PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Dunn 7L-341**

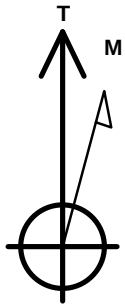
Surface Location: Dunn 5N64W7 Pad Sec.7-T5N-R64W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4625.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1392981.01	3251104.57	40.408630	-104.598271	

Original Well Elev WELL @ 4638.0ft (Original Well Elev)

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 825'FSL & 981'FWL, Sec.7	1.0	0.0	0.0	Point
BHL 200'FNL & 930'FWL, Sec.6	6793.0	9456.5	-22.5	Point



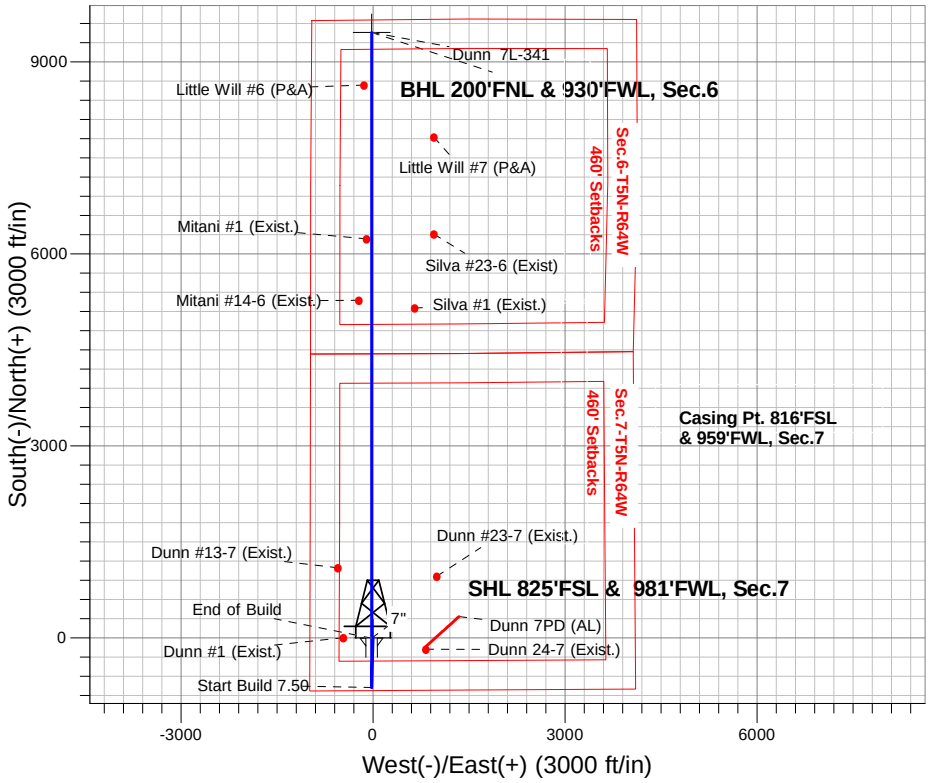
Azimuths to True North
Magnetic North: 8.20°

Magnetic Field
Strength: 52704.3snT
Dip Angle: 66.94°
Date: 9/23/2015
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
2500.0	2500.0	KOP - Start Build 1.50
4987.3	5078.7	Start Drop -2.00
5900.0	6007.6	Start 158.8 hold at 6007.6 MD
6058.8	6166.4	Start Build 7.50
6822.7	7368.8	End of Build
6793.0	16834.0	TD at 16834.0

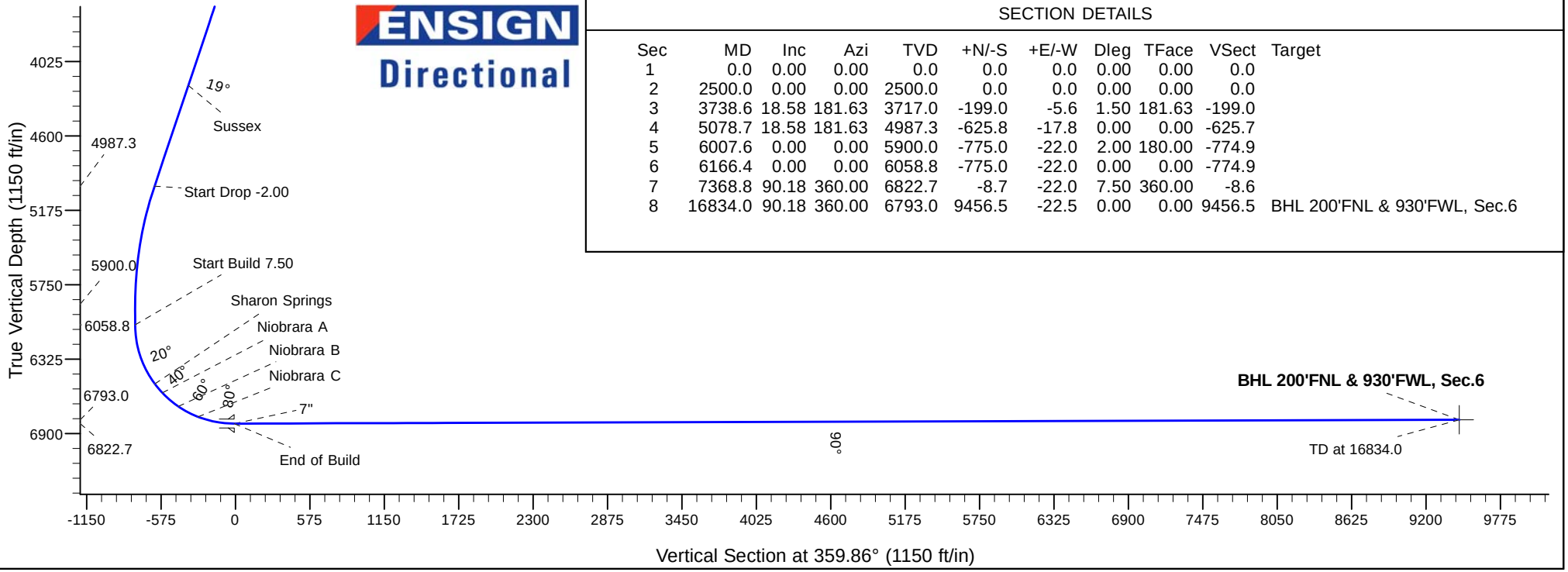
Dunn 5N64W7 Pad Sec.7-T5N-R64W
Dunn 7L-341
Plan #1 (9-10-15)
12:38, September 23 2015



ENSIGN Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2500.0	0.00	0.00	2500.0	0.0	0.0	0.00	0.00	0.0	
3	3738.6	18.58	181.63	3717.0	-199.0	-5.6	1.50	181.63	-199.0	
4	5078.7	18.58	181.63	4987.3	-625.8	-17.8	0.00	0.00	-625.7	
5	6007.6	0.00	0.00	5900.0	-775.0	-22.0	2.00	180.00	-774.9	
6	6166.4	0.00	0.00	6058.8	-775.0	-22.0	0.00	0.00	-774.9	
7	7368.8	90.18	360.00	6822.7	-8.7	-22.0	7.50	360.00	-8.6	
8	16834.0	90.18	360.00	6793.0	9456.5	-22.5	0.00	0.00	9456.5	BHL 200'FNL & 930'FWL, Sec.6



ENSIGN Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.7-T5N-R64W
Dunn 5N64W7 Pad Sec.7-T5N-R64W
Dunn 7L-341

Wellbore #1

Plan: Plan #1 (9-10-15)

Standard Planning Report

23 September, 2015

PDC ENERGY
Growing E&P Value

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Project:	SEC.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**North Reference:**	True
Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-10-15)		

Project SEC.7-T5N-R64W, Weld County, Colorado

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 Dunn 5N64W7 Pad Sec.7-T5N-R64W

Site Position:		**Northing:**	1,392,981.02 usft	**Latitude:**	40.408630
From:	Lat/Long	**Easting:**	3,251,104.57 usft	**Longitude:**	-104.598271
Position Uncertainty:	0.0 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.58 °

Well Dunn 7L-341

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,392,981.01 usft	**Latitude:**	40.408630
	+E/-W	0.0 ft	**Easting:**	3,251,104.57 usft	**Longitude:**	-104.598271
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	0.0 ft	**Ground Level:**	4,625.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/23/2015	8.20	66.94	52,704

Design Plan #1 (9-10-15)

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	359.86

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,738.6	18.58	181.63	3,717.0	-199.0	-5.6	1.50	1.50	0.00	181.63	
5,078.7	18.58	181.63	4,987.3	-625.8	-17.8	0.00	0.00	0.00	0.00	
6,007.6	0.00	0.00	5,900.0	-775.0	-22.0	2.00	-2.00	0.00	180.00	
6,166.4	0.00	0.00	6,058.8	-775.0	-22.0	0.00	0.00	0.00	0.00	
7,368.8	90.18	360.00	6,822.7	-8.7	-22.0	7.50	7.50	0.00	360.00	
16,834.0	90.18	360.00	6,793.0	9,456.5	-22.5	0.00	0.00	0.00	0.00	BHL 200'FNL & 930'F

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Dunn 7L-341
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Project:	SEC.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**North Reference:**	True
Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-10-15)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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 825'FSL & 981'FWL, Sec.7									
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
KOP - Start Build 1.50									
2,600.0	1.50	181.63	2,600.0	-1.3	0.0	-1.3	1.50	1.50	0.00
2,700.0	3.00	181.63	2,699.9	-5.2	-0.1	-5.2	1.50	1.50	0.00
2,800.0	4.50	181.63	2,799.7	-11.8	-0.3	-11.8	1.50	1.50	0.00
2,900.0	6.00	181.63	2,899.3	-20.9	-0.6	-20.9	1.50	1.50	0.00
3,000.0	7.50	181.63	2,998.6	-32.7	-0.9	-32.7	1.50	1.50	0.00
3,100.0	9.00	181.63	3,097.5	-47.0	-1.3	-47.0	1.50	1.50	0.00
3,200.0	10.50	181.63	3,196.1	-63.9	-1.8	-63.9	1.50	1.50	0.00
3,300.0	12.00	181.63	3,294.2	-83.4	-2.4	-83.4	1.50	1.50	0.00
3,400.0	13.50	181.63	3,391.7	-105.5	-3.0	-105.5	1.50	1.50	0.00
3,500.0	15.00	181.63	3,488.6	-130.1	-3.7	-130.1	1.50	1.50	0.00
3,501.4	15.02	181.63	3,490.0	-130.5	-3.7	-130.5	1.50	1.50	0.00
Parkman									
3,600.0	16.50	181.63	3,584.9	-157.2	-4.5	-157.2	1.50	1.50	0.00
3,700.0	18.00	181.63	3,680.4	-186.9	-5.3	-186.9	1.50	1.50	0.00
3,738.6	18.58	181.63	3,717.0	-199.0	-5.6	-199.0	1.50	1.50	0.00
3,800.0	18.58	181.63	3,775.2	-218.5	-6.2	-218.5	0.00	0.00	0.00
3,900.0	18.58	181.63	3,870.0	-250.4	-7.1	-250.4	0.00	0.00	0.00
4,000.0	18.58	181.63	3,964.8	-282.2	-8.0	-282.2	0.00	0.00	0.00
4,100.0	18.58	181.63	4,059.6	-314.1	-8.9	-314.1	0.00	0.00	0.00
4,200.0	18.58	181.63	4,154.4	-345.9	-9.8	-345.9	0.00	0.00	0.00
4,258.7	18.58	181.63	4,210.0	-364.6	-10.3	-364.6	0.00	0.00	0.00
Sussex									
4,300.0	18.58	181.63	4,249.2	-377.8	-10.7	-377.7	0.00	0.00	0.00
4,400.0	18.58	181.63	4,343.9	-409.6	-11.6	-409.6	0.00	0.00	0.00

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Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-10-15)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,500.0	18.58	181.63	4,438.7	-441.5	-12.5	-441.4	0.00	0.00	0.00
4,600.0	18.58	181.63	4,533.5	-473.3	-13.4	-473.3	0.00	0.00	0.00
4,700.0	18.58	181.63	4,628.3	-505.2	-14.3	-505.1	0.00	0.00	0.00
4,800.0	18.58	181.63	4,723.1	-537.0	-15.2	-537.0	0.00	0.00	0.00
4,900.0	18.58	181.63	4,817.9	-568.9	-16.1	-568.8	0.00	0.00	0.00
5,000.0	18.58	181.63	4,912.7	-600.7	-17.0	-600.7	0.00	0.00	0.00
5,078.7	18.58	181.63	4,987.3	-625.8	-17.8	-625.7	0.00	0.00	0.00
Start Drop -2.00									
5,100.0	18.15	181.63	5,007.5	-632.5	-17.9	-632.4	2.00	-2.00	0.00
5,200.0	16.15	181.63	5,103.0	-662.0	-18.8	-661.9	2.00	-2.00	0.00
5,300.0	14.15	181.63	5,199.6	-688.1	-19.5	-688.0	2.00	-2.00	0.00
5,400.0	12.15	181.63	5,296.9	-710.8	-20.2	-710.8	2.00	-2.00	0.00
5,500.0	10.15	181.63	5,395.0	-730.2	-20.7	-730.1	2.00	-2.00	0.00
5,600.0	8.15	181.63	5,493.8	-746.1	-21.2	-746.0	2.00	-2.00	0.00
5,700.0	6.15	181.63	5,593.0	-758.5	-21.5	-758.5	2.00	-2.00	0.00
5,800.0	4.15	181.63	5,692.6	-767.5	-21.8	-767.4	2.00	-2.00	0.00
5,900.0	2.15	181.63	5,792.4	-773.0	-21.9	-772.9	2.00	-2.00	0.00
6,000.0	0.15	181.63	5,892.4	-775.0	-22.0	-774.9	2.00	-2.00	0.00
6,007.6	0.00	181.63	5,900.0	-775.0	-22.0	-774.9	2.00	-2.00	0.00
Start 158.8 hold at 6007.6 MD									
6,100.0	0.00	0.00	5,992.4	-775.0	-22.0	-774.9	0.00	0.00	0.00
6,166.4	0.00	0.00	6,058.8	-775.0	-22.0	-774.9	0.00	0.00	0.00
Start Build 7.50									
6,200.0	2.52	360.00	6,092.4	-774.3	-22.0	-774.2	7.50	7.50	0.00
6,300.0	10.02	360.00	6,191.7	-763.4	-22.0	-763.3	7.50	7.50	0.00
6,400.0	17.52	360.00	6,288.8	-739.6	-22.0	-739.5	7.50	7.50	0.00
6,500.0	25.02	360.00	6,381.9	-703.3	-22.0	-703.3	7.50	7.50	0.00
6,600.0	32.52	360.00	6,469.5	-655.2	-22.0	-655.2	7.50	7.50	0.00
6,656.6	36.76	360.00	6,516.0	-623.1	-22.0	-623.0	7.50	7.50	0.00
Sharon Springs									
6,700.0	40.02	360.00	6,550.0	-596.1	-22.0	-596.1	7.50	7.50	0.00
6,746.9	43.54	360.00	6,585.0	-564.9	-22.0	-564.8	7.50	7.50	0.00
Niobrara A									
6,800.0	47.52	360.00	6,622.2	-527.0	-22.0	-526.9	7.50	7.50	0.00
6,900.0	55.02	360.00	6,684.7	-449.0	-22.0	-449.0	7.50	7.50	0.00
6,909.3	55.71	360.00	6,690.0	-441.4	-22.0	-441.3	7.50	7.50	0.00
Niobrara B									
7,000.0	62.52	360.00	6,736.5	-363.6	-22.0	-363.5	7.50	7.50	0.00
7,080.9	68.59	360.00	6,770.0	-290.0	-22.0	-289.9	7.50	7.50	0.00
Niobrara C									
7,100.0	70.02	360.00	6,776.8	-272.1	-22.0	-272.1	7.50	7.50	0.00
7,200.0	77.52	360.00	6,804.7	-176.2	-22.0	-176.1	7.50	7.50	0.00
7,300.0	85.02	360.00	6,819.9	-77.4	-22.0	-77.3	7.50	7.50	0.00
7,368.8	90.18	360.00	6,822.7	-8.7	-22.0	-8.6	7.50	7.50	0.00
End of Build - 7"									
7,400.0	90.18	360.00	6,822.6	22.5	-22.0	22.6	0.00	0.00	0.00
7,500.0	90.18	360.00	6,822.3	122.5	-22.0	122.6	0.00	0.00	0.00
7,600.0	90.18	360.00	6,822.0	222.5	-22.0	222.6	0.00	0.00	0.00
7,700.0	90.18	360.00	6,821.7	322.5	-22.1	322.6	0.00	0.00	0.00
7,800.0	90.18	360.00	6,821.4	422.5	-22.1	422.6	0.00	0.00	0.00
7,900.0	90.18	360.00	6,821.1	522.5	-22.1	522.6	0.00	0.00	0.00
8,000.0	90.18	360.00	6,820.8	622.5	-22.1	622.6	0.00	0.00	0.00

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Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-10-15)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,100.0	90.18	360.00	6,820.4	722.5	-22.1	722.6	0.00	0.00	0.00
8,200.0	90.18	360.00	6,820.1	822.5	-22.1	822.6	0.00	0.00	0.00
8,300.0	90.18	360.00	6,819.8	922.5	-22.1	922.6	0.00	0.00	0.00
8,400.0	90.18	360.00	6,819.5	1,022.5	-22.1	1,022.6	0.00	0.00	0.00
8,500.0	90.18	360.00	6,819.2	1,122.5	-22.1	1,122.6	0.00	0.00	0.00
8,600.0	90.18	360.00	6,818.9	1,222.5	-22.1	1,222.6	0.00	0.00	0.00
8,700.0	90.18	360.00	6,818.6	1,322.5	-22.1	1,322.6	0.00	0.00	0.00
8,800.0	90.18	360.00	6,818.2	1,422.5	-22.1	1,422.6	0.00	0.00	0.00
8,900.0	90.18	360.00	6,817.9	1,522.5	-22.1	1,522.6	0.00	0.00	0.00
9,000.0	90.18	360.00	6,817.6	1,622.5	-22.1	1,622.6	0.00	0.00	0.00
9,100.0	90.18	360.00	6,817.3	1,722.5	-22.1	1,722.6	0.00	0.00	0.00
9,200.0	90.18	360.00	6,817.0	1,822.5	-22.1	1,822.6	0.00	0.00	0.00
9,300.0	90.18	360.00	6,816.7	1,922.5	-22.1	1,922.6	0.00	0.00	0.00
9,400.0	90.18	360.00	6,816.4	2,022.5	-22.1	2,022.6	0.00	0.00	0.00
9,500.0	90.18	360.00	6,816.0	2,122.5	-22.1	2,122.6	0.00	0.00	0.00
9,600.0	90.18	360.00	6,815.7	2,222.5	-22.2	2,222.6	0.00	0.00	0.00
9,700.0	90.18	360.00	6,815.4	2,322.5	-22.2	2,322.6	0.00	0.00	0.00
9,800.0	90.18	360.00	6,815.1	2,422.5	-22.2	2,422.6	0.00	0.00	0.00
9,900.0	90.18	360.00	6,814.8	2,522.5	-22.2	2,522.6	0.00	0.00	0.00
10,000.0	90.18	360.00	6,814.5	2,622.5	-22.2	2,622.6	0.00	0.00	0.00
10,100.0	90.18	360.00	6,814.2	2,722.5	-22.2	2,722.6	0.00	0.00	0.00
10,200.0	90.18	360.00	6,813.8	2,822.5	-22.2	2,822.6	0.00	0.00	0.00
10,300.0	90.18	360.00	6,813.5	2,922.5	-22.2	2,922.6	0.00	0.00	0.00
10,400.0	90.18	360.00	6,813.2	3,022.5	-22.2	3,022.6	0.00	0.00	0.00
10,500.0	90.18	360.00	6,812.9	3,122.5	-22.2	3,122.6	0.00	0.00	0.00
10,600.0	90.18	360.00	6,812.6	3,222.5	-22.2	3,222.6	0.00	0.00	0.00
10,700.0	90.18	360.00	6,812.3	3,322.5	-22.2	3,322.6	0.00	0.00	0.00
10,800.0	90.18	360.00	6,812.0	3,422.5	-22.2	3,422.6	0.00	0.00	0.00
10,900.0	90.18	360.00	6,811.6	3,522.5	-22.2	3,522.6	0.00	0.00	0.00
11,000.0	90.18	360.00	6,811.3	3,622.5	-22.2	3,622.6	0.00	0.00	0.00
11,100.0	90.18	360.00	6,811.0	3,722.5	-22.2	3,722.6	0.00	0.00	0.00
11,200.0	90.18	360.00	6,810.7	3,822.5	-22.2	3,822.6	0.00	0.00	0.00
11,300.0	90.18	360.00	6,810.4	3,922.5	-22.2	3,922.6	0.00	0.00	0.00
11,400.0	90.18	360.00	6,810.1	4,022.5	-22.3	4,022.5	0.00	0.00	0.00
11,500.0	90.18	360.00	6,809.8	4,122.5	-22.3	4,122.5	0.00	0.00	0.00
11,600.0	90.18	360.00	6,809.4	4,222.5	-22.3	4,222.5	0.00	0.00	0.00
11,700.0	90.18	360.00	6,809.1	4,322.5	-22.3	4,322.5	0.00	0.00	0.00
11,800.0	90.18	360.00	6,808.8	4,422.5	-22.3	4,422.5	0.00	0.00	0.00
11,900.0	90.18	360.00	6,808.5	4,522.5	-22.3	4,522.5	0.00	0.00	0.00
12,000.0	90.18	360.00	6,808.2	4,622.5	-22.3	4,622.5	0.00	0.00	0.00
12,100.0	90.18	360.00	6,807.9	4,722.5	-22.3	4,722.5	0.00	0.00	0.00
12,200.0	90.18	360.00	6,807.6	4,822.5	-22.3	4,822.5	0.00	0.00	0.00
12,300.0	90.18	360.00	6,807.2	4,922.5	-22.3	4,922.5	0.00	0.00	0.00
12,400.0	90.18	360.00	6,806.9	5,022.5	-22.3	5,022.5	0.00	0.00	0.00
12,500.0	90.18	360.00	6,806.6	5,122.5	-22.3	5,122.5	0.00	0.00	0.00
12,600.0	90.18	360.00	6,806.3	5,222.5	-22.3	5,222.5	0.00	0.00	0.00
12,700.0	90.18	360.00	6,806.0	5,322.5	-22.3	5,322.5	0.00	0.00	0.00
12,800.0	90.18	360.00	6,805.7	5,422.5	-22.3	5,422.5	0.00	0.00	0.00
12,900.0	90.18	360.00	6,805.4	5,522.5	-22.3	5,522.5	0.00	0.00	0.00
13,000.0	90.18	360.00	6,805.0	5,622.5	-22.3	5,622.5	0.00	0.00	0.00
13,100.0	90.18	360.00	6,804.7	5,722.5	-22.3	5,722.5	0.00	0.00	0.00
13,200.0	90.18	360.00	6,804.4	5,822.5	-22.4	5,822.5	0.00	0.00	0.00
13,300.0	90.18	360.00	6,804.1	5,922.5	-22.4	5,922.5	0.00	0.00	0.00

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Project:	SEC.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**North Reference:**	True
Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-10-15)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,400.0	90.18	360.00	6,803.8	6,022.5	-22.4	6,022.5	0.00	0.00	0.00
13,500.0	90.18	360.00	6,803.5	6,122.5	-22.4	6,122.5	0.00	0.00	0.00
13,600.0	90.18	360.00	6,803.2	6,222.5	-22.4	6,222.5	0.00	0.00	0.00
13,700.0	90.18	360.00	6,802.8	6,322.5	-22.4	6,322.5	0.00	0.00	0.00
13,800.0	90.18	360.00	6,802.5	6,422.5	-22.4	6,422.5	0.00	0.00	0.00
13,900.0	90.18	360.00	6,802.2	6,522.5	-22.4	6,522.5	0.00	0.00	0.00
14,000.0	90.18	360.00	6,801.9	6,622.5	-22.4	6,622.5	0.00	0.00	0.00
14,100.0	90.18	360.00	6,801.6	6,722.5	-22.4	6,722.5	0.00	0.00	0.00
14,200.0	90.18	360.00	6,801.3	6,822.5	-22.4	6,822.5	0.00	0.00	0.00
14,300.0	90.18	360.00	6,801.0	6,922.5	-22.4	6,922.5	0.00	0.00	0.00
14,400.0	90.18	360.00	6,800.6	7,022.5	-22.4	7,022.5	0.00	0.00	0.00
14,500.0	90.18	360.00	6,800.3	7,122.5	-22.4	7,122.5	0.00	0.00	0.00
14,600.0	90.18	360.00	6,800.0	7,222.5	-22.4	7,222.5	0.00	0.00	0.00
14,700.0	90.18	360.00	6,799.7	7,322.5	-22.4	7,322.5	0.00	0.00	0.00
14,800.0	90.18	360.00	6,799.4	7,422.5	-22.4	7,422.5	0.00	0.00	0.00
14,900.0	90.18	360.00	6,799.1	7,522.5	-22.4	7,522.5	0.00	0.00	0.00
15,000.0	90.18	360.00	6,798.8	7,622.5	-22.4	7,622.5	0.00	0.00	0.00
15,100.0	90.18	360.00	6,798.4	7,722.5	-22.5	7,722.5	0.00	0.00	0.00
15,200.0	90.18	360.00	6,798.1	7,822.5	-22.5	7,822.5	0.00	0.00	0.00
15,300.0	90.18	360.00	6,797.8	7,922.5	-22.5	7,922.5	0.00	0.00	0.00
15,400.0	90.18	360.00	6,797.5	8,022.5	-22.5	8,022.5	0.00	0.00	0.00
15,500.0	90.18	360.00	6,797.2	8,122.5	-22.5	8,122.5	0.00	0.00	0.00
15,600.0	90.18	360.00	6,796.9	8,222.5	-22.5	8,222.5	0.00	0.00	0.00
15,700.0	90.18	360.00	6,796.6	8,322.5	-22.5	8,322.5	0.00	0.00	0.00
15,800.0	90.18	360.00	6,796.2	8,422.5	-22.5	8,422.5	0.00	0.00	0.00
15,900.0	90.18	360.00	6,795.9	8,522.5	-22.5	8,522.5	0.00	0.00	0.00
16,000.0	90.18	360.00	6,795.6	8,622.5	-22.5	8,622.5	0.00	0.00	0.00
16,100.0	90.18	360.00	6,795.3	8,722.5	-22.5	8,722.5	0.00	0.00	0.00
16,200.0	90.18	360.00	6,795.0	8,822.5	-22.5	8,822.5	0.00	0.00	0.00
16,300.0	90.18	360.00	6,794.7	8,922.5	-22.5	8,922.5	0.00	0.00	0.00
16,400.0	90.18	360.00	6,794.4	9,022.5	-22.5	9,022.5	0.00	0.00	0.00
16,500.0	90.18	360.00	6,794.0	9,122.5	-22.5	9,122.5	0.00	0.00	0.00
16,600.0	90.18	360.00	6,793.7	9,222.5	-22.5	9,222.5	0.00	0.00	0.00
16,700.0	90.18	360.00	6,793.4	9,322.5	-22.5	9,322.5	0.00	0.00	0.00
16,800.0	90.18	360.00	6,793.1	9,422.5	-22.5	9,422.5	0.00	0.00	0.00
16,834.0	90.18	360.00	6,793.0	9,456.5	-22.5	9,456.5	0.00	0.00	0.00

TD at 16834.0 - BHL 200'FNL & 930'FWL, Sec.6

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 825'FSL & 981'FW - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,392,981.02	3,251,104.57	40.408630	-104.598271
BHL 200'FNL & 930'FWl - plan hits target center - Point	0.00	0.00	6,793.0	9,456.5	-22.5	1,402,436.40	3,250,985.87	40.434587	-104.598352

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Project:	SEC.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**North Reference:**	True
Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-10-15)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,368.8	6,822.7	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,501.4	3,490.0	Parkman		0.00	
4,258.7	4,210.0	Sussex		0.00	
6,656.6	6,516.0	Sharon Springs		0.00	
6,746.9	6,585.0	Niobrara A		0.00	
6,909.3	6,690.0	Niobrara B		0.00	
7,080.9	6,770.0	Niobrara C		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,500.0	2,500.0	0.0	0.0	KOP - Start Build 1.50
5,078.7	4,987.3	-199.0	-5.6	Start Drop -2.00
6,007.6	5,900.0	-625.8	-17.8	Start 158.8 hold at 6007.6 MD
6,166.4	6,058.8	-775.0	-22.0	Start Build 7.50
7,368.8	6,822.7	-775.0	-22.0	End of Build
16,834.0	6,793.0	-8.7	-22.0	TD at 16834.0

ENSIGN Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.7-T5N-R64W
Dunn 5N64W7 Pad Sec.7-T5N-R64W
Dunn 7L-341

Wellbore #1
Plan #1 (9-10-15)

Anticollision Report

23 September, 2015

PDC ENERGY
Growing E&P Value

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Reference Plan #1 (9-10-15)

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 800.0 ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 9/23/2015

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	16,834.0	Plan #1 (9-10-15) (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Dunn 5N64W7 Pad Sec.7-T5N-R64W						
Dunn 7I-201 - Wellbore #1 - Plan #1 (9-8-15)	1,800.0	1,800.0	14.9	7.1	1.898	CC, ES, SF
Dunn 7I-221 - Wellbore #1 - Plan #1 (9-10-15)	1,500.0	1,500.0	45.2	38.7	6.931	CC
Dunn 7I-221 - Wellbore #1 - Plan #1 (9-10-15)	16,834.0	16,733.4	341.3	-24.8	0.932	Level 1, ES, SF
Dunn 7I-321 - Wellbore #1 - Plan #1 (9-10-15)	1,600.0	1,600.0	29.9	22.9	4.288	CC, ES
Dunn 7I-321 - Wellbore #1 - Plan #1 (9-10-15)	16,834.0	16,839.0	562.1	190.2	1.511	SF
Dunn 7L-201 - Wellbore #1 - Plan #1 (9-10-15)	1,400.0	1,400.0	60.1	54.0	9.905	CC
Dunn 7L-201 - Wellbore #1 - Plan #1 (9-10-15)	16,834.0	16,710.8	273.3	-89.7	0.753	Level 1, ES, SF
Dunn 7L-221 - Wellbore #1 - Plan #1 (9-10-15)	500.0	500.0	90.0	88.0	44.484	CC, ES
Dunn 7L-221 - Wellbore #1 - Plan #1 (9-10-15)	16,834.0	16,738.7	753.5	381.2	2.024	SF
Dunn 7L-301 - Wellbore #1 - Plan #1 (9-10-15)	1,200.0	1,200.0	75.1	69.9	14.518	CC, ES
Dunn 7L-301 - Wellbore #1 - Plan #1 (9-10-15)	16,834.0	16,801.5	498.0	124.7	1.334	Level 3, SF
Dunn 7Q-221 - Wellbore #1 - Plan #1 (9-11-15)	200.0	200.0	150.1	149.4	222.614	CC
Dunn 7Q-221 - Wellbore #1 - Plan #1 (9-11-15)	300.0	298.8	150.5	149.4	136.008	ES
Dunn 7Q-221 - Wellbore #1 - Plan #1 (9-11-15)	1,200.0	1,166.7	225.1	219.6	40.844	SF
Dunn 7Q-241 - Wellbore #1 - Plan #1 (9-11-15)	600.0	600.0	119.9	117.4	48.481	CC, ES
Dunn 7Q-241 - Wellbore #1 - Plan #1 (9-11-15)	1,300.0	1,283.1	158.0	152.4	28.246	SF
Dunn 7Q-301 - Wellbore #1 - Plan #1 (9-11-15)	400.0	400.0	135.2	133.6	85.911	CC, ES
Dunn 7Q-301 - Wellbore #1 - Plan #1 (9-11-15)	1,300.0	1,272.8	198.4	192.6	34.428	SF
Dunn 7Q-341 - Wellbore #1 - Plan #1 (9-11-15)	800.0	800.0	104.9	101.6	31.122	CC, ES
Dunn 7Q-341 - Wellbore #1 - Plan #1 (9-11-15)	1,400.0	1,386.8	135.1	129.1	22.639	SF
Dunn Pad Sec.7-T5N-R64W						
Dunn 24-7 (Exist.) - Wellbore #1 - Wellbore #1						Out of range
Dunn 24-7 (Exist.) - Wellbore #1 - Wellbore #1						Out of range
Dunn 7PD (AL) - Wellbore #1 - Design #1						Out of range
Dunn 7PD (AL) - Wellbore #1 - Design #1						Out of range
Dunn 7PD (AL) - Wellbore #1 - Design #1						Out of range

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Existing Wells - Sec.7-T5N-R64W						
Dunn #1 (Exist.) - Wellbore #1 - Wellbore #1	7,380.0	6,809.7	443.0	290.1	2.896	CC, ES, SF
Dunn #13-7 (Exist.) - Wellbore #1 - Wellbore #1	8,471.2	6,804.3	525.9	360.4	3.177	CC, ES
Dunn #13-7 (Exist.) - Wellbore #1 - Wellbore #1	8,500.0	6,804.2	526.7	360.7	3.173	SF
Dunn #23-7 (Exist.) - Wellbore #1 - Wellbore #1						Out of range
Little Will #6 (P&A) - Wellbore #1 - Wellbore #1	16,013.6	6,784.6	118.1	-187.7	0.386	Level 1, CC, ES, SF
Little Will #7 (P&A) - Wellbore #1 - Wellbore #1						Out of range
Little Will #7 (P&A) - Wellbore #1 - Wellbore #1						Out of range
Mitani #1 (Exist.) - Wellbore #1 - Wellbore #1	13,611.3	6,775.1	78.7	-181.1	0.303	Level 1, CC, ES, SF
Mitani #14-6 (Exist.) - Wellbore #1 - Wellbore #1	12,650.9	6,768.1	199.6	-41.8	0.827	Level 1, CC, ES, SF
Silva #1 (Exist.) - Wellbore #1 - Wellbore #1	12,530.3	6,767.5	671.6	432.5	2.809	CC, ES
Silva #1 (Exist.) - Wellbore #1 - Wellbore #1	12,600.0	6,767.3	675.2	434.8	2.809	SF
Silva #23-6 (Exist) - Wellbore #1 - Wellbore #1						Out of range
Silva #23-6 (Exist) - Wellbore #1 - Wellbore #1						Out of range
Silva #23-6 (Exist) - Wellbore #1 - Wellbore #1						Out of range

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-201 - Wellbore #1 - Plan #1 (9-8-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-180.00	-14.9	0.0	14.9	14.9	0.00	N/A	
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-14.9	0.0	14.9	14.7	0.22	66.443	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-14.9	0.0	14.9	14.3	0.67	22.146	
300.0	300.0	300.0	300.0	0.6	0.6	-180.00	-14.9	0.0	14.9	13.8	1.12	13.288	
400.0	400.0	400.0	400.0	0.8	0.8	-180.00	-14.9	0.0	14.9	13.4	1.57	9.491	
500.0	500.0	500.0	500.0	1.0	1.0	-180.00	-14.9	0.0	14.9	12.9	2.02	7.382	
600.0	600.0	600.0	600.0	1.2	1.2	-180.00	-14.9	0.0	14.9	12.5	2.47	6.040	
700.0	700.0	700.0	700.0	1.5	1.5	-180.00	-14.9	0.0	14.9	12.0	2.92	5.111	
800.0	800.0	800.0	800.0	1.7	1.7	-180.00	-14.9	0.0	14.9	11.6	3.37	4.429	
900.0	900.0	900.0	900.0	1.9	1.9	-180.00	-14.9	0.0	14.9	11.1	3.82	3.908	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-180.00	-14.9	0.0	14.9	10.7	4.27	3.497	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-180.00	-14.9	0.0	14.9	10.2	4.72	3.164	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-180.00	-14.9	0.0	14.9	9.8	5.17	2.889	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-180.00	-14.9	0.0	14.9	9.3	5.62	2.657	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-180.00	-14.9	0.0	14.9	8.9	6.07	2.461	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-180.00	-14.9	0.0	14.9	8.4	6.52	2.291	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-180.00	-14.9	0.0	14.9	8.0	6.97	2.143	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-180.00	-14.9	0.0	14.9	7.5	7.42	2.013	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-180.00	-14.9	0.0	14.9	7.1	7.87	1.898	CC, ES, SF
1,900.0	1,900.0	1,899.7	1,899.7	4.2	4.1	-176.64	-15.8	-0.9	15.9	7.6	8.29	1.914	
2,000.0	2,000.0	1,999.3	1,999.2	4.4	4.3	-168.68	-18.6	-3.7	19.0	10.3	8.70	2.179	
2,100.0	2,100.0	2,098.6	2,098.3	4.6	4.5	-160.14	-23.1	-8.3	24.6	15.5	9.11	2.702	
2,200.0	2,200.0	2,197.5	2,196.8	4.8	4.7	-153.30	-29.4	-14.8	33.0	23.5	9.52	3.470	
2,300.0	2,300.0	2,295.8	2,294.4	5.1	4.9	-148.43	-37.4	-23.0	44.2	34.3	9.94	4.452	
2,400.0	2,400.0	2,393.5	2,391.2	5.3	5.1	-145.06	-47.1	-32.9	58.1	47.8	10.36	5.613	
2,500.0	2,500.0	2,490.5	2,486.7	5.5	5.4	-142.71	-58.4	-44.5	74.6	63.9	10.78	6.925	
2,600.0	2,600.0	2,586.7	2,581.1	5.7	5.6	37.67	-71.4	-57.7	92.7	81.5	11.17	8.298	
2,700.0	2,699.9	2,682.3	2,674.5	5.9	6.0	39.89	-85.8	-72.5	111.3	99.8	11.54	9.648	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-201 - Wellbore #1 - Plan #1 (9-8-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
2,800.0	2,799.7	2,777.3	2,766.7	6.0	6.3	42.19	-101.8	-88.9	130.6	118.7	11.91	10.968	
2,900.0	2,899.3	2,871.6	2,857.6	6.2	6.7	44.50	-119.3	-106.8	150.7	138.4	12.29	12.263	
3,000.0	2,998.6	2,965.2	2,947.2	6.4	7.1	46.77	-138.2	-126.1	171.6	158.9	12.68	13.534	
3,100.0	3,097.5	3,058.0	3,035.4	6.6	7.5	48.97	-158.4	-146.8	193.5	180.4	13.09	14.780	
3,200.0	3,196.1	3,150.0	3,122.1	6.8	8.0	51.07	-180.0	-168.8	216.4	202.9	13.53	15.992	
3,300.0	3,294.2	3,241.3	3,207.3	7.1	8.5	53.08	-202.8	-192.2	240.4	226.4	14.01	17.163	
3,400.0	3,391.7	3,336.7	3,295.8	7.4	9.1	55.14	-227.6	-217.5	264.8	250.3	14.54	18.206	
3,500.0	3,488.6	3,433.2	3,385.4	7.7	9.8	57.27	-252.7	-243.3	288.2	273.1	15.14	19.034	
3,600.0	3,584.9	3,529.8	3,475.1	8.0	10.4	59.46	-277.9	-269.0	310.8	295.0	15.81	19.654	
3,700.0	3,680.4	3,626.3	3,564.7	8.4	11.1	61.71	-303.0	-294.7	332.6	316.0	16.57	20.077	
3,738.6	3,717.0	3,663.6	3,599.2	8.6	11.3	62.59	-312.7	-304.6	340.9	324.0	16.88	20.191	
3,800.0	3,775.2	3,722.9	3,654.2	8.8	11.7	64.12	-328.1	-320.4	354.1	336.7	17.42	20.328	
3,900.0	3,870.0	3,819.4	3,743.8	9.3	12.4	66.40	-353.3	-346.1	376.1	357.8	18.34	20.510	
4,000.0	3,964.8	3,915.9	3,833.3	9.8	13.1	68.42	-378.4	-371.8	398.6	379.3	19.30	20.651	
4,100.0	4,059.6	4,012.4	3,922.9	10.3	13.8	70.23	-403.5	-397.6	421.6	401.3	20.31	20.757	
4,200.0	4,154.4	4,108.9	4,012.5	10.8	14.5	71.85	-428.7	-423.3	444.9	423.5	21.35	20.837	
4,300.0	4,249.2	4,205.4	4,102.0	11.3	15.2	73.31	-453.8	-449.0	468.5	446.1	22.42	20.895	
4,400.0	4,343.9	4,301.9	4,191.6	11.9	15.9	74.63	-478.9	-474.7	492.4	468.9	23.52	20.937	
4,500.0	4,438.7	4,398.4	4,281.1	12.4	16.6	75.84	-504.0	-500.4	516.5	491.9	24.63	20.966	
4,600.0	4,533.5	4,494.9	4,370.7	13.0	17.3	76.93	-529.2	-526.1	540.8	515.0	25.77	20.986	
4,700.0	4,628.3	4,591.3	4,460.2	13.5	18.0	77.93	-554.3	-551.8	565.3	538.4	26.92	20.997	
4,800.0	4,723.1	4,687.8	4,549.8	14.1	18.7	78.85	-579.4	-577.5	589.9	561.8	28.09	21.003	
4,900.0	4,817.9	4,784.3	4,639.3	14.7	19.4	79.70	-604.6	-603.2	614.7	585.4	29.26	21.005	
5,000.0	4,912.7	4,880.8	4,728.9	15.3	20.1	80.48	-629.7	-628.9	639.6	609.1	30.45	21.004	
5,078.7	4,987.3	4,972.1	4,814.0	15.8	20.7	81.24	-652.6	-652.4	658.4	627.0	31.41	20.962	
5,100.0	5,007.5	4,997.2	4,837.6	15.9	20.8	81.55	-658.6	-658.5	663.2	631.5	31.67	20.943	
5,200.0	5,103.0	5,115.7	4,950.0	16.3	21.4	82.92	-684.8	-685.3	684.2	651.4	32.76	20.885	
5,300.0	5,199.6	5,235.3	5,065.0	16.7	21.9	84.11	-707.9	-708.9	702.7	668.9	33.78	20.803	
5,400.0	5,296.9	5,356.1	5,182.3	17.1	22.4	85.13	-727.8	-729.3	718.6	683.8	34.72	20.698	
5,500.0	5,395.0	5,477.7	5,301.6	17.4	22.9	86.00	-744.4	-746.3	731.7	696.1	35.57	20.573	
5,600.0	5,493.8	5,600.0	5,422.5	17.8	23.2	86.73	-757.5	-759.6	742.0	705.7	36.32	20.430	
5,700.0	5,593.0	5,722.9	5,544.6	18.0	23.5	87.34	-767.0	-769.4	749.4	712.5	36.96	20.275	
5,800.0	5,692.6	5,846.0	5,667.4	18.3	23.8	87.84	-772.8	-775.3	754.0	716.5	37.51	20.101	
5,900.0	5,792.4	5,969.3	5,790.6	18.5	23.9	88.22	-774.9	-777.5	755.6	717.6	37.95	19.907	
6,007.6	5,900.0	6,078.6	5,900.0	18.6	24.0	-89.99	-774.9	-777.5	755.5	717.2	38.29	19.731	
6,066.8	5,959.1	6,137.8	5,959.1	18.7	24.1	-89.99	-774.9	-777.5	755.5	717.1	38.45	19.650	
6,100.0	5,992.4	6,171.0	5,992.4	18.8	24.1	-89.99	-774.9	-777.5	755.5	717.0	38.54	19.606	
6,108.4	6,000.8	6,179.5	6,000.8	18.8	24.1	-89.98	-774.7	-777.5	755.5	717.0	38.56	19.595	
6,166.4	6,058.8	6,237.2	6,058.4	18.9	24.2	-89.72	-771.3	-777.5	755.5	716.8	38.72	19.514	
6,200.0	6,092.4	6,270.4	6,091.4	18.9	24.2	-89.47	-767.3	-777.5	755.6	716.8	38.80	19.475	
6,250.0	6,142.2	6,319.5	6,139.8	18.9	24.2	-89.10	-758.8	-777.5	755.6	716.8	38.85	19.448	
6,300.0	6,191.7	6,368.4	6,187.3	18.9	24.1	-88.74	-747.3	-777.5	755.7	716.9	38.84	19.457	
6,350.0	6,240.6	6,417.0	6,233.7	18.9	24.0	-88.39	-732.9	-777.5	755.8	717.1	38.76	19.501	
6,400.0	6,288.8	6,465.3	6,278.8	18.8	23.9	-88.04	-715.7	-777.5	756.0	717.4	38.61	19.580	
6,450.0	6,335.9	6,513.3	6,322.5	18.7	23.8	-87.71	-695.8	-777.5	756.1	717.7	38.40	19.691	
6,500.0	6,381.9	6,561.1	6,364.6	18.5	23.7	-87.38	-673.3	-777.5	756.3	718.2	38.13	19.834	
6,550.0	6,426.5	6,608.6	6,405.1	18.4	23.5	-87.06	-648.3	-777.5	756.5	718.7	37.82	20.005	
6,600.0	6,469.5	6,655.9	6,443.7	18.2	23.4	-86.76	-621.0	-777.5	756.7	719.3	37.46	20.203	
6,650.0	6,510.7	6,703.0	6,480.4	18.0	23.2	-86.47	-591.5	-777.5	757.0	719.9	37.06	20.424	
6,700.0	6,550.0	6,750.0	6,515.1	17.8	23.0	-86.20	-559.9	-777.5	757.2	720.5	36.64	20.664	
6,750.0	6,587.3	6,796.6	6,547.6	17.6	22.8	-85.94	-526.5	-777.5	757.4	721.2	36.21	20.918	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-201 - Wellbore #1 - Plan #1 (9-8-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
6,800.0	6,622.2	6,843.2	6,578.0	17.4	22.6	-85.70	-491.2	-777.5	757.6	721.9	35.77	21.181	
6,850.0	6,654.7	6,889.5	6,606.0	17.2	22.4	-85.47	-454.3	-777.5	757.9	722.5	35.34	21.445	
6,900.0	6,684.7	6,935.7	6,631.7	17.0	22.2	-85.27	-415.9	-777.5	758.1	723.2	34.93	21.702	
6,950.0	6,712.0	6,981.8	6,654.9	16.8	22.0	-85.08	-376.1	-777.5	758.3	723.7	34.56	21.944	
7,000.0	6,736.5	7,027.8	6,675.6	16.6	21.8	-84.92	-335.0	-777.5	758.5	724.3	34.23	22.161	
7,050.0	6,758.1	7,073.7	6,693.8	16.5	21.6	-84.77	-293.0	-777.5	758.7	724.7	33.95	22.344	
7,100.0	6,776.8	7,119.4	6,709.4	16.4	21.4	-84.64	-249.9	-777.5	758.8	725.1	33.75	22.484	
7,150.0	6,792.3	7,165.1	6,722.4	16.4	21.2	-84.54	-206.1	-777.5	758.9	725.3	33.62	22.573	
7,200.0	6,804.7	7,210.8	6,732.8	16.4	21.0	-84.45	-161.7	-777.5	759.0	725.5	33.58	22.603	
7,250.0	6,813.9	7,256.4	6,740.4	16.4	20.9	-84.39	-116.8	-777.5	759.1	725.5	33.63	22.572	
7,300.0	6,819.9	7,300.0	6,745.2	16.5	20.7	-84.35	-73.4	-777.5	759.2	725.4	33.77	22.479	
7,350.0	6,822.6	7,347.4	6,747.6	16.7	20.6	-84.33	-26.0	-777.5	759.2	725.2	34.02	22.316	
7,368.8	6,822.7	7,364.6	6,747.8	16.7	20.5	-84.33	-8.9	-777.5	759.2	725.1	34.13	22.241	
7,400.0	6,822.6	7,395.8	6,747.7	16.9	20.5	-84.33	22.3	-777.5	759.2	724.8	34.37	22.086	
7,500.0	6,822.3	7,495.8	6,747.4	17.4	20.4	-84.34	122.3	-777.5	759.2	723.8	35.40	21.445	
7,600.0	6,822.0	7,595.8	6,747.2	18.1	20.6	-84.34	222.3	-777.5	759.2	722.4	36.80	20.632	
7,700.0	6,821.7	7,695.8	6,746.9	19.0	21.1	-84.35	322.3	-777.5	759.2	720.6	38.52	19.708	
7,800.0	6,821.4	7,795.8	6,746.6	20.1	22.0	-84.35	422.3	-777.5	759.1	718.6	40.53	18.728	
7,900.0	6,821.1	7,895.8	6,746.4	21.3	23.1	-84.35	522.3	-777.5	759.1	716.3	42.80	17.739	
8,000.0	6,820.8	7,995.8	6,746.1	22.5	24.2	-84.36	622.3	-777.5	759.1	713.9	45.27	16.770	
8,100.0	6,820.4	8,095.8	6,745.8	23.9	25.5	-84.36	722.3	-777.5	759.1	711.2	47.92	15.842	
8,200.0	6,820.1	8,195.8	6,745.6	25.3	26.9	-84.36	822.3	-777.5	759.1	708.4	50.72	14.967	
8,300.0	6,819.8	8,295.8	6,745.3	26.8	28.3	-84.37	922.3	-777.5	759.1	705.4	53.65	14.150	
8,400.0	6,819.5	8,395.8	6,745.1	28.3	29.8	-84.37	1,022.3	-777.5	759.1	702.4	56.68	13.393	
8,500.0	6,819.2	8,495.8	6,744.8	29.9	31.3	-84.38	1,122.3	-777.5	759.1	699.3	59.80	12.693	
8,600.0	6,818.9	8,595.8	6,744.5	31.6	32.9	-84.38	1,222.3	-777.5	759.1	696.1	63.01	12.047	
8,700.0	6,818.6	8,695.8	6,744.3	33.2	34.5	-84.38	1,322.3	-777.5	759.1	692.8	66.28	11.453	
8,800.0	6,818.2	8,795.8	6,744.0	34.9	36.1	-84.39	1,422.3	-777.5	759.0	689.4	69.60	10.906	
8,900.0	6,817.9	8,895.8	6,743.8	36.6	37.7	-84.39	1,522.3	-777.5	759.0	686.1	72.97	10.401	
9,000.0	6,817.6	8,995.8	6,743.5	38.3	39.4	-84.40	1,622.3	-777.5	759.0	682.6	76.39	9.936	
9,100.0	6,817.3	9,095.8	6,743.2	40.1	41.1	-84.40	1,722.3	-777.5	759.0	679.2	79.85	9.506	
9,200.0	6,817.0	9,195.8	6,743.0	41.8	42.8	-84.40	1,822.3	-777.5	759.0	675.7	83.33	9.108	
9,300.0	6,816.7	9,295.8	6,742.7	43.6	44.5	-84.41	1,922.3	-777.5	759.0	672.1	86.85	8.739	
9,400.0	6,816.4	9,395.8	6,742.4	45.4	46.3	-84.41	2,022.3	-777.5	759.0	668.6	90.39	8.397	
9,500.0	6,816.0	9,495.8	6,742.2	47.2	48.0	-84.42	2,122.3	-777.5	759.0	665.0	93.95	8.078	
9,600.0	6,815.7	9,595.8	6,741.9	49.0	49.8	-84.42	2,222.3	-777.5	759.0	661.4	97.53	7.782	
9,700.0	6,815.4	9,695.8	6,741.7	50.8	51.5	-84.42	2,322.3	-777.5	758.9	657.8	101.13	7.504	
9,800.0	6,815.1	9,795.8	6,741.4	52.6	53.3	-84.43	2,422.3	-777.5	758.9	654.2	104.75	7.245	
9,900.0	6,814.8	9,895.8	6,741.1	54.5	55.1	-84.43	2,522.3	-777.5	758.9	650.5	108.38	7.002	
10,000.0	6,814.5	9,995.8	6,740.9	56.3	56.9	-84.43	2,622.3	-777.5	758.9	646.9	112.03	6.775	
10,100.0	6,814.2	10,095.8	6,740.6	58.1	58.7	-84.44	2,722.3	-777.5	758.9	643.2	115.68	6.560	
10,200.0	6,813.8	10,195.8	6,740.3	60.0	60.5	-84.44	2,822.3	-777.5	758.9	639.5	119.35	6.359	
10,300.0	6,813.5	10,295.8	6,740.1	61.8	62.4	-84.45	2,922.3	-777.5	758.9	635.9	123.02	6.169	
10,400.0	6,813.2	10,395.8	6,739.8	63.7	64.2	-84.45	3,022.3	-777.5	758.9	632.2	126.71	5.989	
10,500.0	6,812.9	10,495.8	6,739.6	65.5	66.0	-84.45	3,122.3	-777.5	758.9	628.5	130.40	5.819	
10,600.0	6,812.6	10,595.8	6,739.3	67.4	67.8	-84.46	3,222.3	-777.5	758.9	624.7	134.10	5.659	
10,700.0	6,812.3	10,695.8	6,739.0	69.3	69.7	-84.46	3,322.3	-777.5	758.8	621.0	137.81	5.506	
10,800.0	6,812.0	10,795.8	6,738.8	71.1	71.5	-84.47	3,422.3	-777.5	758.8	617.3	141.53	5.362	
10,900.0	6,811.6	10,895.8	6,738.5	73.0	73.4	-84.47	3,522.3	-777.5	758.8	613.6	145.25	5.224	
11,000.0	6,811.3	10,995.8	6,738.3	74.9	75.2	-84.47	3,622.3	-777.5	758.8	609.8	148.97	5.094	
11,100.0	6,811.0	11,095.8	6,738.0	76.7	77.1	-84.48	3,722.3	-777.5	758.8	606.1	152.70	4.969	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-201 - Wellbore #1 - Plan #1 (9-8-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
11,200.0	6,810.7	11,195.8	6,737.7	78.6	78.9	-84.48	3,822.3	-777.5	758.8	602.4	156.44	4.850	
11,300.0	6,810.4	11,295.8	6,737.5	80.5	80.8	-84.49	3,922.3	-777.5	758.8	598.6	160.18	4.737	
11,400.0	6,810.1	11,395.8	6,737.2	82.4	82.7	-84.49	4,022.3	-777.5	758.8	594.8	163.92	4.629	
11,500.0	6,809.8	11,495.8	6,736.9	84.3	84.5	-84.49	4,122.3	-777.5	758.8	591.1	167.67	4.525	
11,600.0	6,809.4	11,595.8	6,736.7	86.2	86.4	-84.50	4,222.3	-777.5	758.7	587.3	171.42	4.426	
11,700.0	6,809.1	11,695.8	6,736.4	88.0	88.3	-84.50	4,322.3	-777.5	758.7	583.6	175.17	4.331	
11,800.0	6,808.8	11,795.8	6,736.2	89.9	90.1	-84.50	4,422.3	-777.5	758.7	579.8	178.93	4.240	
11,900.0	6,808.5	11,895.8	6,735.9	91.8	92.0	-84.51	4,522.3	-777.5	758.7	576.0	182.69	4.153	
12,000.0	6,808.2	11,995.8	6,735.6	93.7	93.9	-84.51	4,622.3	-777.5	758.7	572.3	186.45	4.069	
12,100.0	6,807.9	12,095.8	6,735.4	95.6	95.8	-84.52	4,722.3	-777.5	758.7	568.5	190.22	3.989	
12,200.0	6,807.6	12,195.8	6,735.1	97.5	97.6	-84.52	4,822.3	-777.5	758.7	564.7	193.99	3.911	
12,300.0	6,807.2	12,295.8	6,734.9	99.4	99.5	-84.52	4,922.3	-777.5	758.7	560.9	197.76	3.836	
12,400.0	6,806.9	12,395.8	6,734.6	101.3	101.4	-84.53	5,022.3	-777.5	758.7	557.1	201.53	3.765	
12,500.0	6,806.6	12,495.8	6,734.3	103.2	103.3	-84.53	5,122.3	-777.5	758.7	553.4	205.30	3.695	
12,600.0	6,806.3	12,595.8	6,734.1	105.1	105.2	-84.54	5,222.3	-777.5	758.6	549.6	209.08	3.629	
12,700.0	6,806.0	12,695.8	6,733.8	107.0	107.1	-84.54	5,322.3	-777.5	758.6	545.8	212.86	3.564	
12,800.0	6,805.7	12,795.8	6,733.5	108.9	108.9	-84.54	5,422.3	-777.5	758.6	542.0	216.64	3.502	
12,900.0	6,805.4	12,895.8	6,733.3	110.8	110.8	-84.55	5,522.3	-777.5	758.6	538.2	220.42	3.442	
13,000.0	6,805.0	12,995.8	6,733.0	112.7	112.7	-84.55	5,622.3	-777.5	758.6	534.4	224.20	3.384	
13,100.0	6,804.7	13,095.8	6,732.8	114.6	114.6	-84.56	5,722.3	-777.5	758.6	530.6	227.99	3.327	
13,200.0	6,804.4	13,195.8	6,732.5	116.5	116.5	-84.56	5,822.3	-777.5	758.6	526.8	231.77	3.273	
13,300.0	6,804.1	13,295.8	6,732.2	118.4	118.4	-84.56	5,922.3	-777.5	758.6	523.0	235.56	3.220	
13,400.0	6,803.8	13,395.8	6,732.0	120.3	120.3	-84.57	6,022.3	-777.5	758.6	519.2	239.35	3.169	
13,500.0	6,803.5	13,495.8	6,731.7	122.2	122.2	-84.57	6,122.3	-777.5	758.6	515.4	243.14	3.120	
13,600.0	6,803.2	13,595.8	6,731.4	124.1	124.1	-84.58	6,222.3	-777.5	758.5	511.6	246.93	3.072	
13,700.0	6,802.8	13,695.8	6,731.2	126.0	126.0	-84.58	6,322.3	-777.5	758.5	507.8	250.72	3.025	
13,800.0	6,802.5	13,795.8	6,730.9	127.9	127.9	-84.58	6,422.3	-777.5	758.5	504.0	254.52	2.980	
13,900.0	6,802.2	13,895.8	6,730.7	129.8	129.8	-84.59	6,522.3	-777.5	758.5	500.2	258.31	2.936	
14,000.0	6,801.9	13,995.8	6,730.4	131.7	131.7	-84.59	6,622.3	-777.5	758.5	496.4	262.11	2.894	
14,100.0	6,801.6	14,095.8	6,730.1	133.6	133.6	-84.59	6,722.3	-777.5	758.5	492.6	265.90	2.852	
14,200.0	6,801.3	14,195.8	6,729.9	135.5	135.5	-84.60	6,822.3	-777.5	758.5	488.8	269.70	2.812	
14,300.0	6,801.0	14,295.8	6,729.6	137.4	137.4	-84.60	6,922.3	-777.5	758.5	485.0	273.50	2.773	
14,400.0	6,800.6	14,395.8	6,729.4	139.3	139.3	-84.61	7,022.3	-777.5	758.5	481.2	277.30	2.735	
14,500.0	6,800.3	14,495.8	6,729.1	141.2	141.2	-84.61	7,122.3	-777.5	758.4	477.3	281.10	2.698	
14,600.0	6,800.0	14,595.8	6,728.8	143.1	143.1	-84.61	7,222.3	-777.5	758.4	473.5	284.90	2.662	
14,700.0	6,799.7	14,695.8	6,728.6	145.0	145.0	-84.62	7,322.3	-777.5	758.4	469.7	288.70	2.627	
14,800.0	6,799.4	14,795.8	6,728.3	147.0	146.9	-84.62	7,422.3	-777.5	758.4	465.9	292.50	2.593	
14,900.0	6,799.1	14,895.8	6,728.0	148.9	148.8	-84.63	7,522.3	-777.5	758.4	462.1	296.31	2.560	
15,000.0	6,798.8	14,995.8	6,727.8	150.8	150.7	-84.63	7,622.3	-777.5	758.4	458.3	300.11	2.527	
15,100.0	6,798.4	15,095.8	6,727.5	152.7	152.6	-84.63	7,722.3	-777.5	758.4	454.5	303.92	2.495	
15,200.0	6,798.1	15,195.8	6,727.3	154.6	154.5	-84.64	7,822.3	-777.5	758.4	450.7	307.72	2.464	
15,300.0	6,797.8	15,295.8	6,727.0	156.5	156.4	-84.64	7,922.3	-777.5	758.4	446.8	311.53	2.434	
15,400.0	6,797.5	15,395.8	6,726.7	158.4	158.3	-84.65	8,022.3	-777.5	758.4	443.0	315.33	2.405	
15,500.0	6,797.2	15,495.8	6,726.5	160.3	160.2	-84.65	8,122.3	-777.5	758.3	439.2	319.14	2.376	
15,600.0	6,796.9	15,595.8	6,726.2	162.2	162.1	-84.65	8,222.3	-777.5	758.3	435.4	322.95	2.348	
15,700.0	6,796.6	15,695.8	6,725.9	164.1	164.0	-84.66	8,322.3	-777.5	758.3	431.6	326.75	2.321	
15,800.0	6,796.2	15,795.8	6,725.7	166.1	165.9	-84.66	8,422.3	-777.5	758.3	427.7	330.56	2.294	
15,900.0	6,795.9	15,895.8	6,725.4	168.0	167.8	-84.66	8,522.3	-777.5	758.3	423.9	334.37	2.268	
16,000.0	6,795.6	15,995.8	6,725.2	169.9	169.7	-84.67	8,622.3	-777.5	758.3	420.1	338.18	2.242	
16,100.0	6,795.3	16,095.8	6,724.9	171.8	171.6	-84.67	8,722.3	-777.5	758.3	416.3	341.99	2.217	
16,200.0	6,795.0	16,195.8	6,724.6	173.7	173.5	-84.68	8,822.3	-777.5	758.3	412.5	345.80	2.193	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-201 - Wellbore #1 - Plan #1 (9-8-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
16,300.0	6,794.7	16,295.8	6,724.4	175.6	175.4	-84.68	8,922.3	-777.5	758.3	408.6	349.61	2.169	
16,400.0	6,794.4	16,395.8	6,724.1	177.5	177.3	-84.68	9,022.3	-777.5	758.3	404.8	353.42	2.145	
16,500.0	6,794.0	16,495.8	6,723.9	179.4	179.2	-84.69	9,122.3	-777.5	758.2	401.0	357.23	2.123	
16,600.0	6,793.7	16,595.8	6,723.6	181.4	181.2	-84.69	9,222.3	-777.5	758.2	397.2	361.05	2.100	
16,700.0	6,793.4	16,695.8	6,723.3	183.3	183.1	-84.70	9,322.3	-777.5	758.2	393.4	364.86	2.078	
16,800.0	6,793.1	16,795.8	6,723.1	185.2	185.0	-84.70	9,422.3	-777.5	758.2	389.5	368.67	2.057	
16,824.8	6,793.0	16,820.6	6,723.0	185.7	185.4	-84.70	9,447.1	-777.5	758.2	388.6	369.62	2.051	
16,834.0	6,793.0	16,822.3	6,723.0	185.8	185.5	-84.70	9,448.9	-777.5	758.2	388.4	369.83	2.050	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-221 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-179.29	-45.2	-0.6	45.2				
100.0	100.0	100.0	100.0	0.1	0.1	-179.29	-45.2	-0.6	45.2	45.0	0.22	201.020	
200.0	200.0	200.0	200.0	0.3	0.3	-179.29	-45.2	-0.6	45.2	44.5	0.67	67.002	
300.0	300.0	300.0	300.0	0.6	0.6	-179.29	-45.2	-0.6	45.2	44.1	1.12	40.201	
400.0	400.0	400.0	400.0	0.8	0.8	-179.29	-45.2	-0.6	45.2	43.6	1.57	28.715	
500.0	500.0	500.0	500.0	1.0	1.0	-179.29	-45.2	-0.6	45.2	43.2	2.02	22.334	
600.0	600.0	600.0	600.0	1.2	1.2	-179.29	-45.2	-0.6	45.2	42.7	2.47	18.273	
700.0	700.0	700.0	700.0	1.5	1.5	-179.29	-45.2	-0.6	45.2	42.3	2.92	15.462	
800.0	800.0	800.0	800.0	1.7	1.7	-179.29	-45.2	-0.6	45.2	41.8	3.37	13.400	
900.0	900.0	900.0	900.0	1.9	1.9	-179.29	-45.2	-0.6	45.2	41.4	3.82	11.824	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-179.29	-45.2	-0.6	45.2	40.9	4.27	10.579	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-179.29	-45.2	-0.6	45.2	40.5	4.72	9.572	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-179.29	-45.2	-0.6	45.2	40.0	5.17	8.739	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-179.29	-45.2	-0.6	45.2	39.6	5.62	8.040	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-179.29	-45.2	-0.6	45.2	39.1	6.07	7.445	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-179.29	-45.2	-0.6	45.2	38.7	6.52	6.931 CC	
1,600.0	1,600.0	1,598.9	1,598.9	3.5	3.5	-178.62	-46.3	-1.1	46.4	39.4	6.94	6.680	
1,700.0	1,700.0	1,697.7	1,697.6	3.7	3.6	-176.78	-49.8	-2.8	49.9	42.6	7.34	6.801	
1,800.0	1,800.0	1,796.2	1,795.9	3.9	3.8	-174.25	-55.5	-5.6	55.9	48.2	7.74	7.223	
1,900.0	1,900.0	1,894.4	1,893.7	4.2	4.0	-171.51	-63.5	-9.5	64.5	56.3	8.15	7.908	
2,000.0	2,000.0	1,992.0	1,990.6	4.4	4.2	-168.91	-73.6	-14.4	75.6	67.0	8.57	8.823	
2,100.0	2,100.0	2,088.9	2,086.6	4.6	4.4	-166.63	-85.9	-20.4	89.3	80.3	8.99	9.937	
2,200.0	2,200.0	2,185.1	2,181.5	4.8	4.7	-164.70	-100.3	-27.4	105.6	96.2	9.41	11.220	
2,300.0	2,300.0	2,280.5	2,275.1	5.1	4.9	-163.12	-116.6	-35.4	124.4	114.5	9.84	12.645	
2,400.0	2,400.0	2,375.4	2,367.8	5.3	5.3	-161.81	-134.9	-44.3	145.6	135.4	10.27	14.186	
2,500.0	2,500.0	2,472.9	2,462.8	5.5	5.6	-160.78	-154.5	-53.9	167.8	157.1	10.70	15.679	
2,600.0	2,600.0	2,570.6	2,558.0	5.7	5.9	18.42	-174.1	-63.4	188.8	177.7	11.11	16.998	
2,700.0	2,699.9	2,668.8	2,653.7	5.9	6.3	19.31	-193.8	-73.0	207.4	195.9	11.49	18.049	
2,800.0	2,799.7	2,767.4	2,749.8	6.0	6.7	20.27	-213.6	-82.7	223.6	211.8	11.88	18.826	
2,900.0	2,899.3	2,866.3	2,846.3	6.2	7.1	21.34	-233.5	-92.4	237.5	225.3	12.27	19.356	
3,000.0	2,998.6	2,965.5	2,942.9	6.4	7.5	22.52	-253.4	-102.1	249.1	236.4	12.67	19.664	
3,100.0	3,097.5	3,064.9	3,039.8	6.6	8.0	23.83	-273.4	-111.8	258.4	245.3	13.07	19.769	
3,200.0	3,196.1	3,164.4	3,136.8	6.8	8.4	25.29	-293.3	-121.6	265.5	252.0	13.48	19.690	
3,300.0	3,294.2	3,263.9	3,233.9	7.1	8.8	26.93	-313.3	-131.3	270.4	256.5	13.91	19.442	
3,400.0	3,391.7	3,363.5	3,330.9	7.4	9.3	28.79	-333.3	-141.1	273.2	258.9	14.35	19.037	
3,500.0	3,488.6	3,463.0	3,427.9	7.7	9.7	30.89	-353.3	-150.8	274.1	259.3	14.83	18.486	
3,600.0	3,584.9	3,562.3	3,524.7	8.0	10.1	33.28	-373.2	-160.5	273.2	257.9	15.35	17.798	
3,700.0	3,680.4	3,661.4	3,621.3	8.4	10.6	36.01	-393.1	-170.2	270.6	254.7	15.93	16.984	
3,738.6	3,717.0	3,699.6	3,658.5	8.6	10.8	37.17	-400.8	-174.0	269.2	253.1	16.18	16.638	
3,800.0	3,775.2	3,760.3	3,717.7	8.8	11.0	39.05	-413.0	-179.9	267.0	250.4	16.63	16.056	
3,900.0	3,870.0	3,859.2	3,814.1	9.3	11.5	42.18	-432.8	-189.6	264.1	246.6	17.42	15.159	
4,000.0	3,964.8	3,958.1	3,910.5	9.8	12.0	45.37	-452.7	-199.3	261.9	243.6	18.28	14.326	
4,100.0	4,059.6	4,057.0	4,006.8	10.3	12.4	48.60	-472.6	-209.0	260.6	241.4	19.22	13.559	
4,200.0	4,154.4	4,155.8	4,103.2	10.8	12.9	51.85	-492.4	-218.7	260.2	239.9	20.23	12.859	
4,202.2	4,156.5	4,158.1	4,105.4	10.8	12.9	51.93	-492.9	-218.9	260.2	239.9	20.26	12.845	
4,300.0	4,249.2	4,254.7	4,199.6	11.3	13.3	55.10	-512.3	-228.3	260.6	239.3	21.31	12.229	
4,400.0	4,343.9	4,353.6	4,296.0	11.9	13.8	58.34	-532.1	-238.0	261.8	239.4	22.44	11.667	
4,500.0	4,438.7	4,452.5	4,392.3	12.4	14.3	61.53	-552.0	-247.7	263.9	240.3	23.63	11.171	
4,600.0	4,533.5	4,551.3	4,488.7	13.0	14.7	64.66	-571.8	-257.4	266.9	242.0	24.85	10.739	
4,700.0	4,628.3	4,650.2	4,585.1	13.5	15.2	67.72	-591.7	-267.1	270.6	244.5	26.10	10.367	
4,800.0	4,723.1	4,749.1	4,681.5	14.1	15.6	70.68	-611.5	-276.7	275.1	247.7	27.37	10.050	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-221 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
4,900.0	4,817.9	4,848.0	4,777.9	14.7	16.1	73.55	-631.4	-286.4	280.3	251.6	28.65	9.783	
5,000.0	4,912.7	4,946.9	4,874.2	15.3	16.6	76.31	-651.2	-296.1	286.2	256.3	29.93	9.562	
5,078.7	4,987.3	5,024.7	4,950.1	15.8	17.0	78.39	-666.9	-303.7	291.3	260.4	30.94	9.416	
5,100.0	5,007.5	5,045.7	4,970.6	15.9	17.1	78.96	-671.1	-305.8	292.8	261.6	31.19	9.386	
5,200.0	5,103.0	5,144.9	5,067.2	16.3	17.5	81.18	-691.0	-315.5	300.3	268.0	32.27	9.306	
5,300.0	5,199.6	5,244.5	5,164.4	16.7	18.0	82.67	-711.0	-325.3	308.6	275.4	33.24	9.283	
5,400.0	5,296.9	5,349.9	5,267.5	17.1	18.4	83.83	-730.3	-334.7	316.5	282.4	34.08	9.286	
5,500.0	5,395.0	5,455.4	5,371.5	17.4	18.7	84.85	-746.2	-342.4	323.0	288.2	34.81	9.277	
5,600.0	5,493.8	5,560.9	5,476.1	17.8	19.0	85.77	-758.7	-348.5	328.1	292.6	35.47	9.249	
5,700.0	5,593.0	5,666.5	5,581.2	18.0	19.2	86.59	-767.7	-352.9	331.7	295.7	36.04	9.203	
5,800.0	5,692.6	5,772.0	5,686.6	18.3	19.4	87.33	-773.2	-355.6	333.9	297.4	36.53	9.140	
5,900.0	5,792.4	5,877.5	5,792.0	18.5	19.5	88.00	-775.2	-356.6	334.6	297.7	36.95	9.056	
6,007.6	5,900.0	5,985.5	5,900.0	18.6	19.7	-90.03	-775.2	-356.6	334.6	297.3	37.29	8.973	
6,100.0	5,992.4	6,077.9	5,992.4	18.8	19.8	-90.02	-775.1	-356.6	334.6	297.0	37.53	8.914	
6,113.0	6,005.4	6,090.8	6,005.4	18.8	19.8	-89.98	-774.9	-356.6	334.6	297.0	37.57	8.905	
6,166.4	6,058.8	6,144.0	6,058.5	18.9	19.8	-89.40	-771.5	-356.6	334.6	296.9	37.72	8.870	
6,200.0	6,092.4	6,177.2	6,091.4	18.9	19.8	-88.84	-767.6	-356.6	334.6	296.8	37.80	8.853	
6,250.0	6,142.2	6,226.4	6,139.8	18.9	19.8	-88.02	-759.1	-356.6	334.8	296.9	37.86	8.842	
6,300.0	6,191.7	6,275.3	6,187.3	18.9	19.8	-87.21	-747.6	-356.6	335.0	297.1	37.85	8.850	
6,350.0	6,240.6	6,323.9	6,233.7	18.9	19.7	-86.41	-733.1	-356.6	335.2	297.5	37.77	8.876	
6,400.0	6,288.8	6,372.2	6,278.9	18.8	19.6	-85.63	-715.9	-356.6	335.5	297.9	37.62	8.919	
6,450.0	6,335.9	6,420.2	6,322.6	18.7	19.5	-84.87	-696.0	-356.6	335.9	298.5	37.41	8.979	
6,500.0	6,381.9	6,468.0	6,364.7	18.5	19.3	-84.14	-673.5	-356.6	336.3	299.2	37.14	9.055	
6,550.0	6,426.5	6,515.6	6,405.2	18.4	19.2	-83.43	-648.5	-356.6	336.8	300.0	36.82	9.146	
6,600.0	6,469.5	6,562.9	6,443.8	18.2	19.0	-82.76	-621.2	-356.6	337.3	300.8	36.46	9.249	
6,650.0	6,510.7	6,610.0	6,480.5	18.0	18.8	-82.11	-591.7	-356.6	337.8	301.7	36.07	9.364	
6,700.0	6,550.0	6,656.9	6,515.2	17.8	18.6	-81.50	-560.1	-356.6	338.3	302.6	35.65	9.489	
6,750.0	6,587.3	6,703.6	6,547.7	17.6	18.5	-80.93	-526.6	-356.6	338.8	303.6	35.22	9.620	
6,800.0	6,622.2	6,750.0	6,578.0	17.4	18.3	-80.39	-491.5	-356.6	339.3	304.5	34.79	9.754	
6,850.0	6,654.7	6,796.5	6,606.1	17.2	18.1	-79.89	-454.4	-356.6	339.8	305.5	34.37	9.888	
6,900.0	6,684.7	6,842.8	6,631.8	17.0	17.9	-79.44	-415.9	-356.6	340.3	306.4	33.97	10.017	
6,950.0	6,712.0	6,888.9	6,655.0	16.8	17.8	-79.03	-376.1	-356.6	340.8	307.2	33.62	10.137	
7,000.0	6,736.5	6,934.8	6,675.7	16.6	17.6	-78.66	-335.1	-356.6	341.2	307.9	33.32	10.242	
7,050.0	6,758.1	6,980.7	6,693.9	16.5	17.5	-78.33	-293.0	-356.6	341.6	308.5	33.08	10.328	
7,100.0	6,776.8	7,026.5	6,709.5	16.4	17.4	-78.06	-250.0	-356.6	341.9	309.0	32.91	10.389	
7,150.0	6,792.3	7,072.2	6,722.5	16.4	17.3	-77.82	-206.2	-356.6	342.2	309.4	32.84	10.422	
7,200.0	6,804.7	7,117.8	6,732.8	16.4	17.2	-77.64	-161.7	-356.6	342.5	309.6	32.85	10.424	
7,250.0	6,813.9	7,163.4	6,740.4	16.4	17.2	-77.50	-116.8	-356.6	342.7	309.7	32.97	10.393	
7,300.0	6,819.9	7,209.0	6,745.4	16.5	17.3	-77.41	-71.5	-356.6	342.8	309.6	33.19	10.328	
7,350.0	6,822.6	7,254.5	6,747.6	16.7	17.3	-77.37	-26.0	-356.6	342.8	309.3	33.50	10.232	
7,368.8	6,822.7	7,271.7	6,747.8	16.7	17.4	-77.37	-8.9	-356.6	342.8	309.2	33.65	10.188	
7,400.0	6,822.6	7,302.9	6,747.7	16.9	17.5	-77.37	22.3	-356.6	342.8	308.9	33.94	10.100	
7,500.0	6,822.3	7,402.9	6,747.4	17.4	18.1	-77.38	122.3	-356.6	342.8	307.7	35.12	9.761	
7,600.0	6,822.0	7,502.9	6,747.2	18.1	18.9	-77.39	222.3	-356.6	342.8	306.1	36.64	9.354	
7,700.0	6,821.7	7,602.9	6,746.9	19.0	19.9	-77.40	322.3	-356.6	342.8	304.3	38.48	8.908	
7,800.0	6,821.4	7,702.9	6,746.6	20.1	21.0	-77.41	422.3	-356.6	342.8	302.2	40.58	8.446	
7,900.0	6,821.1	7,802.9	6,746.4	21.3	22.2	-77.41	522.3	-356.6	342.7	299.8	42.91	7.987	
8,000.0	6,820.8	7,902.9	6,746.1	22.5	23.6	-77.42	622.3	-356.6	342.7	297.3	45.43	7.543	
8,100.0	6,820.4	8,002.9	6,745.9	23.9	25.0	-77.43	722.3	-356.6	342.7	294.6	48.12	7.122	
8,200.0	6,820.1	8,102.9	6,745.6	25.3	26.4	-77.44	822.3	-356.6	342.7	291.7	50.94	6.727	
8,300.0	6,819.8	8,202.9	6,745.3	26.8	27.9	-77.45	922.3	-356.6	342.7	288.8	53.88	6.360	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-221 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
8,400.0	6,819.5	8,302.9	6,745.1	28.3	29.5	-77.46	1,022.3	-356.6	342.7	285.7	56.91	6.021	
8,500.0	6,819.2	8,402.9	6,744.8	29.9	31.1	-77.46	1,122.3	-356.6	342.6	282.6	60.03	5.708	
8,600.0	6,818.9	8,502.9	6,744.5	31.6	32.7	-77.47	1,222.3	-356.6	342.6	279.4	63.22	5.420	
8,700.0	6,818.6	8,602.9	6,744.3	33.2	34.4	-77.48	1,322.3	-356.6	342.6	276.1	66.47	5.154	
8,800.0	6,818.2	8,702.9	6,744.0	34.9	36.1	-77.49	1,422.3	-356.6	342.6	272.8	69.77	4.910	
8,900.0	6,817.9	8,802.9	6,743.8	36.6	37.8	-77.50	1,522.3	-356.6	342.6	269.5	73.12	4.685	
9,000.0	6,817.6	8,902.9	6,743.5	38.3	39.5	-77.51	1,622.3	-356.6	342.6	266.1	76.50	4.478	
9,100.0	6,817.3	9,002.9	6,743.2	40.1	41.2	-77.51	1,722.3	-356.6	342.5	262.6	79.92	4.286	
9,200.0	6,817.0	9,102.9	6,743.0	41.8	43.0	-77.52	1,822.3	-356.6	342.5	259.2	83.37	4.109	
9,300.0	6,816.7	9,202.9	6,742.7	43.6	44.8	-77.53	1,922.3	-356.6	342.5	255.7	86.84	3.944	
9,400.0	6,816.4	9,302.9	6,742.5	45.4	46.5	-77.54	2,022.3	-356.6	342.5	252.2	90.34	3.791	
9,500.0	6,816.0	9,402.9	6,742.2	47.2	48.3	-77.55	2,122.3	-356.6	342.5	248.6	93.86	3.649	
9,600.0	6,815.7	9,502.9	6,741.9	49.0	50.1	-77.56	2,222.3	-356.6	342.5	245.1	97.40	3.516	
9,700.0	6,815.4	9,602.9	6,741.7	50.8	51.9	-77.56	2,322.3	-356.6	342.4	241.5	100.96	3.392	
9,800.0	6,815.1	9,702.9	6,741.4	52.6	53.8	-77.57	2,422.3	-356.6	342.4	237.9	104.53	3.276	
9,900.0	6,814.8	9,802.9	6,741.1	54.5	55.6	-77.58	2,522.3	-356.6	342.4	234.3	108.11	3.167	
10,000.0	6,814.5	9,902.9	6,740.9	56.3	57.4	-77.59	2,622.3	-356.6	342.4	230.7	111.70	3.065	
10,100.0	6,814.2	10,002.9	6,740.6	58.1	59.3	-77.60	2,722.3	-356.6	342.4	227.1	115.31	2.969	
10,200.0	6,813.8	10,102.9	6,740.4	60.0	61.1	-77.61	2,822.3	-356.6	342.4	223.4	118.93	2.879	
10,300.0	6,813.5	10,202.9	6,740.1	61.8	62.9	-77.61	2,922.3	-356.6	342.3	219.8	122.55	2.793	
10,400.0	6,813.2	10,302.9	6,739.8	63.7	64.8	-77.62	3,022.3	-356.6	342.3	216.1	126.19	2.713	
10,500.0	6,812.9	10,402.9	6,739.6	65.5	66.6	-77.63	3,122.3	-356.6	342.3	212.5	129.83	2.637	
10,600.0	6,812.6	10,502.9	6,739.3	67.4	68.5	-77.64	3,222.3	-356.6	342.3	208.8	133.48	2.564	
10,700.0	6,812.3	10,602.9	6,739.0	69.3	70.4	-77.65	3,322.3	-356.6	342.3	205.1	137.14	2.496	
10,800.0	6,812.0	10,702.9	6,738.8	71.1	72.2	-77.66	3,422.3	-356.6	342.3	201.5	140.80	2.431	
10,900.0	6,811.6	10,802.9	6,738.5	73.0	74.1	-77.66	3,522.3	-356.6	342.3	197.8	144.47	2.369	
11,000.0	6,811.3	10,902.9	6,738.3	74.9	76.0	-77.67	3,622.3	-356.6	342.2	194.1	148.14	2.310	
11,100.0	6,811.0	11,002.9	6,738.0	76.7	77.8	-77.68	3,722.3	-356.6	342.2	190.4	151.82	2.254	
11,200.0	6,810.7	11,102.9	6,737.7	78.6	79.7	-77.69	3,822.3	-356.6	342.2	186.7	155.50	2.201	
11,300.0	6,810.4	11,202.9	6,737.5	80.5	81.6	-77.70	3,922.3	-356.6	342.2	183.0	159.19	2.150	
11,400.0	6,810.1	11,302.9	6,737.2	82.4	83.5	-77.71	4,022.3	-356.6	342.2	179.3	162.88	2.101	
11,500.0	6,809.8	11,402.9	6,737.0	84.3	85.3	-77.72	4,122.3	-356.6	342.2	175.6	166.57	2.054	
11,600.0	6,809.4	11,502.9	6,736.7	86.2	87.2	-77.72	4,222.3	-356.6	342.1	171.9	170.27	2.009	
11,700.0	6,809.1	11,602.9	6,736.4	88.0	89.1	-77.73	4,322.3	-356.6	342.1	168.2	173.97	1.967	
11,800.0	6,808.8	11,702.9	6,736.2	89.9	91.0	-77.74	4,422.3	-356.6	342.1	164.4	177.68	1.925	
11,900.0	6,808.5	11,802.9	6,735.9	91.8	92.9	-77.75	4,522.3	-356.6	342.1	160.7	181.39	1.886	
12,000.0	6,808.2	11,902.9	6,735.6	93.7	94.8	-77.76	4,622.3	-356.6	342.1	157.0	185.10	1.848	
12,100.0	6,807.9	12,002.9	6,735.4	95.6	96.7	-77.77	4,722.3	-356.6	342.1	153.3	188.81	1.812	
12,200.0	6,807.6	12,102.9	6,735.1	97.5	98.5	-77.77	4,822.3	-356.6	342.0	149.5	192.52	1.777	
12,300.0	6,807.2	12,202.9	6,734.9	99.4	100.4	-77.78	4,922.3	-356.6	342.0	145.8	196.24	1.743	
12,400.0	6,806.9	12,302.9	6,734.6	101.3	102.3	-77.79	5,022.3	-356.6	342.0	142.1	199.96	1.710	
12,500.0	6,806.6	12,402.9	6,734.3	103.2	104.2	-77.80	5,122.3	-356.6	342.0	138.3	203.68	1.679	
12,600.0	6,806.3	12,502.9	6,734.1	105.1	106.1	-77.81	5,222.3	-356.6	342.0	134.6	207.41	1.649	
12,700.0	6,806.0	12,602.9	6,733.8	107.0	108.0	-77.82	5,322.3	-356.6	342.0	130.8	211.13	1.620	
12,800.0	6,805.7	12,702.9	6,733.6	108.9	109.9	-77.82	5,422.3	-356.6	341.9	127.1	214.86	1.592	
12,900.0	6,805.4	12,802.9	6,733.3	110.8	111.8	-77.83	5,522.3	-356.6	341.9	123.3	218.59	1.564	
13,000.0	6,805.0	12,902.9	6,733.0	112.7	113.7	-77.84	5,622.3	-356.6	341.9	119.6	222.32	1.538	
13,100.0	6,804.7	13,002.9	6,732.8	114.6	115.6	-77.85	5,722.3	-356.6	341.9	115.8	226.05	1.512	
13,200.0	6,804.4	13,102.9	6,732.5	116.5	117.5	-77.86	5,822.3	-356.6	341.9	112.1	229.79	1.488	Level 3
13,300.0	6,804.1	13,202.9	6,732.2	118.4	119.4	-77.87	5,922.3	-356.6	341.9	108.3	233.52	1.464	Level 3
13,400.0	6,803.8	13,302.9	6,732.0	120.3	121.3	-77.87	6,022.3	-356.6	341.9	104.6	237.26	1.441	Level 3

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-221 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
13,500.0	6,803.5	13,402.9	6,731.7	122.2	123.2	-77.88	6,122.3	-356.6	341.8	100.8	241.00	1.418	Level 3
13,600.0	6,803.2	13,502.9	6,731.5	124.1	125.1	-77.89	6,222.3	-356.6	341.8	97.1	244.74	1.397	Level 3
13,700.0	6,802.8	13,602.9	6,731.2	126.0	127.0	-77.90	6,322.3	-356.6	341.8	93.3	248.48	1.376	Level 3
13,800.0	6,802.5	13,702.9	6,730.9	127.9	128.9	-77.91	6,422.3	-356.6	341.8	89.6	252.22	1.355	Level 3
13,900.0	6,802.2	13,802.9	6,730.7	129.8	130.8	-77.92	6,522.3	-356.6	341.8	85.8	255.96	1.335	Level 3
14,000.0	6,801.9	13,902.9	6,730.4	131.7	132.7	-77.92	6,622.3	-356.6	341.8	82.1	259.71	1.316	Level 3
14,100.0	6,801.6	14,002.9	6,730.1	133.6	134.6	-77.93	6,722.3	-356.6	341.7	78.3	263.45	1.297	Level 3
14,200.0	6,801.3	14,102.9	6,729.9	135.5	136.5	-77.94	6,822.3	-356.6	341.7	74.5	267.20	1.279	Level 3
14,300.0	6,801.0	14,202.9	6,729.6	137.4	138.4	-77.95	6,922.3	-356.6	341.7	70.8	270.94	1.261	Level 3
14,400.0	6,800.6	14,302.9	6,729.4	139.3	140.3	-77.96	7,022.3	-356.6	341.7	67.0	274.69	1.244	Level 2
14,500.0	6,800.3	14,402.9	6,729.1	141.2	142.2	-77.97	7,122.3	-356.6	341.7	63.2	278.44	1.227	Level 2
14,600.0	6,800.0	14,502.9	6,728.8	143.1	144.2	-77.98	7,222.3	-356.6	341.7	59.5	282.19	1.211	Level 2
14,700.0	6,799.7	14,602.9	6,728.6	145.0	146.1	-77.98	7,322.3	-356.6	341.6	55.7	285.94	1.195	Level 2
14,800.0	6,799.4	14,702.9	6,728.3	147.0	148.0	-77.99	7,422.3	-356.6	341.6	51.9	289.69	1.179	Level 2
14,900.0	6,799.1	14,802.9	6,728.1	148.9	149.9	-78.00	7,522.3	-356.6	341.6	48.2	293.45	1.164	Level 2
15,000.0	6,798.8	14,902.9	6,727.8	150.8	151.8	-78.01	7,622.3	-356.6	341.6	44.4	297.20	1.149	Level 2
15,100.0	6,798.4	15,002.9	6,727.5	152.7	153.7	-78.02	7,722.3	-356.6	341.6	40.6	300.95	1.135	Level 2
15,200.0	6,798.1	15,102.9	6,727.3	154.6	155.6	-78.03	7,822.3	-356.6	341.6	36.9	304.71	1.121	Level 2
15,300.0	6,797.8	15,202.9	6,727.0	156.5	157.5	-78.03	7,922.3	-356.6	341.6	33.1	308.47	1.107	Level 2
15,400.0	6,797.5	15,302.9	6,726.7	158.4	159.4	-78.04	8,022.3	-356.6	341.5	29.3	312.22	1.094	Level 2
15,500.0	6,797.2	15,402.9	6,726.5	160.3	161.3	-78.05	8,122.3	-356.6	341.5	25.5	315.98	1.081	Level 2
15,600.0	6,796.9	15,502.9	6,726.2	162.2	163.2	-78.06	8,222.3	-356.6	341.5	21.8	319.74	1.068	Level 2
15,700.0	6,796.6	15,602.9	6,726.0	164.1	165.1	-78.07	8,322.3	-356.6	341.5	18.0	323.50	1.056	Level 2
15,800.0	6,796.2	15,702.9	6,725.7	166.1	167.1	-78.08	8,422.3	-356.6	341.5	14.2	327.25	1.043	Level 2
15,900.0	6,795.9	15,802.9	6,725.4	168.0	169.0	-78.08	8,522.3	-356.6	341.5	10.4	331.01	1.032	Level 2
16,000.0	6,795.6	15,902.9	6,725.2	169.9	170.9	-78.09	8,622.3	-356.6	341.4	6.7	334.77	1.020	Level 2
16,100.0	6,795.3	16,002.9	6,724.9	171.8	172.8	-78.10	8,722.3	-356.6	341.4	2.9	338.54	1.009	Level 2
16,200.0	6,795.0	16,102.9	6,724.7	173.7	174.7	-78.11	8,822.3	-356.6	341.4	-0.9	342.30	0.997	Level 1
16,300.0	6,794.7	16,202.9	6,724.4	175.6	176.6	-78.12	8,922.3	-356.6	341.4	-4.7	346.06	0.987	Level 1
16,400.0	6,794.4	16,302.9	6,724.1	177.5	178.5	-78.13	9,022.3	-356.6	341.4	-8.4	349.82	0.976	Level 1
16,500.0	6,794.0	16,402.9	6,723.9	179.4	180.4	-78.14	9,122.3	-356.6	341.4	-12.2	353.58	0.965	Level 1
16,600.0	6,793.7	16,502.9	6,723.6	181.4	182.3	-78.14	9,222.3	-356.6	341.3	-16.0	357.35	0.955	Level 1
16,700.0	6,793.4	16,602.9	6,723.3	183.3	184.3	-78.15	9,322.3	-356.6	341.3	-19.8	361.11	0.945	Level 1
16,800.0	6,793.1	16,702.9	6,723.1	185.2	186.2	-78.16	9,422.3	-356.6	341.3	-23.6	364.88	0.935	Level 1
16,826.8	6,793.0	16,729.6	6,723.0	185.7	186.7	-78.16	9,449.0	-356.6	341.3	-24.6	365.88	0.933	Level 1
16,834.0	6,793.0	16,733.4	6,723.0	185.8	186.8	-78.16	9,452.9	-356.6	341.3	-24.8	366.09	0.932	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-321 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-179.47	-29.9	-0.3	29.9	29.9	0.00	N/A	
100.0	100.0	100.0	100.0	0.1	0.1	-179.47	-29.9	-0.3	29.9	29.7	0.22	132.928	
200.0	200.0	200.0	200.0	0.3	0.3	-179.47	-29.9	-0.3	29.9	29.2	0.67	44.307	
300.0	300.0	300.0	300.0	0.6	0.6	-179.47	-29.9	-0.3	29.9	28.8	1.12	26.584	
400.0	400.0	400.0	400.0	0.8	0.8	-179.47	-29.9	-0.3	29.9	28.3	1.57	18.988	
500.0	500.0	500.0	500.0	1.0	1.0	-179.47	-29.9	-0.3	29.9	27.9	2.02	14.769	
600.0	600.0	600.0	600.0	1.2	1.2	-179.47	-29.9	-0.3	29.9	27.4	2.47	12.083	
700.0	700.0	700.0	700.0	1.5	1.5	-179.47	-29.9	-0.3	29.9	27.0	2.92	10.224	
800.0	800.0	800.0	800.0	1.7	1.7	-179.47	-29.9	-0.3	29.9	26.5	3.37	8.861	
900.0	900.0	900.0	900.0	1.9	1.9	-179.47	-29.9	-0.3	29.9	26.1	3.82	7.819	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-179.47	-29.9	-0.3	29.9	25.6	4.27	6.996	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-179.47	-29.9	-0.3	29.9	25.2	4.72	6.329	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-179.47	-29.9	-0.3	29.9	24.7	5.17	5.779	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-179.47	-29.9	-0.3	29.9	24.3	5.62	5.317	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-179.47	-29.9	-0.3	29.9	23.8	6.07	4.923	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-179.47	-29.9	-0.3	29.9	23.4	6.52	4.583	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-179.47	-29.9	-0.3	29.9	22.9	6.97	4.288	CC, ES
1,700.0	1,700.0	1,699.4	1,699.4	3.7	3.7	-178.01	-30.9	-1.1	30.9	23.5	7.39	4.183	
1,800.0	1,800.0	1,798.6	1,798.5	3.9	3.9	-174.17	-33.9	-3.5	34.1	26.4	7.79	4.381	
1,900.0	1,900.0	1,897.5	1,897.2	4.2	4.0	-169.22	-39.0	-7.4	39.8	31.6	8.20	4.850	
2,000.0	2,000.0	1,996.1	1,995.4	4.4	4.2	-164.29	-46.0	-12.9	48.0	39.4	8.62	5.574	
2,100.0	2,100.0	2,094.1	2,092.8	4.6	4.4	-160.04	-55.0	-20.0	58.9	49.9	9.03	6.526	
2,200.0	2,200.0	2,191.5	2,189.2	4.8	4.7	-156.60	-65.8	-28.5	72.6	63.1	9.45	7.674	
2,300.0	2,300.0	2,288.1	2,284.4	5.1	4.9	-153.92	-78.5	-38.4	88.8	78.9	9.88	8.989	
2,400.0	2,400.0	2,383.9	2,378.4	5.3	5.2	-151.84	-92.9	-49.7	107.6	97.3	10.30	10.443	
2,500.0	2,500.0	2,478.6	2,470.9	5.5	5.5	-150.23	-109.0	-62.4	128.9	118.2	10.73	12.013	
2,600.0	2,600.0	2,572.5	2,562.1	5.7	5.8	29.48	-126.8	-76.3	151.6	140.5	11.13	13.623	
2,700.0	2,699.9	2,666.8	2,653.0	5.9	6.2	30.93	-146.3	-91.6	174.5	163.0	11.51	15.166	
2,800.0	2,799.7	2,764.3	2,746.9	6.0	6.6	32.48	-167.0	-107.8	196.0	184.1	11.89	16.483	
2,900.0	2,899.3	2,862.2	2,841.2	6.2	7.1	34.09	-187.7	-124.1	215.5	203.2	12.28	17.545	
3,000.0	2,998.6	2,960.4	2,935.7	6.4	7.5	35.80	-208.6	-140.4	233.1	220.4	12.69	18.376	
3,100.0	3,097.5	3,058.8	3,030.5	6.6	8.0	37.62	-229.4	-156.8	248.9	235.8	13.10	18.993	
3,200.0	3,196.1	3,157.4	3,125.4	6.8	8.5	39.57	-250.3	-173.2	262.9	249.3	13.54	19.414	
3,300.0	3,294.2	3,256.0	3,220.4	7.1	9.0	41.69	-271.3	-189.6	275.3	261.3	14.01	19.652	
3,400.0	3,391.7	3,354.8	3,315.5	7.4	9.5	43.97	-292.2	-206.0	286.2	271.7	14.51	19.718	
3,500.0	3,488.6	3,453.4	3,410.5	7.7	10.0	46.45	-313.1	-222.4	295.7	280.7	15.07	19.622	
3,600.0	3,584.9	3,552.0	3,505.4	8.0	10.5	49.13	-334.0	-238.8	304.2	288.5	15.70	19.375	
3,700.0	3,680.4	3,650.4	3,600.2	8.4	11.0	52.02	-354.9	-255.2	311.6	295.2	16.41	18.992	
3,738.6	3,717.0	3,688.3	3,636.7	8.6	11.2	53.20	-363.0	-261.5	314.3	297.6	16.71	18.812	
3,800.0	3,775.2	3,748.6	3,694.7	8.8	11.5	55.13	-375.8	-271.5	318.8	301.5	17.23	18.500	
3,900.0	3,870.0	3,846.8	3,789.3	9.3	12.1	58.15	-396.6	-287.9	326.7	308.6	18.13	18.022	
4,000.0	3,964.8	3,944.9	3,883.8	9.8	12.6	61.02	-417.4	-304.2	335.5	316.4	19.08	17.581	
4,100.0	4,059.6	4,043.1	3,978.4	10.3	13.1	63.75	-438.2	-320.6	345.2	325.1	20.09	17.178	
4,200.0	4,154.4	4,141.3	4,072.9	10.8	13.6	66.33	-459.1	-336.9	355.5	334.4	21.15	16.814	
4,300.0	4,249.2	4,239.5	4,167.5	11.3	14.2	68.75	-479.9	-353.2	366.6	344.4	22.23	16.489	
4,400.0	4,343.9	4,337.7	4,262.0	11.9	14.7	71.04	-500.7	-369.6	378.3	355.0	23.35	16.200	
4,500.0	4,438.7	4,435.9	4,356.6	12.4	15.3	73.19	-521.5	-385.9	390.6	366.1	24.50	15.945	
4,600.0	4,533.5	4,534.1	4,451.1	13.0	15.8	75.20	-542.4	-402.2	403.4	377.7	25.66	15.721	
4,700.0	4,628.3	4,632.2	4,545.7	13.5	16.3	77.10	-563.2	-418.6	416.7	389.8	26.83	15.527	
4,800.0	4,723.1	4,730.4	4,640.2	14.1	16.9	78.87	-584.0	-434.9	430.3	402.3	28.02	15.358	
4,900.0	4,817.9	4,828.6	4,734.8	14.7	17.4	80.54	-604.9	-451.2	444.4	415.2	29.21	15.212	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-321 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
5,000.0	4,912.7	4,926.8	4,829.3	15.3	18.0	82.11	-625.7	-467.6	458.9	428.4	30.41	15.087	
5,078.7	4,987.3	5,004.1	4,903.7	15.8	18.4	83.27	-642.1	-480.4	470.4	439.1	31.36	15.001	
5,100.0	5,007.5	5,025.0	4,923.9	15.9	18.5	83.63	-646.5	-483.9	473.6	442.0	31.61	14.985	
5,200.0	5,103.0	5,123.4	5,018.6	16.3	19.1	85.03	-667.4	-500.3	488.9	456.2	32.65	14.972	
5,300.0	5,199.6	5,222.0	5,113.6	16.7	19.6	85.98	-688.3	-516.7	504.5	470.9	33.63	15.005	
5,400.0	5,296.9	5,331.5	5,219.5	17.1	20.1	86.65	-710.3	-534.0	519.6	485.1	34.51	15.058	
5,500.0	5,395.0	5,443.5	5,328.8	17.4	20.5	87.19	-729.6	-549.1	532.5	497.2	35.27	15.097	
5,600.0	5,493.8	5,556.1	5,439.5	17.8	20.9	87.63	-745.6	-561.6	543.1	507.2	35.95	15.106	
5,700.0	5,593.0	5,669.2	5,551.4	18.0	21.2	87.96	-758.1	-571.4	551.5	514.9	36.55	15.087	
5,800.0	5,692.6	5,782.5	5,664.2	18.3	21.4	88.19	-767.2	-578.6	557.5	520.5	37.06	15.042	
5,900.0	5,792.4	5,896.2	5,777.6	18.5	21.6	88.34	-772.8	-583.0	561.2	523.7	37.48	14.972	
6,007.6	5,900.0	6,018.6	5,900.0	18.6	21.8	-89.99	-774.9	-584.6	562.6	524.8	37.84	14.869	
6,100.0	5,992.4	6,111.0	5,992.4	18.8	21.9	-89.99	-774.9	-584.6	562.6	524.5	38.09	14.771	
6,144.3	6,036.6	6,155.3	6,036.6	18.8	22.0	-89.99	-774.9	-584.6	562.6	524.4	38.20	14.726	
6,166.4	6,058.8	6,177.4	6,058.8	18.9	22.0	-89.99	-774.9	-584.6	562.6	524.3	38.26	14.703	
6,200.0	6,092.4	6,211.0	6,092.4	18.9	22.0	-89.98	-774.1	-584.6	562.6	524.3	38.33	14.676	
6,250.0	6,142.2	6,261.0	6,142.2	18.9	22.0	-89.98	-770.3	-584.6	562.6	524.2	38.38	14.657	
6,300.0	6,191.7	6,311.0	6,191.7	18.9	22.0	-89.98	-763.2	-584.6	562.6	524.2	38.36	14.664	
6,350.0	6,240.6	6,361.0	6,240.6	18.9	22.0	-89.98	-752.9	-584.6	562.6	524.3	38.28	14.698	
6,400.0	6,288.8	6,411.0	6,288.7	18.8	21.9	-89.98	-739.4	-584.6	562.6	524.5	38.12	14.756	
6,450.0	6,335.9	6,460.9	6,335.9	18.7	21.8	-89.98	-722.9	-584.6	562.6	524.7	37.91	14.839	
6,500.0	6,381.9	6,510.9	6,381.8	18.5	21.7	-89.98	-703.2	-584.6	562.6	524.9	37.65	14.944	
6,550.0	6,426.5	6,560.9	6,426.4	18.4	21.6	-89.99	-680.6	-584.6	562.6	525.2	37.33	15.070	
6,600.0	6,469.5	6,610.9	6,469.4	18.2	21.4	-89.99	-655.1	-584.6	562.6	525.6	36.98	15.214	
6,650.0	6,510.7	6,660.9	6,510.7	18.0	21.3	-89.99	-626.9	-584.6	562.6	526.0	36.59	15.375	
6,700.0	6,550.0	6,710.9	6,550.0	17.8	21.1	-89.99	-596.0	-584.6	562.6	526.4	36.18	15.548	
6,750.0	6,587.3	6,760.9	6,587.2	17.6	20.9	-89.99	-562.7	-584.6	562.6	526.8	35.77	15.730	
6,800.0	6,622.2	6,810.9	6,622.1	17.4	20.7	-89.99	-526.9	-584.6	562.6	527.2	35.35	15.916	
6,850.0	6,654.7	6,860.9	6,654.7	17.2	20.5	-89.99	-489.0	-584.6	562.6	527.6	34.94	16.100	
6,900.0	6,684.7	6,910.9	6,684.7	17.0	20.2	-89.99	-449.0	-584.6	562.6	528.0	34.56	16.277	
6,950.0	6,712.0	6,960.9	6,712.0	16.8	20.0	-89.99	-407.1	-584.6	562.6	528.3	34.22	16.440	
7,000.0	6,736.5	7,010.9	6,736.5	16.6	19.8	-89.99	-363.5	-584.6	562.6	528.6	33.93	16.582	
7,050.0	6,758.1	7,060.9	6,758.1	16.5	19.6	-89.99	-318.5	-584.6	562.6	528.9	33.70	16.695	
7,100.0	6,776.8	7,110.9	6,776.7	16.4	19.4	-89.99	-272.1	-584.6	562.6	529.0	33.54	16.774	
7,150.0	6,792.3	7,160.9	6,792.2	16.4	19.2	-89.99	-224.6	-584.6	562.6	529.1	33.46	16.812	
7,200.0	6,804.7	7,210.9	6,804.6	16.4	19.0	-89.99	-176.1	-584.6	562.6	529.1	33.48	16.805	
7,250.0	6,813.9	7,260.9	6,813.8	16.4	18.8	-90.00	-127.0	-584.6	562.6	529.0	33.58	16.751	
7,300.0	6,819.9	7,310.9	6,819.8	16.5	18.7	-90.00	-77.4	-584.6	562.5	528.8	33.79	16.649	
7,350.0	6,822.6	7,360.9	6,822.5	16.7	18.5	-90.00	-27.5	-584.6	562.5	528.5	34.09	16.502	
7,368.8	6,822.7	7,379.7	6,822.7	16.7	18.5	-90.00	-8.7	-584.6	562.5	528.3	34.23	16.436	
7,400.0	6,822.6	7,410.9	6,822.6	16.9	18.4	-90.00	22.5	-584.6	562.5	528.0	34.50	16.308	
7,500.0	6,822.3	7,510.9	6,822.3	17.4	18.2	-90.00	122.5	-584.6	562.5	526.9	35.59	15.805	
7,600.0	6,822.0	7,610.9	6,822.0	18.1	19.0	-90.00	222.5	-584.6	562.5	525.5	37.06	15.181	
7,700.0	6,821.7	7,710.9	6,821.7	19.0	20.1	-90.00	322.5	-584.6	562.5	523.7	38.85	14.481	
7,800.0	6,821.4	7,810.9	6,821.4	20.1	21.2	-90.00	422.5	-584.6	562.5	521.6	40.92	13.747	
7,900.0	6,821.1	7,910.9	6,821.0	21.3	22.5	-90.00	522.5	-584.6	562.5	519.3	43.24	13.011	
8,000.0	6,820.8	8,010.9	6,820.7	22.5	23.8	-90.00	622.5	-584.6	562.5	516.8	45.76	12.293	
8,100.0	6,820.4	8,110.9	6,820.4	23.9	25.2	-90.00	722.5	-584.6	562.5	514.1	48.45	11.610	
8,200.0	6,820.1	8,210.9	6,820.1	25.3	26.6	-90.00	822.5	-584.6	562.5	511.2	51.29	10.966	
8,300.0	6,819.8	8,310.9	6,819.8	26.8	28.1	-90.00	922.5	-584.6	562.5	508.2	54.26	10.367	
8,400.0	6,819.5	8,410.9	6,819.5	28.3	29.6	-90.00	1,022.5	-584.6	562.5	505.2	57.33	9.812	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-321 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
8,500.0	6,819.2	8,510.9	6,819.2	29.9	31.2	-90.00	1,122.5	-584.6	562.5	502.0	60.49	9.300	
8,600.0	6,818.9	8,610.9	6,818.8	31.6	32.8	-90.00	1,222.5	-584.6	562.5	498.8	63.72	8.828	
8,700.0	6,818.6	8,710.9	6,818.5	33.2	34.4	-90.00	1,322.5	-584.6	562.5	495.5	67.01	8.393	
8,800.0	6,818.2	8,810.9	6,818.2	34.9	36.1	-90.00	1,422.5	-584.6	562.5	492.1	70.37	7.993	
8,900.0	6,817.9	8,910.9	6,817.9	36.6	37.8	-90.00	1,522.5	-584.6	562.5	488.7	73.77	7.625	
9,000.0	6,817.6	9,010.9	6,817.6	38.3	39.5	-90.00	1,622.5	-584.6	562.5	485.3	77.21	7.285	
9,100.0	6,817.3	9,110.9	6,817.3	40.1	41.2	-90.00	1,722.5	-584.6	562.5	481.8	80.69	6.971	
9,200.0	6,817.0	9,210.9	6,817.0	41.8	42.9	-90.00	1,822.5	-584.6	562.5	478.3	84.19	6.680	
9,300.0	6,816.7	9,310.9	6,816.7	43.6	44.7	-90.00	1,922.5	-584.6	562.4	474.7	87.73	6.411	
9,400.0	6,816.4	9,410.9	6,816.3	45.4	46.5	-90.00	2,022.5	-584.6	562.4	471.1	91.29	6.161	
9,500.0	6,816.0	9,510.9	6,816.0	47.2	48.2	-90.00	2,122.5	-584.6	562.4	467.6	94.88	5.928	
9,600.0	6,815.7	9,610.9	6,815.7	49.0	50.0	-90.00	2,222.5	-584.6	562.4	464.0	98.48	5.711	
9,700.0	6,815.4	9,710.9	6,815.4	50.8	51.8	-90.00	2,322.5	-584.6	562.4	460.3	102.10	5.509	
9,800.0	6,815.1	9,810.9	6,815.1	52.6	53.6	-90.00	2,422.5	-584.6	562.4	456.7	105.73	5.319	
9,900.0	6,814.8	9,910.9	6,814.8	54.5	55.4	-90.00	2,522.5	-584.6	562.4	453.0	109.38	5.142	
10,000.0	6,814.5	10,010.9	6,814.5	56.3	57.2	-90.00	2,622.5	-584.6	562.4	449.4	113.05	4.975	
10,100.0	6,814.2	10,110.9	6,814.1	58.1	59.1	-90.00	2,722.5	-584.6	562.4	445.7	116.72	4.818	
10,200.0	6,813.8	10,210.9	6,813.8	60.0	60.9	-90.00	2,822.5	-584.6	562.4	442.0	120.40	4.671	
10,300.0	6,813.5	10,310.9	6,813.5	61.8	62.7	-90.00	2,922.5	-584.6	562.4	438.3	124.10	4.532	
10,400.0	6,813.2	10,410.9	6,813.2	63.7	64.6	-90.00	3,022.5	-584.6	562.4	434.6	127.80	4.400	
10,500.0	6,812.9	10,510.9	6,812.9	65.5	66.4	-90.00	3,122.5	-584.6	562.4	430.9	131.51	4.276	
10,600.0	6,812.6	10,610.9	6,812.6	67.4	68.3	-90.00	3,222.5	-584.6	562.4	427.1	135.23	4.159	
10,700.0	6,812.3	10,710.9	6,812.3	69.3	70.1	-90.00	3,322.5	-584.6	562.4	423.4	138.95	4.047	
10,800.0	6,812.0	10,810.9	6,811.9	71.1	72.0	-90.00	3,422.5	-584.6	562.4	419.7	142.69	3.941	
10,900.0	6,811.6	10,910.9	6,811.6	73.0	73.8	-90.00	3,522.5	-584.6	562.4	415.9	146.42	3.841	
11,000.0	6,811.3	11,010.9	6,811.3	74.9	75.7	-90.00	3,622.5	-584.6	562.4	412.2	150.16	3.745	
11,100.0	6,811.0	11,110.9	6,811.0	76.7	77.6	-90.00	3,722.5	-584.6	562.4	408.4	153.91	3.654	
11,200.0	6,810.7	11,210.9	6,810.7	78.6	79.4	-90.00	3,822.5	-584.6	562.3	404.7	157.66	3.567	
11,300.0	6,810.4	11,310.9	6,810.4	80.5	81.3	-90.00	3,922.5	-584.6	562.3	400.9	161.42	3.484	
11,400.0	6,810.1	11,410.9	6,810.1	82.4	83.2	-90.00	4,022.5	-584.6	562.3	397.2	165.18	3.404	
11,500.0	6,809.8	11,510.9	6,809.7	84.3	85.0	-90.00	4,122.5	-584.6	562.3	393.4	168.94	3.329	
11,600.0	6,809.4	11,610.9	6,809.4	86.2	86.9	-90.00	4,222.5	-584.6	562.3	389.6	172.71	3.256	
11,700.0	6,809.1	11,710.9	6,809.1	88.0	88.8	-90.00	4,322.5	-584.6	562.3	385.8	176.48	3.186	
11,800.0	6,808.8	11,810.9	6,808.8	89.9	90.7	-90.00	4,422.5	-584.6	562.3	382.1	180.25	3.120	
11,900.0	6,808.5	11,910.9	6,808.5	91.8	92.5	-90.00	4,522.5	-584.6	562.3	378.3	184.02	3.056	
12,000.0	6,808.2	12,010.9	6,808.2	93.7	94.4	-90.00	4,622.5	-584.6	562.3	374.5	187.80	2.994	
12,100.0	6,807.9	12,110.9	6,807.9	95.6	96.3	-90.00	4,722.5	-584.6	562.3	370.7	191.58	2.935	
12,200.0	6,807.6	12,210.9	6,807.5	97.5	98.2	-90.00	4,822.5	-584.6	562.3	366.9	195.37	2.878	
12,300.0	6,807.2	12,310.9	6,807.2	99.4	100.1	-90.00	4,922.5	-584.6	562.3	363.1	199.15	2.823	
12,400.0	6,806.9	12,410.9	6,806.9	101.3	102.0	-90.00	5,022.5	-584.6	562.3	359.3	202.94	2.771	
12,500.0	6,806.6	12,510.9	6,806.6	103.2	103.9	-90.00	5,122.5	-584.6	562.3	355.5	206.73	2.720	
12,600.0	6,806.3	12,610.9	6,806.3	105.1	105.8	-90.00	5,222.5	-584.6	562.3	351.8	210.52	2.671	
12,700.0	6,806.0	12,710.9	6,806.0	107.0	107.6	-90.00	5,322.5	-584.6	562.3	348.0	214.31	2.624	
12,800.0	6,805.7	12,810.9	6,805.7	108.9	109.5	-90.00	5,422.5	-584.6	562.3	344.2	218.11	2.578	
12,900.0	6,805.4	12,910.9	6,805.3	110.8	111.4	-90.00	5,522.5	-584.6	562.3	340.4	221.90	2.534	
13,000.0	6,805.0	13,010.9	6,805.0	112.7	113.3	-90.00	5,622.5	-584.6	562.3	336.5	225.70	2.491	
13,100.0	6,804.7	13,110.9	6,804.7	114.6	115.2	-90.00	5,722.5	-584.6	562.2	332.7	229.50	2.450	
13,200.0	6,804.4	13,210.9	6,804.4	116.5	117.1	-90.00	5,822.5	-584.6	562.2	328.9	233.30	2.410	
13,300.0	6,804.1	13,310.9	6,804.1	118.4	119.0	-90.00	5,922.5	-584.6	562.2	325.1	237.10	2.371	
13,400.0	6,803.8	13,410.9	6,803.8	120.3	120.9	-90.00	6,022.5	-584.6	562.2	321.3	240.91	2.334	
13,500.0	6,803.5	13,510.9	6,803.5	122.2	122.8	-90.00	6,122.5	-584.6	562.2	317.5	244.71	2.297	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7I-321 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
13,600.0	6,803.2	13,610.9	6,803.1	124.1	124.7	-90.00	6,222.5	-584.6	562.2	313.7	248.52	2.262	
13,700.0	6,802.8	13,710.9	6,802.8	126.0	126.6	-90.00	6,322.5	-584.6	562.2	309.9	252.32	2.228	
13,800.0	6,802.5	13,810.9	6,802.5	127.9	128.5	-90.00	6,422.5	-584.6	562.2	306.1	256.13	2.195	
13,900.0	6,802.2	13,910.9	6,802.2	129.8	130.4	-90.00	6,522.5	-584.6	562.2	302.3	259.94	2.163	
14,000.0	6,801.9	14,010.9	6,801.9	131.7	132.3	-90.00	6,622.5	-584.6	562.2	298.4	263.75	2.132	
14,100.0	6,801.6	14,110.9	6,801.6	133.6	134.2	-90.00	6,722.5	-584.6	562.2	294.6	267.56	2.101	
14,200.0	6,801.3	14,210.9	6,801.3	135.5	136.1	-90.00	6,822.5	-584.6	562.2	290.8	271.37	2.072	
14,300.0	6,801.0	14,310.9	6,800.9	137.4	138.0	-90.00	6,922.5	-584.6	562.2	287.0	275.18	2.043	
14,400.0	6,800.6	14,410.9	6,800.6	139.3	139.9	-90.00	7,022.5	-584.6	562.2	283.2	279.00	2.015	
14,500.0	6,800.3	14,510.9	6,800.3	141.2	141.8	-90.00	7,122.5	-584.6	562.2	279.4	282.81	1.988	
14,600.0	6,800.0	14,610.9	6,800.0	143.1	143.7	-90.00	7,222.5	-584.6	562.2	275.5	286.63	1.961	
14,700.0	6,799.7	14,710.9	6,799.7	145.0	145.6	-90.00	7,322.5	-584.6	562.2	271.7	290.44	1.936	
14,800.0	6,799.4	14,810.9	6,799.4	147.0	147.5	-90.00	7,422.5	-584.6	562.2	267.9	294.26	1.910	
14,900.0	6,799.1	14,910.9	6,799.1	148.9	149.4	-90.00	7,522.5	-584.6	562.2	264.1	298.07	1.886	
15,000.0	6,798.8	15,010.9	6,798.7	150.8	151.3	-90.00	7,622.5	-584.6	562.1	260.3	301.89	1.862	
15,100.0	6,798.4	15,110.9	6,798.4	152.7	153.2	-90.00	7,722.5	-584.6	562.1	256.4	305.71	1.839	
15,200.0	6,798.1	15,210.9	6,798.1	154.6	155.1	-90.00	7,822.5	-584.6	562.1	252.6	309.53	1.816	
15,300.0	6,797.8	15,310.9	6,797.8	156.5	157.1	-90.00	7,922.5	-584.6	562.1	248.8	313.34	1.794	
15,400.0	6,797.5	15,410.9	6,797.5	158.4	159.0	-90.00	8,022.5	-584.6	562.1	245.0	317.16	1.772	
15,500.0	6,797.2	15,510.9	6,797.2	160.3	160.9	-90.00	8,122.5	-584.6	562.1	241.1	320.98	1.751	
15,600.0	6,796.9	15,610.9	6,796.9	162.2	162.8	-90.00	8,222.5	-584.6	562.1	237.3	324.80	1.731	
15,700.0	6,796.6	15,710.9	6,796.5	164.1	164.7	-90.00	8,322.5	-584.6	562.1	233.5	328.63	1.710	
15,800.0	6,796.2	15,810.9	6,796.2	166.1	166.6	-90.00	8,422.5	-584.6	562.1	229.7	332.45	1.691	
15,900.0	6,795.9	15,910.9	6,795.9	168.0	168.5	-90.00	8,522.5	-584.6	562.1	225.8	336.27	1.672	
16,000.0	6,795.6	16,010.9	6,795.6	169.9	170.4	-90.00	8,622.5	-584.6	562.1	222.0	340.09	1.653	
16,100.0	6,795.3	16,110.9	6,795.3	171.8	172.3	-90.00	8,722.5	-584.6	562.1	218.2	343.91	1.634	
16,200.0	6,795.0	16,210.9	6,795.0	173.7	174.2	-90.00	8,822.5	-584.6	562.1	214.3	347.74	1.616	
16,300.0	6,794.7	16,310.9	6,794.7	175.6	176.1	-90.00	8,922.5	-584.6	562.1	210.5	351.56	1.599	
16,400.0	6,794.4	16,410.9	6,794.3	177.5	178.0	-90.00	9,022.5	-584.6	562.1	206.7	355.38	1.582	
16,500.0	6,794.0	16,510.9	6,794.0	179.4	180.0	-90.00	9,122.5	-584.6	562.1	202.9	359.21	1.565	
16,600.0	6,793.7	16,610.9	6,793.7	181.4	181.9	-90.00	9,222.5	-584.6	562.1	199.0	363.03	1.548	
16,700.0	6,793.4	16,710.9	6,793.4	183.3	183.8	-90.00	9,322.5	-584.6	562.1	195.2	366.86	1.532	
16,800.0	6,793.1	16,810.9	6,793.1	185.2	185.7	-90.00	9,422.5	-584.6	562.1	191.4	370.68	1.516	
16,825.5	6,793.0	16,836.4	6,793.0	185.7	186.2	-90.00	9,448.0	-584.6	562.0	190.4	371.66	1.512	
16,834.0	6,793.0	16,839.0	6,793.0	185.8	186.2	-90.00	9,450.7	-584.6	562.1	190.2	371.87	1.511 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-201 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-179.47	-60.1	-0.6	60.1				
100.0	100.0	100.0	100.0	0.1	0.1	-179.47	-60.1	-0.6	60.1	59.9	0.22	267.459	
200.0	200.0	200.0	200.0	0.3	0.3	-179.47	-60.1	-0.6	60.1	59.4	0.67	89.147	
300.0	300.0	300.0	300.0	0.6	0.6	-179.47	-60.1	-0.6	60.1	59.0	1.12	53.488	
400.0	400.0	400.0	400.0	0.8	0.8	-179.47	-60.1	-0.6	60.1	58.5	1.57	38.205	
500.0	500.0	500.0	500.0	1.0	1.0	-179.47	-60.1	-0.6	60.1	58.1	2.02	29.715	
600.0	600.0	600.0	600.0	1.2	1.2	-179.47	-60.1	-0.6	60.1	57.6	2.47	24.312	
700.0	700.0	700.0	700.0	1.5	1.5	-179.47	-60.1	-0.6	60.1	57.2	2.92	20.572	
800.0	800.0	800.0	800.0	1.7	1.7	-179.47	-60.1	-0.6	60.1	56.7	3.37	17.829	
900.0	900.0	900.0	900.0	1.9	1.9	-179.47	-60.1	-0.6	60.1	56.3	3.82	15.731	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-179.47	-60.1	-0.6	60.1	55.8	4.27	14.076	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-179.47	-60.1	-0.6	60.1	55.4	4.72	12.735	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-179.47	-60.1	-0.6	60.1	54.9	5.17	11.628	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-179.47	-60.1	-0.6	60.1	54.5	5.62	10.697	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-179.47	-60.1	-0.6	60.1	54.0	6.07	9.905	CC
1,500.0	1,500.0	1,498.5	1,498.5	3.3	3.2	-179.86	-61.3	-0.1	61.3	54.8	6.49	9.453	
1,600.0	1,600.0	1,596.9	1,596.8	3.5	3.4	179.05	-64.9	1.1	65.0	58.1	6.89	9.440	
1,700.0	1,700.0	1,695.0	1,694.7	3.7	3.6	177.49	-70.9	3.1	71.2	63.9	7.29	9.762	
1,800.0	1,800.0	1,792.8	1,792.1	3.9	3.8	175.72	-79.2	5.9	79.8	72.1	7.70	10.370	
1,900.0	1,900.0	1,890.0	1,888.6	4.2	4.0	173.94	-89.8	9.5	91.0	82.9	8.11	11.223	
2,000.0	2,000.0	1,986.6	1,984.3	4.4	4.2	172.29	-102.7	13.9	104.8	96.3	8.53	12.286	
2,100.0	2,100.0	2,082.4	2,078.8	4.6	4.5	170.83	-117.7	19.0	121.1	112.1	8.95	13.526	
2,200.0	2,200.0	2,178.0	2,172.6	4.8	4.7	169.57	-134.8	24.8	139.8	130.4	9.38	14.909	
2,300.0	2,300.0	2,276.0	2,268.7	5.1	5.0	168.54	-153.2	31.0	159.4	149.6	9.81	16.253	
2,400.0	2,400.0	2,374.0	2,364.8	5.3	5.4	167.74	-171.6	37.3	179.1	168.8	10.24	17.482	
2,500.0	2,500.0	2,472.1	2,460.9	5.5	5.7	167.10	-189.9	43.5	198.7	188.1	10.68	18.607	
2,600.0	2,600.0	2,570.3	2,557.2	5.7	6.1	-15.08	-208.3	49.8	217.2	206.1	11.10	19.569	
2,700.0	2,699.9	2,669.0	2,653.9	5.9	6.4	-15.71	-226.8	56.0	233.2	221.7	11.49	20.299	
2,800.0	2,799.7	2,768.0	2,751.0	6.0	6.8	-16.44	-245.4	62.3	246.7	234.9	11.88	20.770	
2,900.0	2,899.3	2,867.3	2,848.3	6.2	7.2	-17.26	-264.0	68.7	257.8	245.6	12.27	21.009	
3,000.0	2,998.6	2,966.8	2,945.9	6.4	7.6	-18.19	-282.6	75.0	266.5	253.8	12.67	21.038	
3,100.0	3,097.5	3,066.5	3,043.6	6.6	8.0	-19.25	-301.3	81.3	272.8	259.7	13.07	20.877	
3,200.0	3,196.1	3,166.2	3,141.3	6.8	8.4	-20.46	-320.0	87.7	276.7	263.3	13.47	20.543	
3,300.0	3,294.2	3,266.0	3,239.1	7.1	8.8	-21.85	-338.7	94.0	278.4	264.5	13.88	20.051	
3,400.0	3,391.7	3,365.7	3,336.8	7.4	9.2	-23.44	-357.4	100.4	277.7	263.4	14.31	19.413	
3,500.0	3,488.6	3,465.3	3,434.4	7.7	9.6	-25.28	-376.0	106.7	275.0	260.2	14.75	18.638	
3,600.0	3,584.9	3,564.6	3,531.8	8.0	10.0	-27.41	-394.7	113.0	270.2	254.9	15.23	17.737	
3,700.0	3,680.4	3,663.7	3,629.0	8.4	10.4	-29.91	-413.2	119.3	263.5	247.7	15.76	16.717	
3,738.6	3,717.0	3,701.9	3,666.4	8.6	10.6	-30.99	-420.4	121.8	260.4	244.4	15.98	16.294	
3,800.0	3,775.2	3,762.6	3,725.9	8.8	10.9	-32.76	-431.8	125.6	255.5	239.1	16.39	15.584	
3,900.0	3,870.0	3,861.4	3,822.8	9.3	11.3	-35.77	-450.3	131.9	248.0	230.9	17.12	14.486	
4,000.0	3,964.8	3,960.2	3,919.6	9.8	11.7	-38.97	-468.8	138.2	241.3	223.4	17.92	13.462	
4,100.0	4,059.6	4,059.1	4,016.5	10.3	12.1	-42.33	-487.3	144.5	235.3	216.5	18.81	12.513	
4,200.0	4,154.4	4,157.9	4,113.4	10.8	12.5	-45.85	-505.8	150.8	230.3	210.5	19.78	11.641	
4,300.0	4,249.2	4,256.7	4,210.2	11.3	13.0	-49.50	-524.3	157.0	226.1	205.3	20.84	10.851	
4,400.0	4,343.9	4,355.5	4,307.1	11.9	13.4	-53.28	-542.9	163.3	223.0	201.0	21.98	10.144	
4,500.0	4,438.7	4,454.4	4,404.0	12.4	13.8	-57.14	-561.4	169.6	220.8	197.6	23.19	9.520	
4,600.0	4,533.5	4,553.2	4,500.9	13.0	14.2	-61.07	-579.9	175.9	219.7	195.2	24.47	8.980	
4,654.5	4,585.2	4,607.0	4,553.6	13.3	14.5	-63.21	-590.0	179.3	219.6	194.4	25.18	8.719	
4,700.0	4,628.3	4,652.0	4,597.7	13.5	14.7	-65.01	-598.4	182.2	219.7	193.9	25.78	8.520	
4,800.0	4,723.1	4,750.8	4,694.6	14.1	15.1	-68.93	-616.9	188.5	220.7	193.6	27.12	8.136	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-201 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
4,900.0	4,817.9	4,849.7	4,791.5	14.7	15.5	-72.80	-635.4	194.8	222.7	194.3	28.47	7.824	
5,000.0	4,912.7	4,948.5	4,888.3	15.3	16.0	-76.59	-654.0	201.0	225.8	196.0	29.81	7.576	
5,078.7	4,987.3	5,026.2	4,964.6	15.8	16.3	-79.49	-668.5	206.0	228.9	198.1	30.84	7.423	
5,100.0	5,007.5	5,047.3	4,985.2	15.9	16.4	-80.26	-672.5	207.3	229.9	198.8	31.10	7.391	
5,200.0	5,103.0	5,146.4	5,082.4	16.3	16.8	-83.31	-691.1	213.6	235.1	203.0	32.19	7.306	
5,300.0	5,199.6	5,245.9	5,179.9	16.7	17.3	-85.43	-709.7	220.0	241.3	208.1	33.16	7.276	
5,400.0	5,296.9	5,347.2	5,279.2	17.1	17.7	-86.76	-728.3	226.3	247.7	213.7	34.02	7.282	
5,500.0	5,395.0	5,450.4	5,381.0	17.4	18.0	-87.88	-744.3	231.7	253.2	218.5	34.75	7.287	
5,600.0	5,493.8	5,553.6	5,483.4	17.8	18.3	-88.90	-756.9	236.0	257.6	222.2	35.38	7.281	
5,700.0	5,593.0	5,656.8	5,586.2	18.0	18.5	-89.83	-765.9	239.1	260.8	224.9	35.93	7.258	
5,800.0	5,692.6	5,760.0	5,689.1	18.3	18.7	-90.70	-771.5	240.9	262.8	226.4	36.40	7.219	
5,900.0	5,792.4	5,863.0	5,792.2	18.5	18.8	-91.51	-773.5	241.6	263.6	226.8	36.80	7.162	
6,007.6	5,900.0	5,970.9	5,900.0	18.6	19.0	89.68	-773.5	241.6	263.6	226.5	37.13	7.099	
6,062.1	5,954.5	6,025.4	5,954.5	18.7	19.0	89.68	-773.5	241.6	263.6	226.3	37.28	7.072	
6,100.0	5,992.4	6,063.2	5,992.3	18.8	19.1	89.63	-773.3	241.6	263.6	226.3	37.38	7.053	
6,166.4	6,058.8	6,129.1	6,058.1	18.9	19.1	88.66	-768.9	241.6	263.7	226.1	37.55	7.023	
6,200.0	6,092.4	6,162.2	6,090.9	18.9	19.1	87.87	-764.5	241.6	263.8	226.2	37.62	7.013	
6,250.0	6,142.2	6,211.1	6,138.9	18.9	19.1	86.70	-755.5	241.6	264.1	226.4	37.65	7.013	
6,300.0	6,191.7	6,259.6	6,186.0	18.9	19.0	85.55	-743.5	241.6	264.4	226.8	37.62	7.030	
6,350.0	6,240.6	6,307.9	6,231.9	18.9	19.0	84.42	-728.6	241.6	264.9	227.4	37.51	7.062	
6,400.0	6,288.8	6,355.8	6,276.5	18.8	18.9	83.32	-711.1	241.6	265.5	228.1	37.33	7.110	
6,450.0	6,335.9	6,403.5	6,319.6	18.7	18.7	82.26	-690.8	241.6	266.1	229.0	37.09	7.173	
6,500.0	6,381.9	6,450.0	6,360.4	18.5	18.6	81.25	-668.5	241.6	266.8	230.0	36.80	7.249	
6,550.0	6,426.5	6,498.0	6,401.0	18.4	18.5	80.25	-643.0	241.6	267.5	231.1	36.45	7.339	
6,600.0	6,469.5	6,544.9	6,439.1	18.2	18.3	79.31	-615.6	241.6	268.3	232.3	36.06	7.441	
6,650.0	6,510.7	6,591.5	6,475.2	18.0	18.2	78.42	-586.1	241.6	269.1	233.5	35.64	7.552	
6,700.0	6,550.0	6,637.9	6,509.2	17.8	18.0	77.59	-554.6	241.6	270.0	234.8	35.20	7.671	
6,750.0	6,587.3	6,684.2	6,541.2	17.6	17.9	76.81	-521.2	241.6	270.8	236.1	34.74	7.795	
6,800.0	6,622.2	6,730.2	6,571.0	17.4	17.7	76.08	-486.1	241.6	271.7	237.4	34.29	7.922	
6,850.0	6,654.7	6,776.1	6,598.5	17.2	17.6	75.41	-449.4	241.6	272.5	238.6	33.85	8.048	
6,900.0	6,684.7	6,821.8	6,623.7	17.0	17.4	74.80	-411.3	241.6	273.2	239.8	33.45	8.169	
6,950.0	6,712.0	6,867.3	6,646.5	16.8	17.3	74.26	-371.9	241.6	274.0	240.9	33.08	8.281	
7,000.0	6,736.5	6,912.8	6,666.8	16.6	17.3	73.77	-331.2	241.6	274.6	241.8	32.77	8.380	
7,050.0	6,758.1	6,958.1	6,684.7	16.5	17.2	73.35	-289.6	241.6	275.2	242.7	32.53	8.460	
7,100.0	6,776.8	7,003.3	6,700.0	16.4	17.2	72.99	-247.0	241.6	275.7	243.4	32.37	8.517	
7,150.0	6,792.3	7,050.0	6,713.2	16.4	17.2	72.68	-202.3	241.6	276.2	243.9	32.31	8.548	
7,200.0	6,804.7	7,093.6	6,723.0	16.4	17.2	72.46	-159.8	241.6	276.5	244.2	32.34	8.550	
7,250.0	6,813.9	7,138.7	6,730.5	16.4	17.3	72.29	-115.4	241.6	276.8	244.3	32.48	8.521	
7,300.0	6,819.9	7,183.7	6,735.4	16.5	17.4	72.19	-70.6	241.6	276.9	244.2	32.73	8.462	
7,350.0	6,822.6	7,228.7	6,737.7	16.7	17.6	72.16	-25.7	241.6	277.0	243.9	33.08	8.374	
7,368.8	6,822.7	7,246.0	6,737.9	16.7	17.7	72.16	-8.4	241.6	277.0	243.8	33.23	8.334	
7,400.0	6,822.6	7,276.8	6,737.8	16.9	17.8	72.17	22.4	241.6	277.0	243.4	33.54	8.257	
7,500.0	6,822.3	7,376.8	6,737.7	17.4	18.5	72.20	122.4	241.6	276.9	242.2	34.77	7.965	
7,600.0	6,822.0	7,476.8	6,737.5	18.1	19.3	72.23	222.4	241.6	276.9	240.6	36.32	7.624	
7,700.0	6,821.7	7,576.8	6,737.4	19.0	20.3	72.26	322.4	241.6	276.8	238.7	38.16	7.254	
7,800.0	6,821.4	7,676.8	6,737.2	20.1	21.5	72.29	422.4	241.6	276.8	236.5	40.27	6.874	
7,900.0	6,821.1	7,776.8	6,737.0	21.3	22.7	72.33	522.4	241.6	276.8	234.2	42.58	6.499	
8,000.0	6,820.8	7,876.8	6,736.9	22.5	24.0	72.36	622.4	241.6	276.7	231.6	45.09	6.137	
8,100.0	6,820.4	7,976.8	6,736.7	23.9	25.4	72.39	722.4	241.6	276.7	228.9	47.75	5.795	
8,200.0	6,820.1	8,076.7	6,736.6	25.3	26.9	72.42	822.4	241.6	276.6	226.1	50.54	5.474	
8,300.0	6,819.8	8,176.7	6,736.4	26.8	28.4	72.45	922.4	241.6	276.6	223.2	53.44	5.176	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-201 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
8,400.0	6,819.5	8,276.7	6,736.3	28.3	30.0	72.48	1,022.4	241.6	276.5	220.1	56.43	4.901	
8,500.0	6,819.2	8,376.7	6,736.1	29.9	31.6	72.51	1,122.4	241.6	276.5	217.0	59.50	4.647	
8,600.0	6,818.9	8,476.7	6,735.9	31.6	33.2	72.54	1,222.4	241.6	276.5	213.8	62.65	4.413	
8,700.0	6,818.6	8,576.7	6,735.8	33.2	34.9	72.58	1,322.4	241.6	276.4	210.6	65.85	4.198	
8,800.0	6,818.2	8,676.7	6,735.6	34.9	36.6	72.61	1,422.4	241.6	276.4	207.3	69.10	4.000	
8,900.0	6,817.9	8,776.7	6,735.5	36.6	38.3	72.64	1,522.4	241.6	276.3	203.9	72.40	3.817	
9,000.0	6,817.6	8,876.7	6,735.3	38.3	40.0	72.67	1,622.4	241.6	276.3	200.6	75.73	3.648	
9,100.0	6,817.3	8,976.7	6,735.2	40.1	41.7	72.70	1,722.4	241.6	276.3	197.2	79.10	3.493	
9,200.0	6,817.0	9,076.7	6,735.0	41.8	43.5	72.73	1,822.4	241.6	276.2	193.7	82.50	3.348	
9,300.0	6,816.7	9,176.7	6,734.8	43.6	45.3	72.76	1,922.4	241.6	276.2	190.3	85.92	3.214	
9,400.0	6,816.4	9,276.7	6,734.7	45.4	47.1	72.80	2,022.4	241.6	276.1	186.8	89.37	3.090	
9,500.0	6,816.0	9,376.7	6,734.5	47.2	48.9	72.83	2,122.4	241.6	276.1	183.3	92.83	2.974	
9,600.0	6,815.7	9,476.7	6,734.4	49.0	50.7	72.86	2,222.4	241.6	276.1	179.7	96.32	2.866	
9,700.0	6,815.4	9,576.7	6,734.2	50.8	52.5	72.89	2,322.4	241.6	276.0	176.2	99.82	2.765	
9,800.0	6,815.1	9,676.7	6,734.1	52.6	54.3	72.92	2,422.4	241.6	276.0	172.6	103.34	2.670	
9,900.0	6,814.8	9,776.7	6,733.9	54.5	56.1	72.95	2,522.4	241.6	275.9	169.1	106.88	2.582	
10,000.0	6,814.5	9,876.7	6,733.7	56.3	57.9	72.98	2,622.4	241.6	275.9	165.5	110.42	2.498	
10,100.0	6,814.2	9,976.7	6,733.6	58.1	59.8	73.02	2,722.4	241.6	275.8	161.9	113.98	2.420	
10,200.0	6,813.8	10,076.7	6,733.4	60.0	61.6	73.05	2,822.4	241.6	275.8	158.3	117.55	2.346	
10,300.0	6,813.5	10,176.7	6,733.3	61.8	63.5	73.08	2,922.4	241.6	275.8	154.6	121.12	2.277	
10,400.0	6,813.2	10,276.7	6,733.1	63.7	65.3	73.11	3,022.4	241.6	275.7	151.0	124.71	2.211	
10,500.0	6,812.9	10,376.7	6,733.0	65.5	67.2	73.14	3,122.4	241.6	275.7	147.4	128.31	2.149	
10,600.0	6,812.6	10,476.7	6,732.8	67.4	69.0	73.17	3,222.4	241.6	275.6	143.7	131.91	2.090	
10,700.0	6,812.3	10,576.7	6,732.6	69.3	70.9	73.21	3,322.4	241.6	275.6	140.1	135.52	2.034	
10,800.0	6,812.0	10,676.7	6,732.5	71.1	72.8	73.24	3,422.4	241.6	275.6	136.4	139.13	1.981	
10,900.0	6,811.6	10,776.7	6,732.3	73.0	74.6	73.27	3,522.4	241.6	275.5	132.8	142.76	1.930	
11,000.0	6,811.3	10,876.7	6,732.2	74.9	76.5	73.30	3,622.4	241.6	275.5	129.1	146.39	1.882	
11,100.0	6,811.0	10,976.7	6,732.0	76.7	78.4	73.33	3,722.4	241.6	275.4	125.4	150.02	1.836	
11,200.0	6,810.7	11,076.7	6,731.9	78.6	80.3	73.36	3,822.4	241.6	275.4	121.7	153.66	1.792	
11,300.0	6,810.4	11,176.7	6,731.7	80.5	82.1	73.40	3,922.4	241.6	275.4	118.1	157.30	1.751	
11,400.0	6,810.1	11,276.7	6,731.5	82.4	84.0	73.43	4,022.4	241.6	275.3	114.4	160.95	1.711	
11,500.0	6,809.8	11,376.7	6,731.4	84.3	85.9	73.46	4,122.4	241.6	275.3	110.7	164.61	1.672	
11,600.0	6,809.4	11,476.7	6,731.2	86.2	87.8	73.49	4,222.4	241.6	275.2	107.0	168.26	1.636	
11,700.0	6,809.1	11,576.7	6,731.1	88.0	89.7	73.52	4,322.4	241.6	275.2	103.3	171.93	1.601	
11,800.0	6,808.8	11,676.7	6,730.9	89.9	91.5	73.55	4,422.4	241.6	275.2	99.6	175.59	1.567	
11,900.0	6,808.5	11,776.7	6,730.8	91.8	93.4	73.59	4,522.4	241.6	275.1	95.9	179.26	1.535	
12,000.0	6,808.2	11,876.7	6,730.6	93.7	95.3	73.62	4,622.4	241.6	275.1	92.2	182.93	1.504	
12,100.0	6,807.9	11,976.7	6,730.4	95.6	97.2	73.65	4,722.4	241.6	275.0	88.4	186.61	1.474	Level 3
12,200.0	6,807.6	12,076.7	6,730.3	97.5	99.1	73.68	4,822.4	241.6	275.0	84.7	190.29	1.445	Level 3
12,300.0	6,807.2	12,176.7	6,730.1	99.4	101.0	73.71	4,922.4	241.6	275.0	81.0	193.97	1.418	Level 3
12,400.0	6,806.9	12,276.7	6,730.0	101.3	102.9	73.74	5,022.4	241.6	274.9	77.3	197.66	1.391	Level 3
12,500.0	6,806.6	12,376.7	6,729.8	103.2	104.8	73.78	5,122.4	241.6	274.9	73.6	201.34	1.365	Level 3
12,600.0	6,806.3	12,476.7	6,729.7	105.1	106.7	73.81	5,222.4	241.6	274.9	69.8	205.03	1.341	Level 3
12,700.0	6,806.0	12,576.7	6,729.5	107.0	108.6	73.84	5,322.4	241.6	274.8	66.1	208.73	1.317	Level 3
12,800.0	6,805.7	12,676.7	6,729.3	108.9	110.5	73.87	5,422.4	241.6	274.8	62.4	212.42	1.294	Level 3
12,900.0	6,805.4	12,776.7	6,729.2	110.8	112.4	73.90	5,522.4	241.6	274.7	58.6	216.12	1.271	Level 3
13,000.0	6,805.0	12,876.7	6,729.0	112.7	114.3	73.93	5,622.4	241.6	274.7	54.9	219.82	1.250	Level 2
13,100.0	6,804.7	12,976.7	6,728.9	114.6	116.2	73.97	5,722.4	241.6	274.7	51.1	223.52	1.229	Level 2
13,200.0	6,804.4	13,076.7	6,728.7	116.5	118.1	74.00	5,822.4	241.6	274.6	47.4	227.23	1.209	Level 2
13,300.0	6,804.1	13,176.7	6,728.6	118.4	120.0	74.03	5,922.4	241.6	274.6	43.7	230.94	1.189	Level 2
13,400.0	6,803.8	13,276.7	6,728.4	120.3	121.9	74.06	6,022.4	241.6	274.5	39.9	234.65	1.170	Level 2

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-201 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
13,500.0	6,803.5	13,376.7	6,728.2	122.2	123.8	74.09	6,122.4	241.6	274.5	36.2	238.36	1.152	Level 2
13,600.0	6,803.2	13,476.7	6,728.1	124.1	125.7	74.13	6,222.4	241.6	274.5	32.4	242.07	1.134	Level 2
13,700.0	6,802.8	13,576.7	6,727.9	126.0	127.6	74.16	6,322.4	241.6	274.4	28.6	245.79	1.117	Level 2
13,800.0	6,802.5	13,676.7	6,727.8	127.9	129.5	74.19	6,422.4	241.6	274.4	24.9	249.50	1.100	Level 2
13,900.0	6,802.2	13,776.7	6,727.6	129.8	131.4	74.22	6,522.4	241.6	274.4	21.1	253.22	1.083	Level 2
14,000.0	6,801.9	13,876.7	6,727.5	131.7	133.3	74.25	6,622.4	241.6	274.3	17.4	256.94	1.068	Level 2
14,100.0	6,801.6	13,976.7	6,727.3	133.6	135.2	74.29	6,722.4	241.6	274.3	13.6	260.67	1.052	Level 2
14,200.0	6,801.3	14,076.7	6,727.1	135.5	137.1	74.32	6,822.4	241.6	274.2	9.9	264.39	1.037	Level 2
14,300.0	6,801.0	14,176.7	6,727.0	137.4	139.0	74.35	6,922.4	241.6	274.2	6.1	268.12	1.023	Level 2
14,400.0	6,800.6	14,276.7	6,726.8	139.3	140.9	74.38	7,022.4	241.6	274.2	2.3	271.84	1.009	Level 2
14,500.0	6,800.3	14,376.7	6,726.7	141.2	142.8	74.41	7,122.4	241.6	274.1	-1.4	275.57	0.995	Level 1
14,600.0	6,800.0	14,476.7	6,726.5	143.1	144.7	74.44	7,222.4	241.6	274.1	-5.2	279.31	0.981	Level 1
14,700.0	6,799.7	14,576.7	6,726.4	145.0	146.6	74.48	7,322.4	241.6	274.1	-9.0	283.04	0.968	Level 1
14,800.0	6,799.4	14,676.7	6,726.2	147.0	148.5	74.51	7,422.4	241.6	274.0	-12.7	286.77	0.956	Level 1
14,900.0	6,799.1	14,776.7	6,726.0	148.9	150.4	74.54	7,522.4	241.6	274.0	-16.5	290.51	0.943	Level 1
15,000.0	6,798.8	14,876.7	6,725.9	150.8	152.3	74.57	7,622.4	241.6	274.0	-20.3	294.25	0.931	Level 1
15,100.0	6,798.4	14,976.7	6,725.7	152.7	154.3	74.60	7,722.4	241.6	273.9	-24.1	297.98	0.919	Level 1
15,200.0	6,798.1	15,076.7	6,725.6	154.6	156.2	74.64	7,822.4	241.6	273.9	-27.8	301.72	0.908	Level 1
15,300.0	6,797.8	15,176.7	6,725.4	156.5	158.1	74.67	7,922.4	241.6	273.8	-31.6	305.47	0.896	Level 1
15,400.0	6,797.5	15,276.7	6,725.3	158.4	160.0	74.70	8,022.4	241.6	273.8	-35.4	309.21	0.886	Level 1
15,500.0	6,797.2	15,376.7	6,725.1	160.3	161.9	74.73	8,122.4	241.6	273.8	-39.2	312.95	0.875	Level 1
15,600.0	6,796.9	15,476.7	6,724.9	162.2	163.8	74.76	8,222.4	241.6	273.7	-43.0	316.70	0.864	Level 1
15,700.0	6,796.6	15,576.7	6,724.8	164.1	165.7	74.80	8,322.4	241.6	273.7	-46.7	320.45	0.854	Level 1
15,800.0	6,796.2	15,676.7	6,724.6	166.1	167.6	74.83	8,422.4	241.6	273.7	-50.5	324.19	0.844	Level 1
15,900.0	6,795.9	15,776.7	6,724.5	168.0	169.5	74.86	8,522.4	241.6	273.6	-54.3	327.94	0.834	Level 1
16,000.0	6,795.6	15,876.7	6,724.3	169.9	171.4	74.89	8,622.4	241.6	273.6	-58.1	331.70	0.825	Level 1
16,100.0	6,795.3	15,976.7	6,724.2	171.8	173.4	74.92	8,722.4	241.6	273.6	-61.9	335.45	0.815	Level 1
16,200.0	6,795.0	16,076.7	6,724.0	173.7	175.3	74.96	8,822.4	241.6	273.5	-65.7	339.20	0.806	Level 1
16,300.0	6,794.7	16,176.7	6,723.8	175.6	177.2	74.99	8,922.4	241.6	273.5	-69.5	342.96	0.797	Level 1
16,400.0	6,794.4	16,276.7	6,723.7	177.5	179.1	75.02	9,022.4	241.6	273.5	-73.3	346.71	0.789	Level 1
16,500.0	6,794.0	16,376.7	6,723.5	179.4	181.0	75.05	9,122.4	241.6	273.4	-77.1	350.47	0.780	Level 1
16,600.0	6,793.7	16,476.7	6,723.4	181.4	182.9	75.09	9,222.4	241.6	273.4	-80.8	354.23	0.772	Level 1
16,700.0	6,793.4	16,576.7	6,723.2	183.3	184.8	75.12	9,322.4	241.6	273.3	-84.6	357.99	0.764	Level 1
16,800.0	6,793.1	16,676.7	6,723.1	185.2	186.7	75.15	9,422.4	241.6	273.3	-88.4	361.75	0.756	Level 1
16,834.0	6,793.0	16,710.8	6,723.0	185.8	187.4	75.16	9,456.4	241.6	273.3	-89.7	363.03	0.753	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-221 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-179.47	-90.0	-0.8	90.0				
100.0	100.0	100.0	100.0	0.1	0.1	-179.47	-90.0	-0.8	90.0	89.8	0.22	400.387	
200.0	200.0	200.0	200.0	0.3	0.3	-179.47	-90.0	-0.8	90.0	89.3	0.67	133.454	
300.0	300.0	300.0	300.0	0.6	0.6	-179.47	-90.0	-0.8	90.0	88.9	1.12	80.071	
400.0	400.0	400.0	400.0	0.8	0.8	-179.47	-90.0	-0.8	90.0	88.4	1.57	57.194	
500.0	500.0	500.0	500.0	1.0	1.0	-179.47	-90.0	-0.8	90.0	88.0	2.02	44.484	CC, ES
600.0	600.0	598.4	598.4	1.2	1.2	179.94	-90.8	0.1	90.9	88.4	2.45	37.127	
700.0	700.0	696.7	696.6	1.5	1.4	178.24	-93.4	2.9	93.5	90.7	2.86	32.679	
800.0	800.0	794.7	794.4	1.7	1.6	175.63	-97.7	7.5	98.2	94.9	3.29	29.836	
900.0	900.0	892.3	891.7	1.9	1.8	172.38	-103.7	13.9	105.0	101.3	3.73	28.143	
1,000.0	1,000.0	989.5	988.1	2.1	2.1	168.80	-111.4	22.0	114.1	110.0	4.18	27.314	
1,100.0	1,100.0	1,086.0	1,083.7	2.4	2.4	165.17	-120.6	31.9	125.8	121.2	4.63	27.152	
1,200.0	1,200.0	1,181.7	1,178.1	2.6	2.7	161.68	-131.4	43.5	140.1	135.0	5.09	27.514	
1,300.0	1,300.0	1,276.6	1,271.2	2.8	3.0	158.48	-143.7	56.7	157.1	151.6	5.55	28.283	
1,400.0	1,400.0	1,372.7	1,365.2	3.0	3.4	155.60	-157.5	71.4	176.4	170.4	6.02	29.297	
1,500.0	1,500.0	1,470.4	1,460.7	3.3	3.8	153.23	-171.7	86.6	196.3	189.8	6.48	30.265	
1,600.0	1,600.0	1,568.2	1,556.2	3.5	4.3	151.29	-185.9	101.8	216.4	209.4	6.95	31.143	
1,700.0	1,700.0	1,665.9	1,651.7	3.7	4.7	149.68	-200.0	117.0	236.7	229.3	7.41	31.933	
1,800.0	1,800.0	1,763.6	1,747.2	3.9	5.1	148.33	-214.2	132.2	257.2	249.3	7.88	32.645	
1,900.0	1,900.0	1,861.3	1,842.6	4.2	5.6	147.18	-228.4	147.3	277.8	269.5	8.35	33.287	
2,000.0	2,000.0	1,959.0	1,938.1	4.4	6.0	146.18	-242.6	162.5	298.5	289.7	8.81	33.868	
2,100.0	2,100.0	2,056.7	2,033.6	4.6	6.5	145.31	-256.8	177.7	319.3	310.0	9.28	34.394	
2,200.0	2,200.0	2,154.4	2,129.1	4.8	6.9	144.55	-271.0	192.9	340.1	330.3	9.75	34.871	
2,300.0	2,300.0	2,252.1	2,224.5	5.1	7.4	143.88	-285.2	208.1	361.0	350.8	10.22	35.307	
2,400.0	2,400.0	2,349.9	2,320.0	5.3	7.8	143.28	-299.3	223.3	381.9	371.2	10.70	35.705	
2,500.0	2,500.0	2,447.6	2,415.5	5.5	8.3	142.75	-313.5	238.4	402.9	391.7	11.17	36.070	
2,600.0	2,600.0	2,545.5	2,511.1	5.7	8.7	-39.28	-327.7	253.7	422.9	411.2	11.65	36.289	
2,700.0	2,699.9	2,643.6	2,607.1	5.9	9.2	-39.87	-342.0	268.9	440.9	428.8	12.08	36.501	
2,800.0	2,799.7	2,742.1	2,703.3	6.0	9.6	-40.63	-356.3	284.2	457.1	444.6	12.51	36.551	
2,900.0	2,899.3	2,840.7	2,799.6	6.2	10.1	-41.56	-370.6	299.5	471.5	458.5	12.93	36.455	
3,000.0	2,998.6	2,939.3	2,896.0	6.4	10.6	-42.64	-384.9	314.9	484.1	470.7	13.36	36.224	
3,100.0	3,097.5	3,038.1	2,992.5	6.6	11.0	-43.89	-399.2	330.2	495.0	481.2	13.80	35.865	
3,200.0	3,196.1	3,136.7	3,088.9	6.8	11.5	-45.29	-413.6	345.5	504.4	490.1	14.25	35.383	
3,300.0	3,294.2	3,235.3	3,185.2	7.1	12.0	-46.86	-427.9	360.8	512.3	497.6	14.73	34.780	
3,400.0	3,391.7	3,333.7	3,281.4	7.4	12.4	-48.60	-442.2	376.1	518.9	503.7	15.24	34.057	
3,500.0	3,488.6	3,431.9	3,377.3	7.7	12.9	-50.51	-456.4	391.4	524.4	508.6	15.79	33.215	
3,600.0	3,584.9	3,529.8	3,472.9	8.0	13.3	-52.60	-470.6	406.6	528.9	512.5	16.40	32.258	
3,700.0	3,680.4	3,627.2	3,568.2	8.4	13.8	-54.86	-484.8	421.7	532.6	515.6	17.08	31.193	
3,738.6	3,717.0	3,664.7	3,604.8	8.6	14.0	-55.79	-490.2	427.6	533.9	516.6	17.36	30.757	
3,800.0	3,775.2	3,724.4	3,663.1	8.8	14.3	-57.30	-498.9	436.8	536.1	518.3	17.84	30.050	
3,900.0	3,870.0	3,821.5	3,758.0	9.3	14.7	-59.73	-513.0	451.9	540.6	521.9	18.67	28.949	
4,000.0	3,964.8	3,918.6	3,852.9	9.8	15.2	-62.12	-527.1	467.0	546.0	526.5	19.56	27.913	
4,100.0	4,059.6	4,015.7	3,947.8	10.3	15.6	-64.46	-541.2	482.1	552.4	531.9	20.50	26.949	
4,200.0	4,154.4	4,112.8	4,042.6	10.8	16.1	-66.75	-555.3	497.2	559.8	538.3	21.48	26.057	
4,300.0	4,249.2	4,209.9	4,137.5	11.3	16.6	-68.97	-569.4	512.3	568.1	545.6	22.51	25.240	
4,400.0	4,343.9	4,307.0	4,232.4	11.9	17.0	-71.14	-583.5	527.4	577.2	553.7	23.56	24.495	
4,500.0	4,438.7	4,404.1	4,327.3	12.4	17.5	-73.23	-597.6	542.5	587.2	562.5	24.65	23.820	
4,600.0	4,533.5	4,501.2	4,422.2	13.0	17.9	-75.26	-611.7	557.6	598.0	572.2	25.76	23.212	
4,700.0	4,628.3	4,598.3	4,517.0	13.5	18.4	-77.21	-625.8	572.6	609.5	582.6	26.89	22.666	
4,800.0	4,723.1	4,695.4	4,611.9	14.1	18.8	-79.10	-639.8	587.7	621.7	593.7	28.03	22.178	
4,900.0	4,817.9	4,792.5	4,706.8	14.7	19.3	-80.91	-653.9	602.8	634.6	605.4	29.18	21.744	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-221 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
5,000.0	4,912.7	4,889.6	4,801.7	15.3	19.8	-82.65	-668.0	617.9	648.1	617.7	30.34	21.359	
5,078.7	4,987.3	4,966.0	4,876.4	15.8	20.1	-83.97	-679.1	629.8	659.1	627.9	31.26	21.087	
5,100.0	5,007.5	4,986.7	4,896.6	15.9	20.2	-84.38	-682.1	633.0	662.2	630.7	31.50	21.024	
5,200.0	5,103.0	5,084.3	4,991.9	16.3	20.7	-86.08	-696.3	648.2	677.0	644.5	32.51	20.822	
5,300.0	5,199.6	5,182.2	5,087.6	16.7	21.2	-87.46	-710.5	663.4	692.4	658.9	33.47	20.686	
5,400.0	5,296.9	5,280.6	5,183.7	17.1	21.6	-88.52	-724.8	678.7	708.1	673.7	34.36	20.606	
5,500.0	5,395.0	5,400.4	5,301.2	17.4	22.0	-89.45	-740.7	695.7	722.6	687.4	35.17	20.546	
5,600.0	5,493.8	5,522.6	5,422.0	17.8	22.4	-90.24	-753.5	709.4	734.1	698.2	35.88	20.461	
5,700.0	5,593.0	5,645.6	5,544.2	18.0	22.6	-90.88	-762.8	719.3	742.4	705.9	36.49	20.344	
5,800.0	5,692.6	5,768.9	5,667.2	18.3	22.8	-91.40	-768.5	725.4	747.6	710.6	37.01	20.198	
5,900.0	5,792.4	5,892.3	5,790.6	18.5	23.0	-91.80	-770.6	727.7	749.6	712.1	37.45	20.015	
6,007.6	5,900.0	6,001.7	5,900.0	18.6	23.1	89.66	-770.6	727.7	749.7	711.9	37.79	19.836	
6,061.7	5,954.1	6,055.8	5,954.1	18.7	23.2	89.66	-770.6	727.7	749.7	711.7	37.93	19.762	
6,100.0	5,992.4	6,094.0	5,992.3	18.8	23.2	89.65	-770.4	727.7	749.7	711.6	38.03	19.711	
6,166.4	6,058.8	6,159.7	6,057.8	18.9	23.3	89.31	-766.0	727.7	749.7	711.5	38.21	19.621	
6,200.0	6,092.4	6,192.6	6,090.4	18.9	23.3	89.03	-761.6	727.7	749.8	711.5	38.29	19.582	
6,250.0	6,142.2	6,241.3	6,138.3	18.9	23.2	88.62	-752.7	727.7	749.9	711.5	38.35	19.555	
6,300.0	6,191.7	6,289.7	6,185.2	18.9	23.2	88.22	-740.8	727.7	750.0	711.7	38.34	19.562	
6,350.0	6,240.6	6,337.8	6,231.0	18.9	23.1	87.82	-726.0	727.7	750.2	711.9	38.27	19.602	
6,400.0	6,288.8	6,385.6	6,275.4	18.8	23.1	87.44	-708.6	727.7	750.4	712.3	38.14	19.674	
6,450.0	6,335.9	6,433.1	6,318.5	18.7	23.0	87.07	-688.5	727.7	750.7	712.7	37.96	19.775	
6,500.0	6,381.9	6,480.3	6,360.0	18.5	22.9	86.70	-665.9	727.7	750.9	713.2	37.73	19.903	
6,550.0	6,426.5	6,527.3	6,399.7	18.4	22.7	86.36	-640.9	727.7	751.2	713.7	37.46	20.055	
6,600.0	6,469.5	6,574.1	6,437.7	18.2	22.6	86.03	-613.7	727.7	751.5	714.3	37.15	20.229	
6,650.0	6,510.7	6,620.6	6,473.8	18.0	22.5	85.71	-584.3	727.7	751.8	715.0	36.81	20.421	
6,700.0	6,550.0	6,666.9	6,507.9	17.8	22.3	85.42	-553.0	727.7	752.1	715.6	36.46	20.626	
6,750.0	6,587.3	6,713.0	6,539.9	17.6	22.2	85.14	-519.8	727.7	752.4	716.3	36.11	20.838	
6,800.0	6,622.2	6,758.9	6,569.7	17.4	22.0	84.88	-484.8	727.7	752.7	716.9	35.75	21.053	
6,850.0	6,654.7	6,804.7	6,597.3	17.2	21.8	84.64	-448.3	727.7	753.0	717.6	35.41	21.262	
6,900.0	6,684.7	6,850.0	6,622.3	17.0	21.7	84.43	-410.6	727.7	753.2	718.1	35.10	21.458	
6,950.0	6,712.0	6,895.8	6,645.4	16.8	21.5	84.23	-371.0	727.7	753.5	718.7	34.83	21.632	
7,000.0	6,736.5	6,941.2	6,665.8	16.6	21.4	84.06	-330.5	727.7	753.7	719.1	34.61	21.777	
7,050.0	6,758.1	6,986.5	6,683.8	16.5	21.2	83.91	-288.9	727.7	753.9	719.5	34.45	21.883	
7,100.0	6,776.8	7,031.7	6,699.2	16.4	21.1	83.79	-246.5	727.7	754.1	719.8	34.36	21.945	
7,150.0	6,792.3	7,076.8	6,712.1	16.4	20.9	83.69	-203.2	727.7	754.3	719.9	34.35	21.956	
7,200.0	6,804.7	7,121.9	6,722.4	16.4	20.8	83.61	-159.4	727.7	754.4	719.9	34.43	21.913	
7,250.0	6,813.9	7,166.9	6,730.1	16.4	20.6	83.56	-115.0	727.7	754.5	719.9	34.59	21.813	
7,300.0	6,819.9	7,211.9	6,735.2	16.5	20.5	83.54	-70.3	727.7	754.5	719.7	34.84	21.657	
7,350.0	6,822.6	7,256.9	6,737.6	16.7	20.4	83.54	-25.4	727.7	754.5	719.3	35.18	21.448	
7,368.8	6,822.7	7,273.8	6,737.9	16.7	20.3	83.54	-8.5	727.7	754.5	719.2	35.33	21.355	
7,400.0	6,822.6	7,304.7	6,737.8	16.9	20.2	83.55	22.4	727.7	754.5	718.8	35.63	21.173	
7,500.0	6,822.3	7,404.7	6,737.7	17.4	20.0	83.56	122.4	727.7	754.5	717.6	36.85	20.474	
7,600.0	6,822.0	7,504.7	6,737.5	18.1	20.4	83.57	222.4	727.7	754.5	716.0	38.41	19.643	
7,700.0	6,821.7	7,604.7	6,737.4	19.0	21.5	83.58	322.4	727.7	754.4	714.2	40.27	18.733	
7,800.0	6,821.4	7,704.7	6,737.2	20.1	22.7	83.59	422.4	727.7	754.4	712.0	42.40	17.793	
7,900.0	6,821.1	7,804.7	6,737.0	21.3	24.0	83.61	522.4	727.7	754.4	709.7	44.76	16.856	
8,000.0	6,820.8	7,904.7	6,736.9	22.5	25.4	83.62	622.4	727.7	754.4	707.1	47.30	15.948	
8,100.0	6,820.4	8,004.7	6,736.7	23.9	26.8	83.63	722.4	727.7	754.4	704.4	50.02	15.083	
8,200.0	6,820.1	8,104.7	6,736.6	25.3	28.2	83.64	822.4	727.7	754.4	701.5	52.86	14.270	
8,300.0	6,819.8	8,204.7	6,736.4	26.8	29.8	83.65	922.4	727.7	754.4	698.5	55.83	13.512	
8,400.0	6,819.5	8,304.7	6,736.3	28.3	31.3	83.67	1,022.4	727.7	754.4	695.5	58.89	12.809	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-221 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
8,500.0	6,819.2	8,404.7	6,736.1	29.9	32.9	83.68	1,122.4	727.7	754.4	692.3	62.04	12.159	
8,600.0	6,818.9	8,504.7	6,735.9	31.6	34.5	83.69	1,222.4	727.7	754.3	689.1	65.26	11.558	
8,700.0	6,818.6	8,604.7	6,735.8	33.2	36.1	83.70	1,322.4	727.7	754.3	685.8	68.55	11.005	
8,800.0	6,818.2	8,704.7	6,735.6	34.9	37.8	83.71	1,422.4	727.7	754.3	682.4	71.88	10.494	
8,900.0	6,817.9	8,804.7	6,735.5	36.6	39.5	83.72	1,522.4	727.7	754.3	679.0	75.27	10.022	
9,000.0	6,817.6	8,904.7	6,735.3	38.3	41.2	83.74	1,622.4	727.7	754.3	675.6	78.69	9.586	
9,100.0	6,817.3	9,004.7	6,735.2	40.1	42.9	83.75	1,722.4	727.7	754.3	672.1	82.15	9.182	
9,200.0	6,817.0	9,104.7	6,735.0	41.8	44.7	83.76	1,822.4	727.7	754.3	668.6	85.64	8.808	
9,300.0	6,816.7	9,204.7	6,734.8	43.6	46.4	83.77	1,922.4	727.7	754.3	665.1	89.15	8.460	
9,400.0	6,816.4	9,304.7	6,734.7	45.4	48.2	83.78	2,022.4	727.7	754.2	661.6	92.70	8.137	
9,500.0	6,816.0	9,404.7	6,734.5	47.2	49.9	83.80	2,122.4	727.7	754.2	658.0	96.26	7.836	
9,600.0	6,815.7	9,504.7	6,734.4	49.0	51.7	83.81	2,222.4	727.7	754.2	654.4	99.84	7.554	
9,700.0	6,815.4	9,604.7	6,734.2	50.8	53.5	83.82	2,322.4	727.7	754.2	650.8	103.44	7.291	
9,800.0	6,815.1	9,704.7	6,734.1	52.6	55.3	83.83	2,422.4	727.7	754.2	647.1	107.06	7.045	
9,900.0	6,814.8	9,804.7	6,733.9	54.5	57.1	83.84	2,522.4	727.7	754.2	643.5	110.69	6.814	
10,000.0	6,814.5	9,904.7	6,733.7	56.3	58.9	83.86	2,622.4	727.7	754.2	639.9	114.33	6.597	
10,100.0	6,814.2	10,004.7	6,733.6	58.1	60.7	83.87	2,722.4	727.7	754.2	636.2	117.98	6.392	
10,200.0	6,813.8	10,104.7	6,733.4	60.0	62.6	83.88	2,822.4	727.7	754.2	632.5	121.65	6.200	
10,300.0	6,813.5	10,204.7	6,733.3	61.8	64.4	83.89	2,922.4	727.7	754.1	628.8	125.32	6.018	
10,400.0	6,813.2	10,304.7	6,733.1	63.7	66.2	83.90	3,022.4	727.7	754.1	625.1	129.00	5.846	
10,500.0	6,812.9	10,404.7	6,733.0	65.5	68.1	83.92	3,122.4	727.7	754.1	621.4	132.70	5.683	
10,600.0	6,812.6	10,504.7	6,732.8	67.4	69.9	83.93	3,222.4	727.7	754.1	617.7	136.39	5.529	
10,700.0	6,812.3	10,604.7	6,732.6	69.3	71.8	83.94	3,322.4	727.7	754.1	614.0	140.10	5.383	
10,800.0	6,812.0	10,704.7	6,732.5	71.1	73.6	83.95	3,422.4	727.7	754.1	610.3	143.81	5.244	
10,900.0	6,811.6	10,804.7	6,732.3	73.0	75.5	83.96	3,522.4	727.7	754.1	606.6	147.53	5.111	
11,000.0	6,811.3	10,904.7	6,732.2	74.9	77.3	83.97	3,622.4	727.7	754.1	602.8	151.25	4.985	
11,100.0	6,811.0	11,004.7	6,732.0	76.7	79.2	83.99	3,722.4	727.7	754.1	599.1	154.98	4.865	
11,200.0	6,810.7	11,104.7	6,731.9	78.6	81.1	84.00	3,822.4	727.7	754.0	595.3	158.72	4.751	
11,300.0	6,810.4	11,204.7	6,731.7	80.5	82.9	84.01	3,922.4	727.7	754.0	591.6	162.45	4.642	
11,400.0	6,810.1	11,304.7	6,731.5	82.4	84.8	84.02	4,022.4	727.7	754.0	587.8	166.20	4.537	
11,500.0	6,809.8	11,404.7	6,731.4	84.3	86.7	84.03	4,122.4	727.7	754.0	584.1	169.94	4.437	
11,600.0	6,809.4	11,504.7	6,731.2	86.2	88.5	84.05	4,222.4	727.7	754.0	580.3	173.69	4.341	
11,700.0	6,809.1	11,604.7	6,731.1	88.0	90.4	84.06	4,322.4	727.7	754.0	576.6	177.44	4.249	
11,800.0	6,808.8	11,704.7	6,730.9	89.9	92.3	84.07	4,422.4	727.7	754.0	572.8	181.20	4.161	
11,900.0	6,808.5	11,804.7	6,730.8	91.8	94.2	84.08	4,522.4	727.7	754.0	569.0	184.96	4.076	
12,000.0	6,808.2	11,904.7	6,730.6	93.7	96.0	84.09	4,622.4	727.7	754.0	565.2	188.72	3.995	
12,100.0	6,807.9	12,004.7	6,730.4	95.6	97.9	84.11	4,722.4	727.7	754.0	561.5	192.49	3.917	
12,200.0	6,807.6	12,104.7	6,730.3	97.5	99.8	84.12	4,822.4	727.7	753.9	557.7	196.25	3.842	
12,300.0	6,807.2	12,204.7	6,730.1	99.4	101.7	84.13	4,922.4	727.7	753.9	553.9	200.02	3.769	
12,400.0	6,806.9	12,304.7	6,730.0	101.3	103.6	84.14	5,022.4	727.7	753.9	550.1	203.79	3.699	
12,500.0	6,806.6	12,404.7	6,729.8	103.2	105.4	84.15	5,122.4	727.7	753.9	546.3	207.57	3.632	
12,600.0	6,806.3	12,504.7	6,729.7	105.1	107.3	84.17	5,222.4	727.7	753.9	542.6	211.34	3.567	
12,700.0	6,806.0	12,604.7	6,729.5	107.0	109.2	84.18	5,322.4	727.7	753.9	538.8	215.12	3.504	
12,800.0	6,805.7	12,704.7	6,729.3	108.9	111.1	84.19	5,422.4	727.7	753.9	535.0	218.90	3.444	
12,900.0	6,805.4	12,804.7	6,729.2	110.8	113.0	84.20	5,522.4	727.7	753.9	531.2	222.68	3.385	
13,000.0	6,805.0	12,904.7	6,729.0	112.7	114.9	84.21	5,622.4	727.7	753.9	527.4	226.47	3.329	
13,100.0	6,804.7	13,004.7	6,728.9	114.6	116.8	84.23	5,722.4	727.7	753.8	523.6	230.25	3.274	
13,200.0	6,804.4	13,104.7	6,728.7	116.5	118.7	84.24	5,822.4	727.7	753.8	519.8	234.04	3.221	
13,300.0	6,804.1	13,204.7	6,728.6	118.4	120.6	84.25	5,922.4	727.7	753.8	516.0	237.83	3.170	
13,400.0	6,803.8	13,304.7	6,728.4	120.3	122.5	84.26	6,022.4	727.7	753.8	512.2	241.61	3.120	
13,500.0	6,803.5	13,404.7	6,728.2	122.2	124.4	84.27	6,122.4	727.7	753.8	508.4	245.41	3.072	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-221 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
13,600.0	6,803.2	13,504.7	6,728.1	124.1	126.3	84.28	6,222.4	727.7	753.8	504.6	249.20	3.025	
13,700.0	6,802.8	13,604.7	6,727.9	126.0	128.2	84.30	6,322.4	727.7	753.8	500.8	252.99	2.980	
13,800.0	6,802.5	13,704.7	6,727.8	127.9	130.1	84.31	6,422.4	727.7	753.8	497.0	256.79	2.935	
13,900.0	6,802.2	13,804.7	6,727.6	129.8	132.0	84.32	6,522.4	727.7	753.8	493.2	260.58	2.893	
14,000.0	6,801.9	13,904.7	6,727.5	131.7	133.9	84.33	6,622.4	727.7	753.8	489.4	264.38	2.851	
14,100.0	6,801.6	14,004.7	6,727.3	133.6	135.8	84.34	6,722.4	727.7	753.7	485.6	268.17	2.811	
14,200.0	6,801.3	14,104.7	6,727.1	135.5	137.7	84.36	6,822.4	727.7	753.7	481.8	271.97	2.771	
14,300.0	6,801.0	14,204.7	6,727.0	137.4	139.6	84.37	6,922.4	727.7	753.7	478.0	275.77	2.733	
14,400.0	6,800.6	14,304.7	6,726.8	139.3	141.5	84.38	7,022.4	727.7	753.7	474.1	279.57	2.696	
14,500.0	6,800.3	14,404.7	6,726.7	141.2	143.4	84.39	7,122.4	727.7	753.7	470.3	283.38	2.660	
14,600.0	6,800.0	14,504.7	6,726.5	143.1	145.3	84.40	7,222.4	727.7	753.7	466.5	287.18	2.625	
14,700.0	6,799.7	14,604.7	6,726.4	145.0	147.2	84.42	7,322.4	727.7	753.7	462.7	290.98	2.590	
14,800.0	6,799.4	14,704.7	6,726.2	147.0	149.1	84.43	7,422.4	727.7	753.7	458.9	294.78	2.557	
14,900.0	6,799.1	14,804.7	6,726.0	148.9	151.0	84.44	7,522.4	727.7	753.7	455.1	298.59	2.524	
15,000.0	6,798.8	14,904.7	6,725.9	150.8	152.9	84.45	7,622.4	727.7	753.7	451.3	302.40	2.492	
15,100.0	6,798.4	15,004.7	6,725.7	152.7	154.8	84.46	7,722.4	727.7	753.7	447.4	306.20	2.461	
15,200.0	6,798.1	15,104.7	6,725.6	154.6	156.7	84.48	7,822.4	727.7	753.6	443.6	310.01	2.431	
15,300.0	6,797.8	15,204.7	6,725.4	156.5	158.6	84.49	7,922.4	727.7	753.6	439.8	313.82	2.402	
15,400.0	6,797.5	15,304.7	6,725.3	158.4	160.5	84.50	8,022.4	727.7	753.6	436.0	317.63	2.373	
15,500.0	6,797.2	15,404.7	6,725.1	160.3	162.4	84.51	8,122.4	727.7	753.6	432.2	321.43	2.345	
15,600.0	6,796.9	15,504.7	6,724.9	162.2	164.3	84.52	8,222.4	727.7	753.6	428.4	325.24	2.317	
15,700.0	6,796.6	15,604.7	6,724.8	164.1	166.2	84.54	8,322.4	727.7	753.6	424.5	329.05	2.290	
15,800.0	6,796.2	15,704.7	6,724.6	166.1	168.1	84.55	8,422.4	727.7	753.6	420.7	332.87	2.264	
15,900.0	6,795.9	15,804.7	6,724.5	168.0	170.0	84.56	8,522.4	727.7	753.6	416.9	336.68	2.238	
16,000.0	6,795.6	15,904.7	6,724.3	169.9	171.9	84.57	8,622.4	727.7	753.6	413.1	340.49	2.213	
16,100.0	6,795.3	16,004.7	6,724.2	171.8	173.8	84.58	8,722.4	727.7	753.6	409.3	344.30	2.189	
16,200.0	6,795.0	16,104.7	6,724.0	173.7	175.7	84.59	8,822.4	727.7	753.5	405.4	348.11	2.165	
16,300.0	6,794.7	16,204.7	6,723.9	175.6	177.7	84.61	8,922.4	727.7	753.5	401.6	351.93	2.141	
16,400.0	6,794.4	16,304.7	6,723.7	177.5	179.6	84.62	9,022.4	727.7	753.5	397.8	355.74	2.118	
16,500.0	6,794.0	16,404.7	6,723.5	179.4	181.5	84.63	9,122.4	727.7	753.5	394.0	359.56	2.096	
16,600.0	6,793.7	16,504.7	6,723.4	181.4	183.4	84.64	9,222.4	727.7	753.5	390.1	363.37	2.074	
16,700.0	6,793.4	16,604.7	6,723.2	183.3	185.3	84.65	9,322.4	727.7	753.5	386.3	367.19	2.052	
16,800.0	6,793.1	16,704.7	6,723.1	185.2	187.2	84.67	9,422.4	727.7	753.5	382.5	371.00	2.031	
16,834.0	6,793.0	16,738.7	6,723.0	185.8	187.9	84.67	9,456.4	727.7	753.5	381.2	372.30	2.024	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-301 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-179.36	-75.0	-0.8	75.1				
100.0	100.0	100.0	100.0	0.1	0.1	-179.36	-75.0	-0.8	75.1	74.8	0.22	333.947	
200.0	200.0	200.0	200.0	0.3	0.3	-179.36	-75.0	-0.8	75.1	74.4	0.67	111.309	
300.0	300.0	300.0	300.0	0.6	0.6	-179.36	-75.0	-0.8	75.1	73.9	1.12	66.785	
400.0	400.0	400.0	400.0	0.8	0.8	-179.36	-75.0	-0.8	75.1	73.5	1.57	47.703	
500.0	500.0	500.0	500.0	1.0	1.0	-179.36	-75.0	-0.8	75.1	73.0	2.02	37.102	
600.0	600.0	600.0	600.0	1.2	1.2	-179.36	-75.0	-0.8	75.1	72.6	2.47	30.356	
700.0	700.0	700.0	700.0	1.5	1.5	-179.36	-75.0	-0.8	75.1	72.1	2.92	25.686	
800.0	800.0	800.0	800.0	1.7	1.7	-179.36	-75.0	-0.8	75.1	71.7	3.37	22.261	
900.0	900.0	900.0	900.0	1.9	1.9	-179.36	-75.0	-0.8	75.1	71.2	3.82	19.642	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-179.36	-75.0	-0.8	75.1	70.8	4.27	17.575	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-179.36	-75.0	-0.8	75.1	70.3	4.72	15.901	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-179.36	-75.0	-0.8	75.1	69.9	5.17	14.518	CC, ES
1,300.0	1,300.0	1,298.4	1,298.4	2.8	2.8	-179.91	-76.1	-0.1	76.1	70.5	5.59	13.615	
1,400.0	1,400.0	1,396.7	1,396.6	3.0	3.0	178.54	-79.2	2.0	79.3	73.3	5.99	13.237	
1,500.0	1,500.0	1,494.7	1,494.4	3.3	3.1	176.22	-84.4	5.6	84.8	78.4	6.40	13.245	
1,600.0	1,600.0	1,592.3	1,591.6	3.5	3.3	173.45	-91.7	10.5	92.6	85.8	6.82	13.588	
1,700.0	1,700.0	1,689.4	1,688.0	3.7	3.6	170.53	-100.9	16.8	103.0	95.7	7.24	14.224	
1,800.0	1,800.0	1,785.9	1,783.6	3.9	3.8	167.69	-112.1	24.5	115.9	108.2	7.67	15.115	
1,900.0	1,900.0	1,881.6	1,878.0	4.2	4.1	165.06	-125.1	33.4	131.4	123.3	8.10	16.224	
2,000.0	2,000.0	1,976.5	1,971.1	4.4	4.3	162.72	-140.0	43.5	149.4	140.9	8.53	17.517	
2,100.0	2,100.0	2,073.6	2,066.2	4.6	4.7	160.69	-156.5	54.8	169.2	160.3	8.97	18.867	
2,200.0	2,200.0	2,171.5	2,162.0	4.8	5.0	159.07	-173.2	66.2	189.3	179.9	9.41	20.112	
2,300.0	2,300.0	2,269.3	2,257.7	5.1	5.4	157.76	-189.8	77.6	209.4	199.6	9.85	21.250	
2,400.0	2,400.0	2,367.2	2,353.4	5.3	5.8	156.68	-206.5	89.0	229.7	219.4	10.30	22.292	
2,500.0	2,500.0	2,465.0	2,449.2	5.5	6.2	155.78	-223.2	100.4	250.0	239.2	10.75	23.247	
2,600.0	2,600.0	2,563.1	2,545.1	5.7	6.6	-26.61	-239.9	111.8	269.2	258.0	11.19	24.053	
2,700.0	2,699.9	2,661.5	2,641.4	5.9	7.0	-27.51	-256.7	123.3	286.1	274.5	11.59	24.687	
2,800.0	2,799.7	2,760.2	2,738.0	6.0	7.4	-28.55	-273.5	134.8	300.9	288.9	11.99	25.092	
2,900.0	2,899.3	2,859.2	2,834.9	6.2	7.8	-29.73	-290.4	146.3	313.6	301.2	12.40	25.293	
3,000.0	2,998.6	2,958.3	2,931.9	6.4	8.2	-31.07	-307.2	157.8	324.1	311.3	12.80	25.312	
3,100.0	3,097.5	3,057.6	3,029.0	6.6	8.7	-32.56	-324.1	169.4	332.7	319.4	13.22	25.165	
3,200.0	3,196.1	3,156.8	3,126.1	6.8	9.1	-34.23	-341.1	180.9	339.3	325.6	13.64	24.865	
3,300.0	3,294.2	3,256.0	3,223.2	7.1	9.5	-36.10	-358.0	192.5	344.1	330.0	14.09	24.422	
3,400.0	3,391.7	3,355.2	3,320.2	7.4	10.0	-38.19	-374.9	204.0	347.2	332.6	14.56	23.845	
3,500.0	3,488.6	3,454.1	3,417.0	7.7	10.4	-40.52	-391.7	215.6	348.8	333.7	15.07	23.141	
3,600.0	3,584.9	3,552.8	3,513.6	8.0	10.8	-43.11	-408.5	227.1	349.0	333.4	15.64	22.318	
3,700.0	3,680.4	3,651.2	3,609.8	8.4	11.3	-46.00	-425.3	238.5	348.2	331.9	16.28	21.386	
3,738.6	3,717.0	3,689.1	3,646.9	8.6	11.4	-47.20	-431.7	242.9	347.7	331.1	16.56	21.000	
3,800.0	3,775.2	3,749.3	3,705.8	8.8	11.7	-49.14	-442.0	249.9	346.9	329.9	17.03	20.367	
3,880.6	3,851.6	3,828.3	3,783.1	9.2	12.1	-51.69	-455.5	259.1	346.6	328.9	17.70	19.578	
3,900.0	3,870.0	3,847.4	3,801.8	9.3	12.1	-52.31	-458.7	261.4	346.6	328.7	17.87	19.396	
4,000.0	3,964.8	3,945.4	3,897.7	9.8	12.6	-55.47	-475.4	272.8	347.4	328.6	18.77	18.503	
4,100.0	4,059.6	4,043.5	3,993.7	10.3	13.0	-58.61	-492.1	284.2	349.2	329.5	19.74	17.690	
4,200.0	4,154.4	4,141.6	4,089.7	10.8	13.5	-61.71	-508.8	295.6	352.2	331.4	20.77	16.957	
4,300.0	4,249.2	4,239.7	4,185.6	11.3	13.9	-64.76	-525.6	307.0	356.1	334.3	21.84	16.305	
4,400.0	4,343.9	4,337.7	4,281.6	11.9	14.3	-67.73	-542.3	318.4	361.1	338.2	22.96	15.730	
4,500.0	4,438.7	4,435.8	4,377.5	12.4	14.8	-70.61	-559.0	329.9	367.1	343.0	24.11	15.229	
4,600.0	4,533.5	4,533.9	4,473.5	13.0	15.2	-73.40	-575.7	341.3	374.0	348.8	25.28	14.797	
4,700.0	4,628.3	4,631.9	4,569.4	13.5	15.7	-76.08	-592.4	352.7	381.8	355.4	26.47	14.427	
4,800.0	4,723.1	4,730.0	4,665.4	14.1	16.1	-78.66	-609.1	364.1	390.4	362.8	27.66	14.115	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-301 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
4,900.0	4,817.9	4,828.1	4,761.4	14.7	16.6	-81.12	-625.8	375.5	399.8	371.0	28.86	13.855	
5,000.0	4,912.7	4,926.1	4,857.3	15.3	17.0	-83.47	-642.5	387.0	409.9	379.9	30.05	13.640	
5,078.7	4,987.3	5,003.3	4,932.8	15.8	17.4	-85.23	-655.7	395.9	418.3	387.3	30.99	13.500	
5,100.0	5,007.5	5,024.2	4,953.3	15.9	17.5	-85.74	-659.2	398.4	420.7	389.5	31.23	13.472	
5,200.0	5,103.0	5,122.6	5,049.6	16.3	17.9	-87.77	-676.0	409.8	432.2	399.9	32.24	13.404	
5,300.0	5,199.6	5,221.4	5,146.3	16.7	18.4	-89.28	-692.8	421.3	444.1	410.9	33.18	13.383	
5,400.0	5,296.9	5,320.5	5,243.2	17.1	18.8	-90.30	-709.7	432.9	456.2	422.2	34.06	13.396	
5,500.0	5,395.0	5,423.0	5,343.6	17.4	19.2	-90.87	-727.0	444.7	468.3	433.4	34.84	13.441	
5,600.0	5,493.8	5,532.7	5,451.5	17.8	19.6	-91.27	-742.9	455.5	478.6	443.1	35.49	13.485	
5,700.0	5,593.0	5,642.8	5,560.6	18.0	19.9	-91.57	-755.4	464.1	486.7	450.6	36.07	13.495	
5,800.0	5,692.6	5,753.2	5,670.4	18.3	20.1	-91.79	-764.4	470.3	492.6	456.0	36.56	13.474	
5,900.0	5,792.4	5,863.9	5,780.9	18.5	20.3	-91.92	-770.0	474.1	496.2	459.2	36.97	13.422	
6,007.6	5,900.0	5,983.0	5,900.0	18.6	20.5	89.66	-772.0	475.5	497.5	460.1	37.32	13.329	
6,100.0	5,992.4	6,075.4	5,992.4	18.8	20.6	89.66	-772.0	475.5	497.5	459.9	37.57	13.241	
6,142.5	6,034.9	6,117.9	6,034.9	18.8	20.6	89.66	-772.0	475.5	497.5	459.8	37.68	13.201	
6,166.4	6,058.8	6,141.8	6,058.8	18.9	20.7	89.66	-772.0	475.5	497.5	459.7	37.75	13.179	
6,200.0	6,092.4	6,175.3	6,092.2	18.9	20.7	89.64	-771.1	475.5	497.5	459.7	37.82	13.154	
6,250.0	6,142.2	6,225.0	6,141.8	18.9	20.7	89.60	-767.0	475.5	497.5	459.6	37.87	13.135	
6,300.0	6,191.7	6,274.8	6,191.0	18.9	20.7	89.57	-759.6	475.5	497.5	459.6	37.86	13.140	
6,350.0	6,240.6	6,324.5	6,239.6	18.9	20.7	89.54	-749.1	475.5	497.5	459.7	37.78	13.168	
6,400.0	6,288.8	6,374.3	6,287.4	18.8	20.6	89.51	-735.5	475.5	497.5	459.8	37.64	13.217	
6,450.0	6,335.9	6,424.0	6,334.2	18.7	20.5	89.48	-718.7	475.5	497.5	460.0	37.44	13.287	
6,500.0	6,381.9	6,473.7	6,379.8	18.5	20.4	89.45	-699.0	475.5	497.5	460.3	37.20	13.375	
6,550.0	6,426.5	6,523.4	6,424.1	18.4	20.3	89.43	-676.4	475.5	497.5	460.6	36.91	13.480	
6,600.0	6,469.5	6,573.0	6,466.7	18.2	20.2	89.41	-650.9	475.5	497.5	460.9	36.58	13.599	
6,650.0	6,510.7	6,622.7	6,507.6	18.0	20.0	89.39	-622.7	475.5	497.5	461.3	36.23	13.731	
6,700.0	6,550.0	6,672.3	6,546.5	17.8	19.9	89.38	-591.9	475.5	497.5	461.6	35.86	13.872	
6,750.0	6,587.3	6,722.0	6,583.4	17.6	19.7	89.36	-558.7	475.5	497.5	462.0	35.49	14.018	
6,800.0	6,622.2	6,771.6	6,618.0	17.4	19.5	89.35	-523.2	475.5	497.5	462.4	35.12	14.165	
6,850.0	6,654.7	6,821.2	6,650.3	17.2	19.4	89.34	-485.5	475.5	497.5	462.7	34.77	14.307	
6,900.0	6,684.7	6,870.9	6,680.0	17.0	19.2	89.34	-445.7	475.5	497.5	463.1	34.45	14.440	
6,950.0	6,712.0	6,920.5	6,707.1	16.8	19.0	89.34	-404.2	475.5	497.5	463.3	34.18	14.557	
7,000.0	6,736.5	6,970.1	6,731.4	16.6	18.9	89.34	-360.9	475.5	497.5	463.6	33.95	14.653	
7,050.0	6,758.1	7,019.8	6,752.9	16.5	18.7	89.34	-316.2	475.5	497.5	463.7	33.79	14.722	
7,100.0	6,776.8	7,069.4	6,771.4	16.4	18.6	89.35	-270.2	475.5	497.5	463.8	33.71	14.759	
7,150.0	6,792.3	7,119.0	6,786.9	16.4	18.5	89.36	-223.0	475.5	497.5	463.8	33.71	14.760	
7,200.0	6,804.7	7,168.7	6,799.3	16.4	18.4	89.37	-175.0	475.5	497.5	463.7	33.79	14.722	
7,250.0	6,813.9	7,218.3	6,808.6	16.4	18.3	89.38	-126.2	475.5	497.5	463.6	33.97	14.644	
7,300.0	6,819.9	7,268.0	6,814.7	16.5	18.2	89.40	-76.9	475.5	497.5	463.3	34.25	14.528	
7,350.0	6,822.6	7,317.6	6,817.5	16.7	18.3	89.42	-27.3	475.5	497.5	462.9	34.61	14.375	
7,368.8	6,822.7	7,336.3	6,817.8	16.7	18.3	89.43	-8.7	475.5	497.5	462.8	34.77	14.309	
7,400.0	6,822.6	7,367.5	6,817.7	16.9	18.4	89.43	22.5	475.5	497.5	462.5	35.08	14.184	
7,500.0	6,822.3	7,467.5	6,817.4	17.4	18.9	89.44	122.5	475.5	497.5	461.2	36.30	13.707	
7,600.0	6,822.0	7,567.5	6,817.2	18.1	19.7	89.44	222.5	475.5	497.5	459.7	37.86	13.141	
7,700.0	6,821.7	7,667.5	6,816.9	19.0	20.7	89.45	322.5	475.5	497.5	457.8	39.73	12.522	
7,800.0	6,821.4	7,767.5	6,816.7	20.1	21.9	89.46	422.5	475.5	497.6	455.7	41.88	11.881	
7,900.0	6,821.1	7,867.5	6,816.4	21.3	23.2	89.46	522.5	475.5	497.6	453.3	44.25	11.243	
8,000.0	6,820.8	7,967.5	6,816.1	22.5	24.5	89.47	622.5	475.5	497.6	450.7	46.82	10.626	
8,100.0	6,820.4	8,067.5	6,815.9	23.9	25.9	89.47	722.5	475.5	497.6	448.0	49.56	10.040	
8,200.0	6,820.1	8,167.5	6,815.6	25.3	27.4	89.48	822.5	475.5	497.6	445.1	52.43	9.490	
8,300.0	6,819.8	8,267.5	6,815.4	26.8	28.9	89.49	922.5	475.5	497.6	442.2	55.43	8.977	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-301 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
8,400.0	6,819.5	8,367.5	6,815.1	28.3	30.5	89.49	1,022.5	475.5	497.6	439.1	58.52	8.503	
8,500.0	6,819.2	8,467.5	6,814.8	29.9	32.1	89.50	1,122.5	475.5	497.6	435.9	61.69	8.066	
8,600.0	6,818.9	8,567.5	6,814.6	31.6	33.7	89.50	1,222.5	475.5	497.6	432.7	64.94	7.662	
8,700.0	6,818.6	8,667.5	6,814.3	33.2	35.3	89.51	1,322.5	475.5	497.6	429.3	68.25	7.291	
8,800.0	6,818.2	8,767.5	6,814.0	34.9	37.0	89.52	1,422.5	475.5	497.6	426.0	71.61	6.949	
8,900.0	6,817.9	8,867.5	6,813.8	36.6	38.7	89.52	1,522.5	475.5	497.6	422.6	75.02	6.633	
9,000.0	6,817.6	8,967.5	6,813.5	38.3	40.4	89.53	1,622.5	475.5	497.6	419.1	78.47	6.341	
9,100.0	6,817.3	9,067.5	6,813.3	40.1	42.2	89.54	1,722.5	475.5	497.6	415.7	81.95	6.072	
9,200.0	6,817.0	9,167.5	6,813.0	41.8	43.9	89.54	1,822.5	475.5	497.6	412.2	85.47	5.822	
9,300.0	6,816.7	9,267.5	6,812.7	43.6	45.7	89.55	1,922.5	475.5	497.6	408.6	89.01	5.591	
9,400.0	6,816.4	9,367.5	6,812.5	45.4	47.5	89.55	2,022.5	475.5	497.6	405.1	92.57	5.375	
9,500.0	6,816.0	9,467.5	6,812.2	47.2	49.3	89.56	2,122.5	475.5	497.6	401.5	96.16	5.175	
9,600.0	6,815.7	9,567.5	6,812.0	49.0	51.0	89.57	2,222.5	475.5	497.6	397.9	99.77	4.988	
9,700.0	6,815.4	9,667.5	6,811.7	50.8	52.9	89.57	2,322.5	475.5	497.6	394.3	103.39	4.813	
9,800.0	6,815.1	9,767.5	6,811.4	52.6	54.7	89.58	2,422.5	475.5	497.7	390.6	107.03	4.650	
9,900.0	6,814.8	9,867.5	6,811.2	54.5	56.5	89.58	2,522.5	475.5	497.7	387.0	110.68	4.496	
10,000.0	6,814.5	9,967.5	6,810.9	56.3	58.3	89.59	2,622.5	475.5	497.7	383.3	114.34	4.352	
10,100.0	6,814.2	10,067.5	6,810.6	58.1	60.1	89.60	2,722.5	475.5	497.7	379.6	118.02	4.217	
10,200.0	6,813.8	10,167.5	6,810.4	60.0	62.0	89.60	2,822.5	475.5	497.7	376.0	121.70	4.089	
10,300.0	6,813.5	10,267.5	6,810.1	61.8	63.8	89.61	2,922.5	475.5	497.7	372.3	125.40	3.969	
10,400.0	6,813.2	10,367.5	6,809.9	63.7	65.7	89.61	3,022.5	475.5	497.7	368.6	129.10	3.855	
10,500.0	6,812.9	10,467.5	6,809.6	65.5	67.5	89.62	3,122.5	475.5	497.7	364.9	132.81	3.747	
10,600.0	6,812.6	10,567.5	6,809.3	67.4	69.4	89.63	3,222.5	475.5	497.7	361.2	136.53	3.645	
10,700.0	6,812.3	10,667.5	6,809.1	69.3	71.2	89.63	3,322.5	475.5	497.7	357.4	140.26	3.549	
10,800.0	6,812.0	10,767.5	6,808.8	71.1	73.1	89.64	3,422.5	475.5	497.7	353.7	143.99	3.457	
10,900.0	6,811.6	10,867.5	6,808.5	73.0	74.9	89.64	3,522.5	475.5	497.7	350.0	147.72	3.369	
11,000.0	6,811.3	10,967.5	6,808.3	74.9	76.8	89.65	3,622.5	475.5	497.7	346.2	151.47	3.286	
11,100.0	6,811.0	11,067.5	6,808.0	76.7	78.7	89.66	3,722.5	475.5	497.7	342.5	155.21	3.207	
11,200.0	6,810.7	11,167.5	6,807.8	78.6	80.5	89.66	3,822.5	475.5	497.7	338.8	158.96	3.131	
11,300.0	6,810.4	11,267.5	6,807.5	80.5	82.4	89.67	3,922.5	475.5	497.7	335.0	162.72	3.059	
11,400.0	6,810.1	11,367.5	6,807.2	82.4	84.3	89.67	4,022.5	475.5	497.7	331.3	166.48	2.990	
11,500.0	6,809.8	11,467.5	6,807.0	84.3	86.2	89.68	4,122.5	475.5	497.7	327.5	170.24	2.924	
11,600.0	6,809.4	11,567.5	6,806.7	86.2	88.0	89.69	4,222.5	475.5	497.7	323.7	174.01	2.860	
11,700.0	6,809.1	11,667.5	6,806.5	88.0	89.9	89.69	4,322.5	475.5	497.7	320.0	177.78	2.800	
11,800.0	6,808.8	11,767.5	6,806.2	89.9	91.8	89.70	4,422.5	475.5	497.8	316.2	181.55	2.742	
11,900.0	6,808.5	11,867.5	6,805.9	91.8	93.7	89.70	4,522.5	475.5	497.8	312.4	185.33	2.686	
12,000.0	6,808.2	11,967.5	6,805.7	93.7	95.6	89.71	4,622.5	475.5	497.8	308.7	189.10	2.632	
12,100.0	6,807.9	12,067.5	6,805.4	95.6	97.5	89.72	4,722.5	475.5	497.8	304.9	192.88	2.581	
12,200.0	6,807.6	12,167.5	6,805.1	97.5	99.4	89.72	4,822.5	475.5	497.8	301.1	196.67	2.531	
12,300.0	6,807.2	12,267.5	6,804.9	99.4	101.2	89.73	4,922.5	475.5	497.8	297.3	200.45	2.483	
12,400.0	6,806.9	12,367.5	6,804.6	101.3	103.1	89.73	5,022.5	475.5	497.8	293.5	204.24	2.437	
12,500.0	6,806.6	12,467.5	6,804.4	103.2	105.0	89.74	5,122.5	475.5	497.8	289.8	208.03	2.393	
12,600.0	6,806.3	12,567.5	6,804.1	105.1	106.9	89.75	5,222.5	475.5	497.8	286.0	211.82	2.350	
12,700.0	6,806.0	12,667.5	6,803.8	107.0	108.8	89.75	5,322.5	475.5	497.8	282.2	215.61	2.309	
12,800.0	6,805.7	12,767.5	6,803.6	108.9	110.7	89.76	5,422.5	475.5	497.8	278.4	219.41	2.269	
12,900.0	6,805.4	12,867.5	6,803.3	110.8	112.6	89.76	5,522.5	475.5	497.8	274.6	223.20	2.230	
13,000.0	6,805.0	12,967.5	6,803.0	112.7	114.5	89.77	5,622.5	475.5	497.8	270.8	227.00	2.193	
13,100.0	6,804.7	13,067.5	6,802.8	114.6	116.4	89.78	5,722.5	475.5	497.8	267.0	230.80	2.157	
13,200.0	6,804.4	13,167.5	6,802.5	116.5	118.3	89.78	5,822.5	475.5	497.8	263.2	234.60	2.122	
13,300.0	6,804.1	13,267.5	6,802.3	118.4	120.2	89.79	5,922.5	475.5	497.8	259.4	238.40	2.088	
13,400.0	6,803.8	13,367.5	6,802.0	120.3	122.1	89.79	6,022.5	475.5	497.8	255.6	242.21	2.055	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-301 - Wellbore #1 - Plan #1 (9-10-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
13,500.0	6,803.5	13,467.5	6,801.7	122.2	124.0	89.80	6,122.5	475.5	497.8	251.8	246.01	2.024	
13,600.0	6,803.2	13,567.5	6,801.5	124.1	125.9	89.81	6,222.5	475.5	497.8	248.0	249.82	1.993	
13,700.0	6,802.8	13,667.5	6,801.2	126.0	127.8	89.81	6,322.5	475.5	497.9	244.2	253.62	1.963	
13,800.0	6,802.5	13,767.5	6,801.0	127.9	129.7	89.82	6,422.5	475.5	497.9	240.4	257.43	1.934	
13,900.0	6,802.2	13,867.5	6,800.7	129.8	131.6	89.82	6,522.5	475.5	497.9	236.6	261.24	1.906	
14,000.0	6,801.9	13,967.5	6,800.4	131.7	133.5	89.83	6,622.5	475.5	497.9	232.8	265.05	1.878	
14,100.0	6,801.6	14,067.5	6,800.2	133.6	135.4	89.84	6,722.5	475.5	497.9	229.0	268.86	1.852	
14,200.0	6,801.3	14,167.5	6,799.9	135.5	137.3	89.84	6,822.5	475.5	497.9	225.2	272.67	1.826	
14,300.0	6,801.0	14,267.5	6,799.6	137.4	139.2	89.85	6,922.5	475.5	497.9	221.4	276.48	1.801	
14,400.0	6,800.6	14,367.5	6,799.4	139.3	141.1	89.85	7,022.5	475.5	497.9	217.6	280.29	1.776	
14,500.0	6,800.3	14,467.5	6,799.1	141.2	143.0	89.86	7,122.5	475.5	497.9	213.8	284.11	1.752	
14,600.0	6,800.0	14,567.5	6,798.9	143.1	144.9	89.87	7,222.5	475.5	497.9	210.0	287.92	1.729	
14,700.0	6,799.7	14,667.5	6,798.6	145.0	146.8	89.87	7,322.5	475.5	497.9	206.2	291.74	1.707	
14,800.0	6,799.4	14,767.5	6,798.3	147.0	148.7	89.88	7,422.5	475.5	497.9	202.4	295.55	1.685	
14,900.0	6,799.1	14,867.5	6,798.1	148.9	150.6	89.88	7,522.5	475.5	497.9	198.5	299.37	1.663	
15,000.0	6,798.8	14,967.5	6,797.8	150.8	152.5	89.89	7,622.5	475.5	497.9	194.7	303.19	1.642	
15,100.0	6,798.4	15,067.5	6,797.6	152.7	154.4	89.90	7,722.5	475.5	497.9	190.9	307.00	1.622	
15,200.0	6,798.1	15,167.5	6,797.3	154.6	156.4	89.90	7,822.5	475.5	497.9	187.1	310.82	1.602	
15,300.0	6,797.8	15,267.5	6,797.0	156.5	158.3	89.91	7,922.5	475.5	497.9	183.3	314.64	1.583	
15,400.0	6,797.5	15,367.5	6,796.8	158.4	160.2	89.92	8,022.5	475.5	497.9	179.5	318.46	1.564	
15,500.0	6,797.2	15,467.5	6,796.5	160.3	162.1	89.92	8,122.5	475.5	497.9	175.7	322.28	1.545	
15,600.0	6,796.9	15,567.5	6,796.2	162.2	164.0	89.93	8,222.5	475.5	498.0	171.9	326.10	1.527	
15,700.0	6,796.6	15,667.5	6,796.0	164.1	165.9	89.93	8,322.5	475.5	498.0	168.0	329.92	1.509	
15,800.0	6,796.2	15,767.5	6,795.7	166.1	167.8	89.94	8,422.5	475.5	498.0	164.2	333.74	1.492	Level 3
15,900.0	6,795.9	15,867.5	6,795.5	168.0	169.7	89.95	8,522.5	475.5	498.0	160.4	337.56	1.475	Level 3
16,000.0	6,795.6	15,967.5	6,795.2	169.9	171.6	89.95	8,622.5	475.5	498.0	156.6	341.38	1.459	Level 3
16,100.0	6,795.3	16,067.5	6,794.9	171.8	173.5	89.96	8,722.5	475.5	498.0	152.8	345.21	1.443	Level 3
16,200.0	6,795.0	16,167.5	6,794.7	173.7	175.4	89.96	8,822.5	475.5	498.0	149.0	349.03	1.427	Level 3
16,300.0	6,794.7	16,267.5	6,794.4	175.6	177.3	89.97	8,922.5	475.5	498.0	145.1	352.85	1.411	Level 3
16,400.0	6,794.4	16,367.5	6,794.1	177.5	179.3	89.98	9,022.5	475.5	498.0	141.3	356.68	1.396	Level 3
16,500.0	6,794.0	16,467.5	6,793.9	179.4	181.2	89.98	9,122.5	475.5	498.0	137.5	360.50	1.381	Level 3
16,600.0	6,793.7	16,567.5	6,793.6	181.4	183.1	89.99	9,222.5	475.5	498.0	133.7	364.32	1.367	Level 3
16,700.0	6,793.4	16,667.5	6,793.4	183.3	185.0	89.99	9,322.5	475.5	498.0	129.9	368.15	1.353	Level 3
16,800.0	6,793.1	16,767.5	6,793.1	185.2	186.9	90.00	9,422.5	475.5	498.0	126.0	371.97	1.339	Level 3
16,834.0	6,793.0	16,801.5	6,793.0	185.8	187.6	90.00	9,456.5	475.5	498.0	124.7	373.28	1.334	Level 3, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7Q-221 - Wellbore #1 - Plan #1 (9-11-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-179.47	-150.1	-1.4	150.1				
100.0	100.0	100.0	100.0	0.1	0.1	-179.47	-150.1	-1.4	150.1	149.9	0.22	667.882	
200.0	200.0	200.0	200.0	0.3	0.3	-179.47	-150.1	-1.4	150.1	149.4	0.67	222.614	CC
300.0	300.0	298.8	298.7	0.6	0.5	-179.93	-150.5	-0.2	150.5	149.4	1.11	136.008	ES
400.0	400.0	397.4	397.3	0.8	0.8	178.70	-151.7	3.4	151.8	150.3	1.54	98.455	
500.0	500.0	495.8	495.5	1.0	1.0	176.49	-153.8	9.4	154.1	152.1	1.99	77.272	
600.0	600.0	593.7	593.0	1.2	1.2	173.52	-156.6	17.8	157.8	155.3	2.47	64.011	
700.0	700.0	691.2	689.8	1.5	1.5	169.93	-160.3	28.5	163.1	160.1	2.95	55.242	
800.0	800.0	788.0	785.7	1.7	1.8	165.90	-164.7	41.4	170.4	166.9	3.45	49.328	
900.0	900.0	884.1	880.4	1.9	2.2	161.61	-169.8	56.4	180.0	176.0	3.97	45.387	
1,000.0	1,000.0	979.3	973.9	2.1	2.5	157.27	-175.6	73.6	192.2	187.7	4.48	42.881	
1,100.0	1,100.0	1,073.5	1,065.9	2.4	3.0	153.02	-182.2	92.7	207.2	202.2	5.00	41.452	
1,200.0	1,200.0	1,166.7	1,156.4	2.6	3.4	148.99	-189.3	113.8	225.1	219.6	5.51	40.844	SF
1,300.0	1,300.0	1,258.6	1,245.1	2.8	3.9	145.28	-197.1	136.6	246.0	240.0	6.02	40.864	
1,400.0	1,400.0	1,349.4	1,332.1	3.0	4.4	141.90	-205.4	161.1	269.7	263.2	6.52	41.365	
1,500.0	1,500.0	1,438.8	1,417.2	3.3	5.0	138.87	-214.3	187.1	296.3	289.3	7.02	42.234	
1,600.0	1,600.0	1,526.9	1,500.4	3.5	5.6	136.18	-223.6	214.6	325.6	318.1	7.50	43.383	
1,700.0	1,700.0	1,613.5	1,581.4	3.7	6.2	133.81	-233.4	243.4	357.5	349.5	7.99	44.746	
1,800.0	1,800.0	1,700.0	1,661.7	3.9	6.8	131.68	-243.8	273.8	391.9	383.4	8.47	46.247	
1,900.0	1,900.0	1,782.2	1,737.3	4.2	7.5	129.87	-254.2	304.4	428.6	419.7	8.95	47.900	
2,000.0	2,000.0	1,866.1	1,813.8	4.4	8.2	128.21	-265.4	337.1	467.7	458.3	9.43	49.591	
2,100.0	2,100.0	1,956.9	1,896.3	4.6	9.0	126.65	-277.6	373.1	507.7	497.7	9.93	51.135	
2,200.0	2,200.0	2,047.8	1,978.8	4.8	9.8	125.32	-289.8	409.0	547.9	537.5	10.42	52.568	
2,300.0	2,300.0	2,138.6	2,061.3	5.1	10.6	124.17	-302.1	445.0	588.4	577.5	10.92	53.887	
2,400.0	2,400.0	2,229.5	2,143.9	5.3	11.4	123.17	-314.3	480.9	629.0	617.6	11.42	55.100	
2,500.0	2,500.0	2,320.3	2,226.4	5.5	12.2	122.29	-326.6	516.9	669.8	657.9	11.92	56.216	
2,600.0	2,600.0	2,411.3	2,309.0	5.7	13.1	-59.65	-338.8	552.9	710.1	697.6	12.54	56.641	
2,700.0	2,699.9	2,502.5	2,391.9	5.9	13.9	-60.07	-351.1	589.0	749.4	736.3	13.03	57.529	
2,800.0	2,799.7	2,594.0	2,475.0	6.0	14.7	-60.58	-363.5	625.2	787.6	774.1	13.51	58.298	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7Q-241 - Wellbore #1 - Plan #1 (9-11-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-179.47	-119.9	-1.1	119.9				
100.0	100.0	100.0	100.0	0.1	0.1	-179.47	-119.9	-1.1	119.9	119.6	0.22	533.333	
200.0	200.0	200.0	200.0	0.3	0.3	-179.47	-119.9	-1.1	119.9	119.2	0.67	177.767	
300.0	300.0	300.0	300.0	0.6	0.6	-179.47	-119.9	-1.1	119.9	118.7	1.12	106.659	
400.0	400.0	400.0	400.0	0.8	0.8	-179.47	-119.9	-1.1	119.9	118.3	1.57	76.184	
500.0	500.0	500.0	500.0	1.0	1.0	-179.47	-119.9	-1.1	119.9	117.8	2.02	59.254	
600.0	600.0	600.0	600.0	1.2	1.2	-179.47	-119.9	-1.1	119.9	117.4	2.47	48.481	CC, ES
700.0	700.0	698.6	698.6	1.5	1.4	179.99	-120.4	0.0	120.4	117.5	2.90	41.529	
800.0	800.0	797.1	797.0	1.7	1.6	178.39	-122.1	3.4	122.2	118.9	3.32	36.829	
900.0	900.0	895.3	895.0	1.9	1.8	175.85	-125.0	9.1	125.4	121.7	3.75	33.445	
1,000.0	1,000.0	993.1	992.4	2.1	2.1	172.52	-129.0	16.9	130.3	126.1	4.19	31.061	
1,100.0	1,100.0	1,090.5	1,089.1	2.4	2.3	168.62	-134.0	27.0	137.1	132.5	4.65	29.483	
1,200.0	1,200.0	1,187.1	1,184.8	2.6	2.6	164.41	-140.1	39.1	146.3	141.2	5.12	28.578	
1,300.0	1,300.0	1,283.1	1,279.4	2.8	2.9	160.11	-147.3	53.3	158.0	152.4	5.59	28.246	SF
1,400.0	1,400.0	1,378.1	1,372.7	3.0	3.2	155.93	-155.4	69.4	172.4	166.3	6.07	28.398	
1,500.0	1,500.0	1,472.2	1,464.7	3.3	3.6	152.01	-164.5	87.4	189.6	183.0	6.55	28.956	
1,600.0	1,600.0	1,565.2	1,555.0	3.5	4.0	148.43	-174.5	107.2	209.7	202.6	7.02	29.846	
1,700.0	1,700.0	1,657.1	1,643.7	3.7	4.5	145.22	-185.3	128.7	232.5	225.0	7.50	31.004	
1,800.0	1,800.0	1,747.8	1,730.6	3.9	5.0	142.38	-196.9	151.7	258.1	250.1	7.97	32.375	
1,900.0	1,900.0	1,837.1	1,815.6	4.2	5.5	139.90	-209.2	176.2	286.3	277.8	8.44	33.912	
2,000.0	2,000.0	1,926.7	1,900.2	4.4	6.1	137.69	-222.5	202.5	317.0	308.1	8.91	35.563	
2,100.0	2,100.0	2,020.9	1,989.0	4.6	6.7	135.74	-236.7	230.7	348.6	339.2	9.39	37.109	
2,200.0	2,200.0	2,115.2	2,077.8	4.8	7.3	134.11	-250.9	258.8	380.6	370.7	9.87	38.546	
2,300.0	2,300.0	2,209.4	2,166.6	5.1	7.9	132.73	-265.1	287.0	412.8	402.5	10.36	39.867	
2,400.0	2,400.0	2,303.6	2,255.4	5.3	8.6	131.54	-279.3	315.2	445.2	434.4	10.84	41.082	
2,500.0	2,500.0	2,397.9	2,344.2	5.5	9.2	130.52	-293.5	343.3	477.8	466.4	11.32	42.199	
2,600.0	2,600.0	2,492.3	2,433.2	5.7	9.9	-51.72	-307.7	371.5	509.7	497.8	11.86	42.984	
2,700.0	2,699.9	2,587.0	2,522.4	5.9	10.6	-52.46	-321.9	399.8	540.2	527.9	12.31	43.895	
2,800.0	2,799.7	2,681.9	2,611.9	6.0	11.2	-53.32	-336.3	428.2	569.4	556.6	12.75	44.646	
2,900.0	2,899.3	2,777.1	2,701.6	6.2	11.9	-54.27	-350.6	456.7	597.4	584.2	13.20	45.253	
3,000.0	2,998.6	2,872.3	2,791.3	6.4	12.6	-55.32	-364.9	485.1	624.2	610.5	13.65	45.724	
3,100.0	3,097.5	2,967.6	2,881.1	6.6	13.2	-56.46	-379.3	513.6	649.9	635.8	14.11	46.061	
3,200.0	3,196.1	3,062.9	2,970.9	6.8	13.9	-57.68	-393.6	542.1	674.7	660.1	14.58	46.265	
3,300.0	3,294.2	3,158.1	3,060.6	7.1	14.6	-58.97	-408.0	570.5	698.6	683.6	15.08	46.329	
3,400.0	3,391.7	3,253.1	3,150.2	7.4	15.2	-60.34	-422.3	598.9	721.8	706.2	15.61	46.249	
3,500.0	3,488.6	3,348.0	3,239.5	7.7	15.9	-61.78	-436.6	627.3	744.4	728.2	16.17	46.021	
3,600.0	3,584.9	3,442.5	3,328.6	8.0	16.6	-63.29	-450.8	655.5	766.4	749.7	16.79	45.641	
3,700.0	3,680.4	3,536.7	3,417.4	8.4	17.3	-64.85	-465.0	683.7	788.2	770.7	17.47	45.111	
3,738.6	3,717.0	3,573.0	3,451.5	8.6	17.5	-65.46	-470.5	694.5	796.5	778.7	17.75	44.869	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7Q-301 - Wellbore #1 - Plan #1 (9-11-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-179.41	-135.2	-1.4	135.2				
100.0	100.0	100.0	100.0	0.1	0.1	-179.41	-135.2	-1.4	135.2	134.9	0.22	601.424	
200.0	200.0	200.0	200.0	0.3	0.3	-179.41	-135.2	-1.4	135.2	134.5	0.67	200.462	
300.0	300.0	300.0	300.0	0.6	0.6	-179.41	-135.2	-1.4	135.2	134.0	1.12	120.276	
400.0	400.0	400.0	400.0	0.8	0.8	-179.41	-135.2	-1.4	135.2	133.6	1.57	85.911	CC, ES
500.0	500.0	498.7	498.7	1.0	1.0	-179.91	-135.6	-0.2	135.7	133.7	2.00	67.730	
600.0	600.0	597.2	597.1	1.2	1.2	178.62	-137.1	3.3	137.2	134.7	2.43	56.503	
700.0	700.0	695.5	695.2	1.5	1.4	176.24	-139.5	9.2	139.9	137.0	2.87	48.788	
800.0	800.0	793.4	792.7	1.7	1.6	173.09	-142.9	17.3	144.1	140.8	3.32	43.371	
900.0	900.0	890.8	889.4	1.9	1.9	169.34	-147.2	27.7	150.2	146.4	3.79	39.581	
1,000.0	1,000.0	987.5	985.2	2.1	2.2	165.20	-152.4	40.3	158.3	154.1	4.28	37.020	
1,100.0	1,100.0	1,083.5	1,079.9	2.4	2.5	160.87	-158.5	55.0	168.9	164.2	4.77	35.428	
1,200.0	1,200.0	1,178.6	1,173.2	2.6	2.9	156.57	-165.4	71.7	182.2	177.0	5.26	34.614	
1,300.0	1,300.0	1,272.8	1,265.2	2.8	3.3	152.44	-173.1	90.3	198.4	192.6	5.76	34.428	SF
1,400.0	1,400.0	1,365.9	1,355.6	3.0	3.7	148.60	-181.6	110.8	217.3	211.1	6.26	34.745	
1,500.0	1,500.0	1,457.8	1,444.3	3.3	4.2	145.11	-190.8	133.1	239.2	232.5	6.75	35.461	
1,600.0	1,600.0	1,548.5	1,531.2	3.5	4.7	141.97	-200.7	156.9	263.9	256.6	7.23	36.490	
1,700.0	1,700.0	1,637.8	1,616.3	3.7	5.2	139.20	-211.2	182.3	291.3	283.6	7.71	37.764	
1,800.0	1,800.0	1,725.8	1,699.4	3.9	5.8	136.75	-222.3	209.1	321.3	313.1	8.19	39.226	
1,900.0	1,900.0	1,812.4	1,780.4	4.2	6.4	134.60	-233.9	237.1	353.9	345.2	8.67	40.820	
2,000.0	2,000.0	1,905.5	1,867.2	4.4	7.1	132.61	-246.8	268.3	387.9	378.8	9.16	42.358	
2,100.0	2,100.0	1,998.7	1,954.2	4.6	7.8	130.93	-259.7	299.4	422.3	412.7	9.65	43.784	
2,200.0	2,200.0	2,092.0	2,041.1	4.8	8.5	129.50	-272.5	330.6	457.0	446.8	10.13	45.096	
2,300.0	2,300.0	2,185.2	2,128.0	5.1	9.2	128.28	-285.4	361.7	491.8	481.2	10.62	46.304	
2,400.0	2,400.0	2,278.4	2,214.9	5.3	9.9	127.21	-298.3	392.9	526.9	515.8	11.11	47.416	
2,500.0	2,500.0	2,371.7	2,301.8	5.5	10.6	126.28	-311.2	424.1	562.1	550.5	11.60	48.440	
2,600.0	2,600.0	2,465.0	2,388.9	5.7	11.3	-55.83	-324.1	455.3	596.7	584.5	12.18	49.009	
2,700.0	2,699.9	2,558.7	2,476.2	5.9	12.0	-56.42	-337.1	486.6	630.1	617.5	12.64	49.851	
2,800.0	2,799.7	2,652.6	2,563.7	6.0	12.7	-57.13	-350.1	517.9	662.4	649.3	13.10	50.560	
2,900.0	2,899.3	2,746.6	2,651.4	6.2	13.4	-57.93	-363.1	549.3	693.5	680.0	13.56	51.147	
3,000.0	2,998.6	2,840.7	2,739.1	6.4	14.2	-58.81	-376.1	580.8	723.6	709.6	14.02	51.616	
3,100.0	3,097.5	2,934.8	2,826.8	6.6	14.9	-59.78	-389.1	612.2	752.9	738.4	14.49	51.968	
3,200.0	3,196.1	3,028.9	2,914.5	6.8	15.6	-60.82	-402.1	643.7	781.2	766.3	14.97	52.198	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7Q-341 - Wellbore #1 - Plan #1 (9-11-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-179.39	-104.9	-1.1	104.9				
100.0	100.0	100.0	100.0	0.1	0.1	-179.39	-104.9	-1.1	104.9	104.7	0.22	466.875	
200.0	200.0	200.0	200.0	0.3	0.3	-179.39	-104.9	-1.1	104.9	104.3	0.67	155.615	
300.0	300.0	300.0	300.0	0.6	0.6	-179.39	-104.9	-1.1	104.9	103.8	1.12	93.368	
400.0	400.0	400.0	400.0	0.8	0.8	-179.39	-104.9	-1.1	104.9	103.4	1.57	66.691	
500.0	500.0	500.0	500.0	1.0	1.0	-179.39	-104.9	-1.1	104.9	102.9	2.02	51.871	
600.0	600.0	600.0	600.0	1.2	1.2	-179.39	-104.9	-1.1	104.9	102.5	2.47	42.440	
700.0	700.0	700.0	700.0	1.5	1.5	-179.39	-104.9	-1.1	104.9	102.0	2.92	35.910	
800.0	800.0	800.0	800.0	1.7	1.7	-179.39	-104.9	-1.1	104.9	101.6	3.37	31.122	CC, ES
900.0	900.0	898.5	898.5	1.9	1.9	-179.98	-105.6	0.0	105.6	101.8	3.80	27.812	
1,000.0	1,000.0	997.0	996.9	2.1	2.1	178.31	-107.6	3.2	107.7	103.5	4.21	25.584	
1,100.0	1,100.0	1,095.1	1,094.8	2.4	2.3	175.62	-111.0	8.5	111.5	106.8	4.64	24.050	
1,200.0	1,200.0	1,192.9	1,192.2	2.6	2.5	172.17	-115.8	15.9	117.1	112.0	5.07	23.096	
1,300.0	1,300.0	1,290.1	1,288.8	2.8	2.7	168.23	-121.8	25.4	124.9	119.4	5.52	22.646	
1,400.0	1,400.0	1,386.8	1,384.5	3.0	3.0	164.07	-129.1	36.8	135.1	129.1	5.97	22.639	SF
1,500.0	1,500.0	1,482.6	1,479.0	3.3	3.3	159.95	-137.6	50.2	148.0	141.5	6.43	23.022	
1,600.0	1,600.0	1,577.6	1,572.3	3.5	3.6	156.04	-147.3	65.4	163.5	156.6	6.89	23.741	
1,700.0	1,700.0	1,671.7	1,664.1	3.7	4.0	152.46	-158.1	82.4	181.9	174.5	7.35	24.744	
1,800.0	1,800.0	1,764.7	1,754.4	3.9	4.4	149.25	-170.0	101.1	202.9	195.1	7.81	25.980	
1,900.0	1,900.0	1,856.5	1,843.1	4.2	4.8	146.43	-182.9	121.4	226.7	218.5	8.27	27.407	
2,000.0	2,000.0	1,949.2	1,931.9	4.4	5.3	143.92	-196.9	143.5	253.0	244.3	8.74	28.953	
2,100.0	2,100.0	2,044.9	2,023.7	4.6	5.8	141.78	-211.7	166.7	280.1	270.9	9.21	30.423	
2,200.0	2,200.0	2,140.7	2,115.4	4.8	6.3	140.01	-226.5	190.0	307.5	297.8	9.67	31.781	
2,300.0	2,300.0	2,236.5	2,207.2	5.1	6.9	138.54	-241.3	213.2	335.1	324.9	10.14	33.031	
2,400.0	2,400.0	2,332.3	2,298.9	5.3	7.4	137.28	-256.0	236.4	362.9	352.2	10.62	34.181	
2,500.0	2,500.0	2,428.1	2,390.6	5.5	8.0	136.21	-270.8	259.6	390.8	379.7	11.09	35.240	
2,600.0	2,600.0	2,524.0	2,482.5	5.7	8.5	-46.18	-285.6	282.9	418.0	406.4	11.59	36.072	
2,700.0	2,699.9	2,620.3	2,574.8	5.9	9.1	-47.08	-300.5	306.3	443.5	431.5	12.02	36.907	
2,800.0	2,799.7	2,716.8	2,667.2	6.0	9.7	-48.11	-315.4	329.7	467.6	455.1	12.45	37.563	
2,900.0	2,899.3	2,813.6	2,759.9	6.2	10.3	-49.25	-330.3	353.1	490.2	477.3	12.88	38.060	
3,000.0	2,998.6	2,910.4	2,852.6	6.4	10.8	-50.52	-345.3	376.6	511.4	498.1	13.31	38.410	
3,100.0	3,097.5	3,007.3	2,945.4	6.6	11.4	-51.89	-360.2	400.1	531.4	517.6	13.76	38.618	
3,200.0	3,196.1	3,104.2	3,038.2	6.8	12.0	-53.36	-375.2	423.6	550.2	536.0	14.22	38.688	
3,300.0	3,294.2	3,201.0	3,131.0	7.1	12.6	-54.95	-390.1	447.1	568.0	553.3	14.71	38.620	
3,400.0	3,391.7	3,297.7	3,223.6	7.4	13.2	-56.63	-405.0	470.5	585.0	569.8	15.23	38.411	
3,500.0	3,488.6	3,394.1	3,315.9	7.7	13.8	-58.42	-419.9	493.9	601.2	585.4	15.80	38.060	
3,600.0	3,584.9	3,490.3	3,408.1	8.0	14.3	-60.30	-434.7	517.2	616.8	600.4	16.42	37.569	
3,700.0	3,680.4	3,586.1	3,499.9	8.4	14.9	-62.27	-449.5	540.5	632.0	614.9	17.11	36.943	
3,738.6	3,717.0	3,623.0	3,535.2	8.6	15.1	-63.05	-455.2	549.4	637.8	620.4	17.39	36.668	
3,800.0	3,775.2	3,681.7	3,591.3	8.8	15.5	-64.41	-464.3	563.6	647.2	629.4	17.88	36.209	
3,900.0	3,870.0	3,777.1	3,682.8	9.3	16.1	-66.55	-479.0	586.8	663.4	644.6	18.70	35.468	
4,000.0	3,964.8	3,872.6	3,774.2	9.8	16.7	-68.60	-493.7	610.0	680.4	660.8	19.58	34.747	
4,100.0	4,059.6	3,968.1	3,865.7	10.3	17.3	-70.54	-508.5	633.1	698.3	677.8	20.51	34.053	
4,200.0	4,154.4	4,063.6	3,957.2	10.8	17.8	-72.39	-523.2	656.3	716.9	695.5	21.47	33.393	
4,300.0	4,249.2	4,159.1	4,048.6	11.3	18.4	-74.16	-537.9	679.4	736.3	713.9	22.47	32.770	
4,400.0	4,343.9	4,254.6	4,140.1	11.9	19.0	-75.83	-552.7	702.6	756.4	732.9	23.50	32.188	
4,500.0	4,438.7	4,350.0	4,231.5	12.4	19.6	-77.42	-567.4	725.7	777.1	752.5	24.55	31.647	
4,600.0	4,533.5	4,445.5	4,323.0	13.0	20.2	-78.93	-582.1	748.9	798.3	772.7	25.63	31.145	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.7-T5N-R64W - Dunn #1 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 6990-UNKNOWN

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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	-89.69	2.5	-465.1	465.3				
100.0	100.0	87.0	87.0	0.1	1.7	-89.69	2.5	-465.1	465.1	463.2	1.85	251.071	
200.0	200.0	187.0	187.0	0.3	3.7	-89.69	2.5	-465.1	465.1	461.0	4.08	114.070	
300.0	300.0	287.0	287.0	0.6	5.7	-89.69	2.5	-465.1	465.1	458.8	6.30	73.800	
400.0	400.0	387.0	387.0	0.8	7.7	-89.69	2.5	-465.1	465.1	456.6	8.53	54.544	
500.0	500.0	487.0	487.0	1.0	9.7	-89.69	2.5	-465.1	465.1	454.3	10.75	43.257	
600.0	600.0	587.0	587.0	1.2	11.7	-89.69	2.5	-465.1	465.1	452.1	12.98	35.841	
700.0	700.0	687.0	687.0	1.5	13.7	-89.69	2.5	-465.1	465.1	449.9	15.20	30.595	
800.0	800.0	787.0	787.0	1.7	15.7	-89.69	2.5	-465.1	465.1	447.7	17.43	26.689	
900.0	900.0	887.0	887.0	1.9	17.7	-89.69	2.5	-465.1	465.1	445.4	19.65	23.668	
1,000.0	1,000.0	987.0	987.0	2.1	19.7	-89.69	2.5	-465.1	465.1	443.2	21.88	21.261	
1,100.0	1,100.0	1,087.0	1,087.0	2.4	21.7	-89.69	2.5	-465.1	465.1	441.0	24.10	19.298	
1,200.0	1,200.0	1,187.0	1,187.0	2.6	23.7	-89.69	2.5	-465.1	465.1	438.8	26.32	17.667	
1,300.0	1,300.0	1,287.0	1,287.0	2.8	25.7	-89.69	2.5	-465.1	465.1	436.5	28.55	16.290	
1,400.0	1,400.0	1,387.0	1,387.0	3.0	27.7	-89.69	2.5	-465.1	465.1	434.3	30.77	15.113	
1,500.0	1,500.0	1,487.0	1,487.0	3.3	29.7	-89.69	2.5	-465.1	465.1	432.1	33.00	14.094	
1,600.0	1,600.0	1,587.0	1,587.0	3.5	31.7	-89.69	2.5	-465.1	465.1	429.9	35.22	13.204	
1,700.0	1,700.0	1,687.0	1,687.0	3.7	33.7	-89.69	2.5	-465.1	465.1	427.6	37.45	12.419	
1,800.0	1,800.0	1,787.0	1,787.0	3.9	35.7	-89.69	2.5	-465.1	465.1	425.4	39.67	11.723	
1,900.0	1,900.0	1,887.0	1,887.0	4.2	37.7	-89.69	2.5	-465.1	465.1	423.2	41.90	11.100	
2,000.0	2,000.0	1,987.0	1,987.0	4.4	39.7	-89.69	2.5	-465.1	465.1	421.0	44.12	10.541	
2,100.0	2,100.0	2,087.0	2,087.0	4.6	41.7	-89.69	2.5	-465.1	465.1	418.7	46.35	10.035	
2,200.0	2,200.0	2,187.0	2,187.0	4.8	43.7	-89.69	2.5	-465.1	465.1	416.5	48.57	9.575	
2,300.0	2,300.0	2,287.0	2,287.0	5.1	45.7	-89.69	2.5	-465.1	465.1	414.3	50.80	9.156	
2,400.0	2,400.0	2,387.0	2,387.0	5.3	47.7	-89.69	2.5	-465.1	465.1	412.1	53.02	8.771	
2,500.0	2,500.0	2,487.0	2,487.0	5.5	49.7	-89.69	2.5	-465.1	465.1	409.8	55.25	8.418	
2,600.0	2,600.0	2,587.0	2,587.0	5.7	51.7	88.85	2.5	-465.1	465.1	407.6	57.44	8.096	
2,700.0	2,699.9	2,686.9	2,686.9	5.9	53.7	89.33	2.5	-465.1	465.0	405.4	59.61	7.801	
2,785.3	2,785.0	2,772.0	2,772.0	6.0	55.4	90.00	2.5	-465.1	465.0	403.5	61.46	7.566	
2,800.0	2,799.7	2,786.7	2,786.7	6.0	55.7	90.14	2.5	-465.1	465.0	403.2	61.78	7.527	
2,900.0	2,899.3	2,886.3	2,886.3	6.2	57.7	91.26	2.5	-465.1	465.1	401.1	63.95	7.273	
3,000.0	2,998.6	2,985.6	2,985.6	6.4	59.7	92.69	2.5	-465.1	465.5	399.4	66.12	7.040	
3,100.0	3,097.5	3,084.5	3,084.5	6.6	61.7	94.42	2.5	-465.1	466.4	398.1	68.30	6.828	
3,200.0	3,196.1	3,183.1	3,183.1	6.8	63.7	96.43	2.5	-465.1	468.0	397.5	70.49	6.640	
3,300.0	3,294.2	3,281.2	3,281.2	7.1	65.6	98.71	2.5	-465.1	470.6	398.0	72.67	6.476	
3,400.0	3,391.7	3,378.7	3,378.7	7.4	67.6	101.22	2.5	-465.1	474.5	399.7	74.86	6.339	
3,500.0	3,488.6	3,475.6	3,475.6	7.7	69.5	103.94	2.5	-465.1	480.1	403.0	77.03	6.233	
3,600.0	3,584.9	3,571.8	3,571.8	8.0	71.4	106.83	2.5	-465.1	487.5	408.4	79.17	6.158	
3,700.0	3,680.4	3,667.3	3,667.3	8.4	73.3	109.83	2.5	-465.1	497.3	416.0	81.26	6.119	
3,738.6	3,717.0	3,704.0	3,704.0	8.6	74.1	111.01	2.5	-465.1	501.7	419.6	82.05	6.114	
3,800.0	3,775.2	3,762.2	3,762.2	8.8	75.2	112.98	2.5	-465.1	509.4	426.0	83.35	6.111	
3,900.0	3,870.0	3,857.0	3,857.0	9.3	77.1	116.06	2.5	-465.1	523.2	437.7	85.44	6.123	
4,000.0	3,964.8	3,951.8	3,951.8	9.8	79.0	118.98	2.5	-465.1	538.5	451.0	87.53	6.153	
4,100.0	4,059.6	4,046.6	4,046.6	10.3	80.9	121.75	2.5	-465.1	555.3	465.7	89.60	6.197	
4,200.0	4,154.4	4,141.4	4,141.4	10.8	82.8	124.36	2.5	-465.1	573.3	481.7	91.66	6.255	
4,300.0	4,249.2	4,236.1	4,236.1	11.3	84.7	126.82	2.5	-465.1	592.5	498.8	93.70	6.323	
4,400.0	4,343.9	4,330.9	4,330.9	11.9	86.6	129.14	2.5	-465.1	612.8	517.0	95.74	6.400	
4,500.0	4,438.7	4,425.7	4,425.7	12.4	88.5	131.30	2.5	-465.1	634.0	536.2	97.77	6.485	
4,600.0	4,533.5	4,520.5	4,520.5	13.0	90.4	133.34	2.5	-465.1	656.1	556.3	99.79	6.574	
4,700.0	4,628.3	4,615.3	4,615.3	13.5	92.3	135.24	2.5	-465.1	678.9	577.1	101.81	6.668	
4,800.0	4,723.1	4,710.1	4,710.1	14.1	94.2	137.03	2.5	-465.1	702.5	598.6	103.83	6.766	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.7-T5N-R64W - Dunn #1 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 6990-UNKNOWN

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
4,900.0	4,817.9	4,804.9	4,804.9	14.7	96.1	138.70	2.5	-465.1	726.7	620.8	105.84	6.866	
5,000.0	4,912.7	4,899.7	4,899.7	15.3	98.0	140.27	2.5	-465.1	751.4	643.6	107.85	6.967	
5,078.7	4,987.3	4,974.3	4,974.3	15.8	99.5	141.44	2.5	-465.1	771.3	661.8	109.44	7.048	
5,100.0	5,007.5	4,994.5	4,994.5	15.9	99.9	141.81	2.5	-465.1	776.6	666.6	110.00	7.061	
6,600.0	6,469.5	6,456.5	6,456.5	18.2	129.1	-38.62	2.5	-465.1	793.1	661.5	131.56	6.028	
6,650.0	6,510.7	6,497.7	6,497.7	18.0	130.0	-41.12	2.5	-465.1	769.8	639.2	130.67	5.891	
6,700.0	6,550.0	6,537.0	6,537.0	17.8	130.7	-44.02	2.5	-465.1	744.8	614.5	130.29	5.717	
6,750.0	6,587.3	6,574.2	6,574.2	17.6	131.5	-47.34	2.5	-465.1	718.2	587.6	130.61	5.499	
6,800.0	6,622.2	6,609.2	6,609.2	17.4	132.2	-51.09	2.5	-465.1	690.4	558.7	131.79	5.239	
6,850.0	6,654.7	6,641.7	6,641.7	17.2	132.8	-55.23	2.5	-465.1	661.8	527.9	133.84	4.944	
6,900.0	6,684.7	6,671.7	6,671.7	17.0	133.4	-59.70	2.5	-465.1	632.6	496.0	136.66	4.629	
6,950.0	6,712.0	6,699.0	6,699.0	16.8	134.0	-64.38	2.5	-465.1	603.5	463.5	139.94	4.312	
7,000.0	6,736.5	6,723.5	6,723.5	16.6	134.5	-69.12	2.5	-465.1	574.8	431.5	143.30	4.011	
7,050.0	6,758.1	6,745.1	6,745.1	16.5	134.9	-73.74	2.5	-465.1	547.1	400.8	146.34	3.739	
7,100.0	6,776.8	6,763.7	6,763.7	16.4	135.3	-78.04	2.5	-465.1	521.3	372.5	148.80	3.503	
7,150.0	6,792.3	6,779.3	6,779.3	16.4	135.6	-81.84	2.5	-465.1	497.9	347.3	150.55	3.307	
7,200.0	6,804.7	6,791.7	6,791.7	16.4	135.8	-85.02	2.5	-465.1	477.7	326.1	151.67	3.150	
7,250.0	6,813.9	6,800.9	6,800.9	16.4	136.0	-87.46	2.5	-465.1	461.6	309.3	152.30	3.031	
7,300.0	6,819.9	6,806.8	6,806.8	16.5	136.1	-89.10	2.5	-465.1	450.2	297.6	152.64	2.949	
7,350.0	6,822.6	6,809.6	6,809.6	16.7	136.2	-89.92	2.5	-465.1	444.1	291.2	152.86	2.905	
7,368.8	6,822.7	6,809.7	6,809.7	16.7	136.2	-90.00	2.5	-465.1	443.2	290.3	152.93	2.898	
7,380.0	6,822.7	6,809.7	6,809.7	16.8	136.2	-90.00	2.5	-465.1	443.0	290.1	152.97	2.896	CC, ES, SF
7,400.0	6,822.6	6,809.6	6,809.6	16.9	136.2	-89.99	2.5	-465.1	443.5	290.4	153.05	2.898	
7,500.0	6,822.3	6,809.3	6,809.3	17.4	136.2	-89.95	2.5	-465.1	459.0	305.4	153.59	2.988	
7,600.0	6,822.0	6,809.0	6,809.0	18.1	136.2	-89.91	2.5	-465.1	494.6	340.3	154.32	3.205	
7,700.0	6,821.7	6,808.7	6,808.7	19.0	136.2	-89.87	2.5	-465.1	546.5	391.3	155.21	3.521	
7,800.0	6,821.4	6,808.4	6,808.4	20.1	136.2	-89.83	2.5	-465.1	610.4	454.2	156.25	3.907	
7,900.0	6,821.1	6,808.1	6,808.1	21.3	136.2	-89.79	2.5	-465.1	683.1	525.7	157.41	4.340	
8,000.0	6,820.8	6,807.7	6,807.7	22.5	136.2	-89.75	2.5	-465.1	762.0	603.3	158.68	4.802	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.7-T5N-R64W - Dunn #13-7 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 71125-UNKNOWN

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
7,900.0	6,821.1	6,806.1	6,806.1	21.3	136.1	-90.20	1,093.7	-548.0	776.4	619.1	157.37	4.934	
8,000.0	6,820.8	6,805.7	6,805.7	22.5	136.1	-90.16	1,093.7	-548.0	706.1	547.5	158.64	4.451	
8,100.0	6,820.4	6,805.4	6,805.4	23.9	136.1	-90.13	1,093.7	-548.0	643.7	483.7	159.99	4.024	
8,200.0	6,820.1	6,805.1	6,805.1	25.3	136.1	-90.09	1,093.7	-548.0	591.7	430.3	161.41	3.666	
8,300.0	6,819.8	6,804.8	6,804.8	26.8	136.1	-90.06	1,093.7	-548.0	553.1	390.2	162.90	3.395	
8,400.0	6,819.5	6,804.5	6,804.5	28.3	136.1	-90.02	1,093.7	-548.0	530.7	366.3	164.43	3.228	
8,471.2	6,819.3	6,804.3	6,804.3	29.5	136.1	-90.00	1,093.7	-548.0	525.9	360.4	165.56	3.177	CC, ES
8,500.0	6,819.2	6,804.2	6,804.2	29.9	136.1	-89.99	1,093.7	-548.0	526.7	360.7	166.01	3.173	SF
8,600.0	6,818.9	6,803.9	6,803.9	31.6	136.1	-89.96	1,093.7	-548.0	541.5	373.9	167.63	3.230	
8,700.0	6,818.6	6,803.5	6,803.5	33.2	136.1	-89.92	1,093.7	-548.0	573.6	404.3	169.28	3.388	
8,800.0	6,818.2	6,803.2	6,803.2	34.9	136.1	-89.89	1,093.7	-548.0	620.3	449.3	170.96	3.628	
8,900.0	6,817.9	6,802.9	6,802.9	36.6	136.1	-89.85	1,093.7	-548.0	678.6	506.0	172.66	3.930	
9,000.0	6,817.6	6,802.6	6,802.6	38.3	136.1	-89.82	1,093.7	-548.0	745.8	571.5	174.38	4.277	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.7-T5N-R64W - Little Will #6 (P&A) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 6998-UNKNOWN

Offset Well Error: 0.0 ft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,300.0	6,797.8	6,786.8	6,786.8	156.5	135.7	-91.09	8,636.1	-140.6	723.3	431.1	292.19	2.475	
15,400.0	6,797.5	6,786.5	6,786.5	158.4	135.7	-90.94	8,636.1	-140.6	624.8	330.7	294.11	2.125	
15,500.0	6,797.2	6,786.2	6,786.2	160.3	135.7	-90.78	8,636.1	-140.6	527.0	231.0	296.02	1.780	
15,600.0	6,796.9	6,785.9	6,785.9	162.2	135.7	-90.63	8,636.1	-140.6	430.1	132.2	297.93	1.444	Level 3
15,700.0	6,796.6	6,785.6	6,785.6	164.1	135.7	-90.48	8,636.1	-140.6	335.1	35.2	299.84	1.117	Level 2
15,800.0	6,796.2	6,785.2	6,785.2	166.1	135.7	-90.33	8,636.1	-140.6	244.0	-57.7	301.75	0.809	Level 1
15,900.0	6,795.9	6,784.9	6,784.9	168.0	135.7	-90.17	8,636.1	-140.6	163.8	-139.8	303.66	0.540	Level 1
16,000.0	6,795.6	6,784.6	6,784.6	169.9	135.7	-90.02	8,636.1	-140.6	118.9	-186.7	305.57	0.389	Level 1
16,013.6	6,795.6	6,784.6	6,784.6	170.1	135.7	-90.00	8,636.1	-140.6	118.1	-187.7	305.83	0.386	Level 1, CC, ES, SF
16,100.0	6,795.3	6,784.3	6,784.3	171.8	135.7	-89.87	8,636.1	-140.6	146.3	-161.1	307.47	0.476	Level 1
16,200.0	6,795.0	6,784.0	6,784.0	173.7	135.7	-89.72	8,636.1	-140.6	220.7	-88.7	309.38	0.713	Level 1
16,300.0	6,794.7	6,783.7	6,783.7	175.6	135.7	-89.56	8,636.1	-140.6	309.8	-1.5	311.28	0.995	Level 1
16,400.0	6,794.4	6,783.4	6,783.4	177.5	135.7	-89.41	8,636.1	-140.6	404.1	90.9	313.18	1.290	Level 3
16,500.0	6,794.0	6,783.0	6,783.0	179.4	135.7	-89.26	8,636.1	-140.6	500.5	185.5	315.07	1.589	
16,600.0	6,793.7	6,782.7	6,782.7	181.4	135.7	-89.11	8,636.1	-140.6	598.2	281.2	316.97	1.887	
16,700.0	6,793.4	6,782.4	6,782.4	183.3	135.6	-88.95	8,636.1	-140.6	696.5	377.6	318.86	2.184	
16,800.0	6,793.1	6,782.1	6,782.1	185.2	135.6	-88.80	8,636.1	-140.6	795.2	474.5	320.75	2.479	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.7-T5N-R64W - Mitani #1 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 7000-UNKNOWN

Offset Well Error: 0.0 ft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,900.0	6,805.4	6,777.3	6,777.3	110.8	135.5	-91.63	6,233.8	-101.1	715.6	469.4	246.22	2.906	
13,000.0	6,805.0	6,777.0	6,777.0	112.7	135.5	-91.40	6,233.8	-101.1	616.3	368.2	248.14	2.484	
13,100.0	6,804.7	6,776.7	6,776.7	114.6	135.5	-91.17	6,233.8	-101.1	517.3	267.2	250.05	2.069	
13,200.0	6,804.4	6,776.4	6,776.4	116.5	135.5	-90.94	6,233.8	-101.1	418.7	166.8	251.96	1.662	
13,300.0	6,804.1	6,776.1	6,776.1	118.4	135.5	-90.71	6,233.8	-101.1	321.1	67.2	253.87	1.265	Level 3
13,400.0	6,803.8	6,775.8	6,775.8	120.3	135.5	-90.48	6,233.8	-101.1	225.4	-30.3	255.78	0.881	Level 1
13,500.0	6,803.5	6,775.5	6,775.5	122.2	135.5	-90.25	6,233.8	-101.1	136.3	-121.4	257.68	0.529	Level 1
13,600.0	6,803.2	6,775.2	6,775.2	124.1	135.5	-90.03	6,233.8	-101.1	79.5	-180.1	259.58	0.306	Level 1
13,611.3	6,803.1	6,775.1	6,775.1	124.3	135.5	-90.00	6,233.8	-101.1	78.7	-181.1	259.79	0.303	Level 1, CC, ES, SF
13,700.0	6,802.8	6,774.8	6,774.8	126.0	135.5	-89.80	6,233.8	-101.1	118.6	-142.9	261.48	0.454	Level 1
13,800.0	6,802.5	6,774.5	6,774.5	127.9	135.5	-89.57	6,233.8	-101.1	204.5	-58.9	263.37	0.776	Level 1
13,900.0	6,802.2	6,774.2	6,774.2	129.8	135.5	-89.34	6,233.8	-101.1	299.3	34.0	265.26	1.128	Level 2
14,000.0	6,801.9	6,773.9	6,773.9	131.7	135.5	-89.11	6,233.8	-101.1	396.6	129.5	267.14	1.485	Level 3
14,100.0	6,801.6	6,773.6	6,773.6	133.6	135.5	-88.88	6,233.8	-101.1	495.0	226.0	269.03	1.840	
14,200.0	6,801.3	6,773.3	6,773.3	135.5	135.5	-88.65	6,233.8	-101.1	594.0	323.1	270.90	2.193	
14,300.0	6,801.0	6,773.0	6,773.0	137.4	135.5	-88.42	6,233.8	-101.1	693.2	420.4	272.78	2.541	
14,400.0	6,800.6	6,772.6	6,772.6	139.3	135.5	-88.20	6,233.8	-101.1	792.6	518.0	274.65	2.886	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.7-T5N-R64W - Mitani #14-6 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 7032-UNKNOWN

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
11,900.0	6,808.5	6,770.5	6,770.5	91.8	135.4	-90.68	5,273.4	-221.9	777.0	549.8	227.21	3.420	
12,000.0	6,808.2	6,770.2	6,770.2	93.7	135.4	-90.59	5,273.4	-221.9	680.8	451.7	229.10	2.972	
12,100.0	6,807.9	6,769.9	6,769.9	95.6	135.4	-90.50	5,273.4	-221.9	586.0	355.0	230.99	2.537	
12,200.0	6,807.6	6,769.5	6,769.5	97.5	135.4	-90.41	5,273.4	-221.9	493.1	260.3	232.87	2.118	
12,300.0	6,807.2	6,769.2	6,769.2	99.4	135.4	-90.32	5,273.4	-221.9	403.7	169.0	234.76	1.720	
12,400.0	6,806.9	6,768.9	6,768.9	101.3	135.4	-90.23	5,273.4	-221.9	320.6	84.0	236.65	1.355	Level 3
12,500.0	6,806.6	6,768.6	6,768.6	103.2	135.4	-90.14	5,273.4	-221.9	250.2	11.7	238.54	1.049	Level 2
12,600.0	6,806.3	6,768.3	6,768.3	105.1	135.4	-90.05	5,273.4	-221.9	206.0	-34.5	240.44	0.857	Level 1
12,650.9	6,806.1	6,768.1	6,768.1	106.0	135.4	-90.00	5,273.4	-221.9	199.6	-41.8	241.40	0.827	Level 1, CC, ES, SF
12,700.0	6,806.0	6,768.0	6,768.0	107.0	135.4	-89.96	5,273.4	-221.9	205.5	-36.8	242.33	0.848	Level 1
12,800.0	6,805.7	6,767.7	6,767.7	108.9	135.4	-89.87	5,273.4	-221.9	249.1	4.9	244.22	1.020	Level 2
12,900.0	6,805.4	6,767.3	6,767.3	110.8	135.3	-89.78	5,273.4	-221.9	319.2	73.1	246.11	1.297	Level 3
13,000.0	6,805.0	6,767.0	6,767.0	112.7	135.3	-89.69	5,273.4	-221.9	402.1	154.1	248.00	1.621	
13,100.0	6,804.7	6,766.7	6,766.7	114.6	135.3	-89.60	5,273.4	-221.9	491.4	241.5	249.89	1.967	
13,200.0	6,804.4	6,766.4	6,766.4	116.5	135.3	-89.50	5,273.4	-221.9	584.2	332.4	251.79	2.320	
13,300.0	6,804.1	6,766.1	6,766.1	118.4	135.3	-89.41	5,273.4	-221.9	679.1	425.4	253.68	2.677	
13,400.0	6,803.8	6,765.8	6,765.8	120.3	135.3	-89.32	5,273.4	-221.9	775.2	519.6	255.57	3.033	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.7-T5N-R64W - Silva #1 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 6976-UNKNOWN

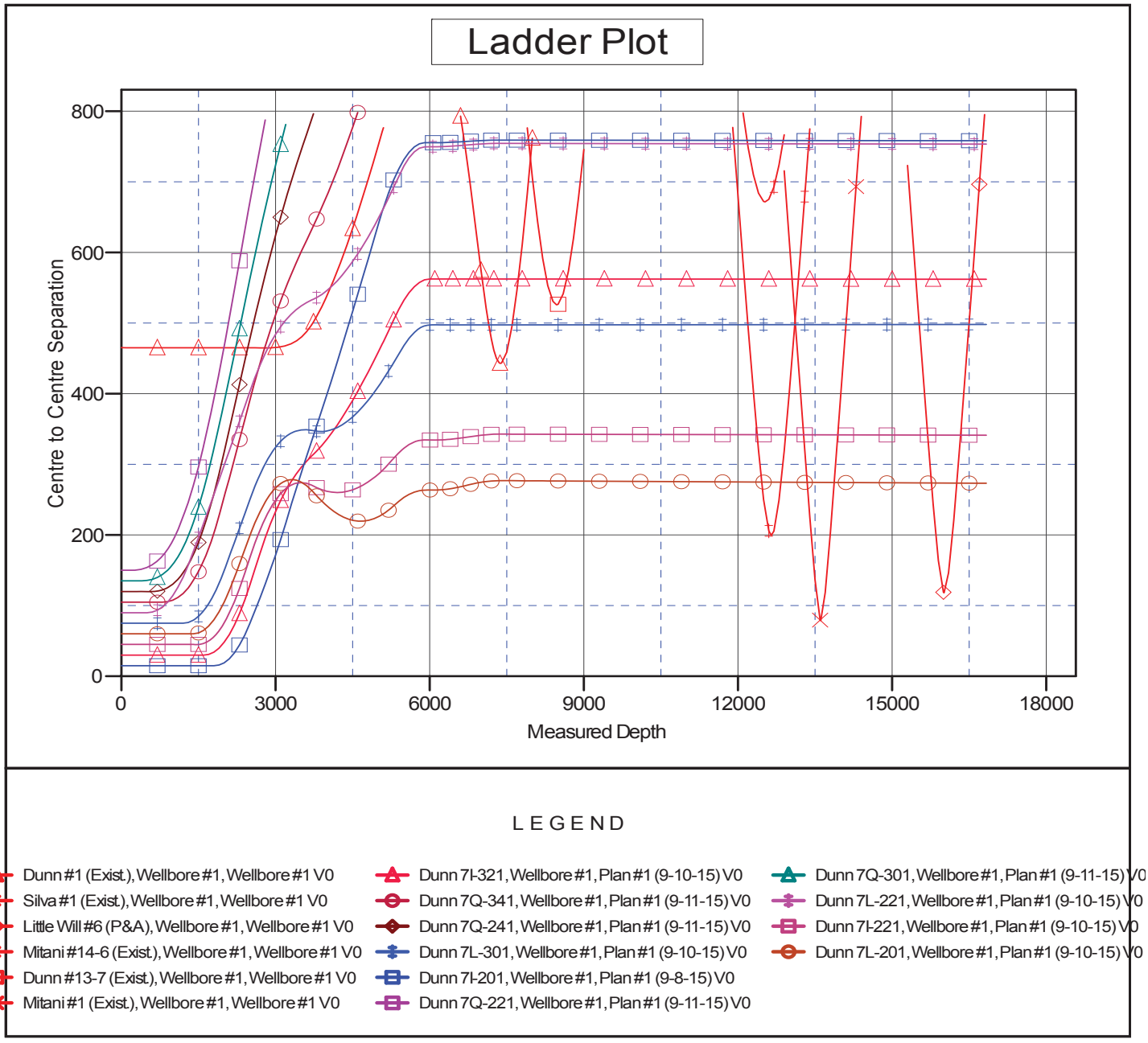
Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	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
12,100.0	6,807.9	6,768.9	6,768.9	95.6	135.4	90.12	5,152.8	649.3	797.6	566.7	230.97	3.453	
12,200.0	6,807.6	6,768.5	6,768.5	97.5	135.4	90.09	5,152.8	649.3	748.4	515.6	232.86	3.214	
12,300.0	6,807.2	6,768.2	6,768.2	99.4	135.4	90.06	5,152.8	649.3	710.0	475.3	234.75	3.025	
12,400.0	6,806.9	6,767.9	6,767.9	101.3	135.4	90.03	5,152.8	649.3	684.1	447.5	236.64	2.891	
12,500.0	6,806.6	6,767.6	6,767.6	103.2	135.4	90.01	5,152.8	649.3	672.3	433.8	238.53	2.819	
12,530.3	6,806.5	6,767.5	6,767.5	103.7	135.4	90.00	5,152.8	649.3	671.6	432.5	239.10	2.809	CC, ES
12,600.0	6,806.3	6,767.3	6,767.3	105.1	135.3	89.98	5,152.8	649.3	675.2	434.8	240.42	2.809	SF
12,700.0	6,806.0	6,767.0	6,767.0	107.0	135.3	89.95	5,152.8	649.3	692.7	450.4	242.31	2.859	
12,800.0	6,805.7	6,766.7	6,766.7	108.9	135.3	89.93	5,152.8	649.3	723.7	479.5	244.20	2.964	
12,900.0	6,805.4	6,766.3	6,766.3	110.8	135.3	89.90	5,152.8	649.3	766.6	520.5	246.09	3.115	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4638.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Dunn 7L-341
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.58°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7L-341
Project:	SEC.7-T5N-R64W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Dunn 5N64W7 Pad Sec.7-T5N-R64W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Dunn 7L-341	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (9-10-15)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4638.0ft (Original Well Elev)	Coordinates are relative to: Dunn 7L-341
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: 0.58°