	
2,500.0	2,482.9	2,498.3	2,497.2	7.0	5.5	172.90	172.90	24.0	40.4	265.9	254.9	11.03	24.097	
2,600.0	2,581.7	2,597.7	2,596.3	7.3	5.7	172.12	172.12	30.2	35.7	276.0	264.5	11.51	23.986	
2,700.0	2,680.5	2,697.1	2,695.4	7.7	6.0	171.40	171.40	36.4	31.1	286.2	274.2	11.99	23.880	
2,800.0	2,779.3	2,796.5	2,794.5	8.1	6.2	170.73	170.73	42.5	26.4	296.5	284.0	12.47	23.780	
2,900.0	2,878.1	2,895.9	2,893.7	8.4	6.5	170.11	170.11	48.7	21.7	306.7	293.8	12.95	23.684	
3,000.0	2,976.8	2,995.4	2,992.8	8.8	6.7	169.52	169.52	54.9	17.0	317.0	303.6	13.44	23.593	
3,100.0	3,075.6	3,094.8	3,091.9	9.1	6.9	168.97	168.97	61.1	12.4	327.4	313.4	13.93	23.505	
3,200.0	3,174.4	3,194.2	3,191.0	9.5	7.2	168.46	168.46	67.2	7.7	337.7	323.3	14.42	23.422	
3,300.0	3,273.2	3,293.6	3,290.1	9.9	7.4	167.98	167.98	73.4	3.0	348.1	333.2	14.91	23.342	
3,400.0	3,372.0	3,393.0	3,389.2	10.2	7.7	167.52	167.52	79.6	-1.7	358.5	343.1	15.41	23.266	
3,500.0	3,470.8	3,492.4	3,488.4	10.6	7.9	167.09	167.09	85.8	-6.3	368.9	353.0	15.91	23.193	
3,600.0	3,569.5	3,591.9	3,587.5	11.0	8.2	166.68	166.68	91.9	-11.0	379.4	363.0	16.41	23.123	
3,700.0	3,668.3	3,691.3	3,686.6	11.4	8.4	166.30	166.30	98.1	-15.7	389.8	372.9	16.91	23.056	
3,800.0	3,767.1	3,790.7	3,785.7	11.7	8.7	165.93	165.93	104.3	-20.4	400.3	382.9	17.41	22.991	
3,900.0	3,865.9	3,890.1	3,884.8	12.1	8.9	165.59	165.59	110.5	-25.0	410.8	392.9	17.92	22.929	
4,000.0	3,964.7	3,989.5	3,983.9	12.5	9.2	165.26	165.26	116.6	-29.7	421.3	402.9	18.42	22.870	
4,100.0	4,063.5	4,088.9	4,083.0	12.8	9.4	164.95	164.95	122.8	-34.4	431.9	412.9	18.93	22.813	
4,200.0	4,162.2	4,188.4	4,182.2	13.2	9.7	164.65	164.65	129.0	-39.1	442.4	423.0	19.44	22.758	
4,300.0	4,261.0	4,287.8	4,281.3	13.6	9.9	164.36	164.36	135.2	-43.8	452.9	433.0	19.95	22.705	
4,400.0	4,359.8	4,387.2	4,380.4	13.9	10.2	164.09	164.09	141.4	-48.4	463.5	443.0	20.46	22.654	
4,500.0	4,458.6	4,486.6	4,479.5	14.3	10.5	163.83	163.83	147.5	-53.1	474.1	453.1	20.97	22.605	
4,600.0	4,557.4	4,586.0	4,578.6	14.7	10.7	163.59	163.59	153.7	-57.8	484.7	463.2	21.48	22.558	
4,700.0	4,656.2	4,685.5	4,677.7	15.0	11.0	163.35	163.35	159.9	-62.5	495.2	473.2	22.00	22.512	
4,800.0	4,754.9	4,784.8	4,776.8	15.4	11.2	163.12	163.12	166.1	-67.1	505.8	483.3	22.51	22.469	
4,900.0	4,853.7	4,875.2	4,867.0	15.8	11.4	163.06	163.06	170.5	-70.5	517.3	494.4	22.95	22.540	
5,000.0	4,952.5	4,965.2	4,957.0	16.2	11.6	163.25	163.25	172.7	-72.2	530.5	507.2	23.36	22.710	

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 5E-403
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5E-403	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
5,100.0	5,051.3	5,059.5	5,051.3	16.5	11.7	163.67		173.0	-72.4	545.2	521.5	23.77	22.938	
5,200.0	5,150.1	5,158.3	5,150.1	16.9	11.9	164.12		173.0	-72.4	560.2	536.0	24.20	23.145	
5,300.0	5,248.8	5,257.1	5,248.8	17.3	12.1	164.54		173.0	-72.4	575.2	550.5	24.65	23.337	
5,400.0	5,347.6	5,355.9	5,347.6	17.6	12.3	164.94		173.0	-72.4	590.2	565.1	25.09	23.522	
5,500.0	5,446.4	5,454.7	5,446.4	18.0	12.6	165.33		173.0	-72.4	605.3	579.7	25.54	23.700	
5,600.0	5,545.2	5,553.4	5,545.2	18.4	12.8	165.69		173.0	-72.4	620.3	594.3	25.99	23.872	
5,700.0	5,644.2	5,652.4	5,644.2	18.7	13.0	166.07		173.0	-72.4	634.0	607.6	26.45	23.974	
5,800.0	5,743.6	5,751.9	5,743.6	18.9	13.2	166.34		173.0	-72.4	644.4	617.6	26.86	23.991	
5,900.0	5,843.3	5,851.6	5,843.3	19.1	13.4	166.53		173.0	-72.4	651.4	624.2	27.25	23.909	
6,000.0	5,943.3	5,951.5	5,943.3	19.3	13.6	166.62		173.0	-72.4	655.1	627.5	27.60	23.733	
6,100.0	6,043.3	6,051.5	6,043.3	19.4	13.8	90.00		173.0	-72.4	655.6	627.7	27.95	23.457	
6,200.0	6,143.3	6,151.5	6,143.3	19.5	14.0	90.00		173.0	-72.4	655.6	627.3	28.36	23.121	
6,300.0	6,243.3	6,251.5	6,243.3	19.7	14.3	90.00		173.0	-72.4	655.6	626.8	28.76	22.793	
6,400.0	6,343.2	6,351.0	6,342.6	19.8	14.4	-89.59		168.5	-72.4	655.6	626.5	29.11	22.524	
6,500.0	6,441.9	6,450.0	6,440.1	19.9	14.5	-89.44		151.5	-72.3	655.7	626.3	29.33	22.357	
6,600.0	6,537.7	6,549.1	6,534.6	20.0	14.6	-89.31		122.0	-72.1	655.7	626.2	29.49	22.235	
6,700.0	6,629.0	6,647.9	6,624.2	20.0	14.7	-89.18		80.6	-71.8	655.8	626.1	29.65	22.121	
6,800.0	6,714.2	6,746.5	6,707.6	20.1	14.8	-89.07		28.2	-71.5	655.9	626.0	29.86	21.964	
6,900.0	6,791.9	6,844.9	6,783.5	20.2	14.9	-88.97		-34.5	-71.1	656.0	625.8	30.21	21.711	
7,000.0	6,860.8	6,943.3	6,850.6	20.3	15.1	-88.90		-106.3	-70.6	656.1	625.3	30.78	21.317	
7,100.0	6,919.5	7,041.6	6,907.9	20.5	15.5	-88.84		-186.0	-70.1	656.2	624.6	31.62	20.755	
7,200.0	6,967.3	7,139.8	6,954.4	20.8	16.1	-88.80		-272.4	-69.5	656.3	623.5	32.77	20.025	
7,300.0	7,003.1	7,237.9	6,989.5	21.2	16.9	-88.78		-364.0	-69.0	656.4	622.2	34.26	19.157	
7,400.0	7,026.5	7,336.1	7,012.6	21.8	17.8	-88.78		-459.4	-68.4	656.5	620.5	36.07	18.200	
7,500.0	7,038.6	7,435.1	7,024.7	22.6	18.9	-88.79		-557.7	-67.7	656.7	618.5	38.19	17.197	
7,600.0	7,046.6	7,534.3	7,032.8	23.5	20.0	-88.80		-656.4	-67.1	656.8	616.2	40.54	16.202	
7,700.0	7,047.4	7,633.7	7,033.9	24.6	21.3	-88.83		-755.9	-66.5	656.9	613.8	43.10	15.242	
7,800.0	7,047.2	7,733.7	7,034.1	25.8	22.7	-88.86		-855.9	-65.8	657.0	611.2	45.84	14.332	
7,900.0	7,047.1	7,833.7	7,034.4	27.1	24.2	-88.89		-955.9	-65.2	657.1	608.4	48.74	13.484	
8,000.0	7,047.0	7,933.7	7,034.6	28.4	25.7	-88.92		-1,055.9	-64.5	657.3	605.5	51.75	12.700	
8,100.0	7,046.8	8,033.7	7,034.8	29.9	27.3	-88.95		-1,155.9	-63.9	657.4	602.5	54.87	11.980	
8,200.0	7,046.7	8,133.7	7,035.0	31.4	28.9	-88.98		-1,255.9	-63.3	657.5	599.4	58.08	11.320	
8,300.0	7,046.5	8,233.7	7,035.2	32.9	30.5	-89.01		-1,355.9	-62.6	657.6	596.2	61.36	10.717	
8,400.0	7,046.4	8,333.7	7,035.4	34.5	32.2	-89.04		-1,455.9	-62.0	657.7	593.0	64.71	10.165	
8,500.0	7,046.3	8,433.7	7,035.6	36.1	33.9	-89.07		-1,555.9	-61.4	657.8	589.7	68.10	9.660	
8,600.0	7,046.1	8,533.7	7,035.8	37.7	35.6	-89.10		-1,655.8	-60.7	658.0	586.4	71.54	9.197	
8,700.0	7,046.0	8,633.7	7,036.0	39.3	37.4	-89.13		-1,755.8	-60.1	658.1	583.1	75.03	8.772	
8,800.0	7,045.8	8,733.7	7,036.2	41.0	39.1	-89.16		-1,855.8	-59.4	658.2	579.7	78.54	8.381	
8,900.0	7,045.7	8,833.7	7,036.5	42.7	40.9	-89.20		-1,955.8	-58.8	658.3	576.2	82.08	8.020	
9,000.0	7,045.6	8,933.7	7,036.7	44.5	42.7	-89.23		-2,055.8	-58.2	658.4	572.8	85.65	7.687	
9,100.0	7,045.4	9,033.7	7,036.9	46.2	44.5	-89.26		-2,155.8	-57.5	658.6	569.3	89.25	7.379	
9,200.0	7,045.3	9,133.7	7,037.1	47.9	46.3	-89.29		-2,255.8	-56.9	658.7	565.8	92.86	7.093	
9,300.0	7,045.1	9,233.7	7,037.3	49.7	48.1	-89.32		-2,355.8	-56.2	658.8	562.3	96.49	6.828	
9,400.0	7,045.0	9,333.7	7,037.5	51.5	50.0	-89.35		-2,455.8	-55.6	658.9	558.8	100.14	6.580	
9,500.0	7,044.9	9,433.7	7,037.7	53.3	51.8	-89.38		-2,555.8	-55.0	659.1	555.3	103.80	6.349	
9,600.0	7,044.7	9,533.7	7,037.9	55.1	53.6	-89.41		-2,655.8	-54.3	659.2	551.7	107.47	6.133	
9,700.0	7,044.6	9,633.7	7,038.1	56.9	55.5	-89.44		-2,755.8	-53.7	659.3	548.1	111.16	5.931	
9,800.0	7,044.4	9,733.7	7,038.3	58.7	57.3	-89.47		-2,855.8	-53.1	659.4	544.6	114.85	5.741	
9,900.0	7,044.3	9,833.7	7,038.5	60.5	59.2	-89.50		-2,955.8	-52.4	659.5	541.0	118.56	5.563	
10,000.0	7,044.2	9,933.7	7,038.8	62.3	61.0	-89.53		-3,055.8	-51.8	659.7	537.4	122.27	5.395	
10,100.0	7,044.0	10,033.7	7,039.0	64.1	62.9	-89.56		-3,155.8	-51.1	659.8	533.8	126.00	5.237	

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 5E-403
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5E-403	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	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,200.0	7,043.9	10,133.7	7,039.2	66.0	64.8	-89.59	-3,255.8	-50.5	659.9	530.2	129.72	5.087		
10,300.0	7,043.7	10,233.7	7,039.4	67.8	66.6	-89.62	-3,355.8	-49.9	660.0	526.6	133.46	4.946		
10,400.0	7,043.6	10,333.7	7,039.6	69.7	68.5	-89.65	-3,455.8	-49.2	660.1	522.9	137.20	4.812		
10,500.0	7,043.5	10,433.7	7,039.8	71.5	70.4	-89.68	-3,555.8	-48.6	660.3	519.3	140.95	4.685		
10,600.0	7,043.3	10,533.7	7,040.0	73.3	72.3	-89.71	-3,655.8	-47.9	660.4	515.7	144.70	4.564		
10,700.0	7,043.2	10,633.7	7,040.2	75.2	74.1	-89.74	-3,755.8	-47.3	660.5	512.1	148.46	4.449		
10,800.0	7,043.0	10,733.7	7,040.4	77.1	76.0	-89.77	-3,855.8	-46.7	660.6	508.4	152.22	4.340		
10,900.0	7,042.9	10,833.7	7,040.6	78.9	77.9	-89.80	-3,955.8	-46.0	660.8	504.8	155.98	4.236		
11,000.0	7,042.8	10,933.7	7,040.9	80.8	79.8	-89.83	-4,055.8	-45.4	660.9	501.1	159.75	4.137		
11,100.0	7,042.6	11,033.7	7,041.1	82.7	81.7	-89.86	-4,155.8	-44.7	661.0	497.5	163.52	4.042		
11,200.0	7,042.5	11,133.7	7,041.3	84.5	83.6	-89.89	-4,255.8	-44.1	661.1	493.8	167.30	3.952		
11,300.0	7,042.3	11,233.7	7,041.5	86.4	85.5	-89.92	-4,355.8	-43.5	661.3	490.2	171.08	3.865		
11,400.0	7,042.2	11,333.7	7,041.7	88.3	87.3	-89.95	-4,455.8	-42.8	661.4	486.5	174.86	3.782		
11,500.0	7,042.1	11,433.7	7,041.9	90.1	89.2	-89.99	-4,555.8	-42.2	661.5	482.9	178.64	3.703		
11,548.4	7,042.0	11,482.1	7,042.0	91.0	90.2	-90.00	-4,604.2	-41.9	661.6	481.1	180.48	3.666 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5E-403
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5E-403	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 @ 4835.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Becker Ranch 5E-403
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 5E-403
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4835.0ft (RKB - 15')
Reference Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4835.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5E-403	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 @ 4835.0ft (RKB - 15')
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