

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Becker Ranch 5J-343**

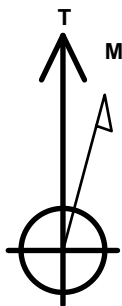
Surface Location: Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4820.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1339314.85	3256478.94	40.261170	-104.580970	

RKB - 15' WELL @ 4835.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 223'FNL & 913'FWL	1.0	0.0	0.0	Point
BHL 500'FSL & 785'FWL	6895.0	-4604.8	-100.5	Point



Azimuths to True North
Magnetic North: 8.27°

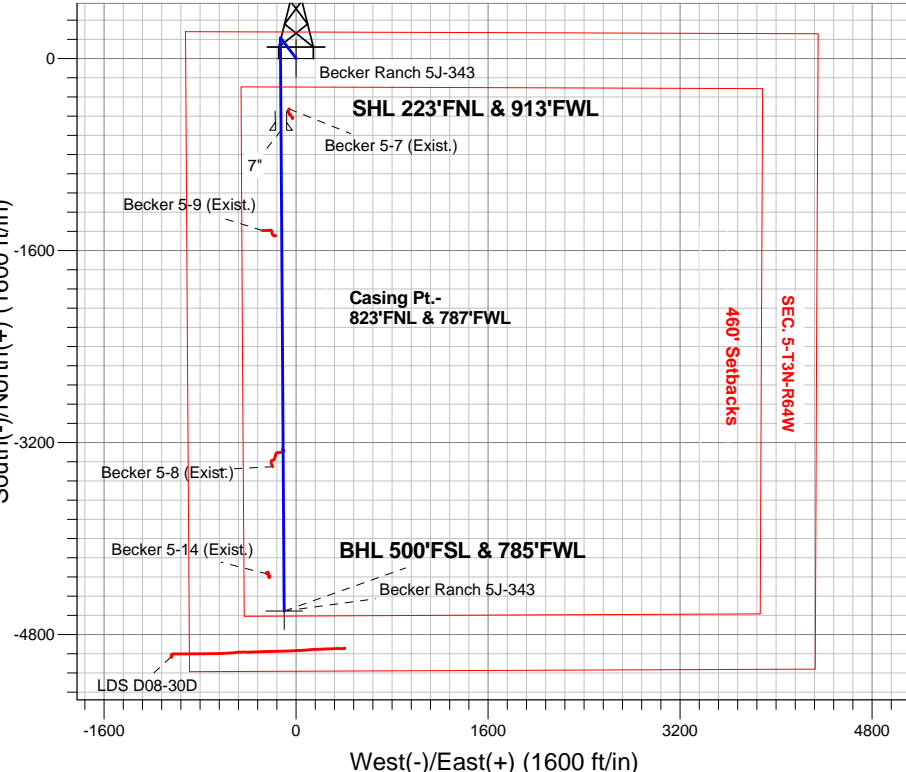
Magnetic Field
Strength: 52696.7snT
Dip Angle: 66.84°
Date: 1/26/2015
Model: IGRF2010

Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W
Becker Ranch 5J-343
Plan #2 (1-23-15)
14:07, January 26 2015

ANNOTATIONS

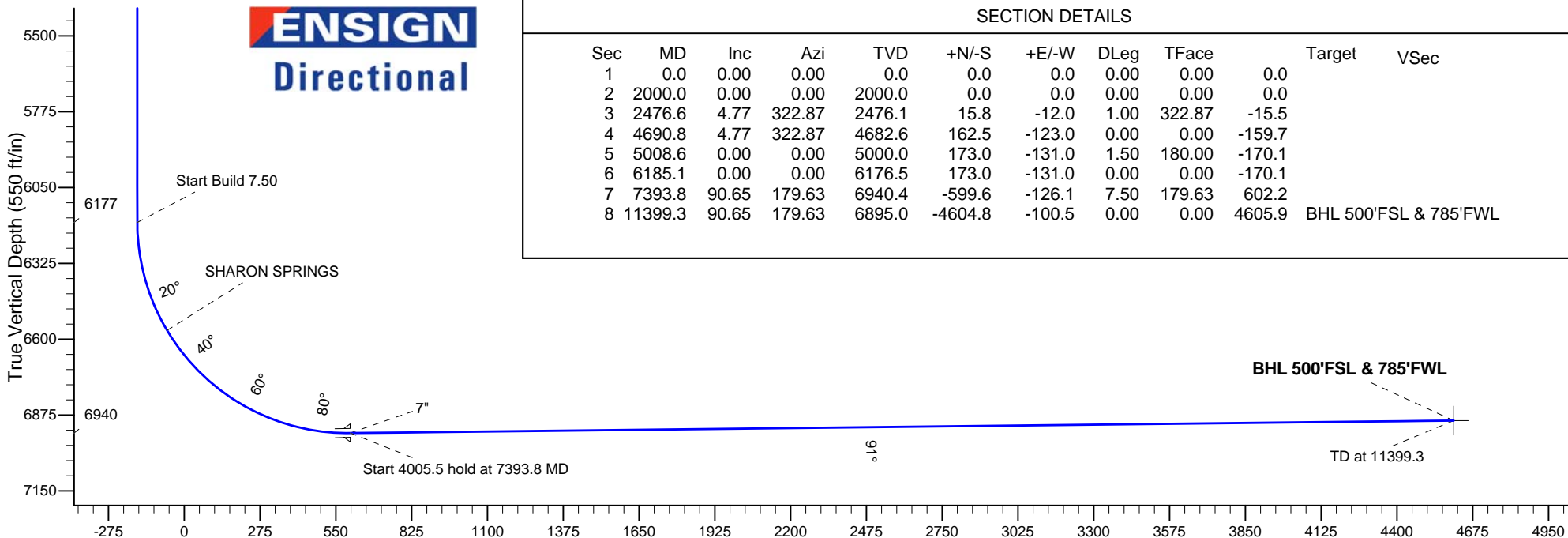
TVD	MD	Annotation
2000.0	2000.0	KOP - Start Build 1.00
4682.6	4690.8	Start Drop -1.50
6176.5	6185.1	Start Build 7.50
6940.4	7393.8	Start 4005.5 hold at 7393.8 MD
6895.0	11399.3	TD at 11399.3

South(-)/North(+) (1600 ft/in)



West(-)/East(+) (1600 ft/in)

ENSIGN
Directional



Vertical Section at 181.25° (550 ft/in)

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	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2476.6	4.77	322.87	2476.1	15.8	-12.0	1.00	322.87	-15.5	
4	4690.8	4.77	322.87	4682.6	162.5	-123.0	0.00	0.00	-159.7	
5	5008.6	0.00	0.00	5000.0	173.0	-131.0	1.50	180.00	-170.1	
6	6185.1	0.00	0.00	6176.5	173.0	-131.0	0.00	0.00	-170.1	
7	7393.8	90.65	179.63	6940.4	-599.6	-126.1	7.50	179.63	602.2	
8	11399.3	90.65	179.63	6895.0	-4604.8	-100.5	0.00	0.00	4605.9	BHL 500'FSL & 785'FWL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.5-T3N-R64W

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

Becker Ranch 5J-343

Wellbore #1

Plan: Plan #2 (1-23-15)

Standard Planning Report

26 January, 2015

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5J-343
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 5J-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-23-15)		

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:			1,339,314.26ft			Latitude:			40.261170		
From:			Lat/Long			Easting:			3,256,420.34ft			Longitude:			-104.581180		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.59 °		

Well	Becker Ranch 5J-343					
Well Position	+N-S	0.0 ft	Northing:	1,339,314.85 ft	Latitude:	40.261170
	+E-W	58.6 ft	Easting:	3,256,478.94 ft	Longitude:	-104.580970
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	1/26/2015	8.27	66.84	52,697

Design	Plan #2 (1-23-15)			
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	181.25

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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,476.6	4.77	322.87	2,476.1	15.8	-12.0	1.00	1.00	0.00	322.87	
4,690.8	4.77	322.87	4,682.6	162.5	-123.0	0.00	0.00	0.00	0.00	
5,008.6	0.00	0.00	5,000.0	173.0	-131.0	1.50	-1.50	0.00	180.00	
6,185.1	0.00	0.00	6,176.5	173.0	-131.0	0.00	0.00	0.00	0.00	
7,393.8	90.65	179.63	6,940.4	-599.6	-126.1	7.50	7.50	0.00	179.63	
11,399.3	90.65	179.63	6,895.0	-4,604.8	-100.5	0.00	0.00	0.00	0.00	BHL 500'FSL & 785

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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 5J-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-23-15)		

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 & 913°FNL									
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
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.00									
2,100.0	1.00	322.87	2,100.0	0.7	-0.5	-0.7	1.00	1.00	0.00
2,200.0	2.00	322.87	2,200.0	2.8	-2.1	-2.7	1.00	1.00	0.00
2,300.0	3.00	322.87	2,299.9	6.3	-4.7	-6.2	1.00	1.00	0.00
2,400.0	4.00	322.87	2,399.7	11.1	-8.4	-10.9	1.00	1.00	0.00
2,476.6	4.77	322.87	2,476.1	15.8	-12.0	-15.5	1.00	1.00	0.00
2,500.0	4.77	322.87	2,499.4	17.3	-13.1	-17.1	0.00	0.00	0.00
2,600.0	4.77	322.87	2,599.0	24.0	-18.1	-23.6	0.00	0.00	0.00
2,700.0	4.77	322.87	2,698.7	30.6	-23.2	-30.1	0.00	0.00	0.00
2,800.0	4.77	322.87	2,798.3	37.2	-28.2	-36.6	0.00	0.00	0.00
2,900.0	4.77	322.87	2,898.0	43.8	-33.2	-43.1	0.00	0.00	0.00
3,000.0	4.77	322.87	2,997.6	50.5	-38.2	-49.6	0.00	0.00	0.00
3,100.0	4.77	322.87	3,097.3	57.1	-43.2	-56.1	0.00	0.00	0.00
3,200.0	4.77	322.87	3,196.9	63.7	-48.2	-62.6	0.00	0.00	0.00
3,300.0	4.77	322.87	3,296.6	70.3	-53.3	-69.2	0.00	0.00	0.00
3,400.0	4.77	322.87	3,396.3	77.0	-58.3	-75.7	0.00	0.00	0.00
3,500.0	4.77	322.87	3,495.9	83.6	-63.3	-82.2	0.00	0.00	0.00
3,600.0	4.77	322.87	3,595.6	90.2	-68.3	-88.7	0.00	0.00	0.00
3,700.0	4.77	322.87	3,695.2	96.8	-73.3	-95.2	0.00	0.00	0.00
3,704.8	4.77	322.87	3,700.0	97.2	-73.6	-95.5	0.00	0.00	0.00
PARKMAN									
3,800.0	4.77	322.87	3,794.9	103.5	-78.3	-101.7	0.00	0.00	0.00
3,900.0	4.77	322.87	3,894.5	110.1	-83.4	-108.2	0.00	0.00	0.00
4,000.0	4.77	322.87	3,994.2	116.7	-88.4	-114.8	0.00	0.00	0.00
4,100.0	4.77	322.87	4,093.8	123.3	-93.4	-121.3	0.00	0.00	0.00
4,200.0	4.77	322.87	4,193.5	130.0	-98.4	-127.8	0.00	0.00	0.00
4,300.0	4.77	322.87	4,293.1	136.6	-103.4	-134.3	0.00	0.00	0.00
4,400.0	4.77	322.87	4,392.8	143.2	-108.4	-140.8	0.00	0.00	0.00
4,407.2	4.77	322.87	4,400.0	143.7	-108.8	-141.3	0.00	0.00	0.00
SUSSEX									

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Site:	Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5J-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-23-15)		

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	4.77	322.87	4,492.5	149.8	-113.5	-147.3	0.00	0.00	0.00
4,600.0	4.77	322.87	4,592.1	156.5	-118.5	-153.8	0.00	0.00	0.00
4,690.8	4.77	322.87	4,682.6	162.5	-123.0	-159.7	0.00	0.00	0.00
Start Drop -1.50									
4,700.0	4.63	322.87	4,691.8	163.1	-123.5	-160.3	1.50	-1.50	0.00
4,800.0	3.13	322.87	4,791.5	168.5	-127.6	-165.6	1.50	-1.50	0.00
4,900.0	1.63	322.87	4,891.4	171.8	-130.1	-168.9	1.50	-1.50	0.00
5,000.0	0.13	322.87	4,991.4	173.0	-131.0	-170.1	1.50	-1.50	0.00
5,008.6	0.00	0.00	5,000.0	173.0	-131.0	-170.1	1.50	-1.50	0.00
5,100.0	0.00	0.00	5,091.4	173.0	-131.0	-170.1	0.00	0.00	0.00
5,108.6	0.00	0.00	5,100.0	173.0	-131.0	-170.1	0.00	0.00	0.00
SHANNON									
5,200.0	0.00	0.00	5,191.4	173.0	-131.0	-170.1	0.00	0.00	0.00
5,300.0	0.00	0.00	5,291.4	173.0	-131.0	-170.1	0.00	0.00	0.00
5,400.0	0.00	0.00	5,391.4	173.0	-131.0	-170.1	0.00	0.00	0.00
5,500.0	0.00	0.00	5,491.4	173.0	-131.0	-170.1	0.00	0.00	0.00
5,600.0	0.00	0.00	5,591.4	173.0	-131.0	-170.1	0.00	0.00	0.00
5,700.0	0.00	0.00	5,691.4	173.0	-131.0	-170.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,791.4	173.0	-131.0	-170.1	0.00	0.00	0.00
5,900.0	0.00	0.00	5,891.4	173.0	-131.0	-170.1	0.00	0.00	0.00
6,000.0	0.00	0.00	5,991.4	173.0	-131.0	-170.1	0.00	0.00	0.00
6,100.0	0.00	0.00	6,091.4	173.0	-131.0	-170.1	0.00	0.00	0.00
6,185.1	0.00	0.00	6,176.5	173.0	-131.0	-170.1	0.00	0.00	0.00
Start Build 7.50									
6,200.0	1.12	179.63	6,191.4	172.9	-131.0	-170.0	7.49	7.49	0.00
6,300.0	8.62	179.63	6,291.0	164.4	-130.9	-161.5	7.50	7.50	0.00
6,400.0	16.12	179.63	6,388.6	143.0	-130.8	-140.1	7.50	7.50	0.00
6,500.0	23.62	179.63	6,482.6	109.0	-130.6	-106.1	7.50	7.50	0.00
6,596.1	30.82	179.63	6,568.0	65.1	-130.3	-62.2	7.50	7.50	0.00
SHARON SPRINGS									
6,600.0	31.12	179.63	6,571.3	63.1	-130.3	-60.2	7.50	7.50	0.00
6,700.0	38.62	179.63	6,653.3	6.0	-129.9	-3.1	7.50	7.50	0.00
6,800.0	46.12	179.63	6,727.2	-61.4	-129.5	64.2	7.50	7.50	0.00
6,900.0	53.62	179.63	6,791.6	-137.8	-129.0	140.6	7.50	7.50	0.00
7,000.0	61.12	179.63	6,845.5	-221.9	-128.5	224.7	7.50	7.50	0.00
7,100.0	68.62	179.63	6,887.9	-312.4	-127.9	315.1	7.50	7.50	0.00
7,200.0	76.12	179.63	6,918.2	-407.6	-127.3	410.3	7.50	7.50	0.00
7,300.0	83.62	179.63	6,935.8	-506.0	-126.7	508.6	7.50	7.50	0.00
7,393.8	90.65	179.63	6,940.4	-599.6	-126.1	602.2	7.50	7.50	0.00
Start 4005.5 hold at 7393.8 MD - 7"									
7,400.0	90.65	179.63	6,940.4	-605.8	-126.0	608.4	0.00	0.00	0.00
7,500.0	90.65	179.63	6,939.2	-705.8	-125.4	708.4	0.00	0.00	0.00
7,600.0	90.65	179.63	6,938.1	-805.8	-124.8	808.3	0.00	0.00	0.00
7,700.0	90.65	179.63	6,937.0	-905.8	-124.1	908.3	0.00	0.00	0.00
7,800.0	90.65	179.63	6,935.8	-1,005.8	-123.5	1,008.2	0.00	0.00	0.00
7,900.0	90.65	179.63	6,934.7	-1,105.8	-122.8	1,108.2	0.00	0.00	0.00
8,000.0	90.65	179.63	6,933.6	-1,205.8	-122.2	1,208.1	0.00	0.00	0.00
8,100.0	90.65	179.63	6,932.4	-1,305.8	-121.6	1,308.1	0.00	0.00	0.00
8,200.0	90.65	179.63	6,931.3	-1,405.7	-120.9	1,408.0	0.00	0.00	0.00
8,300.0	90.65	179.63	6,930.2	-1,505.7	-120.3	1,508.0	0.00	0.00	0.00
8,400.0	90.65	179.63	6,929.0	-1,605.7	-119.6	1,608.0	0.00	0.00	0.00
8,500.0	90.65	179.63	6,927.9	-1,705.7	-119.0	1,707.9	0.00	0.00	0.00

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Wellbore:	Wellbore #1		
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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)
8,600.0	90.65	179.63	6,926.8	-1,805.7	-118.4	1,807.9	0.00	0.00	0.00
8,700.0	90.65	179.63	6,925.6	-1,905.7	-117.7	1,907.8	0.00	0.00	0.00
8,800.0	90.65	179.63	6,924.5	-2,005.7	-117.1	2,007.8	0.00	0.00	0.00
8,900.0	90.65	179.63	6,923.4	-2,105.7	-116.4	2,107.7	0.00	0.00	0.00
9,000.0	90.65	179.63	6,922.2	-2,205.7	-115.8	2,207.7	0.00	0.00	0.00
9,100.0	90.65	179.63	6,921.1	-2,305.7	-115.2	2,307.6	0.00	0.00	0.00
9,200.0	90.65	179.63	6,919.9	-2,405.7	-114.5	2,407.6	0.00	0.00	0.00
9,300.0	90.65	179.63	6,918.8	-2,505.6	-113.9	2,507.5	0.00	0.00	0.00
9,400.0	90.65	179.63	6,917.7	-2,605.6	-113.3	2,607.5	0.00	0.00	0.00
9,500.0	90.65	179.63	6,916.5	-2,705.6	-112.6	2,707.4	0.00	0.00	0.00
9,600.0	90.65	179.63	6,915.4	-2,805.6	-112.0	2,807.4	0.00	0.00	0.00
9,700.0	90.65	179.63	6,914.3	-2,905.6	-111.3	2,907.4	0.00	0.00	0.00
9,800.0	90.65	179.63	6,913.1	-3,005.6	-110.7	3,007.3	0.00	0.00	0.00
9,900.0	90.65	179.63	6,912.0	-3,105.6	-110.1	3,107.3	0.00	0.00	0.00
10,000.0	90.65	179.63	6,910.9	-3,205.6	-109.4	3,207.2	0.00	0.00	0.00
10,100.0	90.65	179.63	6,909.7	-3,305.6	-108.8	3,307.2	0.00	0.00	0.00
10,200.0	90.65	179.63	6,908.6	-3,405.6	-108.1	3,407.1	0.00	0.00	0.00
10,300.0	90.65	179.63	6,907.5	-3,505.6	-107.5	3,507.1	0.00	0.00	0.00
10,400.0	90.65	179.63	6,906.3	-3,605.6	-106.9	3,607.0	0.00	0.00	0.00
10,500.0	90.65	179.63	6,905.2	-3,705.5	-106.2	3,707.0	0.00	0.00	0.00
10,600.0	90.65	179.63	6,904.1	-3,805.5	-105.6	3,806.9	0.00	0.00	0.00
10,700.0	90.65	179.63	6,902.9	-3,905.5	-105.0	3,906.9	0.00	0.00	0.00
10,800.0	90.65	179.63	6,901.8	-4,005.5	-104.3	4,006.8	0.00	0.00	0.00
10,900.0	90.65	179.63	6,900.7	-4,105.5	-103.7	4,106.8	0.00	0.00	0.00
11,000.0	90.65	179.63	6,899.5	-4,205.5	-103.0	4,206.8	0.00	0.00	0.00
11,100.0	90.65	179.63	6,898.4	-4,305.5	-102.4	4,306.7	0.00	0.00	0.00
11,200.0	90.65	179.63	6,897.3	-4,405.5	-101.8	4,406.7	0.00	0.00	0.00
11,300.0	90.65	179.63	6,896.1	-4,505.5	-101.1	4,506.6	0.00	0.00	0.00
11,399.3	90.65	179.63	6,895.0	-4,604.8	-100.5	4,605.9	0.00	0.00	0.00

TD at 11399.3 - BHL 500'FSL & 785'FWL

Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
BHL 500'FSL & 785'F	0.00	0.00	6,895.0	-4,604.8	-100.5	1,334,709.49	3,256,426.18	40.248530	-104.581330
- plan hits target center									
- Point									
SHL 223'FNL & 913'F	0.00	0.00	1.0	0.0	0.0	1,339,314.86	3,256,478.94	40.261170	-104.580970
- plan hits target center									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,393.8	6,940.4	7"	7	7-1/2

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5J-343
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 5J-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-23-15)		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,704.8	3,700.0	PARKMAN		0.00	
4,407.2	4,400.0	SUSSEX		0.00	
5,108.6	5,100.0	SHANNON		0.00	
6,596.1	6,568.0	SHARON SPRINGS		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,000.0	2,000.0	0.0	0.0	KOP - Start Build 1.00
4,690.8	4,682.6	162.5	-123.0	Start Drop -1.50
6,185.1	6,176.5	173.0	-131.0	Start Build 7.50
7,393.8	6,940.4	-599.6	-126.1	Start 4005.5 hold at 7393.8 MD
11,399.3	6,895.0	-4,604.8	-100.5	TD at 11399.3



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.5-T3N-R64W

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

Becker Ranch 5J-343

Wellbore #1

Plan #2 (1-23-15)

Anticollision Report

26 January, 2015



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #2 (1-23-15)		
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	1/26/2015		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,398.6	Plan #2 (1-23-15) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W						
Becker Ranch 5E-223 - Wellbore #1 - Plan #2 (1-23-15)	1,500.0	1,500.0	30.7	24.2	4.710	CC, ES
Becker Ranch 5E-223 - Wellbore #1 - Plan #2 (1-23-15)	11,399.3	11,326.9	337.8	161.6	1.917	SF
Becker Ranch 5E-403 - Wellbore #1 - Plan #2 (1-23-15)	800.0	800.0	58.6	55.2	17.384	CC, ES
Becker Ranch 5E-403 - Wellbore #1 - Plan #2 (1-23-15)	11,399.3	11,545.4	677.7	501.9	3.855	SF
Becker Ranch 5J-103 - Wellbore #1 - Plan #2 (1-23-15)	1,000.0	999.0	30.7	26.4	7.193	CC, ES
Becker Ranch 5J-103 - Wellbore #1 - Plan #2 (1-23-15)	11,399.3	11,250.8	351.6	181.5	2.067	SF
Existing Wells Sec.5-T3N-R64W						
Becker 5-14 (Exist.) - Wellbore #1 - Wellbore #1	11,100.8	6,821.0	126.1	29.1	1.300	Level 3, CC, ES, SF
Becker 5-7 (Exist.) - Wellbore #1 - Wellbore #1	7,215.6	6,911.9	69.2	36.7	2.130	CC, ES, SF
Becker 5-8 (Exist.) - Wellbore #1 - Wellbore #1	10,174.5	6,848.3	97.2	16.0	1.198	Level 2, CC, ES, SF
Becker 5-9 (Exist.) - Wellbore #1 - Wellbore #1	8,227.5	6,898.2	155.0	108.2	3.310	CC, ES, SF
LDS D08-30D Pad Sec.5-T3N-R64W						
LDS D08-30D - Wellbore #1 - Wellbore #1						Out of range

Offset Design												
Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-223 - Wellbore #1 - Plan #2 (1-23-15)												
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	-90.00	0.0	-30.7	30.7			
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-30.7	30.7	30.5	0.22	136.588
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-30.7	30.7	30.0	0.67	45.529
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-30.7	30.7	29.6	1.12	27.318
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-30.7	30.7	29.1	1.57	19.513
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-30.7	30.7	28.7	2.02	15.176
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-30.7	30.7	28.2	2.47	12.417
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	0.0	-30.7	30.7	27.8	2.92	10.507
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-30.7	30.7	27.3	3.37	9.106
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-30.7	30.7	26.9	3.82	8.035
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-30.7	30.7	26.4	4.27	7.189
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-90.00	0.0	-30.7	30.7	26.0	4.72	6.504

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-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-223 - Wellbore #1 - Plan #2 (1-23-15)													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
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-90.00		0.0	-30.7	30.7	25.5	5.17	5.939	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.00		0.0	-30.7	30.7	25.1	5.62	5.464	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.00		0.0	-30.7	30.7	24.6	6.07	5.059	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-90.00		0.0	-30.7	30.7	24.2	6.52	4.710 CC, ES	
1,600.0	1,600.0	1,599.5	1,599.5	3.5	3.5	-89.41		0.3	-31.5	31.5	24.5	6.96	4.528	
1,700.0	1,700.0	1,698.9	1,698.9	3.7	3.7	-87.81		1.3	-33.9	33.9	26.6	7.39	4.593	
1,800.0	1,800.0	1,798.2	1,798.1	3.9	3.9	-85.61		2.9	-37.9	38.1	30.2	7.83	4.862	
1,900.0	1,900.0	1,897.4	1,897.1	4.2	4.1	-83.23		5.2	-43.5	43.9	35.6	8.26	5.309	
2,000.0	2,000.0	1,996.3	1,995.7	4.4	4.3	-80.96		8.0	-50.6	51.4	42.7	8.71	5.908	
2,100.0	2,100.0	2,095.0	2,093.9	4.6	4.6	-42.33		11.6	-59.3	60.1	51.0	9.13	6.581	
2,200.0	2,200.0	2,193.5	2,191.8	4.8	4.8	-41.88		15.7	-69.6	69.2	59.6	9.56	7.233	
2,300.0	2,299.9	2,291.8	2,289.2	5.0	5.1	-42.12		20.5	-81.3	78.6	68.6	10.00	7.866	
2,400.0	2,399.7	2,390.5	2,386.9	5.3	5.3	-42.86		25.8	-94.6	88.3	77.9	10.43	8.467	
2,476.6	2,476.1	2,466.8	2,462.4	5.4	5.6	-43.78		30.0	-105.0	95.2	84.4	10.77	8.835	
2,500.0	2,499.4	2,490.1	2,485.4	5.5	5.6	-44.11		31.3	-108.2	97.1	86.3	10.88	8.931	
2,600.0	2,599.0	2,589.7	2,583.9	5.7	5.9	-45.39		36.9	-121.9	105.6	94.3	11.33	9.320	
2,700.0	2,698.7	2,689.3	2,682.5	6.0	6.2	-46.49		42.4	-135.5	114.1	102.3	11.79	9.679	
2,800.0	2,798.3	2,788.9	2,781.0	6.2	6.5	-47.42		47.9	-149.2	122.7	110.4	12.26	10.010	
2,900.0	2,898.0	2,888.5	2,879.5	6.4	6.8	-48.24		53.4	-162.8	131.3	118.5	12.73	10.315	
3,000.0	2,997.6	2,988.1	2,978.0	6.7	7.1	-48.96		58.9	-176.4	139.9	126.7	13.20	10.597	
3,100.0	3,097.3	3,087.8	3,076.5	6.9	7.5	-49.59		64.4	-190.1	148.5	134.8	13.68	10.857	
3,200.0	3,196.9	3,187.4	3,175.1	7.2	7.8	-50.16		69.9	-203.7	157.1	143.0	14.16	11.098	
3,300.0	3,296.6	3,287.0	3,273.6	7.4	8.1	-50.66		75.5	-217.4	165.8	151.2	14.64	11.322	
3,400.0	3,396.3	3,386.6	3,372.1	7.7	8.4	-51.12		81.0	-231.0	174.5	159.3	15.13	11.529	
3,500.0	3,495.9	3,486.2	3,470.6	7.9	8.8	-51.53		86.5	-244.7	183.1	167.5	15.62	11.723	
3,600.0	3,595.6	3,585.8	3,569.2	8.2	9.1	-51.90		92.0	-258.3	191.8	175.7	16.12	11.903	
3,700.0	3,695.2	3,685.4	3,667.7	8.4	9.4	-52.24		97.5	-271.9	200.5	183.9	16.61	12.071	
3,800.0	3,794.9	3,785.1	3,766.2	8.7	9.8	-52.56		103.0	-285.6	209.2	192.1	17.11	12.228	
3,900.0	3,894.5	3,884.7	3,864.7	8.9	10.1	-52.85		108.5	-299.2	217.9	200.3	17.61	12.375	
4,000.0	3,994.2	3,984.3	3,963.2	9.2	10.4	-53.11		114.1	-312.9	226.6	208.5	18.11	12.514	
4,100.0	4,093.8	4,083.9	4,061.8	9.5	10.8	-53.36		119.6	-326.5	235.4	216.7	18.61	12.643	
4,200.0	4,193.5	4,183.5	4,160.3	9.7	11.1	-53.59		125.1	-340.2	244.1	225.0	19.12	12.765	
4,300.0	4,293.1	4,283.1	4,258.8	10.0	11.5	-53.80		130.6	-353.8	252.8	233.2	19.63	12.880	
4,400.0	4,392.8	4,382.7	4,357.3	10.2	11.8	-54.00		136.1	-367.4	261.5	241.4	20.13	12.989	
4,500.0	4,492.5	4,482.4	4,455.9	10.5	12.2	-54.19		141.6	-381.1	270.3	249.6	20.64	13.092	
4,600.0	4,592.1	4,582.0	4,554.4	10.8	12.5	-54.36		147.1	-394.7	279.0	257.8	21.15	13.189	
4,690.8	4,682.6	4,672.4	4,643.9	11.0	12.8	-54.51		152.2	-407.1	286.9	265.3	21.62	13.272	
4,700.0	4,691.8	4,681.6	4,652.9	11.0	12.8	-54.53		152.7	-408.4	287.7	266.1	21.66	13.282	
4,800.0	4,791.5	4,782.3	4,752.5	11.2	13.2	-54.56		158.2	-422.1	297.3	275.2	22.11	13.448	
4,900.0	4,891.4	4,889.6	4,858.9	11.4	13.5	-54.30		163.4	-435.0	306.8	284.3	22.50	13.633	
5,008.6	5,000.0	5,006.5	4,975.3	11.6	13.7	-90.94		167.8	-445.9	315.9	293.0	22.88	13.807	
5,100.0	5,091.4	5,105.4	5,073.8	11.8	13.9	-90.45		170.5	-452.5	322.0	298.8	23.23	13.863	
5,200.0	5,191.4	5,213.8	5,182.1	12.0	14.1	-90.12		172.3	-457.0	326.1	302.5	23.63	13.805	
5,300.0	5,291.4	5,322.4	5,290.7	12.2	14.3	-90.00		173.0	-458.7	327.7	303.7	24.03	13.638	
5,400.0	5,391.4	5,423.1	5,391.4	12.4	14.5	-90.00		173.0	-458.7	327.7	303.3	24.43	13.411	
5,500.0	5,491.4	5,523.1	5,491.4	12.6	14.6	-90.00		173.0	-458.7	327.7	302.8	24.85	13.186	
5,600.0	5,591.4	5,623.1	5,591.4	12.8	14.8	-90.00		173.0	-458.7	327.7	302.4	25.27	12.967	
5,700.0	5,691.4	5,723.1	5,691.4	13.0	15.0	-90.00		173.0	-458.7	327.7	302.0	25.69	12.756	
5,800.0	5,791.4	5,823.1	5,791.4	13.2	15.2	-90.00		173.0	-458.7	327.7	301.6	26.11	12.550	
5,900.0	5,891.4	5,923.1	5,891.4	13.5	15.4	-90.00		173.0	-458.7	327.7	301.2	26.53	12.351	
6,000.0	5,991.4	6,023.1	5,991.4	13.7	15.6	-90.00		173.0	-458.7	327.7	300.7	26.96	12.157	

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-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-223 - Wellbore #1 - Plan #2 (1-23-15)													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
6,100.0	6,091.4	6,123.1	6,091.5	13.9	15.7	-90.01		172.9	-458.7	327.7	300.3	27.38	11.970	
6,144.8	6,136.2	6,167.9	6,136.2	14.0	15.8	-90.35		171.0	-458.7	327.7	300.1	27.56	11.890	
6,185.1	6,176.5	6,208.0	6,176.1	14.1	15.9	-91.03		167.1	-458.7	327.7	300.0	27.73	11.819	
6,200.0	6,191.4	6,222.7	6,190.6	14.1	15.9	89.01		165.1	-458.7	327.7	299.9	27.80	11.790	
6,250.0	6,241.3	6,271.7	6,238.9	14.2	15.9	87.94		156.6	-458.6	327.9	299.9	27.97	11.726	
6,300.0	6,291.0	6,320.4	6,286.2	14.2	16.0	86.89		145.0	-458.5	328.2	300.1	28.11	11.675	
6,350.0	6,340.2	6,368.7	6,332.3	14.3	16.0	85.85		130.6	-458.4	328.6	300.3	28.23	11.639	
6,400.0	6,388.6	6,416.6	6,377.0	14.3	16.0	84.84		113.4	-458.3	329.1	300.7	28.33	11.614	
6,450.0	6,436.2	6,464.3	6,420.3	14.4	16.1	83.85		93.6	-458.2	329.6	301.2	28.42	11.598	
6,500.0	6,482.6	6,511.6	6,462.1	14.4	16.1	82.90		71.3	-458.1	330.3	301.8	28.50	11.590	
6,550.0	6,527.7	6,558.6	6,502.1	14.5	16.1	81.97		46.7	-457.9	331.0	302.4	28.57	11.585	
6,600.0	6,571.3	6,605.3	6,540.2	14.5	16.2	81.09		19.7	-457.8	331.8	303.1	28.65	11.581	
6,650.0	6,613.3	6,651.8	6,576.5	14.6	16.2	80.25		-9.3	-457.6	332.6	303.9	28.74	11.573	
6,700.0	6,653.3	6,698.0	6,610.8	14.6	16.3	79.45		-40.3	-457.4	333.5	304.6	28.86	11.555	
6,750.0	6,691.3	6,744.0	6,642.9	14.6	16.3	78.70		-73.1	-457.2	334.3	305.3	29.01	11.525	
6,800.0	6,727.2	6,789.7	6,672.9	14.7	16.4	77.99		-107.7	-457.0	335.2	306.0	29.20	11.477	
6,850.0	6,760.6	6,835.3	6,700.7	14.8	16.5	77.34		-143.8	-456.8	336.0	306.6	29.45	11.409	
6,900.0	6,791.6	6,880.6	6,726.1	15.0	16.6	76.73		-181.3	-456.6	336.9	307.1	29.77	11.316	
6,950.0	6,819.9	6,925.8	6,749.2	15.2	16.8	76.18		-220.2	-456.3	337.6	307.5	30.15	11.197	
7,000.0	6,845.5	6,970.9	6,769.9	15.5	17.0	75.69		-260.2	-456.1	338.4	307.8	30.62	11.050	
7,050.0	6,868.2	7,015.8	6,788.1	15.8	17.2	75.25		-301.2	-455.8	339.1	307.9	31.18	10.875	
7,100.0	6,887.9	7,060.6	6,803.9	16.2	17.5	74.87		-343.2	-455.6	339.7	307.9	31.82	10.673	
7,150.0	6,904.6	7,105.3	6,817.2	16.6	17.8	74.54		-385.9	-455.3	340.2	307.6	32.56	10.448	
7,200.0	6,918.2	7,150.0	6,827.9	17.1	18.2	74.28		-429.2	-455.1	340.7	307.3	33.39	10.202	
7,250.0	6,928.6	7,194.5	6,836.0	17.6	18.6	74.07		-473.0	-454.8	341.0	306.7	34.31	9.938	
7,300.0	6,935.8	7,239.0	6,841.6	18.1	19.1	73.92		-517.1	-454.5	341.3	306.0	35.32	9.663	
7,350.0	6,939.7	7,283.5	6,844.6	18.6	19.5	73.83		-561.5	-454.3	341.5	305.1	36.40	9.381	
7,393.8	6,940.4	7,323.0	6,845.2	19.2	20.0	73.80		-601.0	-454.0	341.5	304.1	37.41	9.129	
7,400.0	6,940.4	7,329.2	6,845.1	19.2	20.1	73.80		-607.2	-454.0	341.5	304.0	37.56	9.093	
7,500.0	6,939.2	7,429.2	6,844.5	20.5	21.3	73.89		-707.2	-453.4	341.4	301.4	40.02	8.531	
7,600.0	6,938.1	7,529.2	6,843.9	21.9	22.6	73.97		-807.2	-452.8	341.3	298.6	42.66	8.000	
7,700.0	6,937.0	7,629.2	6,843.2	23.3	24.0	74.05		-907.2	-452.2	341.2	295.7	45.46	7.506	
7,800.0	6,935.8	7,729.2	6,842.6	24.8	25.4	74.14		-1,007.2	-451.6	341.1	292.7	48.38	7.051	
7,900.0	6,934.7	7,829.2	6,842.0	26.3	27.0	74.22		-1,107.2	-451.0	341.0	289.6	51.40	6.634	
8,000.0	6,933.6	7,929.2	6,841.3	27.9	28.5	74.30		-1,207.2	-450.4	340.9	286.4	54.52	6.252	
8,100.0	6,932.4	8,029.2	6,840.7	29.6	30.1	74.39		-1,307.2	-449.8	340.8	283.1	57.71	5.905	
8,200.0	6,931.3	8,129.2	6,840.1	31.3	31.8	74.47		-1,407.1	-449.2	340.7	279.7	60.97	5.588	
8,300.0	6,930.2	8,229.2	6,839.5	32.9	33.5	74.56		-1,507.1	-448.6	340.6	276.3	64.28	5.299	
8,400.0	6,929.0	8,329.2	6,838.8	34.7	35.2	74.64		-1,607.1	-448.0	340.5	272.8	67.64	5.034	
8,500.0	6,927.9	8,429.2	6,838.2	36.4	36.9	74.72		-1,707.1	-447.4	340.4	269.4	71.03	4.792	
8,600.0	6,926.8	8,529.2	6,837.6	38.2	38.6	74.81		-1,807.1	-446.8	340.3	265.8	74.47	4.570	
8,700.0	6,925.6	8,629.2	6,837.0	39.9	40.4	74.89		-1,907.1	-446.2	340.2	262.3	77.93	4.365	
8,800.0	6,924.5	8,729.2	6,836.3	41.7	42.1	74.97		-2,007.1	-445.5	340.1	258.7	81.42	4.177	
8,900.0	6,923.4	8,829.2	6,835.7	43.5	43.9	75.06		-2,107.1	-444.9	340.0	255.1	84.94	4.003	
9,000.0	6,922.2	8,929.2	6,835.1	45.3	45.7	75.14		-2,207.1	-444.3	339.9	251.4	88.47	3.842	
9,100.0	6,921.1	9,029.2	6,834.4	47.1	47.5	75.23		-2,307.1	-443.7	339.8	247.8	92.03	3.692	
9,200.0	6,919.9	9,129.2	6,833.8	49.0	49.3	75.31		-2,407.1	-443.1	339.7	244.1	95.61	3.553	
9,300.0	6,918.8	9,229.2	6,833.2	50.8	51.1	75.39		-2,507.1	-442.5	339.6	240.4	99.20	3.424	
9,400.0	6,917.7	9,329.2	6,832.6	52.6	53.0	75.48		-2,607.1	-441.9	339.5	236.7	102.80	3.303	
9,500.0	6,916.5	9,429.2	6,831.9	54.5	54.8	75.56		-2,707.1	-441.3	339.4	233.0	106.42	3.190	
9,600.0	6,915.4	9,529.2	6,831.3	56.3	56.6	75.65		-2,807.1	-440.7	339.3	229.3	110.05	3.084	

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-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-223 - Wellbore #1 - Plan #2 (1-23-15)													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	
9,700.0	6,914.3	9,629.2	6,830.7	58.2	58.5	75.73	-2,907.1	-440.1	339.2	225.6	113.69	2.984		
9,800.0	6,913.1	9,729.2	6,830.0	60.0	60.3	75.82	-3,007.1	-439.5	339.2	221.8	117.34	2.890		
9,900.0	6,912.0	9,829.2	6,829.4	61.9	62.2	75.90	-3,107.1	-438.9	339.1	218.1	121.00	2.802		
10,000.0	6,910.9	9,929.2	6,828.8	63.8	64.0	75.98	-3,207.1	-438.3	339.0	214.3	124.67	2.719		
10,100.0	6,909.7	10,029.2	6,828.2	65.6	65.9	76.07	-3,307.1	-437.7	338.9	210.5	128.35	2.640		
10,200.0	6,908.6	10,129.2	6,827.5	67.5	67.8	76.15	-3,407.0	-437.1	338.8	206.8	132.04	2.566		
10,300.0	6,907.5	10,229.2	6,826.9	69.4	69.6	76.24	-3,507.0	-436.5	338.7	203.0	135.73	2.495		
10,400.0	6,906.3	10,329.2	6,826.3	71.3	71.5	76.32	-3,607.0	-435.9	338.6	199.2	139.43	2.429		
10,500.0	6,905.2	10,429.2	6,825.6	73.1	73.4	76.41	-3,707.0	-435.3	338.5	195.4	143.14	2.365		
10,600.0	6,904.1	10,529.2	6,825.0	75.0	75.3	76.49	-3,807.0	-434.7	338.5	191.6	146.85	2.305		
10,700.0	6,902.9	10,629.2	6,824.4	76.9	77.1	76.58	-3,907.0	-434.1	338.4	187.8	150.57	2.247		
10,800.0	6,901.8	10,729.2	6,823.8	78.8	79.0	76.66	-4,007.0	-433.5	338.3	184.0	154.29	2.193		
10,900.0	6,900.7	10,829.2	6,823.1	80.7	80.9	76.75	-4,107.0	-432.9	338.2	180.2	158.02	2.140		
11,000.0	6,899.5	10,929.2	6,822.5	82.6	82.8	76.83	-4,207.0	-432.3	338.1	176.4	161.76	2.090		
11,100.0	6,898.4	11,029.2	6,821.9	84.5	84.7	76.92	-4,307.0	-431.7	338.0	172.6	165.50	2.043		
11,200.0	6,897.3	11,129.2	6,821.2	86.3	86.5	77.00	-4,407.0	-431.1	338.0	168.7	169.24	1.997		
11,300.0	6,896.1	11,229.2	6,820.6	88.2	88.4	77.09	-4,507.0	-430.5	337.9	164.9	172.99	1.953		
11,373.6	6,895.3	11,302.7	6,820.2	89.4	89.8	77.15	-4,580.6	-430.0	337.8	162.4	175.48	1.925		
11,399.3	6,895.0	11,326.9	6,820.0	89.8	90.2	77.17	-4,604.8	-429.9	337.8	161.6	176.24	1.917 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-403 - Wellbore #1 - Plan #2 (1-23-15)													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	0.0	0.0	0.0	0.0	-89.99	-89.99	0.0	-58.6	58.6				
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	-89.99	0.0	-58.6	58.6	58.4	0.22	260.758	
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	-89.99	0.0	-58.6	58.6	57.9	0.67	86.919	
300.0	300.0	300.0	300.0	0.6	0.6	-89.99	-89.99	0.0	-58.6	58.6	57.5	1.12	52.152	
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	-89.99	0.0	-58.6	58.6	57.0	1.57	37.251	
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	-89.99	0.0	-58.6	58.6	56.6	2.02	28.973	
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	-89.99	0.0	-58.6	58.6	56.1	2.47	23.705	
700.0	700.0	700.0	700.0	1.5	1.5	-89.99	-89.99	0.0	-58.6	58.6	55.7	2.92	20.058	
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	-89.99	0.0	-58.6	58.6	55.2	3.37	17.384	CC, ES
900.0	900.0	899.0	899.0	1.9	1.9	-89.80	-89.80	0.2	-59.4	59.5	55.6	3.81	15.610	
1,000.0	1,000.0	998.0	997.9	2.1	2.1	-89.26	-89.26	0.8	-61.9	62.0	57.7	4.24	14.620	
1,100.0	1,100.0	1,096.8	1,096.6	2.4	2.3	-88.45	-88.45	1.8	-66.1	66.2	61.5	4.67	14.161	
1,200.0	1,200.0	1,195.4	1,195.1	2.6	2.5	-87.48	-87.48	3.2	-71.9	72.1	67.0	5.11	14.101	
1,300.0	1,300.0	1,293.8	1,293.2	2.8	2.8	-86.45	-86.45	4.9	-79.3	79.7	74.2	5.56	14.347	
1,400.0	1,400.0	1,392.0	1,390.9	3.0	3.0	-85.42	-85.42	7.1	-88.3	89.1	83.1	6.01	14.829	
1,500.0	1,500.0	1,489.8	1,488.1	3.3	3.3	-84.46	-84.46	9.6	-99.0	100.1	93.7	6.46	15.495	
1,600.0	1,600.0	1,587.1	1,584.7	3.5	3.5	-83.59	-83.59	12.5	-111.1	112.9	106.0	6.92	16.302	
1,700.0	1,700.0	1,684.0	1,680.5	3.7	3.8	-82.81	-82.81	15.7	-124.8	127.3	119.9	7.39	17.219	
1,800.0	1,800.0	1,780.8	1,776.0	3.9	4.1	-82.13	-82.13	19.4	-140.1	143.4	135.5	7.87	18.216	
1,900.0	1,900.0	1,879.4	1,873.2	4.2	4.5	-81.55	-81.55	23.2	-156.2	160.1	151.8	8.36	19.148	
2,000.0	2,000.0	1,978.0	1,970.4	4.4	4.8	-81.09	-81.09	27.0	-172.3	176.9	168.0	8.86	19.968	
2,100.0	2,100.0	2,076.7	2,067.7	4.6	5.1	-43.63	-43.63	30.9	-188.4	193.0	183.9	9.14	21.127	
2,200.0	2,200.0	2,175.5	2,165.1	4.8	5.5	-43.69	-43.69	34.7	-204.6	207.9	198.3	9.59	21.680	
2,300.0	2,299.9	2,274.6	2,262.8	5.0	5.8	-44.05	-44.05	38.5	-220.7	221.5	211.5	10.04	22.055	
2,400.0	2,399.7	2,373.8	2,360.6	5.3	6.2	-44.67	-44.67	42.4	-236.9	233.9	223.4	10.50	22.275	
2,476.6	2,476.1	2,449.8	2,435.6	5.4	6.5	-45.30	-45.30	45.3	-249.4	242.7	231.8	10.86	22.351	
2,500.0	2,499.4	2,473.1	2,458.4	5.5	6.6	-45.52	-45.52	46.2	-253.2	245.2	234.2	10.97	22.361	
2,600.0	2,599.0	2,572.4	2,556.4	5.7	6.9	-46.44	-46.44	50.1	-269.4	256.2	244.7	11.44	22.401	
2,700.0	2,698.7	2,671.7	2,654.3	6.0	7.3	-47.29	-47.29	54.0	-285.6	267.2	255.3	11.91	22.435	
2,800.0	2,798.3	2,771.0	2,752.2	6.2	7.7	-48.06	-48.06	57.8	-301.9	278.3	265.9	12.39	22.463	
2,900.0	2,898.0	2,870.3	2,850.1	6.4	8.1	-48.78	-48.78	61.7	-318.1	289.4	276.6	12.87	22.485	
3,000.0	2,997.6	2,969.6	2,948.0	6.7	8.4	-49.45	-49.45	65.5	-334.3	300.6	287.2	13.36	22.504	
3,100.0	3,097.3	3,069.0	3,045.9	6.9	8.8	-50.06	-50.06	69.4	-350.5	311.8	298.0	13.85	22.518	
3,200.0	3,196.9	3,168.3	3,143.8	7.2	9.2	-50.64	-50.64	73.2	-366.8	323.1	308.7	14.34	22.528	
3,300.0	3,296.6	3,267.6	3,241.7	7.4	9.6	-51.17	-51.17	77.1	-383.0	334.3	319.5	14.84	22.535	
3,400.0	3,396.3	3,366.9	3,339.6	7.7	9.9	-51.67	-51.67	80.9	-399.2	345.6	330.3	15.33	22.540	
3,500.0	3,495.9	3,466.2	3,437.5	7.9	10.3	-52.14	-52.14	84.8	-415.4	357.0	341.1	15.84	22.542	
3,600.0	3,595.6	3,565.5	3,535.4	8.2	10.7	-52.58	-52.58	88.7	-431.7	368.3	352.0	16.34	22.543	
3,700.0	3,695.2	3,664.8	3,633.3	8.4	11.1	-52.99	-52.99	92.5	-447.9	379.7	362.8	16.84	22.541	
3,800.0	3,794.9	3,764.2	3,731.2	8.7	11.5	-53.38	-53.38	96.4	-464.1	391.1	373.7	17.35	22.539	
3,900.0	3,894.5	3,863.5	3,829.1	8.9	11.8	-53.75	-53.75	100.2	-480.3	402.5	384.6	17.86	22.534	
4,000.0	3,994.2	3,962.8	3,927.0	9.2	12.2	-54.10	-54.10	104.1	-496.6	413.9	395.5	18.37	22.529	
4,100.0	4,093.8	4,062.1	4,024.9	9.5	12.6	-54.42	-54.42	107.9	-512.8	425.3	406.4	18.88	22.523	
4,200.0	4,193.5	4,161.4	4,122.8	9.7	13.0	-54.74	-54.74	111.8	-529.0	436.8	417.4	19.40	22.516	
4,300.0	4,293.1	4,260.7	4,220.7	10.0	13.4	-55.03	-55.03	115.7	-545.3	448.2	428.3	19.91	22.509	
4,400.0	4,392.8	4,360.1	4,318.6	10.2	13.8	-55.31	-55.31	119.5	-561.5	459.7	439.3	20.43	22.500	
4,500.0	4,492.5	4,459.4	4,416.6	10.5	14.1	-55.58	-55.58	123.4	-577.7	471.2	450.2	20.95	22.492	
4,600.0	4,592.1	4,558.7	4,514.5	10.8	14.5	-55.83	-55.83	127.2	-593.9	482.6	461.2	21.47	22.483	
4,690.8	4,682.6	4,648.9	4,603.4	11.0	14.9	-56.05	-56.05	130.7	-608.7	493.1	471.2	21.94	22.474	
4,700.0	4,691.8	4,658.0	4,612.4	11.0	14.9	-56.09	-56.09	131.1	-610.2	494.2	472.2	21.99	22.476	
4,800.0	4,791.5	4,757.2	4,710.2	11.2	15.3	-56.33	-56.33	134.9	-626.4	506.5	484.1	22.44	22.571	

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-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-403 - Wellbore #1 - Plan #2 (1-23-15)													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	4,891.4	4,856.3	4,807.8	11.4	15.7	-56.34		138.8	-642.6	520.3	497.4	22.87	22.749	
5,008.6	5,000.0	4,963.5	4,913.5	11.6	16.1	-93.25		142.9	-660.1	536.9	513.6	23.29	23.054	
5,100.0	5,091.4	5,053.6	5,002.3	11.8	16.5	-92.80		146.4	-674.8	551.7	528.0	23.68	23.302	
5,200.0	5,191.4	5,152.2	5,099.5	12.0	16.8	-92.33		150.3	-690.9	567.9	543.7	24.12	23.544	
5,300.0	5,291.4	5,250.8	5,196.7	12.2	17.2	-91.88		154.1	-707.0	584.1	559.5	24.56	23.777	
5,400.0	5,391.4	5,349.3	5,293.9	12.4	17.6	-91.46		157.9	-723.1	600.3	575.3	25.01	24.002	
5,500.0	5,491.4	5,454.0	5,397.1	12.6	18.0	-91.04		161.9	-740.0	616.4	590.9	25.46	24.208	
5,600.0	5,591.4	5,571.6	5,513.5	12.8	18.3	-90.66		165.8	-756.3	630.2	604.3	25.91	24.325	
5,700.0	5,691.4	5,690.2	5,631.3	13.0	18.6	-90.37		168.9	-769.3	641.1	614.8	26.34	24.337	
5,800.0	5,791.4	5,809.4	5,750.2	13.2	18.8	-90.17		171.1	-778.7	649.0	622.2	26.77	24.241	
5,900.0	5,891.4	5,929.2	5,869.7	13.5	19.0	-90.04		172.5	-784.4	653.8	626.6	27.19	24.042	
6,000.0	5,991.4	6,049.2	5,989.7	13.7	19.2	-90.00		173.0	-786.6	655.6	628.0	27.62	23.741	
6,100.0	6,091.4	6,150.9	6,091.4	13.9	19.4	-90.00		173.0	-786.6	655.6	627.6	28.02	23.398	
6,185.1	6,176.5	6,236.0	6,176.5	14.1	19.5	-90.00		173.0	-786.6	655.6	627.2	28.37	23.112	
6,200.0	6,191.4	6,250.9	6,191.4	14.1	19.5	90.38		173.0	-786.6	655.6	627.2	28.44	23.052	
6,250.0	6,241.3	6,300.8	6,241.3	14.2	19.6	90.61		173.0	-786.6	655.6	627.0	28.60	22.924	
6,300.0	6,291.0	6,350.8	6,291.3	14.2	19.7	91.08		172.7	-786.6	655.7	627.0	28.73	22.823	
6,350.0	6,340.2	6,401.4	6,341.8	14.3	19.7	91.60		169.5	-786.6	655.9	627.0	28.83	22.747	
6,400.0	6,388.6	6,452.4	6,392.4	14.3	19.8	92.12		163.0	-786.6	656.1	627.1	28.92	22.687	
6,450.0	6,436.2	6,503.9	6,442.9	14.4	19.8	92.63		152.9	-786.5	656.3	627.3	28.99	22.639	
6,500.0	6,482.6	6,555.7	6,492.9	14.4	19.9	93.13		139.4	-786.4	656.6	627.6	29.06	22.598	
6,550.0	6,527.7	6,608.0	6,542.4	14.5	19.9	93.62		122.4	-786.3	657.0	627.9	29.12	22.557	
6,600.0	6,571.3	6,660.7	6,590.9	14.5	19.9	94.09		101.8	-786.2	657.4	628.2	29.20	22.511	
6,650.0	6,613.3	6,713.9	6,638.3	14.6	19.9	94.55		77.8	-786.1	657.8	628.5	29.30	22.451	
6,700.0	6,653.3	6,767.4	6,684.2	14.6	20.0	94.98		50.3	-786.0	658.3	628.8	29.43	22.370	
6,750.0	6,691.3	6,821.4	6,728.4	14.6	20.0	95.40		19.4	-785.8	658.7	629.1	29.59	22.261	
6,800.0	6,727.2	6,875.7	6,770.6	14.7	20.1	95.79		-14.8	-785.6	659.2	629.4	29.81	22.117	
6,850.0	6,760.6	6,930.4	6,810.6	14.8	20.1	96.16		-52.2	-785.5	659.7	629.6	30.07	21.936	
6,900.0	6,791.6	6,985.5	6,848.0	15.0	20.2	96.50		-92.6	-785.2	660.2	629.8	30.42	21.705	
6,950.0	6,819.9	7,040.9	6,882.6	15.2	20.3	96.80		-135.9	-785.0	660.7	629.8	30.83	21.427	
7,000.0	6,845.5	7,096.6	6,914.1	15.5	20.4	97.08		-181.8	-784.8	661.1	629.8	31.33	21.101	
7,050.0	6,868.2	7,152.6	6,942.3	15.8	20.5	97.33		-230.1	-784.5	661.5	629.6	31.92	20.726	
7,100.0	6,887.9	7,208.8	6,967.0	16.2	20.7	97.53		-280.6	-784.3	661.9	629.3	32.60	20.306	
7,150.0	6,904.6	7,265.2	6,988.0	16.6	21.0	97.71		-333.0	-784.0	662.2	628.9	33.36	19.848	
7,200.0	6,918.2	7,321.8	7,005.1	17.1	21.2	97.84		-386.9	-783.7	662.5	628.3	34.22	19.360	
7,250.0	6,928.6	7,378.6	7,018.2	17.6	21.6	97.94		-442.1	-783.5	662.7	627.6	35.16	18.848	
7,300.0	6,935.8	7,435.4	7,027.2	18.1	22.0	98.00		-498.2	-783.2	662.9	626.7	36.18	18.322	
7,350.0	6,939.7	7,492.3	7,032.0	18.6	22.5	98.02		-554.8	-782.9	663.0	625.7	37.27	17.788	
7,393.8	6,940.4	7,540.2	7,032.9	19.2	22.9	98.02		-602.8	-782.6	663.0	624.8	38.26	17.329	
7,400.0	6,940.4	7,546.4	7,032.9	19.2	23.0	98.02		-609.0	-782.6	663.1	624.7	38.41	17.264	
7,500.0	6,939.2	7,646.4	7,033.2	20.5	24.0	98.14		-709.0	-782.1	663.4	622.5	40.85	16.240	
7,600.0	6,938.1	7,746.4	7,033.4	21.9	25.1	98.25		-808.9	-781.6	663.7	620.2	43.47	15.266	
7,700.0	6,937.0	7,846.4	7,033.6	23.3	26.4	98.37		-908.9	-781.1	664.0	617.8	46.26	14.353	
7,800.0	6,935.8	7,946.4	7,033.8	24.8	27.7	98.48		-1,008.9	-780.5	664.3	615.2	49.18	13.507	
7,900.0	6,934.7	8,046.4	7,034.1	26.3	29.1	98.60		-1,108.9	-780.0	664.7	612.5	52.22	12.729	
8,000.0	6,933.6	8,146.4	7,034.3	27.9	30.5	98.71		-1,208.9	-779.5	665.0	609.7	55.34	12.017	
8,100.0	6,932.4	8,246.4	7,034.5	29.6	32.0	98.82		-1,308.9	-779.0	665.3	606.8	58.54	11.366	
8,200.0	6,931.3	8,346.4	7,034.7	31.3	33.6	98.94		-1,408.9	-778.5	665.7	603.9	61.80	10.771	
8,300.0	6,930.2	8,446.3	7,035.0	32.9	35.2	99.05		-1,508.9	-778.0	666.0	600.9	65.12	10.227	
8,400.0	6,929.0	8,546.3	7,035.2	34.7	36.8	99.17		-1,608.9	-777.5	666.3	597.8	68.49	9.729	
8,500.0	6,927.9	8,646.3	7,035.4	36.4	38.4	99.28		-1,708.9	-776.9	666.7	594.8	71.89	9.273	

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-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design		Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5E-403 - Wellbore #1 - Plan #2 (1-23-15)										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 +N/-S	Offset Wellbore Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
8,600.0	6,926.8	8,746.3	7,035.6	38.2	40.1	99.39	-1,808.8	-776.4	667.0	591.7	75.33	8.855		
8,700.0	6,925.6	8,846.3	7,035.9	39.9	41.8	99.51	-1,908.8	-775.9	667.4	588.6	78.79	8.470		
8,800.0	6,924.5	8,946.3	7,036.1	41.7	43.5	99.62	-2,008.8	-775.4	667.7	585.4	82.29	8.115		
8,900.0	6,923.4	9,046.3	7,036.3	43.5	45.3	99.73	-2,108.8	-774.9	668.1	582.3	85.80	7.787		
9,000.0	6,922.2	9,146.3	7,036.6	45.3	47.0	99.85	-2,208.8	-774.4	668.4	579.1	89.33	7.483		
9,100.0	6,921.1	9,246.3	7,036.8	47.1	48.8	99.96	-2,308.8	-773.9	668.8	575.9	92.88	7.201		
9,200.0	6,919.9	9,346.3	7,037.0	49.0	50.5	100.07	-2,408.8	-773.4	669.1	572.7	96.44	6.939		
9,300.0	6,918.8	9,446.3	7,037.2	50.8	52.3	100.19	-2,508.8	-772.8	669.5	569.5	100.01	6.694		
9,400.0	6,917.7	9,546.2	7,037.5	52.6	54.1	100.30	-2,608.8	-772.3	669.9	566.3	103.59	6.466		
9,500.0	6,916.5	9,646.2	7,037.7	54.5	55.9	100.41	-2,708.7	-771.8	670.2	563.1	107.19	6.253		
9,600.0	6,915.4	9,746.2	7,037.9	56.3	57.7	100.52	-2,808.7	-771.3	670.6	559.8	110.79	6.053		
9,700.0	6,914.3	9,846.2	7,038.1	58.2	59.5	100.64	-2,908.7	-770.8	671.0	556.6	114.39	5.866		
9,800.0	6,913.1	9,946.2	7,038.4	60.0	61.3	100.75	-3,008.7	-770.3	671.4	553.3	118.01	5.689		
9,900.0	6,912.0	10,046.2	7,038.6	61.9	63.2	100.86	-3,108.7	-769.8	671.7	550.1	121.63	5.523		
10,000.0	6,910.9	10,146.2	7,038.8	63.8	65.0	100.97	-3,208.7	-769.2	672.1	546.9	125.25	5.366		
10,100.0	6,909.7	10,246.2	7,039.1	65.6	66.8	101.08	-3,308.7	-768.7	672.5	543.6	128.88	5.218		
10,200.0	6,908.6	10,346.2	7,039.3	67.5	68.7	101.20	-3,408.7	-768.2	672.9	540.4	132.51	5.078		
10,300.0	6,907.5	10,446.2	7,039.5	69.4	70.5	101.31	-3,508.7	-767.7	673.3	537.1	136.14	4.945		
10,400.0	6,906.3	10,546.2	7,039.7	71.3	72.4	101.42	-3,608.6	-767.2	673.7	533.9	139.78	4.819		
10,500.0	6,905.2	10,646.1	7,040.0	73.1	74.2	101.53	-3,708.6	-766.7	674.1	530.6	143.42	4.700		
10,600.0	6,904.1	10,746.1	7,040.2	75.0	76.1	101.64	-3,808.6	-766.2	674.5	527.4	147.06	4.586		
10,700.0	6,902.9	10,846.1	7,040.4	76.9	77.9	101.75	-3,908.6	-765.6	674.9	524.2	150.70	4.478		
10,800.0	6,901.8	10,946.1	7,040.6	78.8	79.8	101.86	-4,008.6	-765.1	675.3	520.9	154.34	4.375		
10,900.0	6,900.7	11,046.1	7,040.9	80.7	81.7	101.97	-4,108.6	-764.6	675.7	517.7	157.98	4.277		
11,000.0	6,899.5	11,146.1	7,041.1	82.6	83.5	102.08	-4,208.6	-764.1	676.1	514.4	161.63	4.183		
11,100.0	6,898.4	11,246.1	7,041.3	84.5	85.4	102.20	-4,308.6	-763.6	676.5	511.2	165.27	4.093		
11,200.0	6,897.3	11,346.1	7,041.5	86.3	87.3	102.31	-4,408.6	-763.1	676.9	508.0	168.91	4.007		
11,300.0	6,896.1	11,446.1	7,041.8	88.2	89.1	102.42	-4,508.5	-762.6	677.3	504.7	172.55	3.925		
11,399.3	6,895.0	11,545.4	7,042.0	89.8	91.0	102.53	-4,607.8	-762.1	677.7	501.9	175.81	3.855 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5J-103 - Wellbore #1 - Plan #2 (1-23-15)												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
0.0	0.0	0.0	0.0	0.0	0.0	89.98	0.0	30.7	30.7				
100.0	100.0	99.0	99.0	0.1	0.1	89.98	0.0	30.7	30.7	30.5	0.22	137.273	
200.0	200.0	199.0	199.0	0.3	0.3	89.98	0.0	30.7	30.7	30.0	0.67	45.681	
300.0	300.0	299.0	299.0	0.6	0.6	89.98	0.0	30.7	30.7	29.6	1.12	27.372	
400.0	400.0	399.0	399.0	0.8	0.8	89.98	0.0	30.7	30.7	29.1	1.57	19.540	
500.0	500.0	499.0	499.0	1.0	1.0	89.98	0.0	30.7	30.7	28.7	2.02	15.193	
600.0	600.0	599.0	599.0	1.2	1.2	89.98	0.0	30.7	30.7	28.2	2.47	12.428	
700.0	700.0	699.0	699.0	1.5	1.5	89.98	0.0	30.7	30.7	27.8	2.92	10.515	
800.0	800.0	799.0	799.0	1.7	1.7	89.98	0.0	30.7	30.7	27.3	3.37	9.112	
900.0	900.0	899.0	899.0	1.9	1.9	89.98	0.0	30.7	30.7	26.9	3.82	8.039	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	89.98	0.0	30.7	30.7	26.4	4.27	7.193 CC, ES	
1,100.0	1,100.0	1,098.6	1,098.6	2.4	2.4	88.88	0.6	31.3	31.3	26.6	4.71	6.643	
1,200.0	1,200.0	1,198.2	1,198.1	2.6	2.6	85.79	2.4	33.1	33.2	28.1	5.15	6.445	
1,300.0	1,300.0	1,297.6	1,297.5	2.8	2.8	81.37	5.5	36.1	36.6	31.0	5.60	6.538	
1,400.0	1,400.0	1,397.0	1,396.7	3.0	3.0	76.44	9.7	40.4	41.6	35.6	6.04	6.882	
1,500.0	1,500.0	1,496.8	1,496.2	3.3	3.2	72.25	14.4	45.0	47.4	40.9	6.49	7.291	
1,600.0	1,600.0	1,596.5	1,595.8	3.5	3.5	68.98	19.1	49.7	53.3	46.4	6.95	7.674	
1,700.0	1,700.0	1,696.3	1,695.3	3.7	3.7	66.37	23.8	54.3	59.4	52.0	7.40	8.026	
1,800.0	1,800.0	1,796.1	1,794.9	3.9	4.0	64.25	28.4	59.0	65.6	57.7	7.86	8.350	
1,900.0	1,900.0	1,895.9	1,894.5	4.2	4.2	62.50	33.1	63.6	71.9	63.5	8.31	8.646	
2,000.0	2,000.0	1,995.7	1,994.0	4.4	4.4	61.03	37.8	68.3	78.2	69.4	8.77	8.917	
2,100.0	2,100.0	2,095.4	2,093.6	4.6	4.7	97.44	42.5	72.9	84.7	75.5	9.17	9.228	
2,200.0	2,200.0	2,195.2	2,193.2	4.8	4.9	97.89	47.1	77.6	91.4	81.7	9.62	9.499	
2,300.0	2,299.9	2,294.9	2,292.7	5.0	5.2	99.28	51.8	82.2	98.3	88.3	10.06	9.772	
2,400.0	2,399.7	2,394.6	2,392.1	5.3	5.4	101.41	56.5	86.8	105.7	95.2	10.51	10.055	
2,476.6	2,476.1	2,470.9	2,468.2	5.4	5.6	103.42	60.1	90.4	111.7	100.9	10.86	10.287	
2,500.0	2,499.4	2,494.1	2,491.4	5.5	5.7	104.09	61.1	91.5	113.6	102.7	10.97	10.360	
2,600.0	2,599.0	2,593.7	2,590.7	5.7	5.9	106.69	65.8	96.1	121.9	110.5	11.43	10.667	
2,700.0	2,698.7	2,693.2	2,690.0	6.0	6.1	108.97	70.5	100.8	130.4	118.5	11.89	10.966	
2,800.0	2,798.3	2,792.7	2,789.3	6.2	6.4	110.96	75.1	105.4	139.1	126.7	12.36	11.254	
2,900.0	2,898.0	2,892.2	2,888.6	6.4	6.6	112.72	79.8	110.0	147.9	135.1	12.83	11.531	
3,000.0	2,997.6	2,991.7	2,987.9	6.7	6.9	114.28	84.5	114.7	156.9	143.6	13.30	11.794	
3,100.0	3,097.3	3,091.2	3,087.2	6.9	7.1	115.67	89.1	119.3	165.9	152.1	13.77	12.046	
3,200.0	3,196.9	3,190.7	3,186.5	7.2	7.4	116.92	93.8	123.9	175.0	160.8	14.25	12.286	
3,300.0	3,296.6	3,290.2	3,285.8	7.4	7.6	118.04	98.4	128.6	184.3	169.5	14.72	12.514	
3,400.0	3,396.3	3,389.8	3,385.1	7.7	7.9	119.05	103.1	133.2	193.5	178.3	15.20	12.730	
3,500.0	3,495.9	3,489.3	3,484.4	7.9	8.1	119.98	107.8	137.8	202.9	187.2	15.68	12.937	
3,600.0	3,595.6	3,588.8	3,583.7	8.2	8.4	120.82	112.4	142.5	212.2	196.1	16.16	13.133	
3,700.0	3,695.2	3,688.3	3,683.0	8.4	8.6	121.59	117.1	147.1	221.7	205.0	16.64	13.319	
3,800.0	3,794.9	3,787.8	3,782.3	8.7	8.9	122.29	121.8	151.7	231.1	214.0	17.12	13.497	
3,900.0	3,894.5	3,887.3	3,881.6	8.9	9.1	122.95	126.4	156.4	240.6	223.0	17.61	13.666	
4,000.0	3,994.2	3,986.8	3,980.9	9.2	9.4	123.55	131.1	161.0	250.1	232.0	18.09	13.827	
4,100.0	4,093.8	4,086.4	4,080.2	9.5	9.6	124.10	135.7	165.7	259.7	241.1	18.57	13.981	
4,200.0	4,193.5	4,185.9	4,179.5	9.7	9.9	124.62	140.4	170.3	269.2	250.2	19.06	14.128	
4,300.0	4,293.1	4,285.4	4,278.8	10.0	10.1	125.11	145.1	174.9	278.8	259.3	19.54	14.268	
4,400.0	4,392.8	4,384.9	4,378.0	10.2	10.4	125.56	149.7	179.6	288.4	268.4	20.03	14.402	
4,500.0	4,492.5	4,484.4	4,477.3	10.5	10.6	125.98	154.4	184.2	298.0	277.5	20.51	14.530	
4,600.0	4,592.1	4,583.9	4,576.6	10.8	10.9	126.37	159.1	188.8	307.7	286.7	21.00	14.653	
4,690.8	4,682.6	4,674.3	4,666.8	11.0	11.1	126.71	163.3	193.0	316.4	295.0	21.44	14.760	
4,700.0	4,691.8	4,683.4	4,675.9	11.0	11.1	126.75	163.7	193.5	317.3	295.8	21.48	14.771	
4,800.0	4,791.5	4,784.8	4,777.1	11.2	11.4	127.00	168.4	198.1	326.0	304.0	21.92	14.868	

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-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5J-103 - Wellbore #1 - Plan #2 (1-23-15)													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	4,891.4	4,891.1	4,883.3	11.4	11.6	127.10		171.7	201.4	331.6	309.3	22.31	14.861	
5,008.6	5,000.0	5,006.8	4,998.9	11.6	11.8	90.00		173.0	202.7	333.7	311.0	22.71	14.693	
5,100.0	5,091.4	5,098.3	5,090.4	11.8	11.9	90.00		173.0	202.7	333.7	310.6	23.06	14.470	
5,200.0	5,191.4	5,198.3	5,190.4	12.0	12.2	90.00		173.0	202.7	333.7	310.2	23.48	14.210	
5,300.0	5,291.4	5,298.3	5,290.4	12.2	12.4	90.00		173.0	202.7	333.7	309.8	23.91	13.958	
5,400.0	5,391.4	5,398.3	5,390.4	12.4	12.6	90.00		173.0	202.7	333.7	309.4	24.33	13.715	
5,500.0	5,491.4	5,498.3	5,490.4	12.6	12.8	90.00		173.0	202.7	333.7	308.9	24.76	13.479	
5,600.0	5,591.4	5,598.3	5,590.4	12.8	13.0	90.00		173.0	202.7	333.7	308.5	25.18	13.251	
5,700.0	5,691.4	5,698.3	5,690.4	13.0	13.2	90.00		173.0	202.7	333.7	308.1	25.61	13.030	
5,800.0	5,791.4	5,798.3	5,790.4	13.2	13.4	90.00		173.0	202.7	333.7	307.7	26.04	12.816	
5,900.0	5,891.4	5,898.3	5,890.4	13.5	13.6	90.00		173.0	202.7	333.7	307.2	26.47	12.608	
6,000.0	5,991.4	5,998.3	5,990.4	13.7	13.8	90.00		173.0	202.7	333.7	306.8	26.90	12.407	
6,036.9	6,028.3	6,035.2	6,027.3	13.7	13.9	90.00		173.0	202.7	333.7	306.6	27.05	12.334	
6,100.0	6,091.4	6,098.0	6,090.1	13.9	14.0	90.38		170.8	202.7	333.7	306.4	27.30	12.226	
6,185.1	6,176.5	6,181.4	6,172.7	14.1	14.1	92.26		159.9	202.8	334.0	306.5	27.59	12.110	
6,200.0	6,191.4	6,195.7	6,186.8	14.1	14.1	-86.92		157.1	202.8	334.2	306.6	27.63	12.095	
6,250.0	6,241.3	6,243.4	6,233.2	14.2	14.2	-85.38		145.9	202.8	334.8	307.0	27.75	12.065	
6,300.0	6,291.0	6,290.7	6,278.3	14.2	14.2	-83.87		132.1	202.9	335.6	307.8	27.85	12.052	
6,350.0	6,340.2	6,337.4	6,322.1	14.3	14.2	-82.41		115.6	203.0	336.7	308.8	27.93	12.054	
6,400.0	6,388.6	6,383.7	6,364.3	14.3	14.3	-80.98		96.7	203.1	337.9	309.9	28.00	12.070	
6,450.0	6,436.2	6,429.6	6,405.0	14.4	14.3	-79.61		75.5	203.2	339.3	311.3	28.05	12.096	
6,500.0	6,482.6	6,475.0	6,443.9	14.4	14.4	-78.29		52.1	203.4	340.8	312.7	28.10	12.129	
6,550.0	6,527.7	6,520.1	6,481.1	14.5	14.4	-77.03		26.7	203.5	342.5	314.3	28.15	12.166	
6,600.0	6,571.3	6,564.8	6,516.5	14.5	14.5	-75.83		-0.6	203.7	344.2	316.0	28.20	12.205	
6,650.0	6,613.3	6,609.1	6,549.9	14.6	14.5	-74.70		-29.8	203.8	346.0	317.7	28.28	12.236	
6,700.0	6,653.3	6,653.2	6,581.4	14.6	14.6	-73.64		-60.6	204.0	347.8	319.4	28.36	12.262	
6,750.0	6,691.3	6,697.0	6,610.9	14.6	14.7	-72.64		-93.0	204.2	349.6	321.1	28.48	12.275	
6,800.0	6,727.2	6,740.5	6,638.3	14.7	14.8	-71.73		-126.7	204.3	351.3	322.7	28.63	12.270	
6,850.0	6,760.6	6,783.8	6,663.6	14.8	15.0	-70.88		-161.9	204.5	353.1	324.2	28.84	12.244	
6,900.0	6,791.6	6,826.9	6,686.8	15.0	15.2	-70.11		-198.1	204.7	354.7	325.6	29.09	12.192	
6,950.0	6,819.9	6,869.7	6,707.8	15.2	15.5	-69.41		-235.5	204.9	356.2	326.8	29.41	12.114	
7,000.0	6,845.5	6,912.4	6,726.6	15.5	15.8	-68.79		-273.9	205.2	357.6	327.8	29.79	12.005	
7,050.0	6,868.2	6,955.0	6,743.2	15.8	16.1	-68.25		-313.0	205.4	358.9	328.6	30.25	11.865	
7,100.0	6,887.9	7,000.0	6,758.3	16.2	16.5	-67.77		-355.4	205.6	360.0	329.2	30.80	11.688	
7,150.0	6,904.6	7,039.7	6,769.6	16.6	16.8	-67.40		-393.5	205.8	360.9	329.5	31.41	11.492	
7,200.0	6,918.2	7,082.0	6,779.3	17.1	17.3	-67.09		-434.6	206.0	361.7	329.6	32.11	11.263	
7,250.0	6,928.6	7,124.1	6,786.8	17.6	17.7	-66.86		-476.1	206.3	362.3	329.4	32.90	11.012	
7,300.0	6,935.8	7,166.2	6,792.0	18.1	18.1	-66.70		-517.9	206.5	362.6	328.9	33.76	10.740	
7,350.0	6,939.7	7,208.3	6,794.9	18.6	18.6	-66.63		-559.9	206.7	362.8	328.1	34.71	10.454	
7,393.8	6,940.4	7,245.4	6,795.5	19.2	19.1	-66.62		-596.9	206.9	362.8	327.2	35.59	10.193	
7,400.0	6,940.4	7,251.6	6,795.4	19.2	19.1	-66.63		-603.1	207.0	362.8	327.0	35.73	10.152	
7,500.0	6,939.2	7,351.6	6,794.8	20.5	20.4	-66.70		-703.1	207.5	362.5	324.4	38.11	9.512	
7,600.0	6,938.1	7,451.6	6,794.2	21.9	21.8	-66.77		-803.1	208.1	362.2	321.5	40.65	8.909	
7,700.0	6,937.0	7,551.6	6,793.6	23.3	23.2	-66.84		-903.1	208.6	361.9	318.5	43.35	8.349	
7,800.0	6,935.8	7,651.6	6,793.0	24.8	24.7	-66.91		-1,003.1	209.1	361.6	315.4	46.17	7.832	
7,900.0	6,934.7	7,751.6	6,792.4	26.3	26.3	-66.98		-1,103.1	209.7	361.3	312.2	49.09	7.360	
8,000.0	6,933.6	7,851.6	6,791.8	27.9	27.9	-67.05		-1,203.1	210.2	361.0	308.9	52.10	6.929	
8,100.0	6,932.4	7,951.6	6,791.2	29.6	29.5	-67.12		-1,303.1	210.8	360.7	305.6	55.19	6.536	
8,200.0	6,931.3	8,051.6	6,790.6	31.3	31.2	-67.19		-1,403.1	211.3	360.5	302.1	58.34	6.179	
8,300.0	6,930.2	8,151.6	6,789.9	32.9	32.9	-67.26		-1,503.1	211.9	360.2	298.6	61.54	5.853	
8,400.0	6,929.0	8,251.6	6,789.3	34.7	34.6	-67.33		-1,603.1	212.4	359.9	295.1	64.79	5.555	

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-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Survey Program: 0-MWD										Becker Ranch 5J-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5J-103 - Wellbore #1 - Plan #2 (1-23-15)		Offset Site Error: 0.0 ft		
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
8,500.0	6,927.9	8,351.6	6,788.7	36.4	36.4	-67.41	-1,703.1	213.0	359.6	291.5	68.07	5.283		
8,600.0	6,926.8	8,451.6	6,788.1	38.2	38.1	-67.48	-1,803.0	213.5	359.3	287.9	71.39	5.033		
8,700.0	6,925.6	8,551.6	6,787.5	39.9	39.9	-67.55	-1,903.0	214.1	359.0	284.3	74.75	4.803		
8,800.0	6,924.5	8,651.6	6,786.9	41.7	41.7	-67.62	-2,003.0	214.6	358.8	280.6	78.12	4.592		
8,900.0	6,923.4	8,751.6	6,786.3	43.5	43.5	-67.69	-2,103.0	215.2	358.5	276.9	81.53	4.397		
9,000.0	6,922.2	8,851.6	6,785.7	45.3	45.3	-67.76	-2,203.0	215.7	358.2	273.2	84.95	4.216		
9,100.0	6,921.1	8,951.6	6,785.1	47.1	47.1	-67.84	-2,303.0	216.3	357.9	269.5	88.40	4.049		
9,200.0	6,919.9	9,051.6	6,784.5	49.0	49.0	-67.91	-2,403.0	216.8	357.6	265.8	91.86	3.893		
9,300.0	6,918.8	9,151.6	6,783.8	50.8	50.8	-67.98	-2,503.0	217.4	357.3	262.0	95.34	3.748		
9,400.0	6,917.7	9,251.6	6,783.2	52.6	52.6	-68.05	-2,603.0	217.9	357.1	258.2	98.83	3.613		
9,500.0	6,916.5	9,351.6	6,782.6	54.5	54.5	-68.13	-2,703.0	218.5	356.8	254.4	102.33	3.486		
9,600.0	6,915.4	9,451.5	6,782.0	56.3	56.3	-68.20	-2,803.0	219.0	356.5	250.7	105.85	3.368		
9,700.0	6,914.3	9,551.5	6,781.4	58.2	58.2	-68.27	-2,903.0	219.6	356.2	246.8	109.38	3.257		
9,800.0	6,913.1	9,651.5	6,780.8	60.0	60.0	-68.34	-3,003.0	220.1	356.0	243.0	112.92	3.152		
9,900.0	6,912.0	9,751.5	6,780.2	61.9	61.9	-68.42	-3,103.0	220.7	355.7	239.2	116.47	3.054		
10,000.0	6,910.9	9,851.5	6,779.6	63.8	63.8	-68.49	-3,203.0	221.2	355.4	235.4	120.03	2.961		
10,100.0	6,909.7	9,951.5	6,779.0	65.6	65.6	-68.56	-3,303.0	221.8	355.1	231.5	123.60	2.873		
10,200.0	6,908.6	10,051.5	6,778.3	67.5	67.5	-68.64	-3,403.0	222.3	354.8	227.7	127.18	2.790		
10,300.0	6,907.5	10,151.5	6,777.7	69.4	69.4	-68.71	-3,503.0	222.9	354.6	223.8	130.77	2.711		
10,400.0	6,906.3	10,251.5	6,777.1	71.3	71.3	-68.78	-3,603.0	223.4	354.3	219.9	134.36	2.637		
10,500.0	6,905.2	10,351.5	6,776.5	73.1	73.1	-68.86	-3,703.0	223.9	354.0	216.1	137.96	2.566		
10,600.0	6,904.1	10,451.5	6,775.9	75.0	75.0	-68.93	-3,803.0	224.5	353.8	212.2	141.57	2.499		
10,700.0	6,902.9	10,551.5	6,775.3	76.9	76.9	-69.01	-3,902.9	225.0	353.5	208.3	145.18	2.435		
10,800.0	6,901.8	10,651.5	6,774.7	78.8	78.8	-69.08	-4,002.9	225.6	353.2	204.4	148.80	2.374		
10,900.0	6,900.7	10,751.5	6,774.1	80.7	80.7	-69.15	-4,102.9	226.1	352.9	200.5	152.42	2.316		
11,000.0	6,899.5	10,851.5	6,773.5	82.6	82.6	-69.23	-4,202.9	226.7	352.7	196.6	156.05	2.260		
11,100.0	6,898.4	10,951.5	6,772.8	84.5	84.4	-69.30	-4,302.9	227.2	352.4	192.7	159.69	2.207		
11,200.0	6,897.3	11,051.5	6,772.2	86.3	86.3	-69.38	-4,402.9	227.8	352.1	188.8	163.33	2.156		
11,300.0	6,896.1	11,151.5	6,771.6	88.2	88.2	-69.45	-4,502.9	228.3	351.9	184.9	166.98	2.107		
11,399.3	6,895.0	11,250.8	6,771.0	89.8	89.9	-69.53	-4,602.2	228.9	351.6	181.5	170.08	2.067 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 5-14 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program: 100-NS-GYRO-MS											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)		
10,200.0	6,908.6	6,861.0	6,859.7	67.5	12.6	106.39	-4,305.6	-229.4	908.6	831.4	77.18	11.773	
10,300.0	6,907.5	6,856.8	6,855.6	69.4	12.6	104.65	-4,305.8	-229.3	809.8	730.2	79.56	10.178	
10,400.0	6,906.3	6,852.6	6,851.3	71.3	12.6	102.85	-4,305.9	-229.2	711.3	629.4	81.93	8.682	
10,500.0	6,905.2	6,848.3	6,847.0	73.1	12.6	101.00	-4,306.1	-229.1	613.2	529.0	84.27	7.277	
10,600.0	6,904.1	6,843.9	6,842.7	75.0	12.6	99.09	-4,306.2	-229.0	515.9	429.3	86.56	5.960	
10,700.0	6,902.9	6,839.5	6,838.2	76.9	12.6	97.13	-4,306.4	-228.9	419.7	330.9	88.80	4.726	
10,800.0	6,901.8	6,835.0	6,833.7	78.8	12.6	95.12	-4,306.5	-228.8	325.8	234.8	90.98	3.581	
10,900.0	6,900.7	6,830.4	6,829.1	80.7	12.6	93.06	-4,306.7	-228.7	236.9	143.8	93.07	2.545	
11,000.0	6,899.5	6,825.7	6,824.5	82.6	12.5	90.96	-4,306.9	-228.6	161.3	66.3	95.07	1.697	
11,100.0	6,898.4	6,821.0	6,819.8	84.5	12.5	88.82	-4,307.0	-228.5	126.1	29.1	96.96	1.300 Level 3	
11,100.8	6,898.4	6,821.0	6,819.7	84.5	12.5	88.80	-4,307.0	-228.5	126.1	29.1	96.98	1.300 Level 3, CC, ES, SF	
11,200.0	6,897.3	6,816.2	6,815.0	86.3	12.5	86.64	-4,307.2	-228.4	160.4	61.6	98.73	1.624	
11,300.0	6,896.1	6,811.4	6,810.1	88.2	12.5	84.44	-4,307.4	-228.3	235.6	135.2	100.37	2.347	
11,399.3	6,895.0	6,806.4	6,805.2	89.8	12.5	82.23	-4,307.6	-228.2	323.7	222.2	101.50	3.189	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-343
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 5J-343	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 #2 (1-23-15)	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: 100-NS-GYRO-MS													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
0.0	0.0	0.0	0.0	0.0	0.0	-176.48	-176.48	-499.1	-30.7	500.2				
100.0	100.0	86.9	86.9	0.1	0.1	-176.48	-176.48	-499.3	-30.7	500.2	500.0	0.23	2,195.670	
200.0	200.0	188.7	188.7	0.3	0.3	-176.48	-176.48	-499.6	-30.7	500.5	499.8	0.67	750.658	
300.0	300.0	288.9	288.9	0.6	0.5	-176.48	-176.48	-499.6	-30.8	500.5	499.5	1.05	474.870	
400.0	400.0	391.8	391.8	0.8	0.6	-176.47	-176.47	-499.3	-30.8	500.3	498.9	1.41	355.450	
500.0	500.0	491.1	491.1	1.0	0.8	-176.49	-176.49	-498.8	-30.6	499.8	498.0	1.79	279.295	
600.0	600.0	591.5	591.5	1.2	1.0	-176.50	-176.50	-498.4	-30.5	499.3	497.1	2.21	225.867	
700.0	700.0	691.5	691.5	1.5	1.2	-176.49	-176.49	-497.9	-30.6	498.8	496.2	2.65	188.216	
800.0	800.0	789.5	789.5	1.7	1.4	-176.47	-176.47	-497.5	-30.7	498.5	495.4	3.09	161.132	
900.0	900.0	889.4	889.4	1.9	1.6	-176.48	-176.48	-497.5	-30.6	498.4	494.9	3.53	141.318	
1,000.0	1,000.0	989.7	989.7	2.1	1.8	-176.50	-176.50	-497.4	-30.4	498.3	494.3	3.97	125.528	
1,100.0	1,100.0	1,090.0	1,090.0	2.4	2.1	-176.52	-176.52	-497.2	-30.2	498.1	493.7	4.42	112.619	
1,200.0	1,200.0	1,190.6	1,190.6	2.6	2.3	-176.54	-176.54	-497.0	-30.0	497.9	493.0	4.87	102.171	
1,300.0	1,300.0	1,290.4	1,290.4	2.8	2.5	-176.53	-176.53	-496.7	-30.1	497.6	492.3	5.33	93.337	
1,400.0	1,400.0	1,391.6	1,391.6	3.0	2.8	-176.51	-176.51	-496.3	-30.2	497.2	491.4	5.80	85.766	
1,500.0	1,500.0	1,490.3	1,490.2	3.3	3.0	-176.48	-176.48	-495.9	-30.5	496.8	490.5	6.24	79.604	
1,600.0	1,600.0	1,590.9	1,590.9	3.5	3.2	-176.44	-176.44	-495.5	-30.8	496.5	489.8	6.68	74.294	
1,700.0	1,700.0	1,690.9	1,690.9	3.7	3.4	-176.39	-176.39	-495.1	-31.2	496.1	489.0	7.13	69.584	
1,800.0	1,800.0	1,793.0	1,793.0	3.9	3.7	-176.33	-176.33	-494.5	-31.8	495.5	487.9	7.59	65.274	
1,900.0	1,900.0	1,895.6	1,895.6	4.2	3.9	-176.27	-176.27	-493.4	-32.2	494.5	486.4	8.07	61.248	
2,000.0	2,000.0	1,995.8	1,995.8	4.4	4.2	-176.20	-176.20	-492.0	-32.7	493.1	484.5	8.55	57.656	
2,098.3	2,098.3	2,093.7	2,093.7	4.6	4.4	-139.02	-139.02	-490.6	-33.6	492.4	483.4	9.01	54.629	
2,100.0	2,100.0	2,095.4	2,095.4	4.6	4.4	-139.02	-139.02	-490.6	-33.6	492.4	483.4	9.02	54.581	
2,200.0	2,200.0	2,191.9	2,191.9	4.8	4.6	-139.03	-139.03	-489.5	-35.0	493.4	484.0	9.46	52.178	
2,300.0	2,299.9	2,300.0	2,299.9	5.0	4.9	-139.11	-139.11	-488.0	-37.2	495.4	485.5	9.92	49.947	
2,400.0	2,399.7	2,400.4	2,400.2	5.3	5.1	-139.28	-139.28	-485.5	-39.5	497.8	487.4	10.39	47.930	
2,476.6	2,476.1	2,479.2	2,479.0	5.4	5.3	-139.51	-139.51	-483.4	-41.2	500.3	489.5	10.75	46.527	
2,500.0	2,499.4	2,503.0	2,502.8	5.5	5.4	-139.61	-139.61	-482.7	-41.5	501.1	490.2	10.87	46.117	
2,600.0	2,599.0	2,600.0	2,599.7	5.7	5.6	-140.04	-140.04	-480.2	-42.8	504.9	493.5	11.35	44.503	
2,700.0	2,698.7	2,694.7	2,694.4	6.0	5.9	-140.42	-140.42	-478.4	-44.4	509.5	497.7	11.81	43.144	
2,800.0	2,798.3	2,796.0	2,795.7	6.2	6.1	-140.85	-140.85	-476.9	-45.8	514.5	502.2	12.29	41.852	
2,900.0	2,898.0	2,895.1	2,894.8	6.4	6.4	-141.35	-141.35	-475.3	-46.4	519.4	506.6	12.78	40.630	
3,000.0	2,997.6	2,995.7	2,995.4	6.7	6.6	-141.88	-141.88	-473.7	-46.8	524.3	511.1	13.28	39.492	
3,100.0	3,097.3	3,092.9	3,092.6	6.9	6.9	-142.37	-142.37	-472.3	-47.2	529.5	515.7	13.76	38.477	
3,200.0	3,196.9	3,192.1	3,191.7	7.2	7.2	-142.82	-142.82	-471.2	-48.1	535.0	520.7	14.25	37.540	
3,300.0	3,296.6	3,291.0	3,290.6	7.4	7.4	-143.30	-143.30	-470.2	-48.6	540.6	525.9	14.74	36.677	
3,400.0	3,396.3	3,386.6	3,386.2	7.7	7.6	-143.78	-143.78	-469.7	-48.7	546.7	531.5	15.20	35.980	
3,500.0	3,495.9	3,487.3	3,487.0	7.9	7.9	-144.25	-144.25	-469.5	-49.1	553.3	537.6	15.66	35.334	
3,600.0	3,595.6	3,585.3	3,584.9	8.2	8.1	-144.68	-144.68	-469.2	-49.7	559.8	543.7	16.11	34.753	
3,700.0	3,695.2	3,685.4	3,685.0	8.4	8.3	-145.11	-145.11	-469.2	-50.2	566.5	550.0	16.55	34.232	
3,800.0	3,794.9	3,786.8	3,786.5	8.7	8.5	-145.55	-145.55	-468.9	-50.7	573.1	556.0	17.02	33.665	
3,900.0	3,894.5	3,885.4	3,885.0	8.9	8.8	-145.96	-145.96	-468.6	-51.2	579.6	562.1	17.50	33.118	
4,000.0	3,994.2	3,982.6	3,982.2	9.2	8.9	-146.37	-146.37	-468.6	-51.6	586.4	568.5	17.91	32.739	
4,100.0	4,093.8	4,083.2	4,082.8	9.5	9.1	-146.79	-146.79	-468.7	-51.9	593.5	575.2	18.31	32.415	
4,200.0	4,193.5	4,185.8	4,185.4	9.7	9.3	-147.20	-147.20	-468.5	-52.2	600.2	581.5	18.77	31.971	
4,300.0	4,293.1	4,282.9	4,282.5	10.0	9.5	-147.55	-147.55	-468.2	-52.9	606.9	587.7	19.23	31.557	
4,400.0	4,392.8	4,383.2	4,382.8	10.2	9.7	-147.86	-147.86	-468.3	-54.1	613.9	594.2	19.68	31.199	
4,500.0	4,492.5	4,490.4	4,490.0	10.5	10.0	-148.19	-148.19	-467.7	-55.3	620.3	600.1	20.16	30.764	
4,600.0	4,592.1	4,591.2	4,590.8	10.8	10.2	-148.56	-148.56	-466.2	-55.8	625.8	605.2	20.65	30.304	
4,690.8	4,682.6	4,686.4	4,686.0	11.0	10.5	-148.94	-148.94	-464.4	-56.0	630.6	609.5	21.10	29.887	
4,700.0	4,691.8	4,696.1	4,695.6	11.0	10.5	-148.98	-148.98	-464.2	-56.0	631.0	609.9	21.14	29.845	

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-343
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 5J-343	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 #2 (1-23-15)	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: 100-NS-GYRO-MS													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
4,800.0	4,791.5	4,799.0	4,798.5	11.2	10.8	-149.35	-149.35	-461.5	-56.1	634.2	612.7	21.58	29.388	
4,900.0	4,891.4	4,894.9	4,894.4	11.4	11.0	-149.51	-149.51	-459.1	-56.6	635.3	613.3	22.00	28.873	
5,008.6	5,000.0	5,004.5	5,003.9	11.6	11.3	173.35	173.35	-456.7	-57.6	634.2	611.7	22.47	28.222	
5,100.0	5,091.4	5,094.1	5,093.5	11.8	11.5	173.44	173.44	-454.9	-58.8	632.1	609.3	22.88	27.631	
5,200.0	5,191.4	5,190.6	5,190.0	12.0	11.8	173.58	173.58	-453.3	-60.6	630.3	607.0	23.35	27.000	
5,300.0	5,291.4	5,293.7	5,293.1	12.2	12.0	173.66	173.66	-451.6	-61.6	628.6	604.8	23.83	26.381	
5,400.0	5,391.4	5,389.4	5,388.8	12.4	12.3	173.72	173.72	-450.1	-62.4	626.9	602.6	24.29	25.809	
5,500.0	5,491.4	5,490.9	5,490.2	12.6	12.5	173.80	173.80	-448.8	-63.5	625.5	600.7	24.77	25.255	
5,600.0	5,591.4	5,587.7	5,587.1	12.8	12.8	173.80	173.80	-447.5	-63.6	624.1	598.9	25.21	24.754	
5,700.0	5,691.4	5,697.1	5,696.5	13.0	13.0	173.76	173.76	-445.6	-63.4	622.5	596.8	25.68	24.236	
5,800.0	5,791.4	5,806.7	5,806.0	13.2	13.3	173.76	173.76	-441.8	-63.7	619.0	592.9	26.17	23.651	
5,900.0	5,891.4	5,906.5	5,905.7	13.5	13.5	173.75	173.75	-437.8	-64.1	614.9	588.3	26.64	23.080	
6,000.0	5,991.4	6,004.9	6,004.1	13.7	13.8	173.69	173.69	-433.8	-63.9	610.9	583.8	27.10	22.544	
6,100.0	6,091.4	6,102.2	6,101.3	13.9	14.0	173.62	173.62	-430.2	-63.5	607.3	579.7	27.55	22.043	
6,185.1	6,176.5	6,184.5	6,183.5	14.1	14.2	173.55	173.55	-427.5	-63.1	604.6	576.6	27.93	21.648	
6,200.0	6,191.4	6,200.0	6,199.0	14.1	14.2	-6.11	-6.11	-427.0	-62.9	604.0	576.0	27.97	21.591	
6,250.0	6,241.3	6,246.4	6,245.4	14.2	14.3	-6.23	-6.23	-425.7	-62.5	600.0	572.0	28.04	21.399	
6,300.0	6,291.0	6,293.7	6,292.6	14.2	14.4	-6.40	-6.40	-424.5	-62.1	593.1	565.0	28.00	21.178	
6,350.0	6,340.2	6,340.3	6,339.2	14.3	14.5	-6.62	-6.62	-423.6	-61.8	583.1	555.2	27.85	20.935	
6,400.0	6,388.6	6,386.2	6,385.1	14.3	14.6	-6.93	-6.93	-422.8	-61.4	570.1	542.5	27.59	20.663	
6,450.0	6,436.2	6,430.0	6,428.9	14.4	14.7	-7.32	-7.32	-422.3	-60.9	554.3	527.1	27.20	20.378	
6,500.0	6,482.6	6,472.4	6,471.3	14.4	14.7	-7.81	-7.81	-422.1	-60.4	535.8	509.1	26.70	20.066	
6,550.0	6,527.7	6,514.4	6,513.3	14.5	14.8	-8.44	-8.44	-422.2	-59.8	514.6	488.5	26.10	19.717	
6,600.0	6,571.3	6,556.1	6,555.0	14.5	14.8	-9.22	-9.22	-422.5	-59.2	490.8	465.4	25.40	19.323	
6,650.0	6,613.3	6,596.5	6,595.4	14.6	14.8	-10.20	-10.20	-422.9	-58.7	464.4	439.7	24.64	18.850	
6,700.0	6,653.3	6,639.3	6,638.2	14.6	14.8	-11.53	-11.53	-423.4	-58.2	435.3	411.5	23.84	18.261	
6,750.0	6,691.3	6,680.1	6,679.0	14.6	14.9	-13.24	-13.24	-423.6	-57.9	403.6	380.5	23.03	17.521	
6,800.0	6,727.2	6,717.7	6,716.6	14.7	14.9	-15.46	-15.46	-423.6	-57.7	369.3	347.0	22.28	16.571	
6,850.0	6,760.6	6,752.2	6,751.1	14.8	15.0	-18.42	-18.42	-423.5	-57.7	332.8	311.1	21.68	15.350	
6,900.0	6,791.6	6,783.8	6,782.7	15.0	15.0	-22.46	-22.46	-423.3	-57.8	294.3	273.0	21.36	13.779	
6,950.0	6,819.9	6,812.2	6,811.1	15.2	15.1	-28.06	-28.06	-423.1	-57.9	254.2	232.6	21.59	11.773	
7,000.0	6,845.5	6,837.2	6,836.1	15.5	15.1	-35.86	-35.86	-422.9	-57.9	213.0	190.3	22.74	9.367	
7,050.0	6,868.2	6,859.5	6,858.4	15.8	15.2	-46.60	-46.60	-422.8	-58.0	171.3	146.3	25.07	6.834	
7,100.0	6,887.9	6,878.8	6,877.7	16.2	15.2	-60.22	-60.22	-422.6	-58.0	130.5	102.3	28.21	4.627	
7,150.0	6,904.6	6,895.1	6,894.0	16.6	15.3	-74.78	-74.78	-422.5	-58.0	93.9	63.0	30.90	3.038	
7,200.0	6,918.2	6,908.4	6,907.3	17.1	15.3	-87.06	-87.06	-422.4	-58.0	70.9	38.6	32.27	2.196	
7,215.6	6,921.8	6,911.9	6,910.8	17.2	15.3	-90.02	-90.02	-422.4	-58.0	69.2	36.7	32.48	2.130 CC, ES, SF	
7,250.0	6,928.6	6,918.5	6,917.4	17.6	15.3	-94.76	-94.76	-422.4	-58.0	77.0	44.2	32.77	2.349	
7,300.0	6,935.8	6,925.4	6,924.3	18.1	15.4	-97.25	-97.25	-422.3	-58.0	108.2	75.0	33.20	3.260	
7,350.0	6,939.7	6,929.0	6,927.9	18.6	15.4	-94.42	-94.42	-422.3	-58.0	150.0	116.1	33.90	4.425	
7,393.8	6,940.4	6,929.5	6,928.4	19.2	15.4	-87.48	-87.48	-422.3	-58.0	189.9	155.5	34.42	5.519	
7,400.0	6,940.4	6,929.4	6,928.3	19.2	15.4	-87.38	-87.38	-422.3	-58.0	195.7	161.2	34.49	5.675	
7,500.0	6,939.2	6,927.6	6,926.5	20.5	15.4	-85.91	-85.91	-422.3	-58.0	291.4	255.7	35.68	8.167	
7,600.0	6,938.1	6,925.8	6,924.7	21.9	15.4	-84.44	-84.44	-422.3	-58.0	389.3	352.3	36.95	10.535	
7,700.0	6,937.0	6,924.0	6,922.9	23.3	15.4	-82.98	-82.98	-422.3	-58.0	488.0	449.7	38.27	12.751	
7,800.0	6,935.8	6,922.2	6,921.1	24.8	15.4	-81.52	-81.52	-422.3	-58.0	587.1	547.5	39.63	14.817	
7,900.0	6,934.7	6,920.4	6,919.3	26.3	15.4	-80.08	-80.08	-422.3	-58.0	686.5	645.5	41.01	16.742	
8,000.0	6,933.6	6,918.7	6,917.5	27.9	15.3	-78.64	-78.64	-422.4	-58.0	786.0	743.7	42.40	18.540	
8,100.0	6,932.4	6,916.9	6,915.7	29.6	15.3	-77.22	-77.22	-422.4	-58.0	885.7	841.9	43.79	20.225	
8,200.0	6,931.3	6,915.1	6,913.9	31.3	15.3	-75.81	-75.81	-422.4	-58.0	985.4	940.2	45.18	21.810	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 5-8 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												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)			
9,200.0	6,919.9	6,780.6	6,776.2	49.0	14.1	56.77	-3,375.3	-207.2	977.0	922.4	54.55	17.911	
9,300.0	6,918.8	6,787.1	6,782.6	50.8	14.1	59.42	-3,375.8	-207.1	877.8	820.3	57.45	15.278	
9,400.0	6,917.7	6,793.6	6,789.2	52.6	14.1	62.28	-3,376.3	-206.9	778.7	718.3	60.44	12.885	
9,500.0	6,916.5	6,800.4	6,795.8	54.5	14.1	65.39	-3,376.9	-206.8	679.9	616.4	63.48	10.710	
9,600.0	6,915.4	6,808.0	6,803.4	56.3	14.2	69.10	-3,377.5	-206.6	581.3	514.6	66.67	8.719	
9,700.0	6,914.3	6,815.4	6,810.8	58.2	14.2	72.93	-3,378.1	-206.4	483.3	413.5	69.74	6.929	
9,800.0	6,913.1	6,822.6	6,818.0	60.0	14.2	76.84	-3,378.7	-206.2	386.1	313.4	72.64	5.314	
9,900.0	6,912.0	6,829.7	6,825.1	61.9	14.2	80.80	-3,379.2	-206.0	290.6	215.3	75.32	3.858	
10,000.0	6,910.9	6,836.6	6,832.0	63.8	14.2	84.77	-3,379.8	-205.8	199.4	121.7	77.72	2.565	
10,100.0	6,909.7	6,843.4	6,838.7	65.6	14.2	88.72	-3,380.3	-205.6	122.4	42.5	79.82	1.533	
10,174.5	6,908.9	6,848.3	6,843.7	67.0	14.2	91.62	-3,380.7	-205.5	97.2	16.0	81.19	1.198	Level 2, CC, ES, SF
10,200.0	6,908.6	6,850.0	6,845.3	67.5	14.2	92.61	-3,380.8	-205.4	100.5	18.9	81.61	1.232	Level 2
10,300.0	6,907.5	6,856.5	6,851.8	69.4	14.3	96.41	-3,381.3	-205.3	158.6	75.5	83.09	1.909	
10,400.0	6,906.3	6,862.8	6,858.1	71.3	14.3	100.09	-3,381.8	-205.1	245.2	160.9	84.25	2.910	
10,500.0	6,905.2	6,869.0	6,864.3	73.1	14.3	103.62	-3,382.2	-204.9	339.1	254.0	85.13	3.984	
10,600.0	6,904.1	6,875.1	6,870.3	75.0	14.3	106.99	-3,382.7	-204.7	435.7	349.9	85.75	5.080	
10,700.0	6,902.9	6,881.0	6,876.3	76.9	14.3	110.20	-3,383.1	-204.5	533.4	447.3	86.16	6.191	
10,800.0	6,901.8	6,886.9	6,882.1	78.8	14.3	113.22	-3,383.5	-204.3	631.8	545.4	86.37	7.315	
10,900.0	6,900.7	6,892.6	6,887.8	80.7	14.3	116.07	-3,383.9	-204.1	730.6	644.2	86.44	8.452	
11,000.0	6,899.5	6,900.0	6,895.2	82.6	14.4	119.60	-3,384.5	-203.9	829.6	743.9	85.79	9.670	
11,100.0	6,898.4	6,904.0	6,899.1	84.5	14.4	121.40	-3,384.7	-203.7	928.9	842.7	86.14	10.783	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 5-9 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													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
7,250.0	6,928.6	6,895.5	6,893.4	17.6	15.2	41.53	41.53	-1,434.2	-275.6	988.9	964.8	24.16	40.931	
7,300.0	6,935.8	6,902.7	6,900.6	18.1	15.2	55.59	55.59	-1,434.2	-275.8	940.1	911.5	28.65	32.819	
7,350.0	6,939.7	6,906.6	6,904.6	18.6	15.2	74.36	74.36	-1,434.2	-275.9	891.0	858.2	32.86	27.117	
7,393.8	6,940.4	6,907.4	6,905.4	19.2	15.2	92.35	92.35	-1,434.2	-275.9	848.0	813.8	34.22	24.782	
7,400.0	6,940.4	6,907.4	6,905.3	19.2	15.2	92.33	92.33	-1,434.2	-275.9	841.9	807.6	34.29	24.549	
7,500.0	6,939.2	6,906.2	6,904.2	20.5	15.2	91.92	91.92	-1,434.2	-275.8	743.8	708.2	35.56	20.916	
7,600.0	6,938.1	6,905.1	6,903.1	21.9	15.2	91.51	91.51	-1,434.2	-275.8	646.3	609.4	36.93	17.503	
7,700.0	6,937.0	6,904.0	6,902.0	23.3	15.2	91.10	91.10	-1,434.2	-275.8	549.8	511.4	38.37	14.328	
7,800.0	6,935.8	6,902.9	6,900.9	24.8	15.2	90.70	90.70	-1,434.2	-275.8	454.7	414.8	39.88	11.402	
7,900.0	6,934.7	6,901.8	6,899.8	26.3	15.2	90.29	90.29	-1,434.2	-275.8	362.3	320.9	41.44	8.743	
8,000.0	6,933.6	6,900.7	6,898.7	27.9	15.2	89.88	89.88	-1,434.2	-275.7	275.3	232.2	43.05	6.395	
8,100.0	6,932.4	6,899.6	6,897.6	29.6	15.2	89.47	89.47	-1,434.2	-275.7	200.7	156.0	44.69	4.491	
8,200.0	6,931.3	6,898.5	6,896.4	31.3	15.2	89.06	89.06	-1,434.2	-275.7	157.4	111.0	46.36	3.395	
8,227.5	6,931.0	6,898.2	6,896.1	31.7	15.2	88.95	88.95	-1,434.2	-275.7	155.0	108.2	46.83	3.310 CC, ES, SF	
8,300.0	6,930.2	6,897.4	6,895.3	32.9	15.2	88.65	88.65	-1,434.2	-275.7	171.1	123.0	48.06	3.560	
8,400.0	6,929.0	6,896.3	6,894.2	34.7	15.2	88.25	88.25	-1,434.2	-275.7	231.9	182.1	49.77	4.659	
8,500.0	6,927.9	6,895.2	6,893.1	36.4	15.2	87.84	87.84	-1,434.2	-275.6	313.5	261.9	51.51	6.086	
8,600.0	6,926.8	6,894.1	6,892.0	38.2	15.2	87.43	87.43	-1,434.2	-275.6	403.4	350.2	53.25	7.575	
8,700.0	6,925.6	6,893.0	6,890.9	39.9	15.2	87.02	87.02	-1,434.2	-275.6	497.2	442.2	55.01	9.038	
8,800.0	6,924.5	6,891.9	6,889.8	41.7	15.2	86.61	86.61	-1,434.2	-275.6	593.0	536.3	56.78	10.445	
8,900.0	6,923.4	6,890.8	6,888.7	43.5	15.2	86.21	86.21	-1,434.2	-275.6	690.1	631.5	58.56	11.785	
9,000.0	6,922.2	6,889.7	6,887.6	45.3	15.2	85.80	85.80	-1,434.2	-275.5	787.8	727.5	60.34	13.057	
9,100.0	6,921.1	6,888.6	6,886.5	47.1	15.2	85.39	85.39	-1,434.2	-275.5	886.1	824.0	62.12	14.263	
9,200.0	6,919.9	6,887.5	6,885.4	49.0	15.1	84.98	84.98	-1,434.2	-275.5	984.7	920.8	63.91	15.407	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5J-343
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 5J-343	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 #2 (1-23-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4835.0ft (RKB - 15')

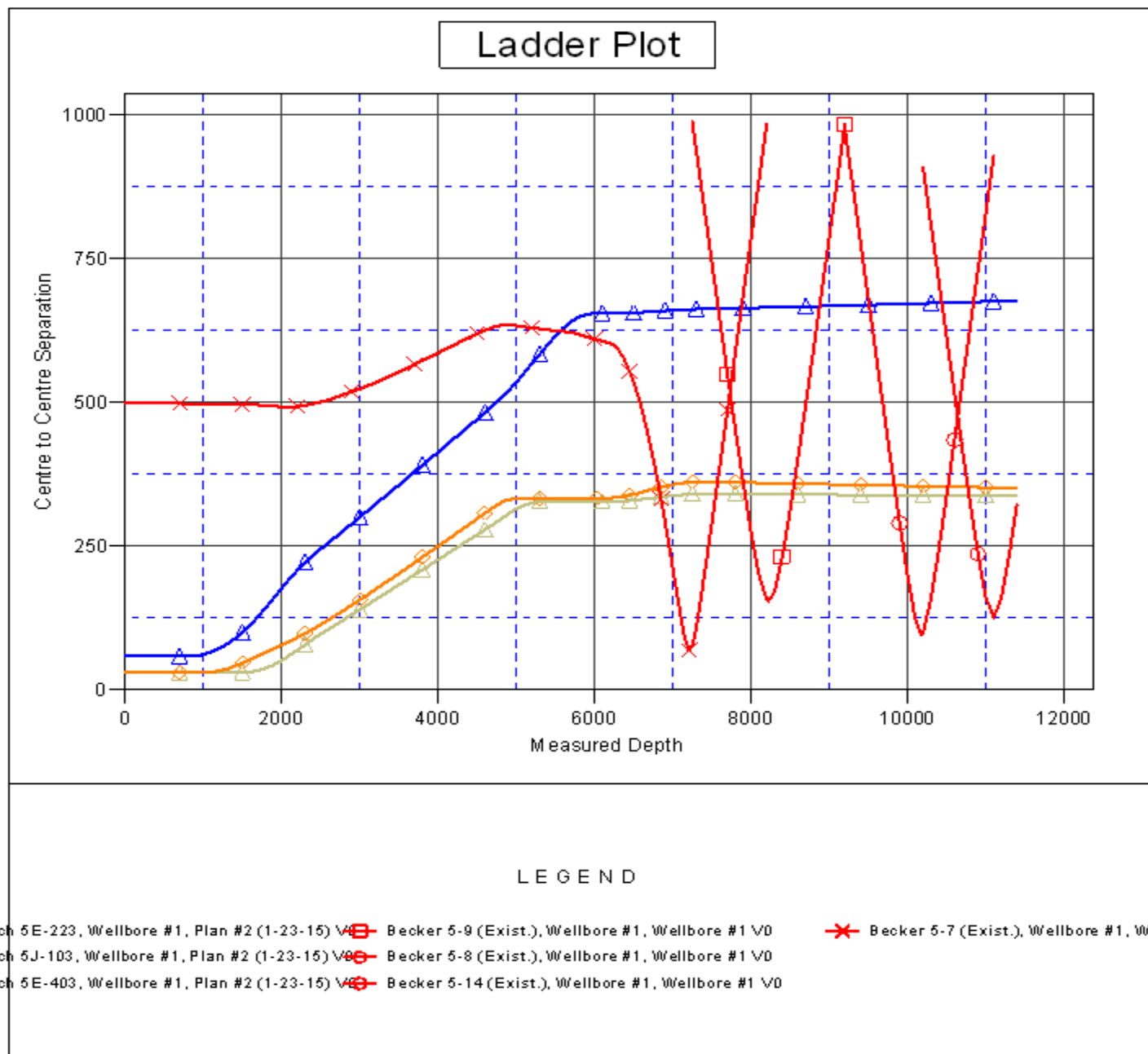
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Becker Ranch 5J-343

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-343
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 5J-343	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 #2 (1-23-15)	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 5J-343
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.59°

