

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Becker Ranch 5R-443**

Surface Location: Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4782.0

+N/-S
0.0

+E/-W
0.0

Northing
339344.66

Easting
3258990.49

Latitude
40.261180

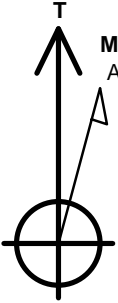
Longitude
-104.571970

Slot

RKB - 15' WELL @ 4797.0ft (RKB - 15')

WELLBORE TARGET DETAILS				
Name	TVD	+N/-S	+E/-W	Shape
SHL 211'FNL, 1845'FEL	1.0	0.0	0.0	Point
BHL 500'FSL, 1795'FEL	6991.0	-4597.5	27.9	Point

T
M



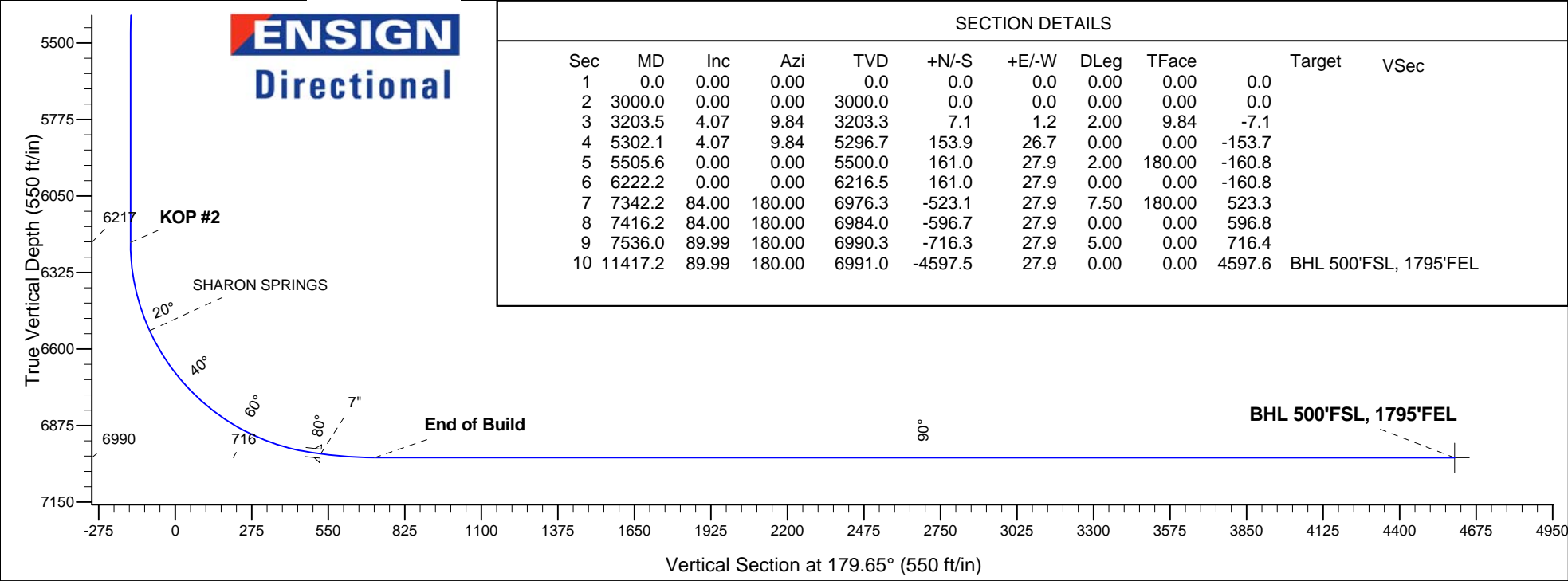
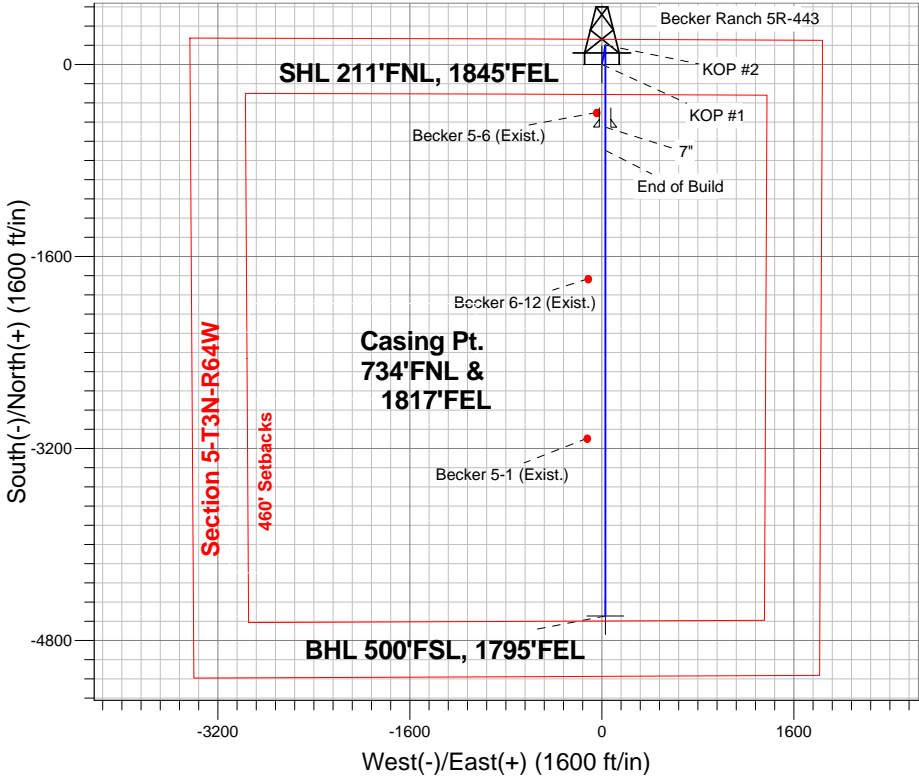
Azimuths to True North
Magnetic North: 8.42°

Magnetic Field
Strength: 52819.3snT
Dip Angle: 66.88°
Date: 12/2/2013
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
3000.0	3000.0	KOP #1
6216.6	6222.2	KOP #2
6990.3	7536.0	End of Build

Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W
Becker Ranch 5R-443
Plan #1 (12-02-13)
9:11, December 04 2013





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.5-T3N-R64W

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

Becker Ranch 5R-443

Wellbore #1

Plan: Plan #1 (12-02-13)

Standard Planning Report

04 December, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5R-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-02-13)		

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 5MR-HZ Pad Sec.5-T3N-R64W											
Site Position:						Northing:			1,339,344.02 ft			Latitude:			40.261180		
From:			Lat/Long			Easting:			3,258,929.10 ft			Longitude:			-104.572190		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.60 °		

Well	Becker Ranch 5R-443					
Well Position	+N-S	0.0 ft	Northing:	1,339,344.66 ft	Latitude:	40.261180
	+E-W	61.4 ft	Easting:	3,258,990.49 ft	Longitude:	-104.571970
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,782.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/2/2013	8.42	66.88	52,819

Design	Plan #1 (12-02-13)			
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	179.65

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	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,203.5	4.07	9.84	3,203.3	7.1	1.2	2.00	2.00	0.00	9.84	
5,302.1	4.07	9.84	5,296.7	153.9	26.7	0.00	0.00	0.00	0.00	
5,505.6	0.00	0.00	5,500.0	161.0	27.9	2.00	-2.00	0.00	180.00	
6,222.2	0.00	0.00	6,216.5	161.0	27.9	0.00	0.00	0.00	0.00	
7,342.2	84.00	180.00	6,976.3	-523.1	27.9	7.50	7.50	0.00	180.00	
7,416.2	84.00	180.00	6,984.0	-596.7	27.9	0.00	0.00	0.00	0.00	
7,536.0	89.99	180.00	6,990.3	-716.3	27.9	5.00	5.00	0.00	0.00	
11,417.2	89.99	180.00	6,991.0	-4,597.5	27.9	0.00	0.00	0.00	0.00	BHL 500'FSL, 1795

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5R-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-02-13)		

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 211'FNL, 1845'FEL									
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
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
3,100.0	2.00	9.84	3,100.0	1.7	0.3	-1.7	2.00	2.00	0.00
3,200.0	4.00	9.84	3,199.8	6.9	1.2	-6.9	2.00	2.00	0.00
3,203.5	4.07	9.84	3,203.3	7.1	1.2	-7.1	2.00	2.00	0.00
3,300.0	4.07	9.84	3,299.6	13.9	2.4	-13.9	0.00	0.00	0.00
3,400.0	4.07	9.84	3,399.3	20.9	3.6	-20.8	0.00	0.00	0.00
3,500.0	4.07	9.84	3,499.1	27.9	4.8	-27.8	0.00	0.00	0.00
3,600.0	4.07	9.84	3,598.8	34.8	6.0	-34.8	0.00	0.00	0.00
3,700.0	4.07	9.84	3,698.6	41.8	7.3	-41.8	0.00	0.00	0.00
3,701.4	4.07	9.84	3,700.0	41.9	7.3	-41.9	0.00	0.00	0.00
PARKMAN									
3,800.0	4.07	9.84	3,798.3	48.8	8.5	-48.8	0.00	0.00	0.00
3,900.0	4.07	9.84	3,898.1	55.8	9.7	-55.8	0.00	0.00	0.00
4,000.0	4.07	9.84	3,997.8	62.8	10.9	-62.8	0.00	0.00	0.00
4,100.0	4.07	9.84	4,097.6	69.8	12.1	-69.7	0.00	0.00	0.00
4,200.0	4.07	9.84	4,197.3	76.8	13.3	-76.7	0.00	0.00	0.00
4,300.0	4.07	9.84	4,297.1	83.8	14.5	-83.7	0.00	0.00	0.00
4,400.0	4.07	9.84	4,396.8	90.8	15.7	-90.7	0.00	0.00	0.00
4,403.2	4.07	9.84	4,400.0	91.0	15.8	-90.9	0.00	0.00	0.00
SUSSEX									

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5R-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-02-13)		

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	4.07	9.84	4,496.6	97.8	17.0	-97.7	0.00	0.00	0.00
4,600.0	4.07	9.84	4,596.3	104.8	18.2	-104.7	0.00	0.00	0.00
4,700.0	4.07	9.84	4,696.1	111.8	19.4	-111.7	0.00	0.00	0.00
4,800.0	4.07	9.84	4,795.8	118.8	20.6	-118.6	0.00	0.00	0.00
4,900.0	4.07	9.84	4,895.6	125.8	21.8	-125.6	0.00	0.00	0.00
5,000.0	4.07	9.84	4,995.3	132.8	23.0	-132.6	0.00	0.00	0.00
5,100.0	4.07	9.84	5,095.0	139.7	24.2	-139.6	0.00	0.00	0.00
5,105.0	4.07	9.84	5,100.0	140.1	24.3	-139.9	0.00	0.00	0.00
SHANNON									
5,200.0	4.07	9.84	5,194.8	146.7	25.4	-146.6	0.00	0.00	0.00
5,300.0	4.07	9.84	5,294.5	153.7	26.7	-153.6	0.00	0.00	0.00
5,302.1	4.07	9.84	5,296.7	153.9	26.7	-153.7	0.00	0.00	0.00
5,400.0	2.11	9.84	5,394.4	159.1	27.6	-158.9	2.00	-2.00	0.00
5,500.0	0.11	9.84	5,494.4	161.0	27.9	-160.8	2.00	-2.00	0.00
5,505.6	0.00	0.00	5,500.0	161.0	27.9	-160.8	2.00	-2.00	0.00
5,600.0	0.00	0.00	5,594.4	161.0	27.9	-160.8	0.00	0.00	0.00
5,700.0	0.00	0.00	5,694.4	161.0	27.9	-160.8	0.00	0.00	0.00
5,800.0	0.00	0.00	5,794.4	161.0	27.9	-160.8	0.00	0.00	0.00
5,900.0	0.00	0.00	5,894.4	161.0	27.9	-160.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,994.4	161.0	27.9	-160.8	0.00	0.00	0.00
6,100.0	0.00	0.00	6,094.4	161.0	27.9	-160.8	0.00	0.00	0.00
6,200.0	0.00	0.00	6,194.4	161.0	27.9	-160.8	0.00	0.00	0.00
6,222.2	0.00	0.00	6,216.6	161.0	27.9	-160.8	0.00	0.00	0.00
KOP #2									
6,300.0	5.84	180.00	6,294.2	157.0	27.9	-156.9	7.50	7.50	0.00
6,400.0	13.34	180.00	6,392.8	140.4	27.9	-140.2	7.50	7.50	0.00
6,500.0	20.84	180.00	6,488.3	111.0	27.9	-110.9	7.50	7.50	0.00
6,549.6	24.55	180.00	6,534.0	91.9	27.9	-91.7	7.50	7.50	0.00
SHARON SPRINGS									
6,600.0	28.34	180.00	6,579.2	69.5	27.9	-69.3	7.50	7.50	0.00
6,700.0	35.84	180.00	6,663.8	16.4	27.9	-16.2	7.50	7.50	0.00
6,800.0	43.34	180.00	6,740.8	-47.3	27.9	47.5	7.50	7.50	0.00
6,900.0	50.84	180.00	6,808.9	-120.5	27.9	120.6	7.50	7.50	0.00
7,000.0	58.34	180.00	6,866.8	-201.9	27.9	202.1	7.50	7.50	0.00
7,100.0	65.84	180.00	6,913.6	-290.2	27.9	290.4	7.50	7.50	0.00
7,200.0	73.34	180.00	6,948.4	-383.9	27.9	384.0	7.50	7.50	0.00
7,300.0	80.84	180.00	6,970.7	-481.3	27.9	481.4	7.50	7.50	0.00
7,342.2	84.00	180.00	6,976.3	-523.1	27.9	523.3	7.50	7.50	0.00
7"									
7,400.0	84.00	180.00	6,982.4	-580.6	27.9	580.7	0.00	0.00	0.00
7,416.2	84.00	180.00	6,984.0	-596.7	27.9	596.8	0.00	0.00	0.00
7,500.0	88.19	180.00	6,989.8	-680.3	27.9	680.4	5.00	5.00	0.00
7,536.0	89.99	180.00	6,990.3	-716.3	27.9	716.4	5.00	5.00	0.00
End of Build									
7,600.0	89.99	180.00	6,990.3	-780.3	27.9	780.4	0.00	0.00	0.00
7,700.0	89.99	180.00	6,990.4	-880.3	27.9	880.4	0.00	0.00	0.00
7,800.0	89.99	180.00	6,990.4	-980.3	27.9	980.4	0.00	0.00	0.00
7,900.0	89.99	180.00	6,990.4	-1,080.3	27.9	1,080.4	0.00	0.00	0.00
8,000.0	89.99	180.00	6,990.4	-1,180.3	27.9	1,180.4	0.00	0.00	0.00
8,100.0	89.99	180.00	6,990.4	-1,280.3	27.9	1,280.4	0.00	0.00	0.00
8,200.0	89.99	180.00	6,990.4	-1,380.3	27.9	1,380.4	0.00	0.00	0.00
8,300.0	89.99	180.00	6,990.5	-1,480.3	27.9	1,480.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5R-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-02-13)		

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	89.99	180.00	6,990.5	-1,580.3	27.9	1,580.4	0.00	0.00	0.00
8,500.0	89.99	180.00	6,990.5	-1,680.3	27.9	1,680.4	0.00	0.00	0.00
8,600.0	89.99	180.00	6,990.5	-1,780.3	27.9	1,780.4	0.00	0.00	0.00
8,700.0	89.99	180.00	6,990.5	-1,880.3	27.9	1,880.4	0.00	0.00	0.00
8,800.0	89.99	180.00	6,990.5	-1,980.3	27.9	1,980.4	0.00	0.00	0.00
8,900.0	89.99	180.00	6,990.6	-2,080.3	27.9	2,080.4	0.00	0.00	0.00
9,000.0	89.99	180.00	6,990.6	-2,180.3	27.9	2,180.4	0.00	0.00	0.00
9,100.0	89.99	180.00	6,990.6	-2,280.3	27.9	2,280.4	0.00	0.00	0.00
9,200.0	89.99	180.00	6,990.6	-2,380.3	27.9	2,380.4	0.00	0.00	0.00
9,300.0	89.99	180.00	6,990.6	-2,480.3	27.9	2,480.4	0.00	0.00	0.00
9,400.0	89.99	180.00	6,990.6	-2,580.3	27.9	2,580.4	0.00	0.00	0.00
9,500.0	89.99	180.00	6,990.7	-2,680.3	27.9	2,680.4	0.00	0.00	0.00
9,600.0	89.99	180.00	6,990.7	-2,780.3	27.9	2,780.4	0.00	0.00	0.00
9,700.0	89.99	180.00	6,990.7	-2,880.3	27.9	2,880.4	0.00	0.00	0.00
9,800.0	89.99	180.00	6,990.7	-2,980.3	27.9	2,980.4	0.00	0.00	0.00
9,900.0	89.99	180.00	6,990.7	-3,080.3	27.9	3,080.4	0.00	0.00	0.00
10,000.0	89.99	180.00	6,990.8	-3,180.3	27.9	3,180.4	0.00	0.00	0.00
10,100.0	89.99	180.00	6,990.8	-3,280.3	27.9	3,280.4	0.00	0.00	0.00
10,200.0	89.99	180.00	6,990.8	-3,380.3	27.9	3,380.4	0.00	0.00	0.00
10,300.0	89.99	180.00	6,990.8	-3,480.3	27.9	3,480.4	0.00	0.00	0.00
10,400.0	89.99	180.00	6,990.8	-3,580.3	27.9	3,580.4	0.00	0.00	0.00
10,500.0	89.99	180.00	6,990.8	-3,680.3	27.9	3,680.4	0.00	0.00	0.00
10,600.0	89.99	180.00	6,990.9	-3,780.3	27.9	3,780.4	0.00	0.00	0.00
10,700.0	89.99	180.00	6,990.9	-3,880.3	27.9	3,880.4	0.00	0.00	0.00
10,800.0	89.99	180.00	6,990.9	-3,980.3	27.9	3,980.4	0.00	0.00	0.00
10,900.0	89.99	180.00	6,990.9	-4,080.3	27.9	4,080.4	0.00	0.00	0.00
11,000.0	89.99	180.00	6,990.9	-4,180.3	27.9	4,180.4	0.00	0.00	0.00
11,100.0	89.99	180.00	6,990.9	-4,280.3	27.9	4,280.4	0.00	0.00	0.00
11,200.0	89.99	180.00	6,991.0	-4,380.3	27.9	4,380.4	0.00	0.00	0.00
11,300.0	89.99	180.00	6,991.0	-4,480.3	27.9	4,480.4	0.00	0.00	0.00
11,400.0	89.99	180.00	6,991.0	-4,580.3	27.9	4,580.4	0.00	0.00	0.00
11,417.2	89.99	180.00	6,991.0	-4,597.5	27.9	4,597.6	0.00	0.00	0.00

BHL 500'FSL, 1795'FEL

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,342.2	6,976.3	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,701.4	3,700.0	PARKMAN			
4,403.2	4,400.0	SUSSEX			
5,105.0	5,100.0	SHANNON			
6,549.6	6,534.0	SHARON SPRINGS			

Database:	Landmark	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Project:	SEC.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	North Reference:	True
Well:	Becker Ranch 5R-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-02-13)		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,000.0	3,000.0	0.0	0.0	KOP #1
6,222.2	6,216.6	161.0	27.9	KOP #2
7,536.0	6,990.3	-716.3	27.9	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.5-T3N-R64W

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

Becker Ranch 5R-443

Wellbore #1

Plan #1 (12-02-13)

Anticollision Report

04 December, 2013



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (12-02-13)		
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	12/3/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,417.2	Plan #1 (12-02-13) (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 5MR-HZ Pad Sec.5-T3N-R64W						
Becker Ranch 5M-323 - Wellbore #1 - Plan #1 (12-02-13)	1,500.0	1,500.0	30.7	24.2	4.710	CC, ES
Becker Ranch 5M-323 - Wellbore #1 - Plan #1 (12-02-13)	11,417.9	11,315.7	358.3	190.6	2.137	SF
Becker Ranch 5M-403 - Wellbore #1 - Plan #1 (12-02-13)	1,000.0	1,000.0	61.4	57.1	14.378	CC, ES
Becker Ranch 5M-403 - Wellbore #1 - Plan #1 (12-02-13)	11,417.9	11,453.4	658.8	478.9	3.663	SF
Becker Ranch 5R-203 - Wellbore #1 - Plan #1 (12-02-13)	1,000.0	999.0	27.9	23.6	6.539	CC, ES
Becker Ranch 5R-203 - Wellbore #1 - Plan #1 (12-02-13)	11,417.9	11,239.2	398.4	244.1	2.583	SF
Existing Wells Sec.5-T3N-R64W						
Becker 5-1 (Exist.) - Wellbore #1 - Wellbore #1	9,934.5	6,961.7	150.7	-50.5	0.749	Level 1, CC, ES, SF
Becker 5-6 (Exist.) - Wellbore #1 - Wellbore #1	7,217.5	6,944.2	72.6	-83.4	0.465	Level 1, CC, ES, SF
Becker 6-12 (Exist.) - Wellbore #1 - Wellbore #1	8,604.8	6,964.5	142.4	-34.7	0.804	Level 1, CC, ES, SF

Offset Design												
Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5M-323 - Wellbore #1 - Plan #1 (12-02-13)												
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	-90.00	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
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

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 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5M-323 - Wellbore #1 - Plan #1 (12-02-1													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
1,600.0	1,600.0	1,599.0	1,599.0	3.5	3.5	-88.44		0.9	-32.2	32.2	25.2	6.96	4.627	
1,700.0	1,700.0	1,697.9	1,697.7	3.7	3.7	-84.55		3.5	-36.6	36.8	29.4	7.39	4.978	
1,800.0	1,800.0	1,797.0	1,796.5	3.9	3.9	-80.11		7.6	-43.4	44.2	36.4	7.83	5.645	
1,900.0	1,900.0	1,896.7	1,895.9	4.2	4.1	-76.85		11.8	-50.6	52.1	43.8	8.27	6.298	
2,000.0	2,000.0	1,996.3	1,995.2	4.4	4.4	-74.44		16.1	-57.7	60.1	51.4	8.71	6.899	
2,100.0	2,100.0	2,096.0	2,094.5	4.6	4.6	-72.61		20.3	-64.9	68.2	59.1	9.16	7.449	
2,200.0	2,200.0	2,195.6	2,193.8	4.8	4.9	-71.16		24.6	-72.0	76.4	66.8	9.60	7.953	
2,300.0	2,300.0	2,295.3	2,293.1	5.1	5.1	-70.00		28.8	-79.2	84.5	74.5	10.05	8.415	
2,400.0	2,400.0	2,394.9	2,392.4	5.3	5.3	-69.04		33.1	-86.3	92.8	82.3	10.49	8.841	
2,500.0	2,500.0	2,494.6	2,491.7	5.5	5.6	-68.23		37.3	-93.5	101.0	90.1	10.94	9.233	
2,600.0	2,600.0	2,594.2	2,591.0	5.7	5.8	-67.55		41.6	-100.6	109.3	97.9	11.39	9.594	
2,700.0	2,700.0	2,693.9	2,690.3	6.0	6.1	-66.96		45.8	-107.8	117.5	105.7	11.84	9.930	
2,800.0	2,800.0	2,793.5	2,789.6	6.2	6.4	-66.45		50.1	-114.9	125.8	113.5	12.28	10.241	
2,900.0	2,900.0	2,893.2	2,888.9	6.4	6.6	-66.01		54.3	-122.1	134.1	121.4	12.73	10.530	
3,000.0	3,000.0	2,992.8	2,988.2	6.6	6.9	-65.61		58.6	-129.2	142.4	129.2	13.18	10.800	
3,100.0	3,100.0	3,092.5	3,087.5	6.9	7.1	-75.59		62.8	-136.4	150.2	136.6	13.62	11.028	
3,200.0	3,199.8	3,192.2	3,186.8	7.1	7.4	-76.95		67.1	-143.5	157.3	143.2	14.07	11.178	
3,300.0	3,299.6	3,291.8	3,286.1	7.3	7.6	-78.96		71.3	-150.7	164.1	149.6	14.52	11.299	
3,400.0	3,399.3	3,391.4	3,385.4	7.5	7.9	-80.80		75.6	-157.8	171.0	156.1	14.98	11.421	
3,500.0	3,499.1	3,491.0	3,484.6	7.8	8.2	-82.50		79.8	-165.0	178.2	162.7	15.43	11.545	
3,600.0	3,598.8	3,590.6	3,583.9	8.0	8.4	-84.07		84.1	-172.1	185.5	169.6	15.89	11.668	
3,700.0	3,698.6	3,690.2	3,683.2	8.2	8.7	-85.52		88.3	-179.3	192.9	176.5	16.36	11.790	
3,800.0	3,798.3	3,789.9	3,782.4	8.4	9.0	-86.87		92.6	-186.4	200.4	183.5	16.82	11.911	
3,900.0	3,898.1	3,889.5	3,881.7	8.7	9.2	-88.11		96.8	-193.6	208.0	190.7	17.29	12.028	
4,000.0	3,997.8	3,989.1	3,980.9	8.9	9.5	-89.27		101.1	-200.7	215.7	197.9	17.76	12.144	
4,100.0	4,097.6	4,088.7	4,080.2	9.1	9.8	-90.34		105.3	-207.9	223.5	205.3	18.24	12.256	
4,200.0	4,197.3	4,188.3	4,179.5	9.4	10.0	-91.35		109.6	-215.0	231.4	212.6	18.71	12.365	
4,300.0	4,297.1	4,287.9	4,278.7	9.6	10.3	-92.28		113.8	-222.2	239.3	220.1	19.19	12.471	
4,400.0	4,396.8	4,387.5	4,378.0	9.9	10.5	-93.16		118.1	-229.3	247.3	227.6	19.67	12.574	
4,500.0	4,496.6	4,487.1	4,477.3	10.1	10.8	-93.98		122.3	-236.5	255.3	235.2	20.15	12.673	
4,600.0	4,596.3	4,586.7	4,576.5	10.3	11.1	-94.76		126.6	-243.6	263.4	242.8	20.63	12.770	
4,700.0	4,696.1	4,686.4	4,675.8	10.6	11.3	-95.48		130.8	-250.7	271.6	250.4	21.11	12.863	
4,800.0	4,795.8	4,786.0	4,775.1	10.8	11.6	-96.16		135.1	-257.9	279.7	258.1	21.60	12.954	
4,900.0	4,895.6	4,885.6	4,874.3	11.1	11.9	-96.81		139.3	-265.0	288.0	265.9	22.08	13.041	
5,000.0	4,895.3	4,885.2	4,873.6	11.3	12.1	-97.42		143.6	-272.2	296.2	273.6	22.57	13.126	
5,100.0	5,095.0	5,084.8	5,072.8	11.6	12.4	-97.99		147.8	-279.3	304.5	281.4	23.05	13.208	
5,200.0	5,194.8	5,184.4	5,172.1	11.8	12.7	-98.54		152.1	-286.5	312.8	289.3	23.54	13.287	
5,300.0	5,294.5	5,284.2	5,272.5	12.0	13.0	-99.06		156.4	-293.7	321.1	297.1	24.03	13.363	
5,400.0	5,394.4	5,384.7	5,372.9	12.3	13.2	-99.63		159.8	-299.4	327.2	302.7	24.46	13.375	
5,500.0	5,494.4	5,484.6	5,473.7	12.4	13.4	-99.84		161.0	-301.5	329.4	304.5	24.84	13.260	
5,600.0	5,594.4	5,584.6	5,573.7	12.6	13.5	-99.00		161.0	-301.5	329.4	304.2	25.22	13.058	
5,700.0	5,694.4	5,684.6	5,673.7	12.8	13.7	-99.00		161.0	-301.5	329.4	303.7	25.65	12.841	
5,800.0	5,794.4	5,784.6	5,773.7	13.1	13.9	-99.00		161.0	-301.5	329.4	303.3	26.08	12.630	
5,900.0	5,894.4	5,884.6	5,873.7	13.3	14.1	-99.00		161.0	-301.5	329.4	302.9	26.51	12.425	
6,000.0	5,994.4	5,984.6	5,973.7	13.5	14.3	-99.00		161.0	-301.5	329.4	302.4	26.94	12.227	
6,100.0	6,094.4	6,084.6	6,073.7	13.7	14.5	-99.00		161.0	-301.5	329.4	302.0	27.37	12.035	
6,135.8	6,130.2	6,124.1	6,113.2	13.8	14.6	-90.05		160.7	-301.5	329.4	301.9	27.52	11.970	
6,200.0	6,194.4	6,184.6	6,173.7	13.9	14.7	-90.83		156.2	-301.5	329.4	301.7	27.77	11.864	
6,300.0	6,294.2	6,284.6	6,273.7	14.1	14.8	-86.83		139.1	-301.5	329.9	301.8	28.08	11.748	
6,400.0	6,392.8	6,383.0	6,371.0	14.2	14.9	-84.52		110.7	-301.5	330.9	302.6	28.30	11.694	
6,500.0	6,488.3	6,478.6	6,467.2	14.3	15.0	-82.31		71.5	-301.5	332.4	304.0	28.46	11.679	

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 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5M-323 - Wellbore #1 - Plan #1 (12-02-1													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
6,600.0	6,579.2	6,587.9	6,546.5	14.4	15.1	80.26		22.9	-301.5	334.3	305.7	28.61	11.683	
6,700.0	6,663.8	6,679.8	6,618.4	14.5	15.2	78.40		-34.2	-301.5	336.3	307.5	28.81	11.673	
6,800.0	6,740.8	6,770.6	6,682.3	14.7	15.3	76.74		-98.7	-301.5	338.5	309.4	29.11	11.628	
6,900.0	6,808.9	6,860.5	6,737.5	15.0	15.6	75.31		-169.6	-301.5	340.6	311.0	29.59	11.509	
7,000.0	6,866.8	6,950.0	6,783.9	15.5	16.0	74.11		-246.1	-301.5	342.5	312.2	30.33	11.294	
7,100.0	6,913.6	7,038.2	6,820.5	16.1	16.6	73.16		-326.4	-301.5	344.2	312.8	31.38	10.970	
7,200.0	6,948.4	7,126.4	6,847.6	16.9	17.3	72.45		-410.2	-301.5	345.5	312.7	32.76	10.547	
7,300.0	6,970.7	7,214.2	6,864.8	17.9	18.2	72.01		-496.2	-301.5	346.3	311.9	34.47	10.046	
7,400.0	6,982.4	7,301.7	6,872.0	19.0	19.2	71.53		-583.4	-301.5	347.4	311.0	36.42	9.539	
7,500.0	6,989.8	7,397.9	6,871.9	20.2	20.4	70.32		-679.6	-301.5	349.8	311.3	38.55	9.075	
7,600.0	6,990.3	7,497.9	6,871.3	21.5	21.7	70.13		-779.6	-301.5	350.2	309.2	41.05	8.531	
7,700.0	6,990.4	7,597.9	6,870.8	23.0	23.1	70.05		-879.6	-301.5	350.4	306.7	43.71	8.016	
7,800.0	6,990.4	7,697.9	6,870.2	24.4	24.5	69.96		-979.6	-301.5	350.6	304.1	46.50	7.540	
7,900.0	6,990.4	7,797.9	6,869.6	26.0	26.1	69.87		-1,079.6	-301.5	350.8	301.4	49.39	7.103	
8,000.0	6,990.4	7,897.9	6,869.1	27.5	27.6	69.78		-1,179.6	-301.5	351.0	298.6	52.37	6.702	
8,100.0	6,990.4	7,997.9	6,868.5	29.2	29.3	69.69		-1,279.6	-301.5	351.2	295.8	55.43	6.336	
8,200.0	6,990.4	8,097.9	6,868.0	30.8	30.9	69.60		-1,379.6	-301.5	351.4	292.9	58.54	6.003	
8,300.0	6,990.5	8,197.9	6,867.4	32.5	32.6	69.52		-1,479.6	-301.5	351.6	289.9	61.71	5.698	
8,400.0	6,990.5	8,297.9	6,866.9	34.2	34.3	69.43		-1,579.6	-301.5	351.8	286.9	64.92	5.420	
8,500.0	6,990.5	8,397.9	6,866.3	36.0	36.0	69.34		-1,679.6	-301.5	352.0	283.9	68.16	5.165	
8,600.0	6,990.5	8,497.9	6,865.7	37.7	37.8	69.25		-1,779.6	-301.5	352.2	280.8	71.44	4.931	
8,700.0	6,990.5	8,597.9	6,865.2	39.5	39.5	69.17		-1,879.6	-301.5	352.4	277.7	74.74	4.715	
8,800.0	6,990.5	8,697.9	6,864.6	41.3	41.3	69.08		-1,979.6	-301.5	352.6	274.6	78.06	4.517	
8,900.0	6,990.6	8,797.9	6,864.1	43.0	43.1	68.99		-2,079.6	-301.5	352.8	271.4	81.41	4.334	
9,000.0	6,990.6	8,897.9	6,863.5	44.8	44.9	68.90		-2,179.6	-301.5	353.0	268.3	84.77	4.165	
9,100.0	6,990.6	8,997.9	6,862.9	46.7	46.7	68.82		-2,279.6	-301.5	353.3	265.1	88.14	4.008	
9,200.0	6,990.6	9,097.9	6,862.4	48.5	48.5	68.73		-2,379.6	-301.5	353.5	261.9	91.53	3.862	
9,300.0	6,990.6	9,197.9	6,861.8	50.3	50.3	68.64		-2,479.6	-301.5	353.7	258.8	94.92	3.726	
9,400.0	6,990.6	9,297.9	6,861.3	52.1	52.2	68.56		-2,579.6	-301.5	353.9	255.6	98.33	3.599	
9,500.0	6,990.7	9,397.9	6,860.7	54.0	54.0	68.47		-2,679.6	-301.5	354.1	252.4	101.74	3.480	
9,600.0	6,990.7	9,497.9	6,860.2	55.8	55.9	68.38		-2,779.6	-301.5	354.3	249.1	105.16	3.369	
9,700.0	6,990.7	9,597.9	6,859.6	57.7	57.7	68.30		-2,879.5	-301.5	354.5	245.9	108.59	3.265	
9,800.0	6,990.7	9,697.9	6,859.0	59.5	59.6	68.21		-2,979.5	-301.5	354.7	242.7	112.02	3.167	
9,900.0	6,990.7	9,797.9	6,858.5	61.4	61.4	68.12		-3,079.5	-301.5	354.9	239.5	115.45	3.075	
10,000.0	6,990.8	9,897.9	6,857.9	63.3	63.3	68.04		-3,179.5	-301.5	355.2	236.3	118.88	2.987	
10,100.0	6,990.8	9,997.9	6,857.4	65.1	65.1	67.95		-3,279.5	-301.5	355.4	233.1	122.32	2.905	
10,200.0	6,990.8	10,097.9	6,856.8	67.0	67.0	67.86		-3,379.5	-301.5	355.6	229.8	125.76	2.827	
10,300.0	6,990.8	10,197.9	6,856.2	68.9	68.9	67.78		-3,479.5	-301.5	355.8	226.6	129.21	2.754	
10,400.0	6,990.8	10,297.9	6,855.7	70.7	70.7	67.69		-3,579.5	-301.5	356.0	223.4	132.65	2.684	
10,500.0	6,990.8	10,397.9	6,855.1	72.6	72.6	67.61		-3,679.5	-301.5	356.2	220.2	136.09	2.618	
10,600.0	6,990.9	10,497.9	6,854.6	74.5	74.5	67.52		-3,779.5	-301.5	356.5	216.9	139.54	2.555	
10,700.0	6,990.9	10,597.9	6,854.0	76.4	76.4	67.44		-3,879.5	-301.5	356.7	213.7	142.98	2.495	
10,800.0	6,990.9	10,697.9	6,853.5	78.2	78.2	67.35		-3,979.5	-301.5	356.9	210.5	146.43	2.437	
10,900.0	6,990.9	10,797.9	6,852.9	80.1	80.1	67.27		-4,079.5	-301.5	357.1	207.3	149.87	2.383	
11,000.0	6,990.9	10,897.9	6,852.3	82.0	82.0	67.18		-4,179.5	-301.5	357.4	204.0	153.31	2.331	
11,100.0	6,990.9	10,997.9	6,851.8	83.9	83.9	67.10		-4,279.5	-301.5	357.6	200.8	156.76	2.281	
11,200.0	6,991.0	11,097.9	6,851.2	85.8	85.8	67.01		-4,379.5	-301.5	357.8	197.6	160.20	2.234	
11,300.0	6,991.0	11,197.9	6,850.7	87.7	87.7	66.93		-4,479.5	-301.5	358.0	194.4	163.64	2.188	
11,400.0	6,991.0	11,297.9	6,850.1	89.6	89.6	66.84		-4,579.5	-301.5	358.3	191.2	167.07	2.144	
11,417.9	6,991.0	11,315.7	6,850.0	89.9	89.9	66.83		-4,597.4	-301.5	358.3	190.6	167.69	2.137 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design													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)	Distance Between Centres (ft)	Distance 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	-61.4	61.4				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	-90.00	0.0	-61.4	61.4	61.2	0.22	273.175	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	-90.00	0.0	-61.4	61.4	60.7	0.67	91.058	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	-90.00	0.0	-61.4	61.4	60.3	1.12	54.635	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	-90.00	0.0	-61.4	61.4	59.8	1.57	39.025	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	-90.00	0.0	-61.4	61.4	59.4	2.02	30.353	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	-90.00	0.0	-61.4	61.4	58.9	2.47	24.834	
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	-90.00	0.0	-61.4	61.4	58.5	2.92	21.013	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	-90.00	0.0	-61.4	61.4	58.0	3.37	18.212	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	-90.00	0.0	-61.4	61.4	57.6	3.82	16.069	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	-90.00	0.0	-61.4	61.4	57.1	4.27	14.378 CC, ES	
1,100.0	1,100.0	1,097.9	1,097.9	2.4	2.3	-89.58	-89.58	0.5	-63.0	63.0	58.3	4.71	13.398	
1,200.0	1,200.0	1,195.7	1,195.5	2.6	2.6	-88.46	-88.46	1.8	-67.8	68.0	62.9	5.14	13.240	
1,300.0	1,300.0	1,292.9	1,292.4	2.8	2.8	-86.92	-86.92	4.1	-75.8	76.3	70.7	5.57	13.695	
1,400.0	1,400.0	1,389.5	1,388.3	3.0	3.0	-85.26	-85.26	7.2	-86.8	87.9	81.9	6.01	14.633	
1,500.0	1,500.0	1,487.8	1,485.6	3.3	3.3	-83.74	-83.74	11.0	-100.3	101.9	95.5	6.45	15.795	
1,600.0	1,600.0	1,586.8	1,583.5	3.5	3.6	-82.57	-82.57	14.9	-114.0	116.1	109.2	6.90	16.827	
1,700.0	1,700.0	1,685.7	1,681.5	3.7	3.8	-81.65	-81.65	18.7	-127.6	130.3	122.9	7.35	17.733	
1,800.0	1,800.0	1,784.7	1,779.4	3.9	4.1	-80.92	-80.92	22.6	-141.2	144.5	136.7	7.80	18.531	
1,900.0	1,900.0	1,883.7	1,877.4	4.2	4.4	-80.31	-80.31	26.4	-154.9	158.8	150.5	8.25	19.240	
2,000.0	2,000.0	1,982.6	1,975.3	4.4	4.8	-79.81	-79.81	30.3	-168.5	173.0	164.3	8.71	19.873	
2,100.0	2,100.0	2,081.6	2,073.3	4.6	5.1	-79.38	-79.38	34.2	-182.2	187.3	178.1	9.16	20.441	
2,200.0	2,200.0	2,180.6	2,171.2	4.8	5.4	-79.02	-79.02	38.0	-195.8	201.6	191.9	9.62	20.953	
2,300.0	2,300.0	2,279.5	2,269.2	5.1	5.7	-78.70	-78.70	41.9	-209.5	215.8	205.8	10.08	21.416	
2,400.0	2,400.0	2,378.5	2,367.1	5.3	6.1	-78.42	-78.42	45.7	-223.1	230.1	219.6	10.54	21.839	
2,500.0	2,500.0	2,477.5	2,465.1	5.5	6.4	-78.17	-78.17	49.6	-236.8	244.4	233.4	11.00	22.224	
2,600.0	2,600.0	2,576.4	2,563.0	5.7	6.7	-77.95	-77.95	53.4	-250.4	258.7	247.3	11.46	22.578	
2,700.0	2,700.0	2,675.4	2,661.0	6.0	7.1	-77.76	-77.76	57.3	-264.1	273.0	261.1	11.92	22.903	
2,800.0	2,800.0	2,774.4	2,758.9	6.2	7.4	-77.58	-77.58	61.2	-277.7	287.3	274.9	12.38	23.203	
2,900.0	2,900.0	2,873.3	2,856.8	6.4	7.7	-77.42	-77.42	65.0	-291.4	301.6	288.8	12.85	23.481	
3,000.0	3,000.0	2,972.3	2,954.8	6.6	8.1	-77.27	-77.27	68.9	-305.0	315.9	302.6	13.31	23.738	
3,100.0	3,100.0	3,071.3	3,052.7	6.9	8.4	-87.00	-87.00	72.7	-318.6	330.2	316.4	13.72	24.067	
3,200.0	3,199.8	3,170.2	3,150.6	7.1	8.7	-87.46	-87.46	76.6	-332.3	344.2	330.0	14.18	24.280	
3,300.0	3,299.6	3,269.0	3,248.4	7.3	9.1	-88.43	-88.43	80.4	-345.9	358.3	343.7	14.64	24.477	
3,400.0	3,399.3	3,367.8	3,346.2	7.5	9.4	-89.34	-89.34	84.3	-359.5	372.5	357.4	15.10	24.663	
3,500.0	3,499.1	3,466.7	3,444.0	7.8	9.8	-90.19	-90.19	88.1	-373.2	386.7	371.1	15.57	24.838	
3,600.0	3,598.8	3,565.5	3,541.8	8.0	10.1	-90.97	-90.97	92.0	-386.8	401.0	385.0	16.04	25.002	
3,700.0	3,698.6	3,664.3	3,639.7	8.2	10.4	-91.70	-91.70	95.9	-400.4	415.4	398.9	16.51	25.157	
3,800.0	3,798.3	3,763.1	3,737.5	8.4	10.8	-92.38	-92.38	99.7	-414.0	429.9	412.9	16.99	25.303	
3,900.0	3,898.1	3,862.0	3,835.3	8.7	11.1	-93.02	-93.02	103.6	-427.7	444.4	426.9	17.47	25.441	
4,000.0	3,997.8	3,960.8	3,933.1	8.9	11.5	-93.62	-93.62	107.4	-441.3	459.0	441.0	17.95	25.571	
4,100.0	4,097.6	4,059.6	4,030.9	9.1	11.8	-94.18	-94.18	111.3	-454.9	473.6	455.1	18.43	25.694	
4,200.0	4,197.3	4,158.4	4,128.7	9.4	12.2	-94.70	-94.70	115.1	-468.5	488.2	469.3	18.92	25.809	
4,300.0	4,297.1	4,257.3	4,226.5	9.6	12.5	-95.20	-95.20	119.0	-482.2	502.9	483.5	19.40	25.919	
4,400.0	4,396.8	4,356.1	4,324.3	9.9	12.8	-95.67	-95.67	122.8	-495.8	517.6	497.8	19.89	26.023	
4,500.0	4,496.6	4,454.9	4,422.1	10.1	13.2	-96.11	-96.11	126.7	-509.4	532.4	512.0	20.38	26.121	
4,600.0	4,596.3	4,553.7	4,519.9	10.3	13.5	-96.53	-96.53	130.5	-523.1	547.2	526.3	20.87	26.215	
4,700.0	4,696.1	4,652.6	4,617.7	10.6	13.9	-96.92	-96.92	134.4	-536.7	562.0	540.6	21.37	26.304	
4,800.0	4,795.8	4,751.4	4,715.5	10.8	14.2	-97.30	-97.30	138.2	-550.3	576.8	555.0	21.86	26.388	
4,900.0	4,895.6	4,850.2	4,813.3	11.1	14.6	-97.65	-97.65	142.1	-563.9	591.7	569.3	22.36	26.468	
5,000.0	4,895.3	4,849.0	4,811.1	11.3	14.9	-97.99	-97.99	145.9	-577.6	606.6	583.7	22.85	26.545	

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 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
5,100.0	5,095.0	5,047.8	5,008.9	11.6	15.3	-98.32	149.8	-591.2	621.5	598.1	23.35	26.618		
5,200.0	5,194.8	5,151.4	5,111.4	11.8	15.6	-98.64	153.8	-605.4	636.3	612.5	23.85	26.677		
5,300.0	5,294.5	5,278.0	5,237.2	12.0	15.9	-99.10	157.7	-619.2	648.4	624.1	24.37	26.608		
5,400.0	5,394.4	5,405.7	5,364.5	12.3	16.2	-99.64	160.1	-627.8	656.0	631.2	24.84	26.406		
5,500.0	5,494.4	5,534.0	5,492.8	12.4	16.4	-99.84	161.0	-630.8	658.8	633.5	25.25	26.085		
5,600.0	5,594.4	5,635.6	5,594.4	12.6	16.5	-90.00	161.0	-630.9	658.8	633.1	25.64	25.696		
5,700.0	5,694.4	5,735.6	5,694.4	12.8	16.7	-90.00	161.0	-630.9	658.8	632.7	26.05	25.287		
5,800.0	5,794.4	5,835.6	5,794.4	13.1	16.9	-90.00	161.0	-630.9	658.8	632.3	26.47	24.891		
5,900.0	5,894.4	5,935.6	5,894.4	13.3	17.0	-90.00	161.0	-630.9	658.8	631.9	26.88	24.505		
6,000.0	5,994.4	6,035.6	5,994.4	13.5	17.2	-90.00	161.0	-630.9	658.8	631.5	27.30	24.131		
6,100.0	6,094.4	6,135.6	6,094.4	13.7	17.4	-90.00	161.0	-630.9	658.8	631.1	27.72	23.767		
6,200.0	6,194.4	6,235.6	6,194.4	13.9	17.5	-90.00	161.0	-630.9	658.8	630.6	28.14	23.413		
6,300.0	6,294.2	6,335.6	6,294.2	14.1	17.7	90.00	157.0	-630.9	658.8	630.3	28.48	23.130		
6,400.0	6,392.8	6,435.6	6,392.8	14.2	17.8	90.00	140.4	-630.9	658.8	630.1	28.72	22.941		
6,500.0	6,488.3	6,535.6	6,488.3	14.3	17.9	90.00	111.0	-630.9	658.8	629.9	28.90	22.798		
6,600.0	6,579.2	6,635.6	6,579.2	14.4	17.9	90.00	69.5	-630.9	658.8	629.7	29.08	22.657		
6,700.0	6,663.8	6,735.6	6,663.8	14.5	18.0	90.00	16.4	-630.9	658.8	629.4	29.32	22.466		
6,800.0	6,740.8	6,835.6	6,740.8	14.7	18.1	90.00	-47.3	-630.9	658.8	629.1	29.72	22.167		
6,900.0	6,808.9	6,935.6	6,808.9	15.0	18.3	90.00	-120.5	-630.9	658.8	628.4	30.34	21.712		
7,000.0	6,866.8	7,035.6	6,866.8	15.5	18.5	90.00	-201.9	-630.9	658.8	627.5	31.26	21.076		
7,100.0	6,913.6	7,135.6	6,913.6	16.1	18.9	90.00	-290.2	-630.9	658.8	626.3	32.51	20.266		
7,200.0	6,948.4	7,235.6	6,948.4	16.9	19.4	90.00	-383.9	-630.9	658.8	624.7	34.10	19.317		
7,300.0	6,970.7	7,335.6	6,970.7	17.9	20.2	90.00	-481.3	-630.9	658.8	622.7	36.03	18.286		
7,400.0	6,982.4	7,435.6	6,982.4	19.0	21.1	90.00	-580.6	-630.9	658.8	620.5	38.23	17.231		
7,500.0	6,989.8	7,535.6	6,989.8	20.2	22.2	90.00	-680.3	-630.9	658.8	618.1	40.68	16.196		
7,600.0	6,990.3	7,635.6	6,990.3	21.5	23.4	90.00	-780.3	-630.9	658.8	615.5	43.31	15.210		
7,700.0	6,990.4	7,735.6	6,990.4	23.0	24.7	90.00	-880.3	-630.9	658.8	612.7	46.11	14.287		
7,800.0	6,990.4	7,835.6	6,990.4	24.4	26.1	90.00	-980.3	-630.9	658.8	609.7	49.05	13.431		
7,900.0	6,990.4	7,935.6	6,990.4	26.0	27.5	90.00	-1,080.3	-630.9	658.8	606.7	52.11	12.643		
8,000.0	6,990.4	8,035.6	6,990.4	27.5	29.0	90.00	-1,180.3	-630.9	658.8	603.5	55.26	11.921		
8,100.0	6,990.4	8,135.6	6,990.4	29.2	30.6	90.00	-1,280.3	-630.9	658.8	600.3	58.50	11.262		
8,200.0	6,990.4	8,235.6	6,990.4	30.8	32.2	90.00	-1,380.3	-630.9	658.8	597.0	61.80	10.660		
8,300.0	6,990.5	8,335.6	6,990.5	32.5	33.8	90.00	-1,480.3	-630.9	658.8	593.6	65.17	10.109		
8,400.0	6,990.5	8,435.6	6,990.5	34.2	35.4	90.00	-1,580.3	-630.9	658.8	590.2	68.58	9.606		
8,500.0	6,990.5	8,535.6	6,990.5	36.0	37.1	90.00	-1,680.3	-630.9	658.8	586.7	72.04	9.145		
8,600.0	6,990.5	8,635.6	6,990.5	37.7	38.8	90.00	-1,780.3	-630.9	658.8	583.2	75.53	8.722		
8,700.0	6,990.5	8,735.6	6,990.5	39.5	40.5	90.00	-1,880.3	-630.9	658.8	579.7	79.05	8.333		
8,800.0	6,990.5	8,835.6	6,990.5	41.3	42.3	90.00	-1,980.3	-630.9	658.8	576.2	82.61	7.975		
8,900.0	6,990.6	8,935.6	6,990.6	43.0	44.0	90.00	-2,080.3	-630.9	658.8	572.6	86.19	7.644		
9,000.0	6,990.6	9,035.6	6,990.6	44.8	45.8	90.00	-2,180.3	-630.9	658.8	569.0	89.79	7.337		
9,100.0	6,990.6	9,135.6	6,990.6	46.7	47.6	90.00	-2,280.3	-630.9	658.8	565.4	93.40	7.053		
9,200.0	6,990.6	9,235.6	6,990.6	48.5	49.3	90.00	-2,380.3	-630.9	658.8	561.7	97.04	6.789		
9,300.0	6,990.6	9,335.6	6,990.6	50.3	51.1	90.00	-2,480.3	-630.9	658.8	558.1	100.69	6.543		
9,400.0	6,990.6	9,435.6	6,990.6	52.1	52.9	90.00	-2,580.3	-630.9	658.8	554.4	104.35	6.313		
9,500.0	6,990.7	9,535.6	6,990.7	54.0	54.8	90.00	-2,680.3	-630.9	658.8	550.7	108.03	6.098		
9,600.0	6,990.7	9,635.6	6,990.7	55.8	56.6	90.00	-2,780.3	-630.9	658.8	547.1	111.72	5.897		
9,700.0	6,990.7	9,735.6	6,990.7	57.7	58.4	90.00	-2,880.3	-630.9	658.8	543.4	115.41	5.708		
9,800.0	6,990.7	9,835.6	6,990.7	59.5	60.2	90.00	-2,980.3	-630.9	658.8	539.7	119.12	5.530		
9,900.0	6,990.7	9,935.6	6,990.7	61.4	62.1	90.00	-3,080.3	-630.9	658.8	535.9	122.83	5.363		
10,000.0	6,990.8	10,035.6	6,990.8	63.3	63.9	90.00	-3,180.3	-630.9	658.8	532.2	126.56	5.205		
10,100.0	6,990.8	10,135.6	6,990.8	65.1	65.8	90.00	-3,280.3	-630.9	658.8	528.5	130.28	5.056		

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 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design										Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5M-403 - Wellbore #1 - Plan #1 (12-02-1		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 (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
10,200.0	6,990.8	10,235.6	6,990.8	67.0	67.6	90.00	-3,380.3	-630.9	658.8	524.8	134.02	4.916			
10,300.0	6,990.8	10,335.6	6,990.8	68.9	69.5	90.00	-3,480.3	-630.9	658.8	521.0	137.76	4.782			
10,400.0	6,990.8	10,435.6	6,990.8	70.7	71.3	90.00	-3,580.3	-630.9	658.8	517.3	141.50	4.655			
10,500.0	6,990.8	10,535.6	6,990.8	72.6	73.2	90.00	-3,680.3	-630.9	658.8	513.5	145.25	4.535			
10,600.0	6,990.9	10,635.6	6,990.9	74.5	75.0	90.00	-3,780.3	-630.9	658.8	509.8	149.01	4.421			
10,700.0	6,990.9	10,735.6	6,990.9	76.4	76.9	90.00	-3,880.3	-630.9	658.8	506.0	152.77	4.312			
10,800.0	6,990.9	10,835.6	6,990.9	78.2	78.8	90.00	-3,980.3	-630.9	658.8	502.2	156.53	4.209			
10,900.0	6,990.9	10,935.6	6,990.9	80.1	80.7	90.00	-4,080.3	-630.9	658.8	498.5	160.30	4.110			
11,000.0	6,990.9	11,035.6	6,990.9	82.0	82.5	90.00	-4,180.3	-630.9	658.8	494.7	164.07	4.015			
11,100.0	6,990.9	11,135.6	6,990.9	83.9	84.4	90.00	-4,280.3	-630.9	658.8	490.9	167.84	3.925			
11,200.0	6,991.0	11,235.6	6,991.0	85.8	86.3	90.00	-4,380.3	-630.9	658.8	487.2	171.62	3.839			
11,300.0	6,991.0	11,335.6	6,991.0	87.7	88.2	90.00	-4,480.3	-630.9	658.8	483.4	175.39	3.756			
11,400.0	6,991.0	11,435.6	6,991.0	89.6	90.0	90.00	-4,580.3	-630.9	658.8	479.6	179.18	3.677			
11,416.9	6,991.0	11,452.5	6,991.0	89.9	90.4	90.00	-4,597.2	-630.9	658.8	479.0	179.81	3.664			
11,417.9	6,991.0	11,453.4	6,991.0	89.9	90.4	90.00	-4,598.2	-630.9	658.8	478.9	179.85	3.663 SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.02	90.02	0.0	27.9	27.9				
100.0	100.0	99.0	99.0	0.1	0.1	90.02	90.02	0.0	27.9	27.9	27.7	0.22	124.793	
200.0	200.0	199.0	199.0	0.3	0.3	90.02	90.02	0.0	27.9	27.9	27.2	0.67	41.529	
300.0	300.0	299.0	299.0	0.6	0.6	90.02	90.02	0.0	27.9	27.9	26.8	1.12	24.884	
400.0	400.0	399.0	399.0	0.8	0.8	90.02	90.02	0.0	27.9	27.9	26.3	1.57	17.764	
500.0	500.0	499.0	499.0	1.0	1.0	90.02	90.02	0.0	27.9	27.9	25.9	2.02	13.812	
600.0	600.0	599.0	599.0	1.2	1.2	90.02	90.02	0.0	27.9	27.9	25.4	2.47	11.299	
700.0	700.0	699.0	699.0	1.5	1.5	90.02	90.02	0.0	27.9	27.9	25.0	2.92	9.559	
800.0	800.0	799.0	799.0	1.7	1.7	90.02	90.02	0.0	27.9	27.9	24.5	3.37	8.284	
900.0	900.0	899.0	899.0	1.9	1.9	90.02	90.02	0.0	27.9	27.9	24.1	3.82	7.308	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.02	90.02	0.0	27.9	27.9	23.6	4.27	6.539 CC, ES	
1,100.0	1,100.0	1,098.1	1,098.1	2.4	2.3	88.58	88.58	0.7	29.4	29.4	24.7	4.71	6.253	
1,200.0	1,200.0	1,197.0	1,196.8	2.6	2.6	85.02	85.02	3.0	34.0	34.2	29.0	5.14	6.646	
1,300.0	1,300.0	1,296.0	1,295.6	2.8	2.8	81.03	81.03	6.5	41.3	41.9	36.3	5.59	7.503	
1,400.0	1,400.0	1,395.7	1,394.8	3.0	3.0	78.15	78.15	10.3	48.9	50.2	44.2	6.03	8.329	
1,500.0	1,500.0	1,495.3	1,494.1	3.3	3.3	76.09	76.09	14.0	56.6	58.5	52.1	6.47	9.053	
1,600.0	1,600.0	1,594.9	1,593.3	3.5	3.5	74.54	74.54	17.8	64.3	67.0	60.1	6.91	9.690	
1,700.0	1,700.0	1,694.6	1,692.6	3.7	3.7	73.34	73.34	21.5	72.0	75.4	68.1	7.36	10.253	
1,800.0	1,800.0	1,794.2	1,791.9	3.9	4.0	72.39	72.39	25.3	79.7	83.9	76.1	7.80	10.753	
1,900.0	1,900.0	1,893.8	1,891.1	4.2	4.3	71.60	71.60	29.1	87.4	92.4	84.2	8.25	11.199	
2,000.0	2,000.0	1,993.5	1,990.4	4.4	4.5	70.96	70.96	32.8	95.1	100.9	92.2	8.70	11.600	
2,100.0	2,100.0	2,093.1	2,089.7	4.6	4.8	70.41	70.41	36.6	102.7	109.5	100.3	9.15	11.961	
2,200.0	2,200.0	2,192.7	2,188.9	4.8	5.0	69.94	69.94	40.3	110.4	118.0	108.4	9.60	12.289	
2,300.0	2,300.0	2,292.4	2,288.2	5.1	5.3	69.53	69.53	44.1	118.1	126.5	116.5	10.05	12.587	
2,400.0	2,400.0	2,392.0	2,387.4	5.3	5.6	69.18	69.18	47.8	125.8	135.1	124.6	10.51	12.859	
2,500.0	2,500.0	2,491.6	2,486.7	5.5	5.8	68.87	68.87	51.6	133.5	143.6	132.7	10.96	13.108	
2,600.0	2,600.0	2,591.2	2,586.0	5.7	6.1	68.59	68.59	55.4	141.2	152.2	140.8	11.41	13.338	
2,700.0	2,700.0	2,690.9	2,685.2	6.0	6.3	68.34	68.34	59.1	148.9	160.8	148.9	11.87	13.549	
2,800.0	2,800.0	2,790.5	2,784.5	6.2	6.6	68.12	68.12	62.9	156.6	169.3	157.0	12.32	13.745	
2,900.0	2,900.0	2,890.1	2,883.8	6.4	6.9	67.92	67.92	66.6	164.2	177.9	165.1	12.77	13.927	
3,000.0	3,000.0	2,989.8	2,983.0	6.6	7.1	67.74	67.74	70.4	171.9	186.5	173.2	13.23	14.096	
3,100.0	3,100.0	3,089.5	3,082.4	6.9	7.4	68.04	68.04	74.1	179.6	194.1	180.4	13.66	14.207	
3,200.0	3,199.8	3,189.2	3,181.7	7.1	7.7	69.04	69.04	77.9	187.3	200.0	185.8	14.11	14.167	
3,300.0	3,299.6	3,289.0	3,281.1	7.3	8.0	69.53	69.53	81.7	195.0	204.9	190.4	14.57	14.069	
3,400.0	3,399.3	3,388.7	3,380.5	7.5	8.2	69.95	69.95	85.4	202.7	210.1	195.0	15.02	13.983	
3,500.0	3,499.1	3,488.4	3,479.8	7.8	8.5	70.30	70.30	89.2	210.4	215.3	199.8	15.48	13.907	
3,600.0	3,598.8	3,588.2	3,579.2	8.0	8.8	70.58	70.58	93.0	218.1	220.7	204.7	15.94	13.840	
3,700.0	3,698.6	3,687.9	3,678.6	8.2	9.0	70.81	70.81	96.7	225.8	226.1	209.7	16.41	13.781	
3,800.0	3,798.3	3,787.6	3,777.9	8.4	9.3	70.98	70.98	100.5	233.5	231.7	214.8	16.87	13.729	
3,900.0	3,898.1	3,887.4	3,877.3	8.7	9.6	71.09	71.09	104.2	241.2	237.3	220.0	17.34	13.684	
4,000.0	3,997.8	3,987.1	3,976.7	8.9	9.8	71.15	71.15	108.0	248.9	243.1	225.3	17.82	13.643	
4,100.0	4,097.6	4,086.8	4,076.0	9.1	10.1	71.16	71.16	111.8	256.6	248.9	230.6	18.29	13.607	
4,200.0	4,197.3	4,186.6	4,175.4	9.4	10.4	71.12	71.12	115.5	264.3	254.8	236.0	18.77	13.576	
4,300.0	4,297.1	4,286.3	4,274.8	9.6	10.7	72.04	72.04	119.3	272.0	260.7	241.5	19.25	13.548	
4,400.0	4,396.8	4,386.1	4,374.2	9.9	10.9	72.92	72.92	123.0	279.7	266.8	247.0	19.73	13.523	
4,500.0	4,496.6	4,485.8	4,473.5	10.1	11.2	73.76	73.76	126.8	287.4	272.8	252.6	20.21	13.502	
4,600.0	4,596.3	4,585.5	4,572.9	10.3	11.5	74.56	74.56	130.6	295.0	279.0	258.3	20.69	13.483	
4,700.0	4,596.1	4,585.3	4,572.3	10.6	11.7	75.33	75.33	134.3	302.7	285.2	264.0	21.18	13.466	
4,800.0	4,795.8	4,785.0	4,771.6	10.8	12.0	76.07	76.07	138.1	310.4	291.4	269.7	21.66	13.451	
4,900.0	4,895.6	4,884.7	4,871.0	11.1	12.3	76.77	76.77	141.8	318.1	297.7	275.5	22.15	13.439	
5,000.0	4,895.3	4,884.5	4,870.4	11.3	12.6	77.45	77.45	145.6	325.8	304.0	281.4	22.64	13.428	

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 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5R-203 - Wellbore #1 - Plan #1 (12-02-1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	5,095.0	5,084.2	5,069.7	11.6	12.8	78.10	149.4	333.5	310.4	287.3	23.13	13.418		
5,200.0	5,194.8	5,183.9	5,169.1	11.8	13.1	78.72	153.1	341.2	316.8	293.2	23.62	13.410		
5,300.0	5,294.5	5,285.3	5,270.1	12.0	13.4	79.33	156.9	349.0	323.2	299.1	24.12	13.401		
5,400.0	5,394.4	5,396.6	5,381.2	12.3	13.6	79.95	159.9	355.1	327.7	303.2	24.55	13.351		
5,500.0	5,494.4	5,508.1	5,492.6	12.4	13.8	80.16	161.0	357.3	329.4	304.5	24.92	13.219		
5,600.0	5,594.4	5,608.8	5,593.4	12.6	14.0	90.00	161.0	357.3	329.4	304.1	25.30	13.019		
5,700.0	5,694.4	5,708.8	5,693.4	12.8	14.2	90.00	161.0	357.3	329.4	303.7	25.72	12.805		
5,800.0	5,794.4	5,808.8	5,793.4	13.1	14.3	90.00	161.0	357.3	329.4	303.2	26.15	12.597		
5,900.0	5,894.4	5,908.8	5,893.4	13.3	14.5	90.00	161.0	357.3	329.4	302.8	26.57	12.396		
6,000.0	5,994.4	6,008.8	5,993.4	13.5	14.7	90.00	161.0	357.3	329.4	302.4	27.00	12.200		
6,046.5	6,040.9	6,055.3	6,039.9	13.6	14.8	90.01	161.0	357.3	329.4	302.2	27.19	12.113		
6,100.0	6,094.4	6,108.7	6,093.2	13.7	14.9	90.42	158.6	357.3	329.4	302.0	27.41	12.019		
6,200.0	6,194.4	6,206.5	6,189.9	13.9	15.0	92.84	144.6	357.3	329.8	302.0	27.79	11.866		
6,300.0	6,294.2	6,300.0	6,280.0	14.1	15.1	-83.36	119.9	357.3	331.7	303.6	28.12	11.796		
6,400.0	6,392.8	6,391.9	6,365.0	14.2	15.2	-79.65	84.9	357.3	335.1	306.7	28.35	11.820		
6,500.0	6,488.3	6,481.3	6,443.0	14.3	15.3	-76.22	41.5	357.3	339.6	311.1	28.49	11.918		
6,600.0	6,579.2	6,568.8	6,514.0	14.4	15.4	-73.09	-9.7	357.3	344.8	316.2	28.57	12.066		
6,700.0	6,663.8	6,654.8	6,577.5	14.5	15.5	-70.31	-67.5	357.3	350.4	321.8	28.63	12.242		
6,800.0	6,740.8	6,739.4	6,633.4	14.7	15.7	-67.88	-130.9	357.3	356.1	327.4	28.72	12.398		
6,900.0	6,808.9	6,822.8	6,681.3	15.0	16.0	-65.82	-199.3	357.3	361.6	332.6	28.95	12.490		
7,000.0	6,866.8	6,905.4	6,721.0	15.5	16.4	-64.12	-271.6	357.3	366.5	337.1	29.38	12.473		
7,100.0	6,913.6	6,987.3	6,752.5	16.1	17.0	-62.80	-347.1	357.3	370.6	340.5	30.11	12.306		
7,200.0	6,948.4	7,068.6	6,775.6	16.9	17.7	-61.83	-425.0	357.3	373.8	342.6	31.21	11.977		
7,300.0	6,970.7	7,150.0	6,790.3	17.9	18.5	-61.22	-505.1	357.3	375.8	343.1	32.68	11.499		
7,400.0	6,982.4	7,230.1	6,796.4	19.0	19.4	-60.76	-584.9	357.3	377.8	343.4	34.41	10.978		
7,500.0	6,989.8	7,324.0	6,796.1	20.2	20.6	-59.69	-678.8	357.3	381.6	345.3	36.34	10.501		
7,600.0	6,990.3	7,424.0	6,795.3	21.5	21.9	-59.50	-778.8	357.3	382.3	343.6	38.68	9.884		
7,700.0	6,990.4	7,524.0	6,794.5	23.0	23.3	-59.40	-878.8	357.3	382.7	341.6	41.13	9.303		
7,800.0	6,990.4	7,624.0	6,793.8	24.4	24.7	-59.30	-978.8	357.3	383.1	339.4	43.71	8.765		
7,900.0	6,990.4	7,724.0	6,793.0	26.0	26.2	-59.20	-1,078.8	357.3	383.5	337.1	46.38	8.269		
8,000.0	6,990.4	7,824.0	6,792.2	27.5	27.8	-59.09	-1,178.8	357.3	383.9	334.8	49.13	7.814		
8,100.0	6,990.4	7,924.0	6,791.5	29.2	29.4	-58.99	-1,278.8	357.3	384.3	332.4	51.95	7.398		
8,200.0	6,990.4	8,024.0	6,790.7	30.8	31.1	-58.89	-1,378.8	357.3	384.7	329.9	54.81	7.018		
8,300.0	6,990.5	8,124.0	6,789.9	32.5	32.7	-58.79	-1,478.7	357.3	385.1	327.4	57.73	6.671		
8,400.0	6,990.5	8,224.0	6,789.2	34.2	34.4	-58.69	-1,578.7	357.3	385.5	324.8	60.68	6.353		
8,500.0	6,990.5	8,324.0	6,788.4	36.0	36.2	-58.59	-1,678.7	357.3	385.9	322.3	63.67	6.062		
8,600.0	6,990.5	8,424.0	6,787.6	37.7	37.9	-58.49	-1,778.7	357.3	386.3	319.7	66.68	5.794		
8,700.0	6,990.5	8,524.0	6,786.9	39.5	39.7	-58.40	-1,878.7	357.3	386.7	317.0	69.71	5.548		
8,800.0	6,990.5	8,624.0	6,786.1	41.3	41.4	-58.30	-1,978.7	357.3	387.2	314.4	72.76	5.321		
8,900.0	6,990.6	8,724.0	6,785.3	43.0	43.2	-58.20	-2,078.7	357.3	387.6	311.7	75.83	5.111		
9,000.0	6,990.6	8,823.9	6,784.5	44.8	45.0	-58.10	-2,178.7	357.3	388.0	309.1	78.91	4.917		
9,100.0	6,990.6	8,923.9	6,783.8	46.7	46.8	-58.00	-2,278.7	357.3	388.4	306.4	82.00	4.737		
9,200.0	6,990.6	9,023.9	6,783.0	48.5	48.6	-57.90	-2,378.7	357.3	388.8	303.7	85.10	4.569		
9,300.0	6,990.6	9,123.9	6,782.2	50.3	50.4	-57.80	-2,478.7	357.3	389.2	301.0	88.21	4.413		
9,400.0	6,990.6	9,223.9	6,781.5	52.1	52.3	-57.71	-2,578.7	357.3	389.7	298.3	91.32	4.267		
9,500.0	6,990.7	9,323.9	6,780.7	54.0	54.1	-57.61	-2,678.7	357.3	390.1	295.6	94.44	4.130		
9,600.0	6,990.7	9,423.9	6,779.9	55.8	56.0	-57.51	-2,778.7	357.3	390.5	292.9	97.57	4.002		
9,700.0	6,990.7	9,523.9	6,779.2	57.7	57.8	-57.42	-2,878.7	357.3	390.9	290.2	100.69	3.882		
9,800.0	6,990.7	9,623.9	6,778.4	59.5	59.6	-57.32	-2,978.7	357.3	391.3	287.5	103.82	3.770		
9,900.0	6,990.7	9,723.9	6,777.6	61.4	61.5	-57.22	-3,078.7	357.3	391.8	284.8	106.95	3.663		
10,000.0	6,990.8	9,823.9	6,776.9	63.3	63.4	-57.13	-3,178.6	357.3	392.2	282.1	110.08	3.563		

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 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W - Becker Ranch 5R-203 - Wellbore #1 - Plan #1 (12-02-1												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 (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
10,100.0	6,990.8	9,923.9	6,776.1	65.1	65.2	-57.03	-3,278.6	357.3	392.6	279.4	113.21	3.468	
10,200.0	6,990.8	10,023.9	6,775.3	67.0	67.1	-56.93	-3,378.6	357.3	393.1	276.7	116.34	3.379	
10,300.0	6,990.8	10,123.9	6,774.6	68.9	69.0	-56.84	-3,478.6	357.3	393.5	274.0	119.46	3.294	
10,400.0	6,990.8	10,223.9	6,773.8	70.7	70.8	-56.74	-3,578.6	357.3	393.9	271.3	122.59	3.213	
10,500.0	6,990.8	10,323.9	6,773.0	72.6	72.7	-56.65	-3,678.6	357.3	394.3	268.6	125.72	3.137	
10,600.0	6,990.9	10,423.9	6,772.3	74.5	74.6	-56.55	-3,778.6	357.3	394.8	265.9	128.84	3.064	
10,700.0	6,990.9	10,523.9	6,771.5	76.4	76.5	-56.46	-3,878.6	357.3	395.2	263.2	131.96	2.995	
10,800.0	6,990.9	10,623.9	6,770.7	78.2	78.3	-56.36	-3,978.6	357.3	395.6	260.6	135.08	2.929	
10,900.0	6,990.9	10,723.9	6,770.0	80.1	80.2	-56.27	-4,078.6	357.3	396.1	257.9	138.20	2.866	
11,000.0	6,990.9	10,823.9	6,769.2	82.0	82.1	-56.17	-4,178.6	357.3	396.5	255.2	141.31	2.806	
11,100.0	6,990.9	10,923.9	6,768.4	83.9	84.0	-56.08	-4,278.6	357.3	397.0	252.5	144.42	2.749	
11,200.0	6,991.0	11,023.9	6,767.7	85.8	85.9	-55.98	-4,378.6	357.3	397.4	249.9	147.53	2.694	
11,300.0	6,991.0	11,123.9	6,766.9	87.7	87.8	-55.89	-4,478.6	357.3	397.8	247.2	150.63	2.641	
11,400.0	6,991.0	11,223.9	6,766.1	89.6	89.6	-55.80	-4,578.6	357.3	398.3	244.5	153.74	2.591	
11,417.9	6,991.0	11,239.2	6,766.0	89.9	89.9	-55.78	-4,593.8	357.3	398.4	244.1	154.25	2.583 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 5-1 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7552-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,000.0	6,990.6	6,961.6	6,961.6	44.8	139.2	89.94	-3,114.8	-122.8	946.6	762.5	184.08	5.142	
9,100.0	6,990.6	6,961.6	6,961.6	46.7	139.2	89.94	-3,114.8	-122.8	848.0	662.1	185.89	4.562	
9,200.0	6,990.6	6,961.6	6,961.6	48.5	139.2	89.95	-3,114.8	-122.8	749.8	562.1	187.71	3.995	
9,300.0	6,990.6	6,961.6	6,961.6	50.3	139.2	89.96	-3,114.8	-122.8	652.2	462.6	189.54	3.441	
9,400.0	6,990.6	6,961.6	6,961.6	52.1	139.2	89.96	-3,114.8	-122.8	555.4	364.0	191.37	2.902	
9,500.0	6,990.7	6,961.7	6,961.7	54.0	139.2	89.97	-3,114.8	-122.8	459.9	266.7	193.21	2.380	
9,600.0	6,990.7	6,961.7	6,961.7	55.8	139.2	89.98	-3,114.8	-122.8	366.9	171.8	195.06	1.881	
9,700.0	6,990.7	6,961.7	6,961.7	57.7	139.2	89.98	-3,114.8	-122.8	278.8	81.9	196.91	1.416	Level 3
9,800.0	6,990.7	6,961.7	6,961.7	59.5	139.2	89.99	-3,114.8	-122.8	202.0	3.3	198.76	1.016	Level 2
9,900.0	6,990.7	6,961.7	6,961.7	61.4	139.2	90.00	-3,114.8	-122.8	154.6	-46.0	200.62	0.771	Level 1
9,934.5	6,990.7	6,961.7	6,961.7	62.0	139.2	90.00	-3,114.8	-122.8	150.7	-50.5	201.26	0.749	Level 1, CC, ES, SF
10,000.0	6,990.8	6,961.8	6,961.8	63.3	139.2	90.00	-3,114.8	-122.8	164.3	-38.1	202.48	0.812	Level 1
10,100.0	6,990.8	6,961.8	6,961.8	65.1	139.2	90.01	-3,114.8	-122.8	223.8	19.5	204.35	1.095	Level 2
10,200.0	6,990.8	6,961.8	6,961.8	67.0	139.2	90.02	-3,114.8	-122.8	305.3	99.1	206.22	1.480	Level 3
10,300.0	6,990.8	6,961.8	6,961.8	68.9	139.2	90.02	-3,114.8	-122.8	395.4	187.3	208.09	1.900	
10,400.0	6,990.8	6,961.8	6,961.8	70.7	139.2	90.03	-3,114.8	-122.8	489.3	279.3	209.96	2.330	
10,500.0	6,990.8	6,961.8	6,961.8	72.6	139.2	90.04	-3,114.8	-122.8	585.2	373.4	211.84	2.763	
10,600.0	6,990.9	6,961.9	6,961.9	74.5	139.2	90.04	-3,114.8	-122.8	682.3	468.6	213.72	3.193	
10,700.0	6,990.9	6,961.9	6,961.9	76.4	139.2	90.05	-3,114.8	-122.8	780.2	564.6	215.60	3.619	
10,800.0	6,990.9	6,961.9	6,961.9	78.2	139.2	90.06	-3,114.8	-122.8	878.5	661.0	217.48	4.039	
10,900.0	6,990.9	6,961.9	6,961.9	80.1	139.2	90.06	-3,114.8	-122.8	977.2	757.8	219.37	4.455	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 5-6 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7160-UNKNOWN												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+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	-173.64	-400.7	-44.7	403.3				
100.0	100.0	91.0	91.0	0.1	1.8	-173.64	-400.7	-44.7	403.2	401.3	1.93	208.640	
200.0	200.0	191.0	191.0	0.3	3.8	-173.64	-400.7	-44.7	403.2	399.1	4.16	96.988	
300.0	300.0	291.0	291.0	0.6	5.8	-173.64	-400.7	-44.7	403.2	396.8	6.38	63.179	
400.0	400.0	391.0	391.0	0.8	7.8	-173.64	-400.7	-44.7	403.2	394.6	8.61	46.848	
500.0	500.0	491.0	491.0	1.0	9.8	-173.64	-400.7	-44.7	403.2	392.4	10.83	37.226	
600.0	600.0	591.0	591.0	1.2	11.8	-173.64	-400.7	-44.7	403.2	390.2	13.06	30.882	
700.0	700.0	691.0	691.0	1.5	13.8	-173.64	-400.7	-44.7	403.2	387.9	15.28	26.386	
800.0	800.0	791.0	791.0	1.7	15.8	-173.64	-400.7	-44.7	403.2	385.7	17.51	23.033	
900.0	900.0	891.0	891.0	1.9	17.8	-173.64	-400.7	-44.7	403.2	383.5	19.73	20.436	
1,000.0	1,000.0	991.0	991.0	2.1	19.8	-173.64	-400.7	-44.7	403.2	381.3	21.96	18.365	
1,100.0	1,100.0	1,091.0	1,091.0	2.4	21.8	-173.64	-400.7	-44.7	403.2	379.0	24.18	16.675	
1,200.0	1,200.0	1,191.0	1,191.0	2.6	23.8	-173.64	-400.7	-44.7	403.2	376.8	26.40	15.270	
1,300.0	1,300.0	1,291.0	1,291.0	2.8	25.8	-173.64	-400.7	-44.7	403.2	374.6	28.63	14.084	
1,400.0	1,400.0	1,391.0	1,391.0	3.0	27.8	-173.64	-400.7	-44.7	403.2	372.4	30.85	13.068	
1,500.0	1,500.0	1,491.0	1,491.0	3.3	29.8	-173.64	-400.7	-44.7	403.2	370.1	33.08	12.189	
1,600.0	1,600.0	1,591.0	1,591.0	3.5	31.8	-173.64	-400.7	-44.7	403.2	367.9	35.30	11.421	
1,700.0	1,700.0	1,691.0	1,691.0	3.7	33.8	-173.64	-400.7	-44.7	403.2	365.7	37.53	10.744	
1,800.0	1,800.0	1,791.0	1,791.0	3.9	35.8	-173.64	-400.7	-44.7	403.2	363.5	39.75	10.143	
1,900.0	1,900.0	1,891.0	1,891.0	4.2	37.8	-173.64	-400.7	-44.7	403.2	361.2	41.98	9.605	
2,000.0	2,000.0	1,991.0	1,991.0	4.4	39.8	-173.64	-400.7	-44.7	403.2	359.0	44.20	9.122	
2,100.0	2,100.0	2,091.0	2,091.0	4.6	41.8	-173.64	-400.7	-44.7	403.2	356.8	46.43	8.685	
2,200.0	2,200.0	2,191.0	2,191.0	4.8	43.8	-173.64	-400.7	-44.7	403.2	354.6	48.65	8.288	
2,300.0	2,300.0	2,291.0	2,291.0	5.1	45.8	-173.64	-400.7	-44.7	403.2	352.3	50.88	7.925	
2,400.0	2,400.0	2,391.0	2,391.0	5.3	47.8	-173.64	-400.7	-44.7	403.2	350.1	53.10	7.593	
2,500.0	2,500.0	2,491.0	2,491.0	5.5	49.8	-173.64	-400.7	-44.7	403.2	347.9	55.33	7.288	
2,600.0	2,600.0	2,591.0	2,591.0	5.7	51.8	-173.64	-400.7	-44.7	403.2	345.7	57.55	7.006	
2,700.0	2,700.0	2,691.0	2,691.0	6.0	53.8	-173.64	-400.7	-44.7	403.2	343.4	59.78	6.745	
2,800.0	2,800.0	2,791.0	2,791.0	6.2	55.8	-173.64	-400.7	-44.7	403.2	341.2	62.00	6.503	
2,900.0	2,900.0	2,891.0	2,891.0	6.4	57.8	-173.64	-400.7	-44.7	403.2	339.0	64.23	6.278	
3,000.0	3,000.0	2,991.0	2,991.0	6.6	59.8	-173.64	-400.7	-44.7	403.2	336.8	66.45	6.068	
3,100.0	3,100.0	3,091.0	3,091.0	6.9	61.8	176.54	-400.7	-44.7	405.0	336.3	68.63	5.900	
3,200.0	3,199.8	3,190.8	3,190.8	7.1	63.8	176.57	-400.7	-44.7	410.2	339.5	70.73	5.799	
3,300.0	3,299.6	3,290.6	3,290.6	7.3	65.8	176.63	-400.7	-44.7	417.3	344.3	72.94	5.721	
3,400.0	3,399.3	3,390.3	3,390.3	7.5	67.8	176.69	-400.7	-44.7	424.3	349.2	75.15	5.647	
3,500.0	3,499.1	3,490.1	3,490.1	7.8	69.8	176.74	-400.7	-44.7	431.4	354.1	77.36	5.577	
3,600.0	3,598.8	3,589.8	3,589.8	8.0	71.8	176.79	-400.7	-44.7	438.5	358.9	79.58	5.510	
3,700.0	3,698.6	3,689.6	3,689.6	8.2	73.8	176.85	-400.7	-44.7	445.6	363.8	81.80	5.448	
3,800.0	3,798.3	3,789.3	3,789.3	8.4	75.8	176.89	-400.7	-44.7	452.7	368.7	84.01	5.388	
3,900.0	3,898.1	3,889.1	3,889.1	8.7	77.8	176.94	-400.7	-44.7	459.8	373.6	86.23	5.332	
4,000.0	3,997.8	3,988.8	3,988.8	8.9	79.8	176.99	-400.7	-44.7	466.9	378.4	88.44	5.279	
4,100.0	4,097.6	4,088.6	4,088.6	9.1	81.8	177.03	-400.7	-44.7	474.0	383.3	90.66	5.228	
4,200.0	4,197.3	4,188.3	4,188.3	9.4	83.8	177.08	-400.7	-44.7	481.0	388.2	92.88	5.179	
4,300.0	4,297.1	4,288.1	4,288.1	9.6	85.8	177.12	-400.7	-44.7	488.1	393.0	95.09	5.133	
4,400.0	4,396.8	4,387.8	4,387.8	9.9	87.8	177.16	-400.7	-44.7	495.2	397.9	97.31	5.089	
4,500.0	4,496.6	4,487.6	4,487.6	10.1	89.8	177.20	-400.7	-44.7	502.3	402.8	99.53	5.047	
4,600.0	4,596.3	4,587.3	4,587.3	10.3	91.7	177.24	-400.7	-44.7	509.4	407.7	101.75	5.007	
4,700.0	4,696.1	4,687.1	4,687.1	10.6	93.7	177.28	-400.7	-44.7	516.5	412.5	103.96	4.968	
4,800.0	4,795.8	4,786.8	4,786.8	10.8	95.7	177.32	-400.7	-44.7	523.6	417.4	106.18	4.931	
4,900.0	4,895.6	4,886.6	4,886.6	11.1	97.7	177.35	-400.7	-44.7	530.7	422.3	108.40	4.896	
5,000.0	4,995.3	4,986.3	4,986.3	11.3	99.7	177.39	-400.7	-44.7	537.8	427.1	110.62	4.862	

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 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 5-6 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7160-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,095.0	5,086.0	5,086.0	11.6	101.7	177.42		-400.7	-44.7	544.9	432.0	112.83	4.829	
5,200.0	5,194.8	5,185.8	5,185.8	11.8	103.7	177.45		-400.7	-44.7	551.9	436.9	115.05	4.797	
5,300.0	5,294.5	5,285.5	5,285.5	12.0	105.7	177.49		-400.7	-44.7	559.0	441.8	117.27	4.767	
5,400.0	5,394.4	5,385.4	5,385.4	12.3	107.7	177.51		-400.7	-44.7	564.5	444.8	119.67	4.717	
5,500.0	5,494.4	5,485.4	5,485.4	12.4	109.7	177.52		-400.7	-44.7	566.4	444.5	121.91	4.646	
5,600.0	5,594.4	5,585.4	5,585.4	12.6	111.7	-172.64		-400.7	-44.7	566.4	442.3	124.10	4.564	
5,700.0	5,694.4	5,685.4	5,685.4	12.8	113.7	-172.64		-400.7	-44.7	566.4	440.1	126.32	4.484	
5,800.0	5,794.4	5,785.4	5,785.4	13.1	115.7	-172.64		-400.7	-44.7	566.4	437.9	128.55	4.406	
5,900.0	5,894.4	5,885.4	5,885.4	13.3	117.7	-172.64		-400.7	-44.7	566.4	435.6	130.77	4.331	
6,000.0	5,994.4	5,985.4	5,985.4	13.5	119.7	-172.64		-400.7	-44.7	566.4	433.4	132.99	4.259	
6,100.0	6,094.4	6,085.4	6,085.4	13.7	121.7	-172.64		-400.7	-44.7	566.4	431.2	135.22	4.189	
6,200.0	6,194.4	6,185.4	6,185.4	13.9	123.7	-172.64		-400.7	-44.7	566.4	429.0	137.44	4.121	
6,300.0	6,294.2	6,285.2	6,285.2	14.1	125.7	7.45		-400.7	-44.7	562.5	423.6	138.90	4.050	
6,400.0	6,392.8	6,383.8	6,383.8	14.2	127.7	7.85		-400.7	-44.7	546.0	408.0	138.02	3.956	
6,500.0	6,488.3	6,479.3	6,479.3	14.3	129.6	8.63		-400.7	-44.7	516.9	382.2	134.73	3.837	
6,600.0	6,579.2	6,570.2	6,570.2	14.4	131.4	9.95		-400.7	-44.7	475.8	346.6	129.12	3.685	
6,700.0	6,663.8	6,654.8	6,654.8	14.5	133.1	12.11		-400.7	-44.7	423.4	301.9	121.53	3.484	
6,800.0	6,740.8	6,731.8	6,731.8	14.7	134.6	15.76		-400.7	-44.7	360.8	247.9	112.90	3.196	
6,900.0	6,808.9	6,799.9	6,799.9	15.0	136.0	22.29		-400.7	-44.7	289.5	183.3	106.21	2.726	
7,000.0	6,866.8	6,857.8	6,857.8	15.5	137.2	34.81		-400.7	-44.7	211.6	101.5	110.14	1.922	
7,100.0	6,913.6	6,904.6	6,904.6	16.1	138.1	58.06		-400.7	-44.7	132.2	-3.2	135.45	0.976 Level 1	
7,200.0	6,948.4	6,939.4	6,939.4	16.9	138.8	86.19		-400.7	-44.7	74.5	-80.9	155.39	0.479 Level 1	
7,217.5	6,953.2	6,944.2	6,944.2	17.1	138.9	90.00		-400.7	-44.7	72.6	-83.4	155.96	0.465 Level 1, CC, ES, SF	
7,300.0	6,970.7	6,961.7	6,961.7	17.9	139.2	100.02		-400.7	-44.7	108.4	-46.4	154.84	0.700 Level 1	
7,400.0	6,982.4	6,973.4	6,973.4	19.0	139.5	104.52		-400.7	-44.7	193.9	40.4	153.59	1.263 Level 3	
7,500.0	6,989.8	6,980.8	6,980.8	20.2	139.6	96.93		-400.7	-44.7	288.8	130.1	158.70	1.820	
7,600.0	6,990.3	6,981.3	6,981.3	21.5	139.6	90.05		-400.7	-44.7	386.4	225.3	161.17	2.398	
7,700.0	6,990.4	6,981.4	6,981.4	23.0	139.6	90.07		-400.7	-44.7	485.0	322.4	162.58	2.983	
7,800.0	6,990.4	6,981.4	6,981.4	24.4	139.6	90.08		-400.7	-44.7	584.1	420.0	164.05	3.560	
7,900.0	6,990.4	6,981.4	6,981.4	26.0	139.6	90.09		-400.7	-44.7	683.4	517.8	165.59	4.127	
8,000.0	6,990.4	6,981.4	6,981.4	27.5	139.6	90.11		-400.7	-44.7	782.9	615.7	167.17	4.683	
8,100.0	6,990.4	6,981.4	6,981.4	29.2	139.6	90.12		-400.7	-44.7	882.5	713.7	168.80	5.228	
8,200.0	6,990.4	6,981.4	6,981.4	30.8	139.6	90.13		-400.7	-44.7	982.2	811.8	170.46	5.762	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.5-T3N-R64W - Becker 6-12 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7200-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		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)			
7,700.0	6,990.4	6,964.4	6,964.4	23.0	139.3	89.94	-1,785.1	-114.4	915.9	753.7	162.24	5.646	
7,800.0	6,990.4	6,964.4	6,964.4	24.4	139.3	89.94	-1,785.1	-114.4	817.3	653.6	163.71	4.992	
7,900.0	6,990.4	6,964.4	6,964.4	26.0	139.3	89.95	-1,785.1	-114.4	719.0	553.8	165.25	4.351	
8,000.0	6,990.4	6,964.4	6,964.4	27.5	139.3	89.96	-1,785.1	-114.4	621.3	454.5	166.83	3.724	
8,100.0	6,990.4	6,964.4	6,964.4	29.2	139.3	89.96	-1,785.1	-114.4	524.5	356.0	168.46	3.114	
8,200.0	6,990.4	6,964.4	6,964.4	30.8	139.3	89.97	-1,785.1	-114.4	429.1	259.0	170.12	2.522	
8,300.0	6,990.5	6,964.5	6,964.5	32.5	139.3	89.98	-1,785.1	-114.4	336.4	164.6	171.80	1.958	
8,400.0	6,990.5	6,964.5	6,964.5	34.2	139.3	89.99	-1,785.1	-114.4	249.4	75.9	173.51	1.437	Level 3
8,500.0	6,990.5	6,964.5	6,964.5	36.0	139.3	89.99	-1,785.1	-114.4	176.8	1.5	175.25	1.009	Level 2
8,600.0	6,990.5	6,964.5	6,964.5	37.7	139.3	90.00	-1,785.1	-114.4	142.4	-34.6	177.00	0.805	Level 1
8,604.8	6,990.5	6,964.5	6,964.5	37.8	139.3	90.00	-1,785.1	-114.4	142.4	-34.7	177.08	0.804	Level 1, CC, ES, SF
8,700.0	6,990.5	6,964.5	6,964.5	39.5	139.3	90.01	-1,785.1	-114.4	171.2	-7.5	178.76	0.958	Level 1
8,800.0	6,990.5	6,964.5	6,964.5	41.3	139.3	90.01	-1,785.1	-114.4	241.6	61.0	180.54	1.338	Level 3
8,900.0	6,990.6	6,964.6	6,964.6	43.0	139.3	90.02	-1,785.1	-114.4	327.7	145.4	182.34	1.797	
9,000.0	6,990.6	6,964.6	6,964.6	44.8	139.3	90.03	-1,785.1	-114.4	420.0	235.9	184.14	2.281	
9,100.0	6,990.6	6,964.6	6,964.6	46.7	139.3	90.03	-1,785.1	-114.4	515.2	329.3	185.95	2.771	
9,200.0	6,990.6	6,964.6	6,964.6	48.5	139.3	90.04	-1,785.1	-114.4	612.0	424.2	187.77	3.259	
9,300.0	6,990.6	6,964.6	6,964.6	50.3	139.3	90.05	-1,785.1	-114.4	709.6	520.0	189.60	3.743	
9,400.0	6,990.6	6,964.6	6,964.6	52.1	139.3	90.06	-1,785.1	-114.4	807.8	616.4	191.43	4.220	
9,500.0	6,990.7	6,964.7	6,964.7	54.0	139.3	90.06	-1,785.1	-114.4	906.4	713.2	193.27	4.690	

Reference Depths are relative to WELL @ 4797.0ft (RKB - 15')	Coordinates are relative to: Becker Ranch 5R-443
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 °	Grid Convergence at Surface is: 0.60°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Becker Ranch 5R-443
Project:	SEC.5-T3N-R64W	TVD Reference:	WELL @ 4797.0ft (RKB - 15')
Reference Site:	Becker Ranch 5MR-HZ Pad Sec.5-T3N-R64W	MD Reference:	WELL @ 4797.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Becker Ranch 5R-443	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 (12-02-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4797.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Becker Ranch 5R-443
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°

