PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Dunn 7Q-301**

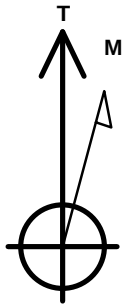
Surface Location: Dunn 5N64W7 Pad Sec.7-T5N-R64W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4625.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1392845.85	3251104.55	40.408259	-104.598276	

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

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 690'FSL & 980'FWL, Sec.7	1.0	0.0	0.0	Point
BHL 200'FNL & 2605'FEL, Sec.6	6793.0	9606.6	1523.0	Point



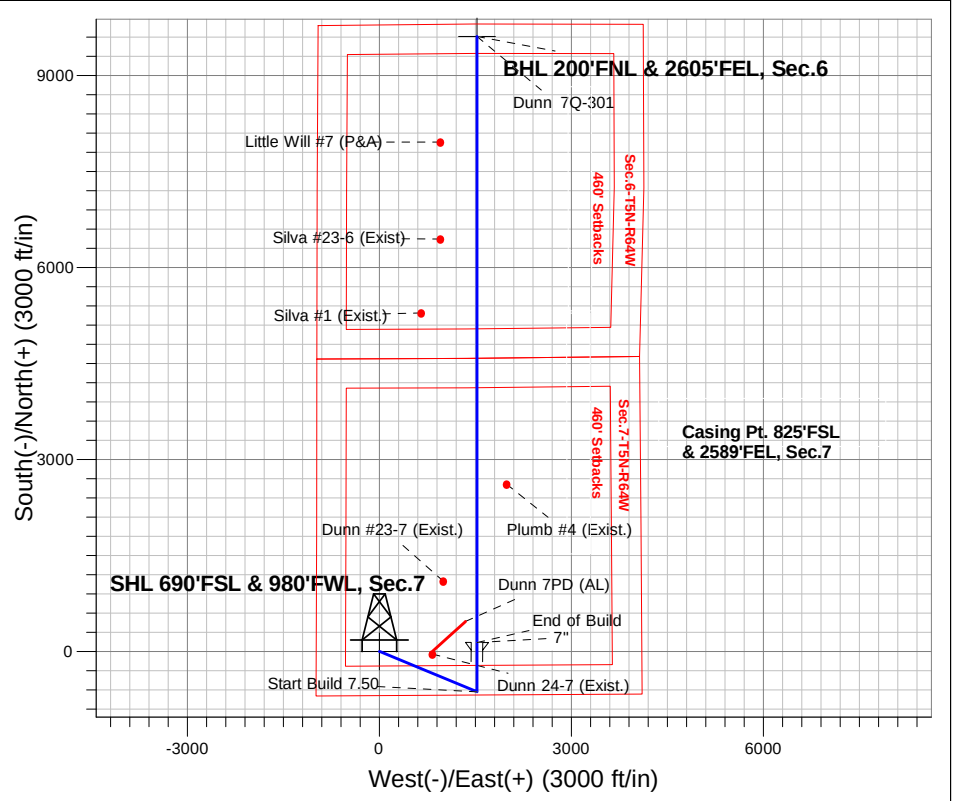
Azimuths to True North
Magnetic North: 8.20°

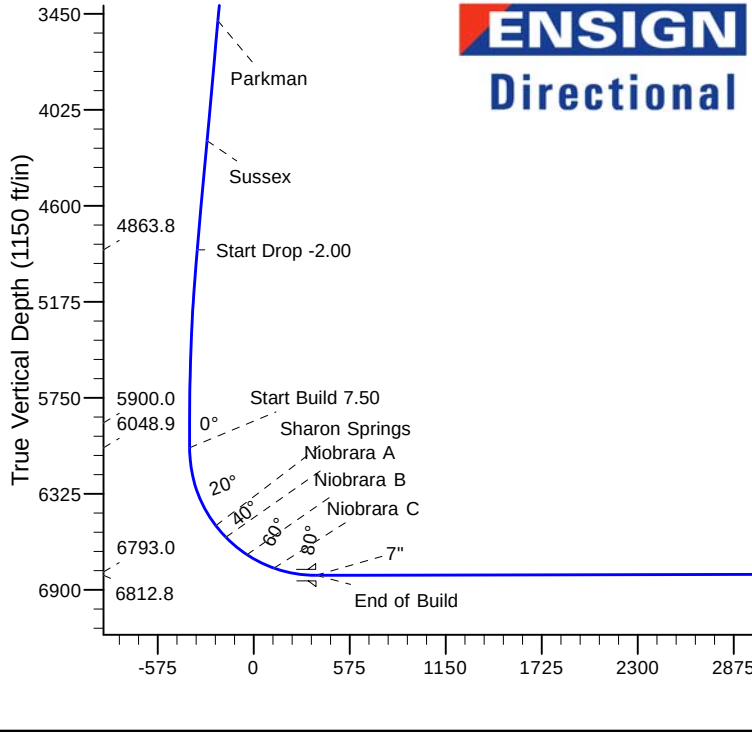
Magnetic Field
Strength: 52703.8snT
Dip Angle: 66.93°
Date: 9/24/2015
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
400.0	400.0	KOP - Start Build 1.50
4863.9	5119.7	Start Drop -2.00
5900.0	6179.9	Start 148.9 hold at 6179.9 MD
6048.9	6328.8	Start Build 7.50
6812.8	7530.4	End of Build
6793.0	17001.8	TD at 17001.8

Dunn 5N64W7 Pad Sec.7-T5N-R64W
Dunn 7Q-301
Plan #1 (9-11-15)
8:59, September 24 2015





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	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	1813.6	21.20	112.48	1781.5	-98.9	238.9	1.50	112.48	-60.2	
4	5119.7	21.20	112.48	4863.9	-556.1	1343.8	0.00	0.00	-338.9	
5	6179.9	0.00	0.00	5900.0	-630.3	1523.0	2.00	180.00	-384.0	
6	6328.8	0.00	0.00	6048.9	-630.3	1523.0	0.00	0.00	-384.0	
7	7530.4	90.12	0.00	6812.8	135.2	1523.0	7.50	0.00	372.1	
8	17001.8	90.12	0.00	6793.0	9606.6	1523.0	0.00	0.00	9726.6	BHL 200'FNL & 2605'FEL, Sec.6

ENSIGN Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.7-T5N-R64W
Dunn 5N64W7 Pad Sec.7-T5N-R64W
Dunn 7Q-301

Wellbore #1

Plan: Plan #1 (9-11-15)

Standard Planning Report

24 September, 2015

PDC ENERGY
Growing E&P Value

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-11-15)		

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 7Q-301

Well Position	**+N/-S**	-135.2 ft	**Northing:**	1,392,845.85 usft	**Latitude:**	40.408259
	+E/-W	-1.4 ft	**Easting:**	3,251,104.55 usft	**Longitude:**	-104.598276
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	9/24/2015	8.20	66.93	52,704

Design Plan #1 (9-11-15)

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	9.01

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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,813.6	21.20	112.48	1,781.5	-98.9	238.9	1.50	1.50	0.00	112.48	
5,119.7	21.20	112.48	4,863.9	-556.1	1,343.8	0.00	0.00	0.00	0.00	
6,179.9	0.00	0.00	5,900.0	-630.3	1,523.0	2.00	-2.00	0.00	180.00	
6,328.8	0.00	0.00	6,048.9	-630.3	1,523.0	0.00	0.00	0.00	0.00	
7,530.4	90.12	0.00	6,812.8	135.2	1,523.0	7.50	7.50	0.00	0.00	
17,001.8	90.12	0.00	6,793.0	9,606.6	1,523.0	0.00	0.00	0.00	0.00	BHL 200'FNL & 2605'

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-11-15)		

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 690'FSL & 980'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
KOP - Start Build 1.50									
500.0	1.50	112.48	500.0	-0.5	1.2	-0.3	1.50	1.50	0.00
600.0	3.00	112.48	599.9	-2.0	4.8	-1.2	1.50	1.50	0.00
700.0	4.50	112.48	699.7	-4.5	10.9	-2.7	1.50	1.50	0.00
800.0	6.00	112.48	799.3	-8.0	19.3	-4.9	1.50	1.50	0.00
900.0	7.50	112.48	898.6	-12.5	30.2	-7.6	1.50	1.50	0.00
1,000.0	9.00	112.48	997.5	-18.0	43.5	-11.0	1.50	1.50	0.00
1,100.0	10.50	112.48	1,096.1	-24.5	59.1	-14.9	1.50	1.50	0.00
1,200.0	12.00	112.48	1,194.2	-31.9	77.1	-19.4	1.50	1.50	0.00
1,300.0	13.50	112.48	1,291.7	-40.4	97.5	-24.6	1.50	1.50	0.00
1,400.0	15.00	112.48	1,388.6	-49.8	120.3	-30.3	1.50	1.50	0.00
1,500.0	16.50	112.48	1,484.9	-60.1	145.3	-36.6	1.50	1.50	0.00
1,600.0	18.00	112.48	1,580.4	-71.5	172.7	-43.6	1.50	1.50	0.00
1,700.0	19.50	112.48	1,675.0	-83.8	202.4	-51.0	1.50	1.50	0.00
1,800.0	21.00	112.48	1,768.9	-97.0	234.4	-59.1	1.50	1.50	0.00
1,813.6	21.20	112.48	1,781.5	-98.9	238.9	-60.2	1.50	1.50	0.00
1,900.0	21.20	112.48	1,862.1	-110.8	267.8	-67.5	0.00	0.00	0.00
2,000.0	21.20	112.48	1,955.3	-124.7	301.2	-76.0	0.00	0.00	0.00
2,100.0	21.20	112.48	2,048.6	-138.5	334.7	-84.4	0.00	0.00	0.00
2,200.0	21.20	112.48	2,141.8	-152.3	368.1	-92.8	0.00	0.00	0.00
2,300.0	21.20	112.48	2,235.0	-166.2	401.5	-101.2	0.00	0.00	0.00
2,400.0	21.20	112.48	2,328.3	-180.0	434.9	-109.7	0.00	0.00	0.00
2,500.0	21.20	112.48	2,421.5	-193.8	468.3	-118.1	0.00	0.00	0.00
2,600.0	21.20	112.48	2,514.7	-207.7	501.8	-126.5	0.00	0.00	0.00
2,700.0	21.20	112.48	2,607.9	-221.5	535.2	-135.0	0.00	0.00	0.00
2,800.0	21.20	112.48	2,701.2	-235.3	568.6	-143.4	0.00	0.00	0.00
2,900.0	21.20	112.48	2,794.4	-249.1	602.0	-151.8	0.00	0.00	0.00
3,000.0	21.20	112.48	2,887.6	-263.0	635.4	-160.2	0.00	0.00	0.00
3,100.0	21.20	112.48	2,980.9	-276.8	668.8	-168.7	0.00	0.00	0.00
3,200.0	21.20	112.48	3,074.1	-290.6	702.3	-177.1	0.00	0.00	0.00
3,300.0	21.20	112.48	3,167.3	-304.5	735.7	-185.5	0.00	0.00	0.00
3,400.0	21.20	112.48	3,260.6	-318.3	769.1	-193.9	0.00	0.00	0.00
3,500.0	21.20	112.48	3,353.8	-332.1	802.5	-202.4	0.00	0.00	0.00
3,600.0	21.20	112.48	3,447.0	-346.0	835.9	-210.8	0.00	0.00	0.00
3,646.1	21.20	112.48	3,490.0	-352.3	851.3	-214.7	0.00	0.00	0.00
Parkman									
3,700.0	21.20	112.48	3,540.3	-359.8	869.4	-219.2	0.00	0.00	0.00
3,800.0	21.20	112.48	3,633.5	-373.6	902.8	-227.6	0.00	0.00	0.00
3,900.0	21.20	112.48	3,726.7	-387.4	936.2	-236.1	0.00	0.00	0.00
4,000.0	21.20	112.48	3,819.9	-401.3	969.6	-244.5	0.00	0.00	0.00
4,100.0	21.20	112.48	3,913.2	-415.1	1,003.0	-252.9	0.00	0.00	0.00
4,200.0	21.20	112.48	4,006.4	-428.9	1,036.5	-261.4	0.00	0.00	0.00
4,300.0	21.20	112.48	4,099.6	-442.8	1,069.9	-269.8	0.00	0.00	0.00
4,400.0	21.20	112.48	4,192.9	-456.6	1,103.3	-278.2	0.00	0.00	0.00
4,418.4	21.20	112.48	4,210.0	-459.1	1,109.4	-279.8	0.00	0.00	0.00
Sussex									

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-11-15)		

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	21.20	112.48	4,286.1	-470.4	1,136.7	-286.6	0.00	0.00	0.00
4,600.0	21.20	112.48	4,379.3	-484.3	1,170.1	-295.1	0.00	0.00	0.00
4,700.0	21.20	112.48	4,472.6	-498.1	1,203.5	-303.5	0.00	0.00	0.00
4,800.0	21.20	112.48	4,565.8	-511.9	1,237.0	-311.9	0.00	0.00	0.00
4,900.0	21.20	112.48	4,659.0	-525.7	1,270.4	-320.3	0.00	0.00	0.00
5,000.0	21.20	112.48	4,752.2	-539.6	1,303.8	-328.8	0.00	0.00	0.00
5,100.0	21.20	112.48	4,845.5	-553.4	1,337.2	-337.2	0.00	0.00	0.00
5,119.7	21.20	112.48	4,863.8	-556.1	1,343.8	-338.9	0.00	0.00	0.00
Start Drop -2.00									
5,200.0	19.60	112.48	4,939.1	-566.8	1,369.7	-345.4	2.00	-2.00	0.00
5,300.0	17.60	112.48	5,033.9	-579.0	1,399.1	-352.8	2.00	-2.00	0.00
5,400.0	15.60	112.48	5,129.7	-590.0	1,425.5	-359.5	2.00	-2.00	0.00
5,500.0	13.60	112.48	5,226.5	-599.6	1,448.8	-365.3	2.00	-2.00	0.00
5,600.0	11.60	112.48	5,324.1	-607.9	1,469.0	-370.4	2.00	-2.00	0.00
5,700.0	9.60	112.48	5,422.3	-615.0	1,486.0	-374.7	2.00	-2.00	0.00
5,800.0	7.60	112.48	5,521.2	-620.7	1,499.8	-378.2	2.00	-2.00	0.00
5,900.0	5.60	112.48	5,620.6	-625.1	1,510.4	-380.9	2.00	-2.00	0.00
6,000.0	3.60	112.48	5,720.2	-628.1	1,517.8	-382.7	2.00	-2.00	0.00
6,100.0	1.60	112.48	5,820.1	-629.9	1,522.0	-383.8	2.00	-2.00	0.00
6,179.9	0.00	0.00	5,900.0	-630.3	1,523.0	-384.0	2.00	-2.00	0.00
Start 148.9 hold at 6179.9 MD									
6,200.0	0.00	0.00	5,920.1	-630.3	1,523.0	-384.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,020.1	-630.3	1,523.0	-384.0	0.00	0.00	0.00
6,328.8	0.00	0.00	6,048.9	-630.3	1,523.0	-384.0	0.00	0.00	0.00
Start Build 7.50									
6,400.0	5.34	0.00	6,120.0	-627.0	1,523.0	-380.8	7.50	7.50	0.00
6,500.0	12.84	0.00	6,218.7	-611.2	1,523.0	-365.2	7.50	7.50	0.00
6,600.0	20.34	0.00	6,314.4	-582.7	1,523.0	-337.0	7.50	7.50	0.00
6,700.0	27.84	0.00	6,405.7	-541.9	1,523.0	-296.7	7.50	7.50	0.00
6,800.0	35.34	0.00	6,490.8	-489.5	1,523.0	-245.0	7.50	7.50	0.00
6,831.4	37.69	0.00	6,516.0	-470.9	1,523.0	-226.6	7.50	7.50	0.00
Sharon Springs									
6,900.0	42.84	0.00	6,568.3	-426.5	1,523.0	-182.8	7.50	7.50	0.00
6,923.0	44.57	0.00	6,585.0	-410.6	1,523.0	-167.1	7.50	7.50	0.00
Niobrara A									
7,000.0	50.34	0.00	6,637.0	-353.9	1,523.0	-111.1	7.50	7.50	0.00
7,089.5	57.06	0.00	6,690.0	-281.8	1,523.0	-39.8	7.50	7.50	0.00
Niobrara B									
7,100.0	57.84	0.00	6,695.6	-273.0	1,523.0	-31.1	7.50	7.50	0.00
7,200.0	65.34	0.00	6,743.2	-185.1	1,523.0	55.7	7.50	7.50	0.00
7,271.7	70.72	0.00	6,770.0	-118.6	1,523.0	121.4	7.50	7.50	0.00
Niobrara C									
7,300.0	72.84	0.00	6,778.8	-91.7	1,523.0	147.9	7.50	7.50	0.00
7,400.0	80.34	0.00	6,802.0	5.5	1,523.0	243.9	7.50	7.50	0.00
7,500.0	87.84	0.00	6,812.3	104.9	1,523.0	342.0	7.50	7.50	0.00
7,530.4	90.12	0.00	6,812.8	135.3	1,523.0	372.1	7.50	7.50	0.00
End of Build - 7"									
7,600.0	90.12	0.00	6,812.7	204.9	1,523.0	440.8	0.00	0.00	0.00
7,700.0	90.12	0.00	6,812.5	304.9	1,523.0	539.6	0.00	0.00	0.00
7,800.0	90.12	0.00	6,812.3	404.9	1,523.0	638.3	0.00	0.00	0.00
7,900.0	90.12	0.00	6,812.1	504.9	1,523.0	737.1	0.00	0.00	0.00
8,000.0	90.12	0.00	6,811.9	604.9	1,523.0	835.9	0.00	0.00	0.00

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-11-15)		

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	90.12	0.00	6,811.6	704.9	1,523.0	934.6	0.00	0.00	0.00
8,200.0	90.12	0.00	6,811.4	804.9	1,523.0	1,033.4	0.00	0.00	0.00
8,300.0	90.12	0.00	6,811.2	904.9	1,523.0	1,132.2	0.00	0.00	0.00
8,400.0	90.12	0.00	6,811.0	1,004.9	1,523.0	1,230.9	0.00	0.00	0.00
8,500.0	90.12	0.00	6,810.8	1,104.9	1,523.0	1,329.7	0.00	0.00	0.00
8,600.0	90.12	0.00	6,810.6	1,204.9	1,523.0	1,428.5	0.00	0.00	0.00
8,700.0	90.12	0.00	6,810.4	1,304.9	1,523.0	1,527.2	0.00	0.00	0.00
8,800.0	90.12	0.00	6,810.2	1,404.9	1,523.0	1,626.0	0.00	0.00	0.00
8,900.0	90.12	0.00	6,810.0	1,504.9	1,523.0	1,724.8	0.00	0.00	0.00
9,000.0	90.12	0.00	6,809.8	1,604.9	1,523.0	1,823.5	0.00	0.00	0.00
9,100.0	90.12	0.00	6,809.5	1,704.9	1,523.0	1,922.3	0.00	0.00	0.00
9,200.0	90.12	0.00	6,809.3	1,804.9	1,523.0	2,021.1	0.00	0.00	0.00
9,300.0	90.12	0.00	6,809.1	1,904.9	1,523.0	2,119.8	0.00	0.00	0.00
9,400.0	90.12	0.00	6,808.9	2,004.9	1,523.0	2,218.6	0.00	0.00	0.00
9,500.0	90.12	0.00	6,808.7	2,104.9	1,523.0	2,317.4	0.00	0.00	0.00
9,600.0	90.12	0.00	6,808.5	2,204.9	1,523.0	2,416.1	0.00	0.00	0.00
9,700.0	90.12	0.00	6,808.3	2,304.9	1,523.0	2,514.9	0.00	0.00	0.00
9,800.0	90.12	0.00	6,808.1	2,404.9	1,523.0	2,613.7	0.00	0.00	0.00
9,900.0	90.12	0.00	6,807.9	2,504.9	1,523.0	2,712.4	0.00	0.00	0.00
10,000.0	90.12	0.00	6,807.7	2,604.9	1,523.0	2,811.2	0.00	0.00	0.00
10,100.0	90.12	0.00	6,807.5	2,704.9	1,523.0	2,910.0	0.00	0.00	0.00
10,200.0	90.12	0.00	6,807.2	2,804.9	1,523.0	3,008.7	0.00	0.00	0.00
10,300.0	90.12	0.00	6,807.0	2,904.8	1,523.0	3,107.5	0.00	0.00	0.00
10,400.0	90.12	0.00	6,806.8	3,004.8	1,523.0	3,206.3	0.00	0.00	0.00
10,500.0	90.12	0.00	6,806.6	3,104.8	1,523.0	3,305.0	0.00	0.00	0.00
10,600.0	90.12	0.00	6,806.4	3,204.8	1,523.0	3,403.8	0.00	0.00	0.00
10,700.0	90.12	0.00	6,806.2	3,304.8	1,523.0	3,502.6	0.00	0.00	0.00
10,800.0	90.12	0.00	6,806.0	3,404.8	1,523.0	3,601.3	0.00	0.00	0.00
10,900.0	90.12	0.00	6,805.8	3,504.8	1,523.0	3,700.1	0.00	0.00	0.00
11,000.0	90.12	0.00	6,805.6	3,604.8	1,523.0	3,798.9	0.00	0.00	0.00
11,100.0	90.12	0.00	6,805.4	3,704.8	1,523.0	3,897.6	0.00	0.00	0.00
11,200.0	90.12	0.00	6,805.2	3,804.8	1,523.0	3,996.4	0.00	0.00	0.00
11,300.0	90.12	0.00	6,804.9	3,904.8	1,523.0	4,095.2	0.00	0.00	0.00
11,400.0	90.12	0.00	6,804.7	4,004.8	1,523.0	4,193.9	0.00	0.00	0.00
11,500.0	90.12	0.00	6,804.5	4,104.8	1,523.0	4,292.7	0.00	0.00	0.00
11,600.0	90.12	0.00	6,804.3	4,204.8	1,523.0	4,391.5	0.00	0.00	0.00
11,700.0	90.12	0.00	6,804.1	4,304.8	1,523.0	4,490.2	0.00	0.00	0.00
11,800.0	90.12	0.00	6,803.9	4,404.8	1,523.0	4,589.0	0.00	0.00	0.00
11,900.0	90.12	0.00	6,803.7	4,504.8	1,523.0	4,687.8	0.00	0.00	0.00
12,000.0	90.12	0.00	6,803.5	4,604.8	1,523.0	4,786.5	0.00	0.00	0.00
12,100.0	90.12	0.00	6,803.3	4,704.8	1,523.0	4,885.3	0.00	0.00	0.00
12,200.0	90.12	0.00	6,803.1	4,804.8	1,523.0	4,984.1	0.00	0.00	0.00
12,300.0	90.12	0.00	6,802.8	4,904.8	1,523.0	5,082.8	0.00	0.00	0.00
12,400.0	90.12	0.00	6,802.6	5,004.8	1,523.0	5,181.6	0.00	0.00	0.00
12,500.0	90.12	0.00	6,802.4	5,104.8	1,523.0	5,280.4	0.00	0.00	0.00
12,600.0	90.12	0.00	6,802.2	5,204.8	1,523.0	5,379.1	0.00	0.00	0.00
12,700.0	90.12	0.00	6,802.0	5,304.8	1,523.0	5,477.9	0.00	0.00	0.00
12,800.0	90.12	0.00	6,801.8	5,404.8	1,523.0	5,576.7	0.00	0.00	0.00
12,900.0	90.12	0.00	6,801.6	5,504.8	1,523.0	5,675.4	0.00	0.00	0.00
13,000.0	90.12	0.00	6,801.4	5,604.8	1,523.0	5,774.2	0.00	0.00	0.00
13,100.0	90.12	0.00	6,801.2	5,704.8	1,523.0	5,873.0	0.00	0.00	0.00
13,200.0	90.12	0.00	6,801.0	5,804.8	1,523.0	5,971.7	0.00	0.00	0.00
13,300.0	90.12	0.00	6,800.8	5,904.8	1,523.0	6,070.5	0.00	0.00	0.00

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-11-15)		

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	90.12	0.00	6,800.5	6,004.8	1,523.0	6,169.2	0.00	0.00	0.00
13,500.0	90.12	0.00	6,800.3	6,104.8	1,523.0	6,268.0	0.00	0.00	0.00
13,600.0	90.12	0.00	6,800.1	6,204.8	1,523.0	6,366.8	0.00	0.00	0.00
13,700.0	90.12	0.00	6,799.9	6,304.8	1,523.0	6,465.5	0.00	0.00	0.00
13,800.0	90.12	0.00	6,799.7	6,404.8	1,523.0	6,564.3	0.00	0.00	0.00
13,900.0	90.12	0.00	6,799.5	6,504.8	1,523.0	6,663.1	0.00	0.00	0.00
14,000.0	90.12	0.00	6,799.3	6,604.8	1,523.0	6,761.8	0.00	0.00	0.00
14,100.0	90.12	0.00	6,799.1	6,704.8	1,523.0	6,860.6	0.00	0.00	0.00
14,200.0	90.12	0.00	6,798.9	6,804.8	1,523.0	6,959.4	0.00	0.00	0.00
14,300.0	90.12	0.00	6,798.7	6,904.8	1,523.0	7,058.1	0.00	0.00	0.00
14,400.0	90.12	0.00	6,798.4	7,004.8	1,523.0	7,156.9	0.00	0.00	0.00
14,500.0	90.12	0.00	6,798.2	7,104.8	1,523.0	7,255.7	0.00	0.00	0.00
14,600.0	90.12	0.00	6,798.0	7,204.8	1,523.0	7,354.4	0.00	0.00	0.00
14,700.0	90.12	0.00	6,797.8	7,304.8	1,523.0	7,453.2	0.00	0.00	0.00
14,800.0	90.12	0.00	6,797.6	7,404.8	1,523.0	7,552.0	0.00	0.00	0.00
14,900.0	90.12	0.00	6,797.4	7,504.8	1,523.0	7,650.7	0.00	0.00	0.00
15,000.0	90.12	0.00	6,797.2	7,604.8	1,523.0	7,749.5	0.00	0.00	0.00
15,100.0	90.12	0.00	6,797.0	7,704.8	1,523.0	7,848.3	0.00	0.00	0.00
15,200.0	90.12	0.00	6,796.8	7,804.8	1,523.0	7,947.0	0.00	0.00	0.00
15,300.0	90.12	0.00	6,796.6	7,904.8	1,523.0	8,045.8	0.00	0.00	0.00
15,400.0	90.12	0.00	6,796.4	8,004.8	1,523.0	8,144.6	0.00	0.00	0.00
15,500.0	90.12	0.00	6,796.1	8,104.8	1,523.0	8,243.3	0.00	0.00	0.00
15,600.0	90.12	0.00	6,795.9	8,204.8	1,523.0	8,342.1	0.00	0.00	0.00
15,700.0	90.12	0.00	6,795.7	8,304.8	1,523.0	8,440.9	0.00	0.00	0.00
15,800.0	90.12	0.00	6,795.5	8,404.8	1,523.0	8,539.6	0.00	0.00	0.00
15,900.0	90.12	0.00	6,795.3	8,504.8	1,523.0	8,638.4	0.00	0.00	0.00
16,000.0	90.12	0.00	6,795.1	8,604.8	1,523.0	8,737.2	0.00	0.00	0.00
16,100.0	90.12	0.00	6,794.9	8,704.8	1,523.0	8,835.9	0.00	0.00	0.00
16,200.0	90.12	0.00	6,794.7	8,804.8	1,523.0	8,934.7	0.00	0.00	0.00
16,300.0	90.12	0.00	6,794.5	8,904.8	1,523.0	9,033.5	0.00	0.00	0.00
16,400.0	90.12	0.00	6,794.3	9,004.8	1,523.0	9,132.2	0.00	0.00	0.00
16,500.0	90.12	0.00	6,794.1	9,104.8	1,523.0	9,231.0	0.00	0.00	0.00
16,600.0	90.12	0.00	6,793.8	9,204.8	1,523.0	9,329.8	0.00	0.00	0.00
16,700.0	90.12	0.00	6,793.6	9,304.8	1,523.0	9,428.5	0.00	0.00	0.00
16,800.0	90.12	0.00	6,793.4	9,404.8	1,523.0	9,527.3	0.00	0.00	0.00
16,900.0	90.12	0.00	6,793.2	9,504.8	1,523.0	9,626.1	0.00	0.00	0.00
17,000.0	90.12	0.00	6,793.0	9,604.8	1,523.0	9,724.8	0.00	0.00	0.00
17,001.8	90.12	0.00	6,793.0	9,606.6	1,523.0	9,726.6	0.00	0.00	0.00
TD at 17001.8 - BHL 200'FNL & 2605'FEL, 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 690'FSL & 980'FWL - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,392,845.86	3,251,104.55	40.408259	-104.598276
BHL 200'FNL & 2605'FE - plan hits target center - Point	0.00	0.00	6,793.0	9,606.6	1,523.0	1,402,467.09	3,252,529.74	40.434628	-104.592805

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-11-15)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,530.4	6,812.8	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,646.1	3,490.0	Parkman		0.00	
4,418.4	4,210.0	Sussex		0.00	
6,831.4	6,516.0	Sharon Springs		0.00	
6,923.0	6,585.0	Niobrara A		0.00	
7,089.5	6,690.0	Niobrara B		0.00	
7,271.7	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
400.0	400.0	0.0	0.0	KOP - Start Build 1.50
5,119.7	4,863.9	-98.9	238.9	Start Drop -2.00
6,179.9	5,900.0	-556.1	1,343.8	Start 148.9 hold at 6179.9 MD
6,328.8	6,048.9	-630.3	1,523.0	Start Build 7.50
7,530.4	6,812.8	-630.3	1,523.0	End of Build
17,001.8	6,793.0	135.2	1,523.0	TD at 17001.8

ENSIGN Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.7-T5N-R64W
Dunn 5N64W7 Pad Sec.7-T5N-R64W
Dunn 7Q-301

Wellbore #1
Plan #1 (9-11-15)

Anticollision Report

24 September, 2015

PDC ENERGY
Growing E&P Value

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**Offset TVD Reference:**	Offset Datum

Reference Plan #1 (9-11-15)

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** 9/24/2015

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	17,001.8	Plan #1 (9-11-15) (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)	400.0	400.0	120.2	118.7	76.420	CC, ES
Dunn 7I-201 - Wellbore #1 - Plan #1 (9-8-15)	1,200.0	1,194.2	170.0	164.6	32.025	SF
Dunn 7I-221 - Wellbore #1 - Plan #1 (9-10-15)	400.0	400.0	90.0	88.4	57.196	CC, ES
Dunn 7I-221 - Wellbore #1 - Plan #1 (9-10-15)	1,100.0	1,096.1	128.4	123.6	26.846	SF
Dunn 7I-321 - Wellbore #1 - Plan #1 (9-10-15)	400.0	400.0	105.3	103.7	66.923	CC, ES
Dunn 7I-321 - Wellbore #1 - Plan #1 (9-10-15)	1,100.0	1,096.1	142.1	137.3	29.629	SF
Dunn 7L-201 - Wellbore #1 - Plan #1 (9-10-15)	400.0	400.0	75.1	73.5	47.706	CC, ES
Dunn 7L-201 - Wellbore #1 - Plan #1 (9-10-15)	1,000.0	997.5	102.3	98.0	23.853	SF
Dunn 7L-221 - Wellbore #1 - Plan #1 (9-10-15)	400.0	400.0	45.2	43.6	28.717	CC, ES
Dunn 7L-221 - Wellbore #1 - Plan #1 (9-10-15)	17,001.8	16,759.2	797.1	422.7	2.129	SF
Dunn 7L-301 - Wellbore #1 - Plan #1 (9-10-15)	400.0	400.0	60.1	58.5	38.208	CC, ES
Dunn 7L-301 - Wellbore #1 - Plan #1 (9-10-15)	900.0	898.6	78.4	74.6	20.596	SF
Dunn 7L-341 - Wellbore #1 - Plan #1 (9-10-15)	400.0	400.0	135.2	133.6	85.911	CC, ES
Dunn 7L-341 - Wellbore #1 - Plan #1 (9-10-15)	1,300.0	1,291.7	200.1	194.3	34.341	SF
Dunn 7Q-221 - Wellbore #1 - Plan #1 (9-11-15)	200.0	200.0	14.9	14.3	22.152	CC
Dunn 7Q-221 - Wellbore #1 - Plan #1 (9-11-15)	17,001.8	17,010.8	287.3	-83.1	0.776	Level 1, ES, SF
Dunn 7Q-241 - Wellbore #1 - Plan #1 (9-11-15)	400.0	400.0	15.3	13.7	9.727	CC
Dunn 7Q-241 - Wellbore #1 - Plan #1 (9-11-15)	17,001.8	16,871.9	248.9	-112.7	0.688	Level 1, ES, SF
Dunn 7Q-341 - Wellbore #1 - Plan #1 (9-11-15)	400.0	400.0	30.2	28.7	19.220	CC, ES
Dunn 7Q-341 - Wellbore #1 - Plan #1 (9-11-15)	17,001.8	16,888.0	479.9	103.6	1.275	Level 3, SF
Dunn Pad Sec.7-T5N-R64W						
Dunn 24-7 (Exist.) - Wellbore #1 - Wellbore #1	3,257.6	3,114.7	275.5	195.8	3.457	CC
Dunn 24-7 (Exist.) - Wellbore #1 - Wellbore #1	3,300.0	3,154.3	275.9	195.1	3.416	ES
Dunn 24-7 (Exist.) - Wellbore #1 - Wellbore #1	3,400.0	3,247.5	280.2	197.2	3.374	SF
Dunn 7PD (AL) - Wellbore #1 - Design #1	7,861.7	6,882.6	178.6	138.2	4.419	CC, ES, SF
Existing Wells - Sec.7-T5N-R64W						
Dunn #23-7 (Exist.) - Wellbore #1 - Wellbore #1	8,490.7	6,795.8	527.2	360.2	3.157	CC
Dunn #23-7 (Exist.) - Wellbore #1 - Wellbore #1	8,500.0	6,795.8	527.3	360.1	3.155	ES, SF
Little Will #7 (P&A) - Wellbore #1 - Wellbore #1	15,354.0	6,781.4	570.9	278.2	1.951	CC, ES, SF
Plumb #4 (Exist.) - Wellbore #1 - Wellbore #1	10,007.3	6,768.6	462.1	270.1	2.406	CC, ES, SF
Silva #1 (Exist.) - Wellbore #1 - Wellbore #1						Out of range
Silva #23-6 (Exist) - Wellbore #1 - Wellbore #1	13,838.8	6,769.6	571.9	308.3	2.170	CC, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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
0.0	0.0	0.0	0.0	0.0	0.0	0.66	120.2	1.4	120.2				
100.0	100.0	100.0	100.0	0.1	0.1	0.66	120.2	1.4	120.2	120.0	0.22	534.985	
200.0	200.0	200.0	200.0	0.3	0.3	0.66	120.2	1.4	120.2	119.6	0.67	178.317	
300.0	300.0	300.0	300.0	0.6	0.6	0.66	120.2	1.4	120.2	119.1	1.12	106.989	
400.0	400.0	400.0	400.0	0.8	0.8	0.66	120.2	1.4	120.2	118.7	1.57	76.420	CC, ES
500.0	500.0	500.0	500.0	1.0	1.0	-112.39	120.2	1.4	120.7	118.7	2.01	60.179	
600.0	599.9	599.9	599.9	1.2	1.2	-114.07	120.2	1.4	122.3	119.8	2.43	50.223	
700.0	699.7	699.7	699.7	1.4	1.5	-116.76	120.2	1.4	125.1	122.2	2.88	43.440	
800.0	799.3	799.3	799.3	1.7	1.7	-120.31	120.2	1.4	129.5	126.1	3.34	38.752	
900.0	898.6	898.6	898.6	1.9	1.9	-124.50	120.2	1.4	135.8	132.0	3.82	35.565	
1,000.0	997.5	997.5	997.5	2.2	2.1	-129.06	120.2	1.4	144.5	140.2	4.31	33.528	
1,100.0	1,096.1	1,096.1	1,096.1	2.6	2.4	-133.74	120.2	1.4	155.8	151.0	4.81	32.407	
1,200.0	1,194.2	1,194.2	1,194.2	3.0	2.6	-138.32	120.2	1.4	170.0	164.6	5.31	32.025	SF
1,300.0	1,291.7	1,291.7	1,291.7	3.4	2.8	-142.62	120.2	1.4	187.2	181.4	5.80	32.242	
1,400.0	1,388.6	1,388.6	1,388.6	3.9	3.0	-146.54	120.2	1.4	207.4	201.1	6.30	32.938	
1,500.0	1,484.9	1,484.9	1,484.9	4.4	3.2	-150.04	120.2	1.4	230.8	224.0	6.78	34.014	
1,600.0	1,580.4	1,580.4	1,580.4	5.0	3.4	-153.13	120.2	1.4	257.1	249.9	7.27	35.389	
1,700.0	1,675.0	1,675.0	1,675.0	5.6	3.7	-155.82	120.2	1.4	286.4	278.7	7.74	36.998	
1,800.0	1,768.9	1,768.9	1,768.9	6.3	3.9	-158.16	120.2	1.4	318.6	310.4	8.21	38.789	
1,813.6	1,781.5	1,781.5	1,781.5	6.4	3.9	-158.46	120.2	1.4	323.2	314.9	8.28	39.043	
1,900.0	1,862.1	1,861.6	1,861.6	7.0	4.1	-160.38	119.9	1.0	352.7	344.0	8.68	40.614	
2,000.0	1,955.3	1,953.5	1,953.5	7.8	4.2	-162.55	118.1	-0.8	387.5	378.4	9.13	42.444	
2,100.0	2,048.6	2,044.5	2,044.4	8.5	4.4	-164.66	114.8	-4.2	423.1	413.5	9.56	44.250	
2,200.0	2,141.8	2,134.6	2,134.2	9.3	4.6	-166.71	110.0	-9.1	459.5	449.5	9.99	45.991	
2,300.0	2,235.0	2,223.7	2,222.8	10.0	4.8	-168.71	103.8	-15.4	496.8	486.4	10.42	47.662	
2,400.0	2,328.3	2,311.7	2,310.1	10.8	4.9	-170.64	96.3	-23.1	535.2	524.3	10.87	49.254	
2,500.0	2,421.5	2,400.0	2,397.5	11.6	5.1	-172.55	87.4	-32.2	574.6	563.3	11.32	50.744	
2,600.0	2,514.7	2,484.0	2,480.4	12.3	5.4	-174.32	77.5	-42.3	615.2	603.4	11.80	52.143	
2,700.0	2,607.9	2,568.3	2,563.1	13.1	5.6	-176.07	66.4	-53.7	657.0	644.7	12.30	53.419	
2,800.0	2,701.2	2,651.2	2,644.2	13.9	5.9	-177.74	54.2	-66.1	700.0	687.1	12.83	54.577	
2,900.0	2,794.4	2,732.7	2,723.5	14.6	6.1	-179.36	41.0	-79.6	744.2	730.8	13.38	55.631	
3,000.0	2,887.6	2,812.8	2,801.0	15.4	6.4	179.09	26.9	-94.1	789.8	775.8	13.96	56.574	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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	0.53	90.0	0.8	90.0				
100.0	100.0	100.0	100.0	0.1	0.1	0.53	90.0	0.8	90.0	89.8	0.22	400.405	
200.0	200.0	200.0	200.0	0.3	0.3	0.53	90.0	0.8	90.0	89.3	0.67	133.460	
300.0	300.0	300.0	300.0	0.6	0.6	0.53	90.0	0.8	90.0	88.9	1.12	80.075	
400.0	400.0	400.0	400.0	0.8	0.8	0.53	90.0	0.8	90.0	88.4	1.57	57.196	CC, ES
500.0	500.0	500.0	500.0	1.0	1.0	-112.71	90.0	0.8	90.5	88.5	2.01	45.104	
600.0	599.9	599.9	599.9	1.2	1.2	-114.94	90.0	0.8	92.1	89.6	2.43	37.816	
700.0	699.7	699.7	699.7	1.4	1.5	-118.48	90.0	0.8	95.0	92.1	2.88	32.997	
800.0	799.3	799.3	799.3	1.7	1.7	-123.03	90.0	0.8	99.7	96.4	3.34	29.852	
900.0	898.6	898.6	898.6	1.9	1.9	-128.23	90.0	0.8	106.6	102.8	3.81	27.946	
1,000.0	997.5	997.5	997.5	2.2	2.1	-133.67	90.0	0.8	116.1	111.8	4.30	27.009	
1,100.0	1,096.1	1,096.1	1,096.1	2.6	2.4	-138.98	90.0	0.8	128.4	123.6	4.78	26.846	SF
1,200.0	1,194.2	1,194.2	1,194.2	3.0	2.6	-143.92	90.0	0.8	143.8	138.5	5.27	27.297	
1,300.0	1,291.7	1,291.7	1,291.7	3.4	2.8	-148.34	90.0	0.8	162.3	156.5	5.75	28.232	
1,400.0	1,388.6	1,388.6	1,388.6	3.9	3.0	-152.19	90.0	0.8	183.8	177.6	6.22	29.539	
1,500.0	1,484.9	1,484.9	1,484.9	4.4	3.2	-155.49	90.0	0.8	208.4	201.7	6.69	31.131	
1,600.0	1,580.4	1,581.8	1,581.8	5.0	3.4	-158.56	89.2	0.5	235.6	228.5	7.14	33.014	
1,700.0	1,675.0	1,678.1	1,678.0	5.6	3.6	-161.67	86.3	-1.0	265.1	257.6	7.54	35.148	
1,800.0	1,768.9	1,773.1	1,772.9	6.3	3.8	-164.74	81.2	-3.4	297.3	289.3	7.94	37.433	
1,813.6	1,781.5	1,785.9	1,785.6	6.4	3.8	-165.15	80.4	-3.9	301.8	293.8	7.99	37.753	
1,900.0	1,862.1	1,867.1	1,866.5	7.0	3.9	-167.78	74.1	-6.9	331.2	322.9	8.36	39.599	
2,000.0	1,955.3	1,960.5	1,959.4	7.8	4.1	-170.64	65.1	-11.3	365.7	356.9	8.80	41.530	
2,100.0	2,048.6	2,053.3	2,051.3	8.5	4.3	-173.33	54.0	-16.7	400.7	391.4	9.27	43.233	
2,200.0	2,141.8	2,145.3	2,142.2	9.3	4.6	-175.89	41.1	-23.0	436.3	426.5	9.76	44.702	
2,300.0	2,235.0	2,236.4	2,231.9	10.0	4.8	-178.33	26.4	-30.2	472.7	462.4	10.29	45.934	
2,400.0	2,328.3	2,326.6	2,320.2	10.8	5.1	179.34	9.9	-38.2	509.9	499.0	10.86	46.936	
2,500.0	2,421.5	2,416.7	2,408.0	11.6	5.4	177.12	-8.0	-47.0	547.9	536.4	11.49	47.703	
2,600.0	2,514.7	2,507.0	2,496.1	12.3	5.7	175.16	-26.2	-55.8	586.7	574.5	12.15	48.292	
2,700.0	2,607.9	2,597.4	2,584.2	13.1	6.0	173.44	-44.3	-64.7	625.9	613.1	12.84	48.748	
2,800.0	2,701.2	2,687.8	2,672.3	13.9	6.4	171.91	-62.5	-73.5	665.6	652.0	13.56	49.095	
2,900.0	2,794.4	2,778.2	2,760.4	14.6	6.8	170.56	-80.6	-82.4	705.6	691.3	14.30	49.362	
3,000.0	2,887.6	2,868.6	2,848.5	15.4	7.1	169.34	-98.8	-91.2	746.0	730.9	15.05	49.567	
3,100.0	2,980.9	2,958.9	2,936.6	16.2	7.5	168.25	-116.9	-100.1	786.6	770.8	15.82	49.724	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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	0.61	105.3	1.1	105.3				
100.0	100.0	100.0	100.0	0.1	0.1	0.61	105.3	1.1	105.3	105.1	0.22	468.496	
200.0	200.0	200.0	200.0	0.3	0.3	0.61	105.3	1.1	105.3	104.6	0.67	156.156	
300.0	300.0	300.0	300.0	0.6	0.6	0.61	105.3	1.1	105.3	104.2	1.12	93.692	
400.0	400.0	400.0	400.0	0.8	0.8	0.61	105.3	1.1	105.3	103.7	1.57	66.923	CC, ES
500.0	500.0	500.0	500.0	1.0	1.0	-112.53	105.3	1.1	105.8	103.8	2.01	52.731	
600.0	599.9	599.9	599.9	1.2	1.2	-114.44	105.3	1.1	107.4	104.9	2.43	44.093	
700.0	699.7	699.7	699.7	1.4	1.5	-117.49	105.3	1.1	110.2	107.3	2.88	38.276	
800.0	799.3	799.3	799.3	1.7	1.7	-121.48	105.3	1.1	114.7	111.4	3.34	34.345	
900.0	898.6	898.6	898.6	1.9	1.9	-126.12	105.3	1.1	121.3	117.5	3.82	31.784	
1,000.0	997.5	997.5	997.5	2.2	2.1	-131.09	105.3	1.1	130.3	126.0	4.30	30.283	
1,100.0	1,096.1	1,096.1	1,096.1	2.6	2.4	-136.08	105.3	1.1	142.1	137.3	4.80	29.629	SF
1,200.0	1,194.2	1,194.2	1,194.2	3.0	2.6	-140.85	105.3	1.1	156.9	151.6	5.29	29.656	
1,300.0	1,291.7	1,291.7	1,291.7	3.4	2.8	-145.24	105.3	1.1	174.7	168.9	5.78	30.226	
1,400.0	1,388.6	1,388.6	1,388.6	3.9	3.0	-149.15	105.3	1.1	195.5	189.3	6.26	31.226	
1,500.0	1,484.9	1,484.9	1,484.9	4.4	3.2	-152.59	105.3	1.1	219.5	212.7	6.74	32.560	
1,600.0	1,580.4	1,580.4	1,580.4	5.0	3.4	-155.57	105.3	1.1	246.4	239.2	7.21	34.154	
1,700.0	1,675.0	1,675.5	1,675.5	5.6	3.6	-158.31	104.7	0.7	276.1	268.5	7.66	36.041	
1,800.0	1,768.9	1,769.4	1,769.4	6.3	3.8	-161.09	102.3	-1.2	308.6	300.6	8.07	38.223	
1,813.6	1,781.5	1,782.0	1,782.0	6.4	3.8	-161.46	101.9	-1.6	313.3	305.1	8.13	38.537	
1,900.0	1,862.1	1,862.1	1,861.9	7.0	4.0	-163.92	98.2	-4.4	343.3	334.8	8.50	40.400	
2,000.0	1,955.3	1,953.9	1,953.4	7.8	4.2	-166.60	92.4	-9.0	378.6	369.7	8.92	42.432	
2,100.0	2,048.6	2,044.9	2,043.9	8.5	4.3	-169.13	84.9	-14.9	414.8	405.5	9.36	44.329	
2,200.0	2,141.8	2,134.9	2,133.2	9.3	4.5	-171.53	75.9	-22.0	452.0	442.2	9.81	46.081	
2,300.0	2,235.0	2,223.9	2,221.1	10.0	4.8	-173.81	65.3	-30.3	490.1	479.8	10.28	47.676	
2,400.0	2,328.3	2,311.8	2,307.6	10.8	5.0	-175.98	53.3	-39.7	529.2	518.4	10.78	49.108	
2,500.0	2,421.5	2,400.0	2,394.2	11.6	5.2	-178.09	39.6	-50.4	569.5	558.2	11.31	50.349	
2,600.0	2,514.7	2,483.8	2,476.0	12.3	5.5	179.97	25.2	-61.7	610.9	599.0	11.88	51.438	
2,700.0	2,607.9	2,567.9	2,557.6	13.1	5.8	178.08	9.3	-74.2	653.5	641.0	12.48	52.362	
2,800.0	2,701.2	2,651.1	2,637.9	13.9	6.2	176.27	-7.8	-87.6	697.4	684.2	13.12	53.140	
2,900.0	2,794.4	2,738.3	2,721.9	14.6	6.5	174.52	-26.3	-102.1	742.1	728.2	13.82	53.695	
3,000.0	2,887.6	2,825.4	2,805.8	15.4	6.9	172.96	-44.8	-116.6	787.3	772.7	14.54	54.143	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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	0.64	75.1	0.8	75.1				
100.0	100.0	100.0	100.0	0.1	0.1	0.64	75.1	0.8	75.1	74.8	0.22	333.965	
200.0	200.0	200.0	200.0	0.3	0.3	0.64	75.1	0.8	75.1	74.4	0.67	111.315	
300.0	300.0	300.0	300.0	0.6	0.6	0.64	75.1	0.8	75.1	73.9	1.12	66.788	
400.0	400.0	400.0	400.0	0.8	0.8	0.64	75.1	0.8	75.1	73.5	1.57	47.706	CC, ES
500.0	500.0	500.0	500.0	1.0	1.0	-112.76	75.1	0.8	75.6	73.5	2.01	37.661	
600.0	599.9	599.9	599.9	1.2	1.2	-115.42	75.1	0.8	77.2	74.7	2.43	31.689	
700.0	699.7	699.7	699.7	1.4	1.5	-119.60	75.1	0.8	80.2	77.3	2.88	27.845	
800.0	799.3	799.3	799.3	1.7	1.7	-124.89	75.1	0.8	85.1	81.7	3.34	25.477	
900.0	898.6	898.6	898.6	1.9	1.9	-130.78	75.1	0.8	92.3	88.5	3.81	24.225	
1,000.0	997.5	997.5	997.5	2.2	2.1	-136.74	75.1	0.8	102.3	98.0	4.29	23.853	SF
1,100.0	1,096.1	1,096.1	1,096.1	2.6	2.4	-142.36	75.1	0.8	115.3	110.5	4.77	24.179	
1,200.0	1,194.2	1,194.2	1,194.2	3.0	2.6	-147.41	75.1	0.8	131.4	126.1	5.25	25.049	
1,300.0	1,291.7	1,291.7	1,291.7	3.4	2.8	-151.77	75.1	0.8	150.6	144.8	5.72	26.335	
1,400.0	1,388.6	1,388.6	1,388.6	3.9	3.0	-155.47	75.1	0.8	172.8	166.6	6.18	27.935	
1,500.0	1,484.9	1,488.9	1,488.9	4.4	3.2	-158.85	74.1	1.2	197.0	190.4	6.63	29.737	
1,600.0	1,580.4	1,589.9	1,589.8	5.0	3.4	-162.07	70.6	2.4	222.1	215.0	7.03	31.569	
1,700.0	1,675.0	1,690.9	1,690.6	5.6	3.6	-165.14	64.6	4.4	247.9	240.5	7.44	33.325	
1,800.0	1,768.9	1,792.0	1,791.3	6.3	3.8	-168.09	56.0	7.3	274.8	266.9	7.85	35.004	
1,813.6	1,781.5	1,805.7	1,804.9	6.4	3.8	-168.48	54.7	7.8	278.5	270.6	7.91	35.226	
1,900.0	1,862.1	1,893.4	1,892.0	7.0	4.0	-170.96	44.9	11.1	301.8	293.5	8.30	36.363	
2,000.0	1,955.3	1,995.4	1,993.0	7.8	4.2	-173.69	31.2	15.7	327.5	318.7	8.78	37.307	
2,100.0	2,048.6	2,097.9	2,094.0	8.5	4.5	-176.33	14.9	21.3	351.8	342.5	9.29	37.870	
2,200.0	2,141.8	2,198.1	2,192.4	9.3	4.8	-178.85	-3.4	27.5	375.1	365.3	9.84	38.109	
2,300.0	2,235.0	2,294.2	2,286.6	10.0	5.1	178.97	-21.5	33.6	398.7	388.2	10.43	38.212	
2,400.0	2,328.3	2,390.3	2,380.8	10.8	5.4	177.03	-39.5	39.7	422.7	411.7	11.06	38.220	
2,500.0	2,421.5	2,486.4	2,475.0	11.6	5.8	175.29	-57.5	45.8	447.2	435.5	11.72	38.155	
2,600.0	2,514.7	2,582.5	2,569.2	12.3	6.1	173.73	-75.5	51.9	472.0	459.6	12.41	38.034	
2,700.0	2,607.9	2,678.6	2,663.4	13.1	6.5	172.33	-93.5	58.1	497.1	484.0	13.13	37.873	
2,800.0	2,701.2	2,774.7	2,757.6	13.9	6.8	171.06	-111.5	64.2	522.5	508.6	13.86	37.684	
2,900.0	2,794.4	2,870.8	2,851.8	14.6	7.2	169.91	-129.5	70.3	548.0	533.4	14.62	37.477	
3,000.0	2,887.6	2,966.9	2,946.0	15.4	7.6	168.86	-147.5	76.4	573.8	558.4	15.40	37.261	
3,100.0	2,980.9	3,063.1	3,040.2	16.2	8.0	167.90	-165.5	82.5	599.8	583.6	16.19	37.041	
3,200.0	3,074.1	3,159.2	3,134.4	16.9	8.4	167.02	-183.5	88.6	625.8	608.8	17.00	36.821	
3,300.0	3,167.3	3,255.3	3,228.6	17.7	8.7	166.21	-201.5	94.7	652.0	634.2	17.81	36.604	
3,400.0	3,260.6	3,351.4	3,322.8	18.5	9.1	165.46	-219.5	100.8	678.4	659.7	18.64	36.393	
3,500.0	3,353.8	3,447.5	3,417.0	19.3	9.5	164.77	-237.5	107.0	704.8	685.3	19.48	36.187	
3,600.0	3,447.0	3,543.6	3,511.2	20.0	9.9	164.12	-255.6	113.1	731.3	711.0	20.32	35.989	
3,700.0	3,540.3	3,639.7	3,605.4	20.8	10.3	163.52	-273.6	119.2	757.9	736.7	21.17	35.799	
3,800.0	3,633.5	3,735.8	3,699.6	21.6	10.7	162.97	-291.6	125.3	784.6	762.6	22.03	35.617	

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 7Q-301
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 7Q-301	**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 (9-11-15)	**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	0.71	45.2	0.6	45.2				
100.0	100.0	100.0	100.0	0.1	0.1	0.71	45.2	0.6	45.2	45.0	0.22	201.038	
200.0	200.0	200.0	200.0	0.3	0.3	0.71	45.2	0.6	45.2	44.5	0.67	67.008	
300.0	300.0	300.0	300.0	0.6	0.6	0.71	45.2	0.6	45.2	44.1	1.12	40.205	
400.0	400.0	400.0	400.0	0.8	0.8	0.71	45.2	0.6	45.2	43.6	1.57	28.717	CC, ES
500.0	500.0	500.0	500.0	1.0	1.0	-113.29	45.2	0.6	45.7	43.7	2.01	22.771	
600.0	599.9	599.9	599.9	1.2	1.2	-117.63	45.2	0.6	47.4	44.9	2.44	19.455	
700.0	699.7	699.7	699.7	1.4	1.5	-124.14	45.2	0.6	50.7	47.9	2.88	17.619	
800.0	799.3	799.3	799.3	1.7	1.7	-131.77	45.2	0.6	56.4	53.1	3.34	16.898	
900.0	898.6	898.6	898.6	1.9	1.9	-139.44	45.2	0.6	64.8	61.0	3.80	17.055	
1,000.0	997.5	997.5	997.5	2.2	2.1	-146.34	45.2	0.6	76.4	72.1	4.27	17.892	
1,100.0	1,096.1	1,098.4	1,098.4	2.6	2.3	-152.17	44.3	1.5	89.7	85.0	4.71	19.059	
1,200.0	1,194.2	1,199.7	1,199.6	3.0	2.5	-156.97	41.6	4.4	103.6	98.5	5.13	20.201	
1,300.0	1,291.7	1,301.3	1,301.0	3.4	2.7	-161.09	37.1	9.2	117.8	112.2	5.55	21.216	
1,400.0	1,388.6	1,403.2	1,402.5	3.9	2.9	-164.72	30.7	16.1	132.3	126.4	5.98	22.122	
1,500.0	1,484.9	1,505.5	1,504.1	4.4	3.2	-168.01	22.4	25.0	147.2	140.8	6.42	22.933	
1,600.0	1,580.4	1,608.2	1,605.6	5.0	3.5	-171.04	12.2	35.9	162.4	155.5	6.87	23.652	
1,700.0	1,675.0	1,711.1	1,707.0	5.6	3.8	-173.87	0.1	48.8	178.0	170.6	7.33	24.277	
1,800.0	1,768.9	1,814.3	1,808.2	6.3	4.1	-176.53	-13.9	63.7	193.9	186.1	7.82	24.800	
1,813.6	1,781.5	1,828.3	1,821.8	6.4	4.2	-176.88	-15.9	65.9	196.1	188.2	7.89	24.859	
1,900.0	1,862.1	1,918.0	1,909.2	7.0	4.5	-179.06	-29.8	80.8	209.2	200.9	8.37	25.005	
2,000.0	1,955.3	2,017.7	2,005.9	7.8	4.9	178.67	-46.3	98.5	223.2	214.2	8.95	24.926	
2,100.0	2,048.6	2,116.4	2,101.6	8.5	5.4	176.69	-62.7	116.0	237.4	227.8	9.58	24.787	
2,200.0	2,141.8	2,215.1	2,197.3	9.3	5.8	174.94	-79.1	133.5	251.9	241.7	10.23	24.612	
2,300.0	2,235.0	2,313.7	2,293.0	10.0	6.3	173.37	-95.5	151.1	266.6	255.7	10.92	24.411	
2,400.0	2,328.3	2,412.4	2,388.7	10.8	6.8	171.97	-111.8	168.6	281.4	269.8	11.63	24.191	
2,500.0	2,421.5	2,511.1	2,484.4	11.6	7.2	170.71	-128.2	186.2	296.4	284.1	12.37	23.961	
2,600.0	2,514.7	2,609.7	2,580.1	12.3	7.7	169.57	-144.6	203.7	311.6	298.4	13.13	23.728	
2,700.0	2,607.9	2,708.4	2,675.8	13.1	8.2	168.54	-161.0	221.3	326.8	312.9	13.91	23.495	
2,800.0	2,701.2	2,807.1	2,771.5	13.9	8.7	167.60	-177.4	238.8	342.1	327.4	14.71	23.267	
2,900.0	2,794.4	2,905.7	2,867.2	14.6	9.2	166.74	-193.8	256.3	357.6	342.1	15.52	23.046	
3,000.0	2,887.6	3,004.4	2,962.9	15.4	9.7	165.95	-210.2	273.9	373.1	356.7	16.34	22.833	
3,100.0	2,980.9	3,103.1	3,058.7	16.2	10.2	165.22	-226.6	291.4	388.6	371.4	17.17	22.628	
3,200.0	3,074.1	3,201.7	3,154.4	16.9	10.7	164.55	-243.0	309.0	404.2	386.2	18.02	22.433	
3,300.0	3,167.3	3,300.4	3,250.1	17.7	11.2	163.93	-259.3	326.5	419.9	401.0	18.87	22.247	
3,400.0	3,260.6	3,399.1	3,345.8	18.5	11.7	163.36	-275.7	344.1	435.6	415.9	19.74	22.071	
3,500.0	3,353.8	3,497.7	3,441.5	19.3	12.2	162.82	-292.1	361.6	451.3	430.7	20.61	21.903	
3,600.0	3,447.0	3,596.4	3,537.2	20.0	12.7	162.32	-308.5	379.1	467.1	445.6	21.48	21.745	
3,700.0	3,540.3	3,695.1	3,632.9	20.8	13.2	161.85	-324.9	396.7	482.9	460.6	22.36	21.595	
3,800.0	3,633.5	3,793.7	3,728.6	21.6	13.8	161.42	-341.3	414.2	498.8	475.5	23.25	21.452	
3,900.0	3,726.7	3,892.4	3,824.3	22.4	14.3	161.00	-357.7	431.8	514.6	490.5	24.14	21.317	
4,000.0	3,819.9	3,991.1	3,920.0	23.1	14.8	160.62	-374.1	449.3	530.5	505.5	25.04	21.189	
4,100.0	3,913.2	4,089.7	4,015.7	23.9	15.3	160.25	-390.5	466.8	546.5	520.5	25.94	21.068	
4,200.0	4,006.4	4,188.4	4,111.4	24.7	15.8	159.91	-406.8	484.4	562.4	535.5	26.84	20.953	
4,300.0	4,099.6	4,287.1	4,207.1	25.5	16.3	159.59	-423.2	501.9	578.3	550.6	27.75	20.844	
4,400.0	4,192.9	4,385.7	4,302.8	26.2	16.9	159.28	-439.6	519.5	594.3	565.7	28.66	20.740	
4,500.0	4,286.1	4,484.4	4,398.5	27.0	17.4	158.99	-456.0	537.0	610.3	580.7	29.57	20.641	
4,600.0	4,379.3	4,583.1	4,494.2	27.8	17.9	158.71	-472.4	554.6	626.3	595.8	30.48	20.547	
4,700.0	4,472.6	4,681.7	4,589.9	28.6	18.4	158.45	-488.8	572.1	642.3	610.9	31.40	20.457	
4,800.0	4,565.8	4,780.4	4,685.6	29.4	18.9	158.20	-505.2	589.6	658.4	626.0	32.32	20.372	
4,900.0	4,659.0	4,879.1	4,781.3	30.1	19.4	157.96	-521.6	607.2	674.4	641.2	33.24	20.291	

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 7Q-301
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 7Q-301	**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 (9-11-15)	**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	4,752.2	4,977.7	4,877.0	30.9	20.0	157.74	-538.0	624.7	690.4	656.3	34.16	20.213	
5,100.0	4,845.5	5,076.4	4,972.7	31.7	20.5	157.52	-554.3	642.3	706.5	671.4	35.08	20.139	
5,119.7	4,863.9	5,095.9	4,991.6	31.9	20.6	157.48	-557.6	645.7	709.7	674.4	35.26	20.124	
5,200.0	4,939.1	5,175.2	5,068.5	32.4	21.0	157.37	-570.8	659.8	721.5	685.5	36.03	20.025	
5,300.0	5,033.9	5,264.3	5,155.1	32.9	21.4	157.20	-585.2	675.3	733.9	697.1	36.85	19.915	
5,400.0	5,129.7	5,347.9	5,236.7	33.4	21.7	157.07	-597.2	688.2	745.1	707.6	37.53	19.855	
5,500.0	5,226.5	5,431.4	5,318.8	33.8	22.0	156.97	-607.6	699.3	755.2	717.1	38.10	19.821	
5,600.0	5,324.1	5,514.8	5,401.3	34.2	22.2	156.92	-616.4	708.7	764.2	725.7	38.59	19.804	
5,700.0	5,422.3	5,600.0	5,485.8	34.5	22.4	156.89	-623.6	716.4	772.2	733.2	39.00	19.801	
5,800.0	5,521.2	5,681.7	5,567.1	34.8	22.6	156.90	-628.9	722.1	779.0	739.7	39.31	19.819	
5,900.0	5,620.6	5,765.0	5,650.3	35.0	22.8	156.94	-632.7	726.2	784.8	745.3	39.54	19.850	
6,000.0	5,720.2	5,848.3	5,733.5	35.2	22.9	157.01	-634.9	728.5	789.4	749.8	39.68	19.895	
6,100.0	5,820.1	5,934.9	5,820.1	35.3	23.0	157.11	-635.4	729.1	792.9	753.2	39.75	19.948	
6,179.9	5,900.0	6,014.8	5,900.0	35.4	23.1	-90.37	-635.4	729.1	794.0	754.2	39.81	19.945	
6,200.0	5,920.1	6,034.9	5,920.1	35.4	23.1	-90.37	-635.4	729.1	794.0	754.1	39.86	19.920	
6,300.0	6,020.1	6,135.2	6,020.3	35.5	23.2	-90.27	-634.0	729.1	794.0	753.9	40.04	19.830	
6,328.8	6,048.9	6,164.0	6,049.0	35.5	23.2	-90.10	-631.7	729.1	794.0	753.9	40.01	19.843	
6,343.3	6,063.4	6,178.5	6,063.4	35.5	23.2	-90.00	-630.2	729.1	794.0	754.0	39.99	19.856	
6,350.0	6,070.1	6,185.1	6,070.0	35.5	23.2	-89.95	-629.4	729.1	794.0	754.0	39.97	19.863	
6,400.0	6,120.0	6,234.6	6,118.9	35.5	23.2	-89.60	-621.5	729.1	794.0	754.1	39.84	19.931	
6,450.0	6,169.6	6,283.9	6,167.0	35.5	23.2	-89.25	-610.6	729.1	794.0	754.4	39.65	20.028	
6,500.0	6,218.7	6,332.8	6,213.9	35.5	23.1	-88.91	-596.8	729.1	794.1	754.7	39.41	20.149	
6,550.0	6,267.0	6,381.5	6,259.6	35.5	23.0	-88.57	-580.0	729.1	794.2	755.1	39.14	20.294	
6,600.0	6,314.4	6,429.9	6,303.8	35.5	23.0	-88.24	-560.5	729.1	794.3	755.5	38.83	20.456	
6,650.0	6,360.7	6,478.0	6,346.5	35.4	22.8	-87.91	-538.4	729.1	794.5	756.0	38.50	20.634	
6,700.0	6,405.7	6,525.8	6,387.6	35.4	22.7	-87.60	-513.8	729.1	794.7	756.5	38.16	20.823	
6,750.0	6,449.1	6,573.4	6,426.8	35.3	22.6	-87.29	-486.7	729.1	794.9	757.0	37.82	21.017	
6,800.0	6,490.8	6,620.8	6,464.0	35.2	22.5	-87.00	-457.5	729.1	795.1	757.6	37.48	21.212	
6,850.0	6,530.6	6,668.0	6,499.2	35.1	22.3	-86.72	-426.2	729.1	795.3	758.1	37.16	21.403	
6,900.0	6,568.3	6,714.9	6,532.3	35.0	22.2	-86.45	-392.9	729.1	795.5	758.6	36.86	21.584	
6,950.0	6,603.9	6,761.7	6,563.1	34.9	22.0	-86.20	-357.7	729.1	795.7	759.1	36.59	21.749	
7,000.0	6,637.0	6,808.2	6,591.7	34.8	21.8	-85.97	-320.9	729.1	795.9	759.6	36.36	21.892	
7,050.0	6,667.6	6,854.6	6,617.8	34.7	21.7	-85.75	-282.6	729.1	796.2	760.0	36.18	22.007	
7,100.0	6,695.6	6,900.0	6,641.1	34.6	21.5	-85.55	-243.7	729.1	796.4	760.3	36.05	22.089	
7,150.0	6,720.8	6,947.0	6,662.7	34.5	21.3	-85.36	-201.9	729.1	796.6	760.6	35.99	22.133	
7,200.0	6,743.2	6,993.0	6,681.3	34.3	21.2	-85.20	-159.9	729.1	796.8	760.8	35.99	22.136	
7,250.0	6,762.5	7,038.9	6,697.4	34.2	21.0	-85.05	-116.9	729.1	796.9	760.9	36.07	22.094	
7,300.0	6,778.8	7,084.7	6,710.8	34.1	20.9	-84.92	-73.1	729.1	797.1	760.9	36.22	22.008	
7,350.0	6,792.0	7,130.4	6,721.5	34.0	20.7	-84.82	-28.7	729.1	797.2	760.8	36.44	21.877	
7,400.0	6,802.0	7,176.0	6,729.6	34.0	20.6	-84.73	16.2	729.1	797.3	760.6	36.74	21.705	
7,450.0	6,808.8	7,221.6	6,734.9	33.9	20.5	-84.67	61.5	729.1	797.4	760.3	37.10	21.492	
7,500.0	6,812.3	7,267.2	6,737.6	33.8	20.3	-84.62	107.0	729.1	797.5	759.9	37.54	21.245	
7,530.4	6,812.8	7,295.4	6,737.9	33.8	20.3	-84.61	135.1	729.1	797.5	759.7	37.83	21.078	
7,600.0	6,812.7	7,365.0	6,737.8	33.7	20.1	-84.61	204.7	729.1	797.5	758.8	38.65	20.634	
7,700.0	6,812.5	7,465.0	6,737.6	33.7	20.0	-84.61	304.7	729.1	797.5	757.4	40.07	19.902	
7,800.0	6,812.3	7,565.0	6,737.4	33.8	20.7	-84.62	404.7	729.1	797.5	755.7	41.80	19.080	
7,900.0	6,812.1	7,665.0	6,737.3	33.9	21.9	-84.62	504.7	729.1	797.5	753.7	43.79	18.212	
8,000.0	6,811.9	7,765.0	6,737.1	34.2	23.2	-84.62	604.7	729.1	797.5	751.4	46.01	17.331	
8,100.0	6,811.6	7,865.0	6,737.0	34.6	24.5	-84.63	704.7	729.1	797.5	749.0	48.44	16.463	
8,200.0	6,811.4	7,965.0	6,736.8	35.1	25.9	-84.63	804.7	729.1	797.5	746.4	51.04	15.624	
8,300.0	6,811.2	8,065.0	6,736.7	35.8	27.3	-84.63	904.7	729.1	797.4	743.7	53.78	14.827	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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
8,400.0	6,811.0	8,165.0	6,736.5	36.6	28.8	-84.64	1,004.7	729.1	797.4	740.8	56.66	14.075	
8,500.0	6,810.8	8,265.0	6,736.3	37.5	30.3	-84.64	1,104.7	729.1	797.4	737.8	59.63	13.372	
8,600.0	6,810.6	8,365.0	6,736.2	38.6	31.9	-84.65	1,204.7	729.1	797.4	734.7	62.70	12.717	
8,700.0	6,810.4	8,465.0	6,736.0	39.8	33.5	-84.65	1,304.7	729.1	797.4	731.6	65.85	12.109	
8,800.0	6,810.2	8,565.0	6,735.9	41.1	35.1	-84.65	1,404.7	729.1	797.4	728.4	69.07	11.545	
8,900.0	6,810.0	8,665.0	6,735.7	42.4	36.8	-84.66	1,504.7	729.1	797.4	725.1	72.35	11.022	
9,000.0	6,809.8	8,765.0	6,735.6	43.8	38.5	-84.66	1,604.7	729.1	797.4	721.7	75.68	10.537	
9,100.0	6,809.5	8,865.0	6,735.4	45.3	40.2	-84.66	1,704.7	729.1	797.4	718.4	79.05	10.087	
9,200.0	6,809.3	8,965.0	6,735.2	46.8	41.9	-84.67	1,804.7	729.1	797.4	714.9	82.47	9.669	
9,300.0	6,809.1	9,065.0	6,735.1	48.3	43.6	-84.67	1,904.7	729.1	797.4	711.5	85.92	9.281	
9,400.0	6,808.9	9,165.0	6,734.9	49.9	45.4	-84.68	2,004.7	729.1	797.4	708.0	89.40	8.920	
9,500.0	6,808.7	9,265.0	6,734.8	51.5	47.1	-84.68	2,104.7	729.1	797.4	704.5	92.90	8.583	
9,600.0	6,808.5	9,365.0	6,734.6	53.1	48.9	-84.68	2,204.7	729.1	797.4	700.9	96.44	8.269	
9,700.0	6,808.3	9,465.0	6,734.5	54.8	50.7	-84.69	2,304.7	729.1	797.4	697.4	99.99	7.975	
9,800.0	6,808.1	9,565.0	6,734.3	56.5	52.5	-84.69	2,404.7	729.1	797.4	693.8	103.56	7.699	
9,900.0	6,807.9	9,665.0	6,734.1	58.2	54.3	-84.69	2,504.7	729.1	797.4	690.2	107.15	7.441	
10,000.0	6,807.7	9,765.0	6,734.0	59.9	56.1	-84.70	2,604.7	729.1	797.4	686.6	110.76	7.199	
10,100.0	6,807.5	9,865.0	6,733.8	61.6	57.9	-84.70	2,704.7	729.1	797.4	683.0	114.38	6.971	
10,200.0	6,807.2	9,965.0	6,733.7	63.3	59.7	-84.71	2,804.7	729.1	797.4	679.3	118.01	6.756	
10,300.0	6,807.0	10,065.0	6,733.5	65.0	61.5	-84.71	2,904.7	729.1	797.3	675.7	121.66	6.554	
10,400.0	6,806.8	10,165.0	6,733.4	66.8	63.3	-84.71	3,004.7	729.1	797.3	672.0	125.32	6.363	
10,500.0	6,806.6	10,265.0	6,733.2	68.5	65.2	-84.72	3,104.7	729.1	797.3	668.4	128.98	6.182	
10,600.0	6,806.4	10,365.0	6,733.0	70.3	67.0	-84.72	3,204.7	729.1	797.3	664.7	132.66	6.010	
10,700.0	6,806.2	10,465.0	6,732.9	72.1	68.9	-84.72	3,304.7	729.1	797.3	661.0	136.34	5.848	
10,800.0	6,806.0	10,565.0	6,732.7	73.9	70.7	-84.73	3,404.7	729.1	797.3	657.3	140.04	5.694	
10,900.0	6,805.8	10,665.0	6,732.6	75.6	72.6	-84.73	3,504.7	729.1	797.3	653.6	143.73	5.547	
11,000.0	6,805.6	10,765.0	6,732.4	77.4	74.4	-84.74	3,604.7	729.1	797.3	649.9	147.44	5.408	
11,100.0	6,805.4	10,865.0	6,732.3	79.2	76.3	-84.74	3,704.7	729.1	797.3	646.2	151.15	5.275	
11,200.0	6,805.2	10,965.0	6,732.1	81.0	78.1	-84.74	3,804.7	729.1	797.3	642.4	154.87	5.148	
11,300.0	6,804.9	11,065.0	6,731.9	82.9	80.0	-84.75	3,904.7	729.1	797.3	638.7	158.59	5.027	
11,400.0	6,804.7	11,165.0	6,731.8	84.7	81.8	-84.75	4,004.7	729.1	797.3	635.0	162.32	4.912	
11,500.0	6,804.5	11,265.0	6,731.6	86.5	83.7	-84.75	4,104.7	729.1	797.3	631.2	166.05	4.801	
11,600.0	6,804.3	11,365.0	6,731.5	88.3	85.6	-84.76	4,204.7	729.1	797.3	627.5	169.79	4.696	
11,700.0	6,804.1	11,465.0	6,731.3	90.1	87.5	-84.76	4,304.7	729.1	797.3	623.7	173.53	4.594	
11,800.0	6,803.9	11,565.0	6,731.2	92.0	89.3	-84.77	4,404.7	729.1	797.3	620.0	177.28	4.497	
11,900.0	6,803.7	11,665.0	6,731.0	93.8	91.2	-84.77	4,504.7	729.1	797.3	616.2	181.02	4.404	
12,000.0	6,803.5	11,765.0	6,730.8	95.6	93.1	-84.77	4,604.7	729.1	797.3	612.5	184.78	4.315	
12,100.0	6,803.3	11,865.0	6,730.7	97.5	95.0	-84.78	4,704.7	729.1	797.3	608.7	188.53	4.229	
12,200.0	6,803.1	11,965.0	6,730.5	99.3	96.8	-84.78	4,804.7	729.1	797.3	605.0	192.29	4.146	
12,300.0	6,802.8	12,065.0	6,730.4	101.2	98.7	-84.78	4,904.7	729.1	797.2	601.2	196.05	4.067	
12,400.0	6,802.6	12,165.0	6,730.2	103.0	100.6	-84.79	5,004.7	729.1	797.2	597.4	199.81	3.990	
12,500.0	6,802.4	12,265.0	6,730.1	104.9	102.5	-84.79	5,104.7	729.1	797.2	593.7	203.58	3.916	
12,600.0	6,802.2	12,365.0	6,729.9	106.7	104.4	-84.80	5,204.7	729.1	797.2	589.9	207.35	3.845	
12,700.0	6,802.0	12,465.0	6,729.7	108.6	106.3	-84.80	5,304.7	729.1	797.2	586.1	211.12	3.776	
12,800.0	6,801.8	12,565.0	6,729.6	110.5	108.2	-84.80	5,404.7	729.1	797.2	582.3	214.89	3.710	
12,900.0	6,801.6	12,665.0	6,729.4	112.3	110.0	-84.81	5,504.7	729.1	797.2	578.6	218.66	3.646	
13,000.0	6,801.4	12,765.0	6,729.3	114.2	111.9	-84.81	5,604.7	729.1	797.2	574.8	222.44	3.584	
13,100.0	6,801.2	12,865.0	6,729.1	116.0	113.8	-84.81	5,704.7	729.1	797.2	571.0	226.22	3.524	
13,200.0	6,801.0	12,965.0	6,729.0	117.9	115.7	-84.82	5,804.7	729.1	797.2	567.2	230.00	3.466	
13,300.0	6,800.8	13,065.0	6,728.8	119.8	117.6	-84.82	5,904.7	729.1	797.2	563.4	233.78	3.410	
13,400.0	6,800.5	13,165.0	6,728.6	121.6	119.5	-84.83	6,004.7	729.1	797.2	559.6	237.56	3.356	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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
13,500.0	6,800.3	13,265.0	6,728.5	123.5	121.4	-84.83	6,104.7	729.1	797.2	555.8	241.34	3.303	
13,600.0	6,800.1	13,365.0	6,728.3	125.4	123.3	-84.83	6,204.7	729.1	797.2	552.1	245.13	3.252	
13,700.0	6,799.9	13,465.0	6,728.2	127.3	125.2	-84.84	6,304.7	729.1	797.2	548.3	248.92	3.203	
13,800.0	6,799.7	13,565.0	6,728.0	129.1	127.1	-84.84	6,404.7	729.1	797.2	544.5	252.71	3.155	
13,900.0	6,799.5	13,665.0	6,727.9	131.0	129.0	-84.84	6,504.7	729.1	797.2	540.7	256.50	3.108	
14,000.0	6,799.3	13,765.0	6,727.7	132.9	130.9	-84.85	6,604.7	729.1	797.2	536.9	260.29	3.063	
14,100.0	6,799.1	13,865.0	6,727.5	134.8	132.8	-84.85	6,704.7	729.1	797.2	533.1	264.08	3.019	
14,200.0	6,798.9	13,965.0	6,727.4	136.6	134.7	-84.86	6,804.7	729.1	797.2	529.3	267.87	2.976	
14,300.0	6,798.7	14,065.0	6,727.2	138.5	136.6	-84.86	6,904.7	729.1	797.2	525.5	271.67	2.934	
14,400.0	6,798.4	14,165.0	6,727.1	140.4	138.5	-84.86	7,004.7	729.1	797.1	521.7	275.46	2.894	
14,500.0	6,798.2	14,265.0	6,726.9	142.3	140.4	-84.87	7,104.7	729.1	797.1	517.9	279.26	2.854	
14,600.0	6,798.0	14,365.0	6,726.8	144.2	142.3	-84.87	7,204.7	729.1	797.1	514.1	283.05	2.816	
14,700.0	6,797.8	14,465.0	6,726.6	146.1	144.2	-84.87	7,304.7	729.1	797.1	510.3	286.85	2.779	
14,800.0	6,797.6	14,565.0	6,726.4	147.9	146.1	-84.88	7,404.7	729.1	797.1	506.5	290.65	2.743	
14,900.0	6,797.4	14,665.0	6,726.3	149.8	148.0	-84.88	7,504.7	729.1	797.1	502.7	294.45	2.707	
15,000.0	6,797.2	14,765.0	6,726.1	151.7	149.9	-84.89	7,604.7	729.1	797.1	498.9	298.25	2.673	
15,100.0	6,797.0	14,865.0	6,726.0	153.6	151.8	-84.89	7,704.7	729.1	797.1	495.1	302.05	2.639	
15,200.0	6,796.8	14,965.0	6,725.8	155.5	153.7	-84.89	7,804.7	729.1	797.1	491.3	305.86	2.606	
15,300.0	6,796.6	15,065.0	6,725.7	157.4	155.6	-84.90	7,904.7	729.1	797.1	487.4	309.66	2.574	
15,400.0	6,796.4	15,165.0	6,725.5	159.3	157.5	-84.90	8,004.7	729.1	797.1	483.6	313.46	2.543	
15,500.0	6,796.1	15,265.0	6,725.3	161.2	159.4	-84.90	8,104.7	729.1	797.1	479.8	317.27	2.512	
15,600.0	6,795.9	15,365.0	6,725.2	163.1	161.3	-84.91	8,204.7	729.1	797.1	476.0	321.07	2.483	
15,700.0	6,795.7	15,465.0	6,725.0	165.0	163.2	-84.91	8,304.7	729.1	797.1	472.2	324.88	2.453	
15,800.0	6,795.5	15,565.0	6,724.9	166.8	165.1	-84.92	8,404.7	729.1	797.1	468.4	328.68	2.425	
15,900.0	6,795.3	15,665.0	6,724.7	168.7	167.0	-84.92	8,504.7	729.1	797.1	464.6	332.49	2.397	
16,000.0	6,795.1	15,765.0	6,724.6	170.6	169.0	-84.92	8,604.7	729.1	797.1	460.8	336.30	2.370	
16,100.0	6,794.9	15,865.0	6,724.4	172.5	170.9	-84.93	8,704.7	729.1	797.1	457.0	340.10	2.344	
16,200.0	6,794.7	15,965.0	6,724.2	174.4	172.8	-84.93	8,804.7	729.1	797.1	453.1	343.91	2.318	
16,300.0	6,794.5	16,065.0	6,724.1	176.3	174.7	-84.93	8,904.7	729.1	797.1	449.3	347.72	2.292	
16,400.0	6,794.3	16,165.0	6,723.9	178.2	176.6	-84.94	9,004.7	729.1	797.0	445.5	351.53	2.267	
16,500.0	6,794.1	16,265.0	6,723.8	180.1	178.5	-84.94	9,104.7	729.1	797.0	441.7	355.34	2.243	
16,600.0	6,793.8	16,365.0	6,723.6	182.0	180.4	-84.95	9,204.7	729.1	797.0	437.9	359.15	2.219	
16,700.0	6,793.6	16,465.0	6,723.5	183.9	182.3	-84.95	9,304.7	729.1	797.0	434.1	362.96	2.196	
16,800.0	6,793.4	16,565.0	6,723.3	185.8	184.2	-84.95	9,404.7	729.1	797.0	430.3	366.77	2.173	
16,900.0	6,793.2	16,665.0	6,723.1	187.7	186.1	-84.96	9,504.7	729.1	797.0	426.4	370.58	2.151	
16,970.5	6,793.1	16,735.4	6,723.0	189.0	187.5	-84.96	9,575.2	729.1	797.0	423.7	373.27	2.135	
17,001.8	6,793.0	16,759.2	6,723.0	189.6	187.9	-84.96	9,599.0	729.1	797.1	422.7	374.32	2.129	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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	0.53	60.1	0.6	60.1				
100.0	100.0	100.0	100.0	0.1	0.1	0.53	60.1	0.6	60.1	59.9	0.22	267.477	
200.0	200.0	200.0	200.0	0.3	0.3	0.53	60.1	0.6	60.1	59.4	0.67	89.153	
300.0	300.0	300.0	300.0	0.6	0.6	0.53	60.1	0.6	60.1	59.0	1.12	53.491	
400.0	400.0	400.0	400.0	0.8	0.8	0.53	60.1	0.6	60.1	58.5	1.57	38.208	CC, ES
500.0	500.0	500.0	500.0	1.0	1.0	-113.09	60.1	0.6	60.6	58.6	2.01	30.214	
600.0	599.9	599.9	599.9	1.2	1.2	-116.39	60.1	0.6	62.3	59.8	2.43	25.570	
700.0	699.7	699.7	699.7	1.4	1.5	-121.48	60.1	0.6	65.4	62.6	2.88	22.721	
800.0	799.3	799.3	799.3	1.7	1.7	-127.74	60.1	0.6	70.7	67.3	3.34	21.161	
900.0	898.6	898.6	898.6	1.9	1.9	-134.44	60.1	0.6	78.4	74.6	3.81	20.596	SF
1,000.0	997.5	997.5	997.5	2.2	2.1	-140.91	60.1	0.6	89.1	84.8	4.28	20.818	
1,100.0	1,096.1	1,096.1	1,096.1	2.6	2.4	-146.73	60.1	0.6	102.9	98.1	4.75	21.649	
1,200.0	1,194.2	1,194.2	1,194.2	3.0	2.6	-151.72	60.1	0.6	119.7	114.5	5.22	22.940	
1,300.0	1,291.7	1,295.1	1,295.1	3.4	2.8	-156.09	59.1	1.2	138.5	132.8	5.66	24.468	
1,400.0	1,388.6	1,396.6	1,396.5	3.9	3.0	-159.97	55.9	3.4	157.8	151.7	6.07	25.975	
1,500.0	1,484.9	1,498.4	1,498.1	4.4	3.2	-163.51	50.5	7.1	177.5	171.0	6.49	27.358	
1,600.0	1,580.4	1,600.5	1,599.8	5.0	3.4	-166.78	42.8	12.4	197.9	191.0	6.91	28.633	
1,700.0	1,675.0	1,702.9	1,701.5	5.6	3.6	-169.85	32.8	19.2	218.8	211.4	7.34	29.807	
1,800.0	1,768.9	1,805.6	1,803.0	6.3	3.8	-172.76	20.6	27.6	240.4	232.6	7.78	30.875	
1,813.6	1,781.5	1,819.5	1,816.8	6.4	3.9	-173.15	18.7	28.8	243.3	235.5	7.85	31.007	
1,900.0	1,862.1	1,908.7	1,904.6	7.0	4.1	-175.55	6.0	37.5	261.7	253.4	8.28	31.588	
2,000.0	1,955.3	2,011.3	2,005.2	7.8	4.5	-178.17	-10.7	49.0	281.3	272.4	8.83	31.870	
2,100.0	2,048.6	2,108.7	2,100.6	8.5	4.8	179.57	-27.3	60.3	300.6	291.2	9.40	31.987	
2,200.0	2,141.8	2,206.2	2,195.9	9.3	5.2	177.59	-43.9	71.7	320.2	310.2	10.00	32.014	
2,300.0	2,235.0	2,303.7	2,291.3	10.0	5.5	175.84	-60.5	83.0	340.2	329.6	10.64	31.975	
2,400.0	2,328.3	2,401.2	2,386.7	10.8	5.9	174.28	-77.1	94.4	360.5	349.2	11.31	31.883	
2,500.0	2,421.5	2,498.6	2,482.1	11.6	6.3	172.88	-93.8	105.7	381.0	369.0	12.00	31.753	
2,600.0	2,514.7	2,596.1	2,577.4	12.3	6.7	171.63	-110.4	117.1	401.7	389.0	12.71	31.596	
2,700.0	2,607.9	2,693.6	2,672.8	13.1	7.1	170.50	-127.0	128.4	422.6	409.2	13.45	31.421	
2,800.0	2,701.2	2,791.0	2,768.2	13.9	7.5	169.47	-143.6	139.8	443.6	429.4	14.20	31.235	
2,900.0	2,794.4	2,888.5	2,863.6	14.6	7.9	168.54	-160.2	151.1	464.8	449.8	14.97	31.045	
3,000.0	2,887.6	2,986.0	2,958.9	15.4	8.3	167.69	-176.8	162.4	486.0	470.3	15.75	30.853	
3,100.0	2,980.9	3,083.5	3,054.3	16.2	8.8	166.91	-193.4	173.8	507.4	490.8	16.55	30.664	
3,200.0	3,074.1	3,180.9	3,149.7	16.9	9.2	166.19	-210.0	185.1	528.8	511.4	17.35	30.478	
3,300.0	3,167.3	3,278.4	3,245.0	17.7	9.6	165.53	-226.6	196.5	550.3	532.1	18.16	30.297	
3,400.0	3,260.6	3,375.9	3,340.4	18.5	10.0	164.92	-243.2	207.8	571.9	552.9	18.98	30.122	
3,500.0	3,353.8	3,473.3	3,435.8	19.3	10.5	164.35	-259.8	219.2	593.5	573.7	19.81	29.953	
3,600.0	3,447.0	3,570.8	3,531.2	20.0	10.9	163.83	-276.4	230.5	615.2	594.5	20.65	29.792	
3,700.0	3,540.3	3,668.3	3,626.5	20.8	11.3	163.33	-293.0	241.9	636.9	615.4	21.49	29.637	
3,800.0	3,633.5	3,765.8	3,721.9	21.6	11.8	162.88	-309.7	253.2	658.6	636.3	22.34	29.489	
3,900.0	3,726.7	3,863.2	3,817.3	22.4	12.2	162.45	-326.3	264.6	680.4	657.3	23.19	29.347	
4,000.0	3,819.9	3,960.7	3,912.7	23.1	12.6	162.04	-342.9	275.9	702.3	678.2	24.04	29.212	
4,100.0	3,913.2	4,058.2	4,008.0	23.9	13.1	161.66	-359.5	287.3	724.1	699.2	24.90	29.083	
4,200.0	4,006.4	4,155.6	4,103.4	24.7	13.5	161.31	-376.1	298.6	746.0	720.3	25.76	28.960	
4,300.0	4,099.6	4,253.1	4,198.8	25.5	14.0	160.97	-392.7	310.0	768.0	741.3	26.63	28.843	
4,400.0	4,192.9	4,350.6	4,294.1	26.2	14.4	160.65	-409.3	321.3	789.9	762.4	27.49	28.731	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn 5N64W7 Pad Sec.7-T5N-R64W - Dunn 7L-341 - 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	0.59	135.2	1.4	135.2				
100.0	100.0	100.0	100.0	0.1	0.1	0.59	135.2	1.4	135.2	134.9	0.22	601.424	
200.0	200.0	200.0	200.0	0.3	0.3	0.59	135.2	1.4	135.2	134.5	0.67	200.462	
300.0	300.0	300.0	300.0	0.6	0.6	0.59	135.2	1.4	135.2	134.0	1.12	120.276	
400.0	400.0	400.0	400.0	0.8	0.8	0.59	135.2	1.4	135.2	133.6	1.57	85.911	CC, ES
500.0	500.0	500.0	500.0	1.0	1.0	-112.40	135.2	1.4	135.7	133.7	2.01	67.622	
600.0	599.9	599.9	599.9	1.2	1.2	-113.89	135.2	1.4	137.2	134.8	2.43	56.355	
700.0	699.7	699.7	699.7	1.4	1.5	-116.30	135.2	1.4	140.0	137.1	2.88	48.613	
800.0	799.3	799.3	799.3	1.7	1.7	-119.49	135.2	1.4	144.3	140.9	3.34	43.179	
900.0	898.6	898.6	898.6	1.9	1.9	-123.29	135.2	1.4	150.4	146.6	3.82	39.382	
1,000.0	997.5	997.5	997.5	2.2	2.1	-127.50	135.2	1.4	158.8	154.5	4.31	36.825	
1,100.0	1,096.1	1,096.1	1,096.1	2.6	2.4	-131.88	135.2	1.4	169.7	164.9	4.81	35.251	
1,200.0	1,194.2	1,194.2	1,194.2	3.0	2.6	-136.23	135.2	1.4	183.4	178.1	5.32	34.472	
1,300.0	1,291.7	1,291.7	1,291.7	3.4	2.8	-140.40	135.2	1.4	200.1	194.3	5.83	34.341	SF
1,400.0	1,388.6	1,388.6	1,388.6	3.9	3.0	-144.28	135.2	1.4	219.8	213.5	6.33	34.734	
1,500.0	1,484.9	1,484.9	1,484.9	4.4	3.2	-147.80	135.2	1.4	242.6	235.8	6.83	35.549	
1,600.0	1,580.4	1,580.4	1,580.4	5.0	3.4	-150.94	135.2	1.4	268.4	261.1	7.31	36.699	
1,700.0	1,675.0	1,675.0	1,675.0	5.6	3.7	-153.72	135.2	1.4	297.2	289.4	7.80	38.116	
1,800.0	1,768.9	1,768.9	1,768.9	6.3	3.9	-156.17	135.2	1.4	328.9	320.7	8.28	39.743	
1,813.6	1,781.5	1,781.5	1,781.5	6.4	3.9	-156.47	135.2	1.4	333.5	325.1	8.34	39.978	
1,900.0	1,862.1	1,862.1	1,862.1	7.0	4.1	-158.43	135.2	1.4	362.6	353.9	8.77	41.353	
2,000.0	1,955.3	1,955.3	1,955.3	7.8	4.3	-160.33	135.2	1.4	396.8	387.5	9.26	42.829	
2,100.0	2,048.6	2,048.6	2,048.6	8.5	4.5	-161.94	135.2	1.4	431.2	421.5	9.76	44.186	
2,200.0	2,141.8	2,141.8	2,141.8	9.3	4.7	-163.31	135.2	1.4	465.9	455.7	10.26	45.430	
2,300.0	2,235.0	2,235.0	2,235.0	10.0	4.9	-164.49	135.2	1.4	500.9	490.1	10.76	46.569	
2,400.0	2,328.3	2,328.3	2,328.3	10.8	5.1	-165.52	135.2	1.4	536.0	524.7	11.26	47.614	
2,500.0	2,421.5	2,421.5	2,421.5	11.6	5.3	-166.43	135.2	1.4	571.2	559.4	11.76	48.573	
2,600.0	2,514.7	2,516.1	2,516.1	12.3	5.5	-167.24	135.1	1.4	606.5	594.3	12.26	49.463	
2,700.0	2,607.9	2,618.5	2,618.5	13.1	5.7	-168.16	133.3	1.3	641.1	628.3	12.74	50.315	
2,800.0	2,701.2	2,721.5	2,721.4	13.9	5.9	-169.20	128.7	1.2	674.4	661.2	13.19	51.126	
2,900.0	2,794.4	2,824.9	2,824.5	14.6	6.1	-170.34	121.4	1.0	706.7	693.0	13.64	51.802	
3,000.0	2,887.6	2,928.7	2,927.8	15.4	6.3	-171.57	111.1	0.7	737.9	723.8	14.10	52.344	
3,100.0	2,980.9	3,032.5	3,030.8	16.2	6.5	-172.89	98.1	0.3	768.1	753.5	14.56	52.748	
3,200.0	3,074.1	3,136.4	3,133.4	16.9	6.7	-174.29	82.3	-0.1	797.4	782.4	15.04	53.006	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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	-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	66.461	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-14.9	0.0	14.9	14.3	0.67	22.152	CC
300.0	300.0	299.9	299.8	0.6	0.5	175.40	-15.4	1.2	15.4	14.3	1.11	13.894	
400.0	400.0	399.6	399.5	0.8	0.8	163.46	-16.6	4.9	17.3	15.8	1.55	11.210	
500.0	500.0	499.1	498.8	1.0	1.0	39.01	-18.7	11.1	20.7	18.8	1.98	10.485	
600.0	599.9	598.5	597.8	1.2	1.3	30.36	-21.6	19.7	24.7	22.3	2.41	10.234	
700.0	699.7	697.8	696.4	1.4	1.5	23.92	-25.4	30.7	28.9	26.1	2.86	10.117	
800.0	799.3	796.9	794.5	1.7	1.9	18.92	-29.9	44.1	33.4	30.1	3.32	10.058	
900.0	898.6	895.9	892.0	1.9	2.2	14.89	-35.3	59.8	38.0	34.2	3.79	10.024	
1,000.0	997.5	994.8	989.0	2.2	2.6	11.54	-41.5	78.0	42.6	38.4	4.26	9.998	
1,100.0	1,096.1	1,093.5	1,085.4	2.6	3.0	8.67	-48.5	98.5	47.3	42.6	4.75	9.970	
1,200.0	1,194.2	1,192.1	1,181.0	3.0	3.5	6.16	-56.2	121.3	52.1	46.9	5.24	9.937	
1,300.0	1,291.7	1,290.6	1,275.8	3.4	4.1	3.92	-64.8	146.4	56.9	51.1	5.75	9.893	
1,400.0	1,388.6	1,388.9	1,369.8	3.9	4.6	1.89	-74.1	173.7	61.7	55.4	6.27	9.843	
1,500.0	1,484.9	1,487.1	1,462.9	4.4	5.3	0.02	-84.2	203.3	66.5	59.7	6.81	9.771	
1,600.0	1,580.4	1,585.2	1,555.1	5.0	6.0	-1.72	-95.0	235.2	71.4	64.0	7.37	9.684	
1,700.0	1,675.0	1,683.2	1,646.2	5.6	6.7	-3.34	-106.6	269.2	76.2	68.2	7.95	9.581	
1,800.0	1,768.9	1,781.0	1,736.3	6.3	7.5	-4.88	-118.9	305.3	81.1	72.5	8.57	9.458	
1,813.6	1,781.5	1,794.3	1,748.4	6.4	7.6	-5.08	-120.6	310.4	81.7	73.1	8.66	9.440	
1,900.0	1,862.1	1,879.4	1,825.9	7.0	8.3	-6.29	-132.0	343.8	86.8	77.5	9.25	9.383	
2,000.0	1,955.3	1,979.2	1,916.5	7.8	9.2	-7.53	-145.4	383.3	93.1	83.1	9.96	9.347	
2,100.0	2,048.6	2,079.0	2,007.2	8.5	10.1	-8.60	-158.9	422.7	99.4	88.8	10.69	9.301	
2,200.0	2,141.8	2,178.8	2,097.8	9.3	11.0	-9.55	-172.3	462.2	105.8	94.4	11.45	9.247	
2,300.0	2,235.0	2,278.5	2,188.5	10.0	11.9	-10.39	-185.8	501.7	112.2	100.0	12.22	9.189	
2,400.0	2,328.3	2,378.3	2,279.1	10.8	12.8	-11.13	-199.2	541.2	118.7	105.7	13.00	9.129	
2,500.0	2,421.5	2,478.1	2,369.7	11.6	13.7	-11.80	-212.7	580.7	125.1	111.3	13.80	9.068	
2,600.0	2,514.7	2,577.9	2,460.4	12.3	14.6	-12.41	-226.1	620.2	131.6	117.0	14.61	9.007	
2,700.0	2,607.9	2,677.7	2,551.0	13.1	15.5	-12.96	-239.6	659.7	138.1	122.7	15.43	8.948	
2,800.0	2,701.2	2,777.4	2,641.7	13.9	16.4	-13.46	-253.0	699.2	144.6	128.3	16.26	8.890	
2,900.0	2,794.4	2,877.2	2,732.3	14.6	17.3	-13.91	-266.5	738.7	151.1	134.0	17.10	8.834	
3,000.0	2,887.6	2,977.0	2,823.0	15.4	18.2	-14.33	-279.9	778.1	157.6	139.7	17.95	8.780	
3,100.0	2,980.9	3,076.8	2,913.6	16.2	19.1	-14.72	-293.4	817.6	164.1	145.3	18.80	8.729	
3,200.0	3,074.1	3,176.6	3,004.2	16.9	20.0	-15.07	-306.8	857.1	170.6	151.0	19.66	8.680	
3,300.0	3,167.3	3,276.3	3,094.9	17.7	20.9	-15.40	-320.2	896.6	177.2	156.7	20.52	8.633	
3,400.0	3,260.6	3,376.1	3,185.5	18.5	21.8	-15.71	-333.7	936.1	183.7	162.3	21.39	8.588	
3,500.0	3,353.8	3,475.9	3,276.2	19.3	22.7	-15.99	-347.1	975.6	190.3	168.0	22.27	8.545	
3,600.0	3,447.0	3,575.7	3,366.8	20.0	23.6	-16.26	-360.6	1,015.1	196.8	173.7	23.14	8.505	
3,700.0	3,540.3	3,675.5	3,457.5	20.8	24.5	-16.51	-374.0	1,054.6	203.4	179.3	24.02	8.466	
3,800.0	3,633.5	3,775.3	3,548.1	21.6	25.4	-16.74	-387.5	1,094.0	209.9	185.0	24.90	8.429	
3,900.0	3,726.7	3,875.0	3,638.7	22.4	26.3	-16.96	-400.9	1,133.5	216.5	190.7	25.79	8.394	
4,000.0	3,819.9	3,974.8	3,729.4	23.1	27.2	-17.17	-414.4	1,173.0	223.0	196.4	26.68	8.360	
4,100.0	3,913.2	4,074.6	3,820.0	23.9	28.1	-17.36	-427.8	1,212.5	229.6	202.0	27.57	8.328	
4,200.0	4,006.4	4,174.4	3,910.7	24.7	29.1	-17.54	-441.3	1,252.0	236.2	207.7	28.46	8.298	
4,300.0	4,099.6	4,274.2	4,001.3	25.5	30.0	-17.72	-454.7	1,291.5	242.7	213.4	29.36	8.269	
4,400.0	4,192.9	4,373.9	4,092.0	26.2	30.9	-17.88	-468.2	1,331.0	249.3	219.1	30.25	8.241	
4,500.0	4,286.1	4,473.7	4,182.6	27.0	31.8	-18.04	-481.6	1,370.5	255.9	224.7	31.15	8.214	
4,600.0	4,379.3	4,573.5	4,273.2	27.8	32.7	-18.19	-495.0	1,409.9	262.5	230.4	32.05	8.189	
4,700.0	4,472.6	4,673.3	4,363.9	28.6	33.6	-18.33	-508.5	1,449.4	269.0	236.1	32.95	8.164	
4,800.0	4,565.8	4,773.1	4,454.5	29.4	34.5	-18.46	-521.9	1,488.9	275.6	241.8	33.85	8.141	
4,900.0	4,659.0	4,872.8	4,545.2	30.1	35.4	-18.59	-535.4	1,528.4	282.2	247.4	34.76	8.118	

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 7Q-301
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 7Q-301	**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 (9-11-15)	**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
5,000.0	4,752.2	4,976.6	4,639.5	30.9	36.3	-18.73	-549.3	1,569.2	288.5	252.8	35.68	8.087	
5,100.0	4,845.5	5,087.3	4,741.6	31.7	37.1	-19.06	-563.1	1,609.8	291.9	255.2	36.65	7.963	
5,119.7	4,863.9	5,109.2	4,762.0	31.9	37.2	-19.15	-565.7	1,617.4	292.1	255.2	36.85	7.925	
5,200.0	4,939.1	5,198.2	4,845.4	32.4	37.8	-19.52	-575.7	1,646.7	292.6	254.9	37.64	7.773	
5,300.0	5,033.9	5,309.1	4,950.6	32.9	38.4	-19.97	-586.9	1,679.7	292.8	254.3	38.50	7.605	
5,400.0	5,129.7	5,419.9	5,057.1	33.4	38.9	-20.40	-596.8	1,708.9	292.6	253.3	39.28	7.449	
5,500.0	5,226.5	5,530.7	5,164.6	33.8	39.4	-20.80	-605.4	1,734.1	292.0	252.0	39.98	7.304	
5,600.0	5,324.1	5,641.4	5,273.0	34.2	39.8	-21.18	-612.7	1,755.4	291.0	250.4	40.59	7.168	
5,700.0	5,422.3	5,752.1	5,382.2	34.5	40.1	-21.55	-618.6	1,772.7	289.5	248.4	41.12	7.042	
5,800.0	5,521.2	5,862.6	5,491.8	34.8	40.3	-21.89	-623.1	1,785.9	287.7	246.1	41.55	6.923	
5,900.0	5,620.6	5,973.1	5,601.8	35.0	40.5	-22.21	-626.2	1,795.2	285.4	243.5	41.90	6.811	
6,000.0	5,720.2	6,083.4	5,712.0	35.2	40.7	-22.51	-628.0	1,800.4	282.7	240.5	42.17	6.704	
6,100.0	5,820.1	6,191.5	5,820.1	35.3	40.8	-22.78	-628.4	1,801.7	279.7	237.3	42.35	6.604	
6,179.9	5,900.0	6,271.4	5,900.0	35.4	40.8	89.62	-628.4	1,801.7	278.7	236.3	42.37	6.577	
6,200.0	5,920.1	6,291.5	5,920.1	35.4	40.8	89.62	-628.4	1,801.7	278.7	236.3	42.41	6.570	
6,240.4	5,960.5	6,331.9	5,960.5	35.4	40.8	89.62	-628.4	1,801.7	278.7	236.2	42.50	6.556	
6,300.0	6,020.1	6,391.3	6,019.9	35.5	40.9	89.27	-626.7	1,801.7	278.7	235.8	42.85	6.504	
6,328.8	6,048.9	6,419.8	6,048.3	35.5	40.9	88.77	-624.3	1,801.7	278.7	235.5	43.21	6.450	
6,350.0	6,070.1	6,440.7	6,069.0	35.5	40.9	88.32	-621.9	1,801.7	278.8	235.2	43.54	6.403	
6,400.0	6,120.0	6,489.7	6,117.4	35.5	40.9	87.27	-613.9	1,801.7	279.0	234.7	44.27	6.301	
6,450.0	6,169.6	6,538.5	6,164.9	35.5	40.9	86.24	-602.9	1,801.7	279.3	234.3	44.95	6.213	
6,500.0	6,218.7	6,586.9	6,211.3	35.5	40.8	85.22	-589.0	1,801.7	279.6	234.1	45.55	6.139	
6,550.0	6,267.0	6,635.0	6,256.4	35.5	40.8	84.23	-572.3	1,801.7	280.1	234.0	46.06	6.081	
6,600.0	6,314.4	6,682.9	6,300.1	35.5	40.8	83.28	-552.9	1,801.7	280.6	234.1	46.47	6.038	
6,650.0	6,360.7	6,730.5	6,342.4	35.4	40.7	82.35	-531.0	1,801.7	281.2	234.4	46.78	6.011	
6,700.0	6,405.7	6,777.8	6,382.9	35.4	40.7	81.46	-506.6	1,801.7	281.8	234.8	46.98	5.999	
6,750.0	6,449.1	6,824.9	6,421.7	35.3	40.6	80.61	-479.8	1,801.7	282.5	235.4	47.06	6.002	
6,800.0	6,490.8	6,871.8	6,458.6	35.2	40.5	79.80	-450.9	1,801.7	283.2	236.1	47.04	6.020	
6,850.0	6,530.6	6,918.5	6,493.5	35.1	40.4	79.04	-419.9	1,801.7	283.9	237.0	46.91	6.051	
6,900.0	6,568.3	6,964.9	6,526.2	35.0	40.3	78.33	-387.0	1,801.7	284.6	237.9	46.69	6.095	
6,950.0	6,603.9	7,011.2	6,556.9	34.9	40.3	77.66	-352.3	1,801.7	285.3	238.9	46.40	6.149	
7,000.0	6,637.0	7,057.3	6,585.2	34.8	40.2	77.05	-316.0	1,801.7	286.0	239.9	46.04	6.211	
7,050.0	6,667.6	7,103.3	6,611.3	34.7	40.1	76.49	-278.1	1,801.7	286.6	241.0	45.64	6.280	
7,100.0	6,695.6	7,150.0	6,635.3	34.6	40.0	75.97	-238.1	1,801.7	287.2	242.0	45.23	6.351	
7,150.0	6,720.8	7,194.8	6,656.1	34.5	39.9	75.53	-198.4	1,801.7	287.8	243.0	44.82	6.421	
7,200.0	6,743.2	7,240.4	6,674.8	34.3	39.8	75.14	-156.8	1,801.7	288.3	243.9	44.45	6.486	
7,250.0	6,762.5	7,285.9	6,690.9	34.2	39.8	74.80	-114.2	1,801.7	288.8	244.6	44.14	6.542	
7,300.0	6,778.8	7,331.4	6,704.5	34.1	39.7	74.52	-70.9	1,801.7	289.2	245.2	43.92	6.584	
7,350.0	6,792.0	7,376.7	6,715.5	34.0	39.6	74.30	-26.9	1,801.7	289.5	245.7	43.80	6.609	
7,400.0	6,802.0	7,422.1	6,723.8	34.0	39.5	74.14	17.7	1,801.7	289.7	245.9	43.80	6.614	
7,450.0	6,808.8	7,467.3	6,729.4	33.9	39.5	74.04	62.6	1,801.7	289.8	245.9	43.94	6.596	
7,500.0	6,812.3	7,512.6	6,732.4	33.8	39.4	73.99	107.8	1,801.7	289.9	245.7	44.22	6.555	
7,530.4	6,812.8	7,541.2	6,732.9	33.8	39.4	74.00	136.3	1,801.7	289.9	245.4	44.47	6.519	
7,556.8	6,812.8	7,566.4	6,732.9	33.8	39.4	74.00	161.5	1,801.7	289.9	245.1	44.79	6.472	
7,600.0	6,812.7	7,609.6	6,732.8	33.7	39.4	74.01	204.8	1,801.7	289.9	244.5	45.33	6.394	
7,700.0	6,812.5	7,709.6	6,732.7	33.7	39.3	74.03	304.8	1,801.7	289.8	243.0	46.80	6.193	
7,800.0	6,812.3	7,809.6	6,732.6	33.8	39.4	74.05	404.8	1,801.7	289.8	241.3	48.51	5.975	
7,900.0	6,812.1	7,909.6	6,732.5	33.9	39.5	74.07	504.8	1,801.7	289.8	239.4	50.43	5.746	
8,000.0	6,811.9	8,009.6	6,732.4	34.2	39.7	74.09	604.8	1,801.7	289.8	237.2	52.55	5.514	
8,100.0	6,811.6	8,109.6	6,732.3	34.6	39.9	74.11	704.8	1,801.7	289.7	234.9	54.83	5.284	
8,200.0	6,811.4	8,209.6	6,732.2	35.1	40.3	74.13	804.8	1,801.7	289.7	232.4	57.27	5.058	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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
8,300.0	6,811.2	8,309.6	6,732.1	35.8	40.7	74.15	904.8	1,801.7	289.7	229.8	59.84	4.841	
8,400.0	6,811.0	8,409.6	6,732.0	36.6	41.3	74.17	1,004.8	1,801.7	289.6	227.1	62.52	4.632	
8,500.0	6,810.8	8,509.6	6,731.9	37.5	42.0	74.19	1,104.8	1,801.7	289.6	224.3	65.31	4.434	
8,600.0	6,810.6	8,609.6	6,731.8	38.6	42.8	74.21	1,204.8	1,801.7	289.6	221.4	68.19	4.247	
8,700.0	6,810.4	8,709.6	6,731.7	39.8	43.7	74.23	1,304.8	1,801.7	289.6	218.4	71.14	4.070	
8,800.0	6,810.2	8,809.6	6,731.6	41.1	44.7	74.25	1,404.8	1,801.7	289.5	215.4	74.17	3.904	
8,900.0	6,810.0	8,909.6	6,731.5	42.4	45.8	74.27	1,504.8	1,801.7	289.5	212.2	77.25	3.747	
9,000.0	6,809.8	9,009.6	6,731.4	43.8	47.0	74.29	1,604.8	1,801.7	289.5	209.1	80.39	3.601	
9,100.0	6,809.5	9,109.6	6,731.3	45.3	48.3	74.31	1,704.8	1,801.7	289.4	205.9	83.58	3.463	
9,200.0	6,809.3	9,209.6	6,731.2	46.8	49.6	74.33	1,804.8	1,801.7	289.4	202.6	86.81	3.334	
9,300.0	6,809.1	9,309.6	6,731.1	48.3	51.0	74.35	1,904.8	1,801.7	289.4	199.3	90.08	3.213	
9,400.0	6,808.9	9,409.6	6,731.0	49.9	52.5	74.37	2,004.8	1,801.7	289.4	196.0	93.38	3.099	
9,500.0	6,808.7	9,509.6	6,730.9	51.5	53.9	74.39	2,104.8	1,801.7	289.3	192.6	96.72	2.991	
9,600.0	6,808.5	9,609.6	6,730.8	53.1	55.5	74.41	2,204.8	1,801.7	289.3	189.2	100.08	2.891	
9,700.0	6,808.3	9,709.6	6,730.6	54.8	57.0	74.43	2,304.8	1,801.7	289.3	185.8	103.47	2.796	
9,800.0	6,808.1	9,809.6	6,730.5	56.5	58.6	74.45	2,404.8	1,801.7	289.2	182.4	106.88	2.706	
9,900.0	6,807.9	9,909.6	6,730.4	58.2	60.2	74.47	2,504.8	1,801.7	289.2	178.9	110.31	2.622	
10,000.0	6,807.7	10,009.6	6,730.3	59.9	61.8	74.49	2,604.8	1,801.7	289.2	175.4	113.76	2.542	
10,100.0	6,807.5	10,109.6	6,730.2	61.6	63.5	74.51	2,704.8	1,801.7	289.2	171.9	117.23	2.467	
10,200.0	6,807.2	10,209.6	6,730.1	63.3	65.2	74.53	2,804.8	1,801.7	289.1	168.4	120.72	2.395	
10,300.0	6,807.0	10,309.6	6,730.0	65.0	66.8	74.55	2,904.8	1,801.7	289.1	164.9	124.22	2.327	
10,400.0	6,806.8	10,409.6	6,729.9	66.8	68.5	74.57	3,004.8	1,801.7	289.1	161.3	127.73	2.263	
10,500.0	6,806.6	10,509.6	6,729.8	68.5	70.2	74.59	3,104.8	1,801.7	289.1	157.8	131.25	2.202	
10,600.0	6,806.4	10,609.6	6,729.7	70.3	72.0	74.61	3,204.8	1,801.7	289.0	154.2	134.79	2.144	
10,700.0	6,806.2	10,709.6	6,729.6	72.1	73.7	74.63	3,304.8	1,801.7	289.0	150.7	138.34	2.089	
10,800.0	6,806.0	10,809.6	6,729.5	73.9	75.4	74.65	3,404.8	1,801.7	289.0	147.1	141.90	2.036	
10,900.0	6,805.8	10,909.6	6,729.4	75.6	77.2	74.67	3,504.8	1,801.7	288.9	143.5	145.46	1.986	
11,000.0	6,805.6	11,009.6	6,729.3	77.4	79.0	74.69	3,604.8	1,801.7	288.9	139.9	149.04	1.939	
11,100.0	6,805.4	11,109.6	6,729.2	79.2	80.7	74.71	3,704.8	1,801.7	288.9	136.3	152.62	1.893	
11,200.0	6,805.2	11,209.6	6,729.1	81.0	82.5	74.73	3,804.8	1,801.7	288.9	132.6	156.21	1.849	
11,300.0	6,804.9	11,309.6	6,729.0	82.9	84.3	74.75	3,904.8	1,801.7	288.8	129.0	159.81	1.807	
11,400.0	6,804.7	11,409.6	6,728.9	84.7	86.1	74.77	4,004.8	1,801.7	288.8	125.4	163.42	1.767	
11,500.0	6,804.5	11,509.6	6,728.8	86.5	87.9	74.79	4,104.8	1,801.7	288.8	121.7	167.03	1.729	
11,600.0	6,804.3	11,609.6	6,728.7	88.3	89.7	74.81	4,204.8	1,801.7	288.7	118.1	170.64	1.692	
11,700.0	6,804.1	11,709.6	6,728.6	90.1	91.5	74.83	4,304.8	1,801.7	288.7	114.5	174.27	1.657	
11,800.0	6,803.9	11,809.6	6,728.4	92.0	93.3	74.85	4,404.8	1,801.7	288.7	110.8	177.89	1.623	
11,900.0	6,803.7	11,909.6	6,728.3	93.8	95.1	74.87	4,504.8	1,801.7	288.7	107.1	181.53	1.590	
12,000.0	6,803.5	12,009.6	6,728.2	95.6	96.9	74.89	4,604.8	1,801.7	288.6	103.5	185.17	1.559	
12,100.0	6,803.3	12,109.6	6,728.1	97.5	98.7	74.91	4,704.8	1,801.7	288.6	99.8	188.81	1.529	
12,200.0	6,803.1	12,209.6	6,728.0	99.3	100.6	74.93	4,804.8	1,801.7	288.6	96.1	192.45	1.499	Level 3
12,300.0	6,802.8	12,309.6	6,727.9	101.2	102.4	74.95	4,904.8	1,801.7	288.6	92.4	196.11	1.471	Level 3
12,400.0	6,802.6	12,409.6	6,727.8	103.0	104.2	74.97	5,004.8	1,801.7	288.5	88.8	199.76	1.444	Level 3
12,500.0	6,802.4	12,509.6	6,727.7	104.9	106.1	74.99	5,104.8	1,801.7	288.5	85.1	203.42	1.418	Level 3
12,600.0	6,802.2	12,609.6	6,727.6	106.7	107.9	75.01	5,204.8	1,801.7	288.5	81.4	207.08	1.393	Level 3
12,700.0	6,802.0	12,709.6	6,727.5	108.6	109.7	75.03	5,304.8	1,801.7	288.4	77.7	210.74	1.369	Level 3
12,800.0	6,801.8	12,809.6	6,727.4	110.5	111.6	75.05	5,404.8	1,801.7	288.4	74.0	214.41	1.345	Level 3
12,900.0	6,801.6	12,909.6	6,727.3	112.3	113.4	75.07	5,504.8	1,801.7	288.4	70.3	218.08	1.322	Level 3
13,000.0	6,801.4	13,009.6	6,727.2	114.2	115.3	75.09	5,604.8	1,801.7	288.4	66.6	221.76	1.300	Level 3
13,100.0	6,801.2	13,109.6	6,727.1	116.0	117.1	75.11	5,704.8	1,801.7	288.3	62.9	225.44	1.279	Level 3
13,200.0	6,801.0	13,209.6	6,727.0	117.9	119.0	75.13	5,804.8	1,801.7	288.3	59.2	229.12	1.258	Level 3
13,300.0	6,800.8	13,309.6	6,726.9	119.8	120.8	75.15	5,904.8	1,801.7	288.3	55.5	232.80	1.238	Level 2

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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
13,400.0	6,800.5	13,409.6	6,726.8	121.6	122.7	75.17	6,004.8	1,801.7	288.3	51.8	236.48	1.219	Level 2
13,500.0	6,800.3	13,509.6	6,726.7	123.5	124.5	75.19	6,104.8	1,801.7	288.2	48.1	240.17	1.200	Level 2
13,600.0	6,800.1	13,609.6	6,726.6	125.4	126.4	75.21	6,204.8	1,801.7	288.2	44.3	243.86	1.182	Level 2
13,700.0	6,799.9	13,709.6	6,726.5	127.3	128.3	75.23	6,304.8	1,801.7	288.2	40.6	247.55	1.164	Level 2
13,800.0	6,799.7	13,809.6	6,726.4	129.1	130.1	75.25	6,404.8	1,801.7	288.2	36.9	251.25	1.147	Level 2
13,900.0	6,799.5	13,909.6	6,726.2	131.0	132.0	75.27	6,504.8	1,801.7	288.1	33.2	254.95	1.130	Level 2
14,000.0	6,799.3	14,009.6	6,726.1	132.9	133.9	75.29	6,604.8	1,801.7	288.1	29.5	258.64	1.114	Level 2
14,100.0	6,799.1	14,109.6	6,726.0	134.8	135.7	75.31	6,704.8	1,801.7	288.1	25.7	262.35	1.098	Level 2
14,200.0	6,798.9	14,209.6	6,725.9	136.6	137.6	75.33	6,804.8	1,801.7	288.0	22.0	266.05	1.083	Level 2
14,300.0	6,798.7	14,309.6	6,725.8	138.5	139.5	75.35	6,904.8	1,801.7	288.0	18.3	269.75	1.068	Level 2
14,400.0	6,798.4	14,409.6	6,725.7	140.4	141.3	75.37	7,004.8	1,801.7	288.0	14.5	273.46	1.053	Level 2
14,500.0	6,798.2	14,509.6	6,725.6	142.3	143.2	75.39	7,104.8	1,801.7	288.0	10.8	277.17	1.039	Level 2
14,600.0	6,798.0	14,609.6	6,725.5	144.2	145.1	75.41	7,204.8	1,801.7	287.9	7.1	280.88	1.025	Level 2
14,700.0	6,797.8	14,709.6	6,725.4	146.1	147.0	75.43	7,304.8	1,801.7	287.9	3.3	284.59	1.012	Level 2
14,800.0	6,797.6	14,809.6	6,725.3	147.9	148.8	75.45	7,404.8	1,801.7	287.9	-0.4	288.30	0.999	Level 1
14,900.0	6,797.4	14,909.6	6,725.2	149.8	150.7	75.47	7,504.8	1,801.7	287.9	-4.2	292.02	0.986	Level 1
15,000.0	6,797.2	15,009.6	6,725.1	151.7	152.6	75.49	7,604.8	1,801.7	287.8	-7.9	295.73	0.973	Level 1
15,100.0	6,797.0	15,109.6	6,725.0	153.6	154.5	75.51	7,704.8	1,801.7	287.8	-11.6	299.45	0.961	Level 1
15,200.0	6,796.8	15,209.6	6,724.9	155.5	156.4	75.53	7,804.8	1,801.7	287.8	-15.4	303.17	0.949	Level 1
15,300.0	6,796.6	15,309.6	6,724.8	157.4	158.3	75.55	7,904.8	1,801.7	287.8	-19.1	306.89	0.938	Level 1
15,400.0	6,796.4	15,409.6	6,724.7	159.3	160.1	75.57	8,004.8	1,801.7	287.7	-22.9	310.61	0.926	Level 1
15,500.0	6,796.1	15,509.6	6,724.6	161.2	162.0	75.59	8,104.8	1,801.7	287.7	-26.6	314.34	0.915	Level 1
15,600.0	6,795.9	15,609.6	6,724.5	163.1	163.9	75.62	8,204.8	1,801.7	287.7	-30.4	318.06	0.904	Level 1
15,700.0	6,795.7	15,709.6	6,724.4	165.0	165.8	75.64	8,304.8	1,801.7	287.7	-34.1	321.79	0.894	Level 1
15,800.0	6,795.5	15,809.6	6,724.3	166.8	167.7	75.66	8,404.8	1,801.7	287.6	-37.9	325.52	0.884	Level 1
15,900.0	6,795.3	15,909.6	6,724.2	168.7	169.6	75.68	8,504.8	1,801.7	287.6	-41.6	329.25	0.874	Level 1
16,000.0	6,795.1	16,009.6	6,724.0	170.6	171.4	75.70	8,604.8	1,801.7	287.6	-45.4	332.98	0.864	Level 1
16,100.0	6,794.9	16,109.6	6,723.9	172.5	173.3	75.72	8,704.8	1,801.7	287.5	-49.2	336.71	0.854	Level 1
16,200.0	6,794.7	16,209.6	6,723.8	174.4	175.2	75.74	8,804.8	1,801.7	287.5	-52.9	340.44	0.845	Level 1
16,300.0	6,794.5	16,309.6	6,723.7	176.3	177.1	75.76	8,904.8	1,801.7	287.5	-56.7	344.17	0.835	Level 1
16,400.0	6,794.3	16,409.6	6,723.6	178.2	179.0	75.78	9,004.8	1,801.7	287.5	-60.4	347.91	0.826	Level 1
16,500.0	6,794.1	16,509.6	6,723.5	180.1	180.9	75.80	9,104.8	1,801.7	287.4	-64.2	351.64	0.817	Level 1
16,600.0	6,793.8	16,609.6	6,723.4	182.0	182.8	75.82	9,204.8	1,801.7	287.4	-68.0	355.38	0.809	Level 1
16,700.0	6,793.6	16,709.6	6,723.3	183.9	184.7	75.84	9,304.8	1,801.7	287.4	-71.7	359.12	0.800	Level 1
16,800.0	6,793.4	16,809.6	6,723.2	185.8	186.6	75.86	9,404.8	1,801.7	287.4	-75.5	362.86	0.792	Level 1
16,900.0	6,793.2	16,909.6	6,723.1	187.7	188.5	75.88	9,504.8	1,801.7	287.3	-79.3	366.60	0.784	Level 1
16,973.1	6,793.1	16,982.8	6,723.0	189.1	189.9	75.89	9,577.9	1,801.7	287.3	-82.0	369.34	0.778	Level 1
17,001.8	6,793.0	17,010.8	6,723.0	189.6	190.4	75.90	9,605.9	1,801.7	287.3	-83.1	370.40	0.776	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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	1.04	15.3	0.3	15.3	15.3	0.00	N/A	
100.0	100.0	100.0	100.0	0.1	0.1	1.04	15.3	0.3	15.3	15.1	0.22	68.093	
200.0	200.0	200.0	200.0	0.3	0.3	1.04	15.3	0.3	15.3	14.6	0.67	22.696	
300.0	300.0	300.0	300.0	0.6	0.6	1.04	15.3	0.3	15.3	14.2	1.12	13.618	
400.0	400.0	400.0	400.0	0.8	0.8	1.04	15.3	0.3	15.3	13.7	1.57	9.727	CC
500.0	500.0	500.0	500.0	1.0	1.0	-115.85	15.3	0.3	15.8	13.8	2.01	7.890	
600.0	599.9	599.9	599.9	1.2	1.2	-127.20	15.3	0.3	17.9	15.5	2.44	7.344	
700.0	699.7	700.2	700.1	1.4	1.4	-138.60	14.7	1.5	21.4	18.5	2.86	7.483	
800.0	799.3	800.5	800.4	1.7	1.6	-146.93	12.9	5.0	25.4	22.1	3.28	7.747	
900.0	898.6	901.0	900.7	1.9	1.9	-153.24	10.0	10.9	29.7	26.0	3.71	8.004	
1,000.0	997.5	1,001.7	1,001.0	2.2	2.1	-158.22	5.8	19.1	34.2	30.0	4.15	8.235	
1,100.0	1,096.1	1,102.5	1,101.0	2.6	2.3	-162.30	0.4	29.7	38.8	34.2	4.60	8.434	
1,200.0	1,194.2	1,203.4	1,200.9	3.0	2.6	-165.74	-6.1	42.7	43.5	38.5	5.06	8.603	
1,300.0	1,291.7	1,304.5	1,300.5	3.4	3.0	-168.73	-13.9	58.1	48.3	42.8	5.52	8.743	
1,400.0	1,388.6	1,405.7	1,399.7	3.9	3.3	-171.38	-22.8	75.9	53.1	47.1	6.00	8.856	
1,500.0	1,484.9	1,507.0	1,498.5	4.4	3.8	-173.78	-32.9	96.0	58.0	51.5	6.48	8.942	
1,600.0	1,580.4	1,608.4	1,596.8	5.0	4.2	-175.99	-44.3	118.5	62.9	55.9	6.99	9.001	
1,700.0	1,675.0	1,710.0	1,694.5	5.6	4.8	-178.03	-56.8	143.3	67.9	60.3	7.51	9.035	
1,800.0	1,768.9	1,811.8	1,791.5	6.3	5.3	-179.95	-70.5	170.5	72.8	64.8	8.06	9.038	
1,813.6	1,781.5	1,825.5	1,804.6	6.4	5.4	179.80	-72.4	174.3	73.5	65.4	8.14	9.036	
1,900.0	1,862.1	1,913.4	1,887.7	7.0	6.0	178.22	-85.3	199.9	76.9	68.2	8.67	8.870	
2,000.0	1,955.3	2,013.4	1,981.9	7.8	6.6	176.50	-100.4	229.8	80.0	70.7	9.31	8.588	
2,100.0	2,048.6	2,113.3	2,076.0	8.5	7.3	174.91	-115.4	259.7	83.1	73.1	9.99	8.323	
2,200.0	2,141.8	2,213.2	2,170.2	9.3	8.0	173.44	-130.5	289.5	86.3	75.6	10.69	8.074	
2,300.0	2,235.0	2,313.1	2,264.4	10.0	8.7	172.08	-145.5	319.4	89.6	78.2	11.43	7.840	
2,400.0	2,328.3	2,413.1	2,358.5	10.8	9.3	170.81	-160.6	349.3	92.9	80.7	12.19	7.621	
2,500.0	2,421.5	2,513.0	2,452.7	11.6	10.0	169.63	-175.6	379.1	96.2	83.3	12.98	7.415	
2,600.0	2,514.7	2,612.9	2,546.8	12.3	10.7	168.53	-190.7	409.0	99.6	85.8	13.80	7.222	
2,700.0	2,607.9	2,712.8	2,641.0	13.1	11.4	167.50	-205.7	438.8	103.1	88.4	14.63	7.042	
2,800.0	2,701.2	2,812.8	2,735.2	13.9	12.1	166.54	-220.8	468.7	106.5	91.0	15.49	6.874	
2,900.0	2,794.4	2,912.7	2,829.3	14.6	12.8	165.63	-235.8	498.6	110.0	93.6	16.37	6.717	
3,000.0	2,887.6	3,012.6	2,923.5	15.4	13.5	164.79	-250.9	528.4	113.5	96.2	17.27	6.571	
3,100.0	2,980.9	3,112.5	3,017.7	16.2	14.3	163.99	-266.0	558.3	117.0	98.8	18.19	6.434	
3,200.0	3,074.1	3,212.5	3,111.8	16.9	15.0	163.24	-281.0	588.2	120.6	101.4	19.12	6.307	
3,300.0	3,167.3	3,312.4	3,206.0	17.7	15.7	162.54	-296.1	618.0	124.1	104.1	20.06	6.188	
3,400.0	3,260.6	3,412.3	3,300.2	18.5	16.4	161.87	-311.1	647.9	127.7	106.7	21.02	6.077	
3,500.0	3,353.8	3,512.2	3,394.3	19.3	17.1	161.24	-326.2	677.8	131.3	109.3	21.99	5.973	
3,600.0	3,447.0	3,612.2	3,488.5	20.0	17.8	160.65	-341.2	707.6	134.9	112.0	22.97	5.876	
3,700.0	3,540.3	3,712.1	3,582.6	20.8	18.5	160.08	-356.3	737.5	138.6	114.6	23.95	5.785	
3,800.0	3,633.5	3,812.0	3,676.8	21.6	19.2	159.55	-371.3	767.3	142.2	117.3	24.95	5.699	
3,900.0	3,726.7	3,911.9	3,771.0	22.4	19.9	159.04	-386.4	797.2	145.9	119.9	25.96	5.619	
4,000.0	3,819.9	4,011.9	3,865.1	23.1	20.7	158.55	-401.4	827.1	149.5	122.6	26.97	5.544	
4,100.0	3,913.2	4,111.8	3,959.3	23.9	21.4	158.09	-416.5	856.9	153.2	125.2	27.99	5.473	
4,200.0	4,006.4	4,211.7	4,053.5	24.7	22.1	157.65	-431.5	886.8	156.9	127.9	29.02	5.406	
4,300.0	4,099.6	4,311.6	4,147.6	25.5	22.8	157.23	-446.6	916.7	160.6	130.5	30.05	5.344	
4,400.0	4,192.9	4,411.6	4,241.8	26.2	23.5	156.83	-461.6	946.5	164.3	133.2	31.09	5.284	
4,500.0	4,286.1	4,511.5	4,335.9	27.0	24.2	156.45	-476.7	976.4	168.0	135.9	32.14	5.228	
4,600.0	4,379.3	4,611.4	4,430.1	27.8	24.9	156.08	-491.7	1,006.3	171.7	138.5	33.18	5.175	
4,700.0	4,472.6	4,711.3	4,524.3	28.6	25.7	155.73	-506.8	1,036.1	175.4	141.2	34.24	5.125	
4,800.0	4,565.8	4,811.3	4,618.4	29.4	26.4	155.40	-521.8	1,066.0	179.2	143.9	35.29	5.077	
4,900.0	4,659.0	4,911.2	4,712.6	30.1	27.1	155.08	-536.9	1,095.8	182.9	146.6	36.35	5.032	

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 7Q-301
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 7Q-301	**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 (9-11-15)	**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
5,000.0	4,752.2	5,011.1	4,806.8	30.9	27.8	154.77	-551.9	1,125.7	186.7	149.2	37.42	4.989	
5,100.0	4,845.5	5,107.6	4,897.8	31.7	28.4	154.57	-566.2	1,154.0	191.0	152.6	38.38	4.977	
5,119.7	4,863.9	5,126.2	4,915.5	31.9	28.5	154.58	-568.8	1,159.2	192.1	153.6	38.52	4.988	
5,200.0	4,939.1	5,200.0	4,986.0	32.4	28.9	154.72	-578.7	1,178.7	197.0	157.9	39.06	5.042	
5,300.0	5,033.9	5,295.9	5,078.5	32.9	29.3	154.90	-590.2	1,201.7	202.7	163.1	39.62	5.116	
5,400.0	5,129.7	5,389.9	5,169.8	33.4	29.7	155.11	-600.2	1,221.5	208.2	168.1	40.09	5.193	
5,500.0	5,226.5	5,483.7	5,261.6	33.8	30.0	155.33	-608.8	1,238.6	213.4	172.9	40.47	5.272	
5,600.0	5,324.1	5,577.4	5,353.9	34.2	30.3	155.58	-616.1	1,253.0	218.2	177.5	40.76	5.353	
5,700.0	5,422.3	5,671.0	5,446.5	34.5	30.6	155.84	-621.9	1,264.6	222.8	181.8	40.97	5.438	
5,800.0	5,521.2	5,764.4	5,539.4	34.8	30.8	156.12	-626.5	1,273.6	227.0	185.9	41.09	5.525	
5,900.0	5,620.6	5,857.7	5,632.5	35.0	30.9	156.41	-629.6	1,279.8	231.0	189.8	41.13	5.615	
6,000.0	5,720.2	5,950.9	5,725.6	35.2	31.0	156.72	-631.4	1,283.3	234.6	193.5	41.08	5.710	
6,100.0	5,820.1	6,045.4	5,820.1	35.3	31.1	157.05	-631.8	1,284.2	237.8	196.9	40.97	5.805	
6,179.9	5,900.0	6,125.3	5,900.0	35.4	31.2	-90.36	-631.8	1,284.2	238.9	197.9	40.93	5.836	
6,200.0	5,920.1	6,145.4	5,920.1	35.4	31.2	-90.36	-631.8	1,284.2	238.9	197.9	40.98	5.829	
6,300.0	6,020.1	6,245.5	6,020.1	35.5	31.3	-90.02	-630.4	1,284.2	238.8	197.8	41.02	5.823	
6,301.7	6,021.8	6,247.1	6,021.8	35.5	31.3	-90.00	-630.3	1,284.2	238.8	197.8	41.01	5.825	
6,328.8	6,048.9	6,274.1	6,048.7	35.5	31.3	-89.48	-628.1	1,284.2	238.9	198.1	40.76	5.860	
6,350.0	6,070.1	6,295.2	6,069.6	35.5	31.3	-88.99	-625.8	1,284.2	238.9	198.4	40.52	5.895	
6,400.0	6,120.0	6,344.5	6,118.3	35.5	31.3	-87.83	-618.0	1,284.2	239.0	199.1	39.92	5.988	
6,450.0	6,169.6	6,393.5	6,166.1	35.5	31.3	-86.68	-607.2	1,284.2	239.3	200.0	39.29	6.090	
6,500.0	6,218.7	6,442.3	6,212.8	35.5	31.2	-85.55	-593.5	1,284.2	239.6	200.9	38.64	6.201	
6,550.0	6,267.0	6,490.7	6,258.4	35.5	31.2	-84.45	-576.9	1,284.2	240.0	202.0	37.99	6.317	
6,600.0	6,314.4	6,538.9	6,302.5	35.5	31.1	-83.38	-557.5	1,284.2	240.5	203.1	37.35	6.438	
6,650.0	6,360.7	6,586.8	6,345.1	35.4	31.0	-82.34	-535.6	1,284.2	241.0	204.3	36.73	6.561	
6,700.0	6,405.7	6,634.5	6,386.0	35.4	31.0	-81.34	-511.1	1,284.2	241.6	205.5	36.15	6.684	
6,750.0	6,449.1	6,681.9	6,425.1	35.3	30.9	-80.39	-484.3	1,284.2	242.3	206.7	35.60	6.806	
6,800.0	6,490.8	6,729.1	6,462.3	35.2	30.8	-79.47	-455.3	1,284.2	243.0	207.9	35.09	6.924	
6,850.0	6,530.6	6,776.1	6,497.5	35.1	30.7	-78.61	-424.1	1,284.2	243.7	209.0	34.63	7.037	
6,900.0	6,568.3	6,822.9	6,530.6	35.0	30.5	-77.79	-391.0	1,284.2	244.4	210.2	34.22	7.142	
6,950.0	6,603.9	6,869.6	6,561.5	34.9	30.4	-77.03	-356.1	1,284.2	245.1	211.3	33.86	7.239	
7,000.0	6,637.0	6,916.0	6,590.1	34.8	30.3	-76.33	-319.5	1,284.2	245.8	212.3	33.56	7.324	
7,050.0	6,667.6	6,962.3	6,616.3	34.7	30.2	-75.68	-281.4	1,284.2	246.5	213.2	33.33	7.397	
7,100.0	6,695.6	7,008.5	6,640.1	34.6	30.1	-75.09	-241.8	1,284.2	247.2	214.0	33.16	7.455	
7,150.0	6,720.8	7,054.5	6,661.4	34.5	29.9	-74.56	-201.0	1,284.2	247.8	214.8	33.06	7.496	
7,200.0	6,743.2	7,100.0	6,680.0	34.3	29.8	-74.09	-159.5	1,284.2	248.4	215.3	33.04	7.518	
7,250.0	6,762.5	7,146.3	6,696.4	34.2	29.7	-73.68	-116.2	1,284.2	248.9	215.8	33.10	7.520	
7,300.0	6,778.8	7,192.0	6,709.9	34.1	29.6	-73.34	-72.6	1,284.2	249.3	216.1	33.24	7.501	
7,350.0	6,792.0	7,237.7	6,720.9	34.0	29.5	-73.06	-28.2	1,284.2	249.7	216.2	33.47	7.461	
7,400.0	6,802.0	7,283.3	6,729.1	34.0	29.4	-72.84	16.6	1,284.2	250.0	216.2	33.78	7.401	
7,450.0	6,808.8	7,328.9	6,734.6	33.9	29.3	-72.69	61.8	1,284.2	250.2	216.0	34.17	7.321	
7,500.0	6,812.3	7,374.4	6,737.5	33.8	29.2	-72.60	107.3	1,284.2	250.3	215.7	34.65	7.224	
7,530.4	6,812.8	7,402.2	6,737.9	33.8	29.2	-72.58	135.1	1,284.2	250.3	215.4	34.97	7.158	
7,600.0	6,812.7	7,471.9	6,737.8	33.7	29.1	-72.58	204.7	1,284.2	250.3	214.6	35.71	7.010	
7,700.0	6,812.5	7,571.9	6,737.6	33.7	29.1	-72.60	304.7	1,284.2	250.3	213.3	37.03	6.759	
7,800.0	6,812.3	7,671.9	6,737.5	33.8	29.2	-72.61	404.7	1,284.2	250.3	211.6	38.67	6.473	
7,900.0	6,812.1	7,771.9	6,737.3	33.9	29.4	-72.62	504.7	1,284.2	250.3	209.7	40.57	6.169	
8,000.0	6,811.9	7,871.9	6,737.1	34.2	29.8	-72.63	604.7	1,284.2	250.3	207.6	42.71	5.859	
8,100.0	6,811.6	7,971.9	6,737.0	34.6	30.4	-72.64	704.7	1,284.2	250.2	205.2	45.05	5.554	
8,200.0	6,811.4	8,071.9	6,736.8	35.1	31.1	-72.65	804.7	1,284.2	250.2	202.7	47.57	5.260	
8,300.0	6,811.2	8,171.9	6,736.7	35.8	32.1	-72.66	904.7	1,284.2	250.2	200.0	50.23	4.981	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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
8,400.0	6,811.0	8,271.9	6,736.5	36.6	33.2	-72.68	1,004.7	1,284.2	250.2	197.2	53.01	4.719	
8,500.0	6,810.8	8,371.9	6,736.4	37.5	34.4	-72.69	1,104.7	1,284.2	250.2	194.3	55.91	4.475	
8,600.0	6,810.6	8,471.9	6,736.2	38.6	35.7	-72.70	1,204.7	1,284.2	250.2	191.3	58.89	4.248	
8,700.0	6,810.4	8,571.9	6,736.0	39.8	37.1	-72.71	1,304.7	1,284.2	250.2	188.2	61.95	4.038	
8,800.0	6,810.2	8,671.9	6,735.9	41.1	38.5	-72.72	1,404.7	1,284.2	250.1	185.1	65.07	3.844	
8,900.0	6,810.0	8,771.9	6,735.7	42.4	40.0	-72.73	1,504.7	1,284.2	250.1	181.9	68.25	3.665	
9,000.0	6,809.8	8,871.9	6,735.6	43.8	41.6	-72.74	1,604.7	1,284.2	250.1	178.6	71.49	3.499	
9,100.0	6,809.5	8,971.9	6,735.4	45.3	43.2	-72.76	1,704.7	1,284.2	250.1	175.3	74.76	3.345	
9,200.0	6,809.3	9,071.9	6,735.3	46.8	44.8	-72.77	1,804.7	1,284.2	250.1	172.0	78.08	3.203	
9,300.0	6,809.1	9,171.9	6,735.1	48.3	46.4	-72.78	1,904.7	1,284.2	250.1	168.6	81.43	3.071	
9,400.0	6,808.9	9,271.9	6,734.9	49.9	48.1	-72.79	2,004.7	1,284.2	250.0	165.2	84.80	2.949	
9,500.0	6,808.7	9,371.9	6,734.8	51.5	49.7	-72.80	2,104.7	1,284.2	250.0	161.8	88.21	2.835	
9,600.0	6,808.5	9,471.9	6,734.6	53.1	51.4	-72.81	2,204.7	1,284.2	250.0	158.4	91.63	2.728	
9,700.0	6,808.3	9,571.9	6,734.5	54.8	53.1	-72.82	2,304.7	1,284.2	250.0	154.9	95.08	2.629	
9,800.0	6,808.1	9,671.9	6,734.3	56.5	54.8	-72.84	2,404.7	1,284.2	250.0	151.4	98.55	2.537	
9,900.0	6,807.9	9,771.9	6,734.2	58.2	56.6	-72.85	2,504.7	1,284.2	250.0	147.9	102.03	2.450	
10,000.0	6,807.7	9,871.9	6,734.0	59.9	58.3	-72.86	2,604.7	1,284.2	250.0	144.4	105.53	2.369	
10,100.0	6,807.5	9,971.9	6,733.8	61.6	60.1	-72.87	2,704.7	1,284.2	249.9	140.9	109.04	2.292	
10,200.0	6,807.2	10,071.9	6,733.7	63.3	61.8	-72.88	2,804.7	1,284.2	249.9	137.4	112.56	2.220	
10,300.0	6,807.0	10,171.9	6,733.5	65.0	63.6	-72.89	2,904.7	1,284.2	249.9	133.8	116.10	2.153	
10,400.0	6,806.8	10,271.9	6,733.4	66.8	65.4	-72.90	3,004.7	1,284.2	249.9	130.2	119.65	2.089	
10,500.0	6,806.6	10,371.9	6,733.2	68.5	67.2	-72.92	3,104.7	1,284.2	249.9	126.7	123.20	2.028	
10,600.0	6,806.4	10,471.9	6,733.1	70.3	69.0	-72.93	3,204.7	1,284.2	249.9	123.1	126.77	1.971	
10,700.0	6,806.2	10,571.9	6,732.9	72.1	70.8	-72.94	3,304.7	1,284.2	249.8	119.5	130.34	1.917	
10,800.0	6,806.0	10,671.9	6,732.7	73.9	72.6	-72.95	3,404.7	1,284.2	249.8	115.9	133.92	1.866	
10,900.0	6,805.8	10,771.9	6,732.6	75.6	74.4	-72.96	3,504.7	1,284.2	249.8	112.3	137.51	1.817	
11,000.0	6,805.6	10,871.9	6,732.4	77.4	76.2	-72.97	3,604.7	1,284.2	249.8	108.7	141.10	1.770	
11,100.0	6,805.4	10,971.9	6,732.3	79.2	78.1	-72.98	3,704.7	1,284.2	249.8	105.1	144.70	1.726	
11,200.0	6,805.2	11,071.9	6,732.1	81.0	79.9	-73.00	3,804.7	1,284.2	249.8	101.5	148.31	1.684	
11,300.0	6,804.9	11,171.9	6,732.0	82.9	81.7	-73.01	3,904.7	1,284.2	249.8	97.8	151.92	1.644	
11,400.0	6,804.7	11,271.9	6,731.8	84.7	83.5	-73.02	4,004.7	1,284.2	249.7	94.2	155.53	1.606	
11,500.0	6,804.5	11,371.9	6,731.6	86.5	85.4	-73.03	4,104.7	1,284.2	249.7	90.6	159.15	1.569	
11,600.0	6,804.3	11,471.9	6,731.5	88.3	87.2	-73.04	4,204.7	1,284.2	249.7	86.9	162.78	1.534	
11,700.0	6,804.1	11,571.9	6,731.3	90.1	89.1	-73.05	4,304.7	1,284.2	249.7	83.3	166.41	1.501	
11,800.0	6,803.9	11,671.9	6,731.2	92.0	90.9	-73.07	4,404.7	1,284.2	249.7	79.6	170.04	1.468	Level 3
11,900.0	6,803.7	11,771.9	6,731.0	93.8	92.8	-73.08	4,504.7	1,284.2	249.7	76.0	173.67	1.438	Level 3
12,000.0	6,803.5	11,871.9	6,730.9	95.6	94.6	-73.09	4,604.7	1,284.2	249.6	72.3	177.31	1.408	Level 3
12,100.0	6,803.3	11,971.9	6,730.7	97.5	96.5	-73.10	4,704.7	1,284.2	249.6	68.7	180.95	1.380	Level 3
12,200.0	6,803.1	12,071.9	6,730.5	99.3	98.3	-73.11	4,804.7	1,284.2	249.6	65.0	184.60	1.352	Level 3
12,300.0	6,802.8	12,171.9	6,730.4	101.2	100.2	-73.12	4,904.7	1,284.2	249.6	61.4	188.25	1.326	Level 3
12,400.0	6,802.6	12,271.9	6,730.2	103.0	102.1	-73.13	5,004.7	1,284.2	249.6	57.7	191.90	1.301	Level 3
12,500.0	6,802.4	12,371.9	6,730.1	104.9	103.9	-73.15	5,104.7	1,284.2	249.6	54.0	195.55	1.276	Level 3
12,600.0	6,802.2	12,471.9	6,729.9	106.7	105.8	-73.16	5,204.7	1,284.2	249.6	50.3	199.21	1.253	Level 3
12,700.0	6,802.0	12,571.9	6,729.8	108.6	107.7	-73.17	5,304.7	1,284.2	249.5	46.7	202.87	1.230	Level 2
12,800.0	6,801.8	12,671.9	6,729.6	110.5	109.5	-73.18	5,404.7	1,284.2	249.5	43.0	206.53	1.208	Level 2
12,900.0	6,801.6	12,771.9	6,729.4	112.3	111.4	-73.19	5,504.7	1,284.2	249.5	39.3	210.19	1.187	Level 2
13,000.0	6,801.4	12,871.9	6,729.3	114.2	113.3	-73.20	5,604.7	1,284.2	249.5	35.6	213.85	1.167	Level 2
13,100.0	6,801.2	12,971.9	6,729.1	116.0	115.2	-73.21	5,704.7	1,284.2	249.5	32.0	217.52	1.147	Level 2
13,200.0	6,801.0	13,071.9	6,729.0	117.9	117.0	-73.23	5,804.7	1,284.2	249.5	28.3	221.19	1.128	Level 2
13,300.0	6,800.8	13,171.9	6,728.8	119.8	118.9	-73.24	5,904.7	1,284.2	249.4	24.6	224.86	1.109	Level 2
13,400.0	6,800.5	13,271.9	6,728.7	121.6	120.8	-73.25	6,004.7	1,284.2	249.4	20.9	228.53	1.091	Level 2

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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
13,500.0	6,800.3	13,371.9	6,728.5	123.5	122.7	-73.26	6,104.7	1,284.2	249.4	17.2	232.21	1.074	Level 2
13,600.0	6,800.1	13,471.9	6,728.3	125.4	124.6	-73.27	6,204.7	1,284.2	249.4	13.5	235.88	1.057	Level 2
13,700.0	6,799.9	13,571.9	6,728.2	127.3	126.4	-73.28	6,304.7	1,284.2	249.4	9.8	239.56	1.041	Level 2
13,800.0	6,799.7	13,671.9	6,728.0	129.1	128.3	-73.30	6,404.7	1,284.2	249.4	6.1	243.24	1.025	Level 2
13,900.0	6,799.5	13,771.9	6,727.9	131.0	130.2	-73.31	6,504.7	1,284.2	249.4	2.4	246.92	1.010	Level 2
14,000.0	6,799.3	13,871.9	6,727.7	132.9	132.1	-73.32	6,604.7	1,284.2	249.3	-1.3	250.60	0.995	Level 1
14,100.0	6,799.1	13,971.9	6,727.6	134.8	134.0	-73.33	6,704.7	1,284.2	249.3	-5.0	254.28	0.981	Level 1
14,200.0	6,798.9	14,071.9	6,727.4	136.6	135.9	-73.34	6,804.7	1,284.2	249.3	-8.7	257.97	0.966	Level 1
14,300.0	6,798.7	14,171.9	6,727.2	138.5	137.7	-73.35	6,904.7	1,284.2	249.3	-12.4	261.65	0.953	Level 1
14,400.0	6,798.4	14,271.9	6,727.1	140.4	139.6	-73.36	7,004.7	1,284.2	249.3	-16.1	265.34	0.939	Level 1
14,500.0	6,798.2	14,371.9	6,726.9	142.3	141.5	-73.38	7,104.7	1,284.2	249.3	-19.8	269.03	0.927	Level 1
14,600.0	6,798.0	14,471.9	6,726.8	144.2	143.4	-73.39	7,204.7	1,284.2	249.3	-23.5	272.72	0.914	Level 1
14,700.0	6,797.8	14,571.9	6,726.6	146.1	145.3	-73.40	7,304.7	1,284.2	249.2	-27.2	276.41	0.902	Level 1
14,800.0	6,797.6	14,671.9	6,726.5	147.9	147.2	-73.41	7,404.7	1,284.2	249.2	-30.9	280.10	0.890	Level 1
14,900.0	6,797.4	14,771.9	6,726.3	149.8	149.1	-73.42	7,504.7	1,284.2	249.2	-34.6	283.79	0.878	Level 1
15,000.0	6,797.2	14,871.9	6,726.1	151.7	151.0	-73.43	7,604.7	1,284.2	249.2	-38.3	287.49	0.867	Level 1
15,100.0	6,797.0	14,971.9	6,726.0	153.6	152.9	-73.45	7,704.7	1,284.2	249.2	-42.0	291.18	0.856	Level 1
15,200.0	6,796.8	15,071.9	6,725.8	155.5	154.8	-73.46	7,804.7	1,284.2	249.2	-45.7	294.88	0.845	Level 1
15,300.0	6,796.6	15,171.9	6,725.7	157.4	156.7	-73.47	7,904.7	1,284.2	249.1	-49.4	298.57	0.834	Level 1
15,400.0	6,796.4	15,271.9	6,725.5	159.3	158.6	-73.48	8,004.7	1,284.2	249.1	-53.1	302.27	0.824	Level 1
15,500.0	6,796.1	15,371.9	6,725.4	161.2	160.5	-73.49	8,104.7	1,284.2	249.1	-56.9	305.97	0.814	Level 1
15,600.0	6,795.9	15,471.9	6,725.2	163.1	162.4	-73.50	8,204.7	1,284.2	249.1	-60.6	309.67	0.804	Level 1
15,700.0	6,795.7	15,571.9	6,725.0	165.0	164.3	-73.51	8,304.7	1,284.2	249.1	-64.3	313.37	0.795	Level 1
15,800.0	6,795.5	15,671.9	6,724.9	166.8	166.2	-73.53	8,404.7	1,284.2	249.1	-68.0	317.07	0.786	Level 1
15,900.0	6,795.3	15,771.9	6,724.7	168.7	168.1	-73.54	8,504.7	1,284.2	249.1	-71.7	320.78	0.776	Level 1
16,000.0	6,795.1	15,871.9	6,724.6	170.6	170.0	-73.55	8,604.7	1,284.2	249.0	-75.4	324.48	0.768	Level 1
16,100.0	6,794.9	15,971.9	6,724.4	172.5	171.9	-73.56	8,704.7	1,284.2	249.0	-79.2	328.18	0.759	Level 1
16,200.0	6,794.7	16,071.9	6,724.3	174.4	173.8	-73.57	8,804.7	1,284.2	249.0	-82.9	331.89	0.750	Level 1
16,300.0	6,794.5	16,171.9	6,724.1	176.3	175.7	-73.58	8,904.7	1,284.2	249.0	-86.6	335.59	0.742	Level 1
16,400.0	6,794.3	16,271.9	6,723.9	178.2	177.6	-73.60	9,004.7	1,284.2	249.0	-90.3	339.30	0.734	Level 1
16,500.0	6,794.1	16,371.9	6,723.8	180.1	179.5	-73.61	9,104.7	1,284.2	249.0	-94.0	343.01	0.726	Level 1
16,600.0	6,793.8	16,471.9	6,723.6	182.0	181.4	-73.62	9,204.7	1,284.2	249.0	-97.8	346.71	0.718	Level 1
16,700.0	6,793.6	16,571.9	6,723.5	183.9	183.3	-73.63	9,304.7	1,284.2	248.9	-101.5	350.42	0.710	Level 1
16,800.0	6,793.4	16,671.9	6,723.3	185.8	185.2	-73.64	9,404.7	1,284.2	248.9	-105.2	354.13	0.703	Level 1
16,900.0	6,793.2	16,771.9	6,723.2	187.7	187.1	-73.65	9,504.7	1,284.2	248.9	-108.9	357.84	0.696	Level 1
16,973.4	6,793.1	16,845.3	6,723.0	189.1	188.5	-73.66	9,578.2	1,284.2	248.9	-111.7	360.57	0.690	Level 1
17,001.8	6,793.0	16,871.9	6,723.0	189.6	189.0	-73.66	9,604.8	1,284.2	248.9	-112.7	361.59	0.688	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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	0.53	30.2	0.3	30.2	30.2	0.00	N/A	
100.0	100.0	100.0	100.0	0.1	0.1	0.53	30.2	0.3	30.2	30.0	0.22	134.549	
200.0	200.0	200.0	200.0	0.3	0.3	0.53	30.2	0.3	30.2	29.6	0.67	44.847	
300.0	300.0	300.0	300.0	0.6	0.6	0.53	30.2	0.3	30.2	29.1	1.12	26.908	
400.0	400.0	400.0	400.0	0.8	0.8	0.53	30.2	0.3	30.2	28.7	1.57	19.220	CC, ES
500.0	500.0	500.0	500.0	1.0	1.0	-114.21	30.2	0.3	30.8	28.7	2.01	15.328	
600.0	599.9	599.9	599.9	1.2	1.2	-120.50	30.2	0.3	32.6	30.1	2.44	13.369	
700.0	699.7	699.7	699.7	1.4	1.5	-129.37	30.2	0.3	36.3	33.4	2.88	12.611	
800.0	799.3	799.3	799.3	1.7	1.7	-138.81	30.2	0.3	42.7	39.4	3.34	12.810	
900.0	898.6	899.8	899.8	1.9	1.9	-146.79	29.5	1.4	51.0	47.2	3.77	13.510	
1,000.0	997.5	1,000.6	1,000.5	2.2	2.1	-152.87	27.4	4.7	59.7	55.5	4.20	14.240	
1,100.0	1,096.1	1,101.7	1,101.4	2.6	2.3	-157.73	23.8	10.3	68.8	64.2	4.63	14.882	
1,200.0	1,194.2	1,203.1	1,202.3	3.0	2.5	-161.76	18.8	18.2	78.2	73.1	5.06	15.441	
1,300.0	1,291.7	1,304.7	1,303.2	3.4	2.8	-165.22	12.4	28.4	87.7	82.2	5.51	15.924	
1,400.0	1,388.6	1,406.6	1,404.0	3.9	3.1	-168.27	4.4	40.8	97.4	91.4	5.96	16.339	
1,500.0	1,484.9	1,508.7	1,504.6	4.4	3.4	-171.00	-5.0	55.6	107.2	100.8	6.42	16.690	
1,600.0	1,580.4	1,611.1	1,605.0	5.0	3.7	-173.51	-15.8	72.7	117.1	110.2	6.90	16.979	
1,700.0	1,675.0	1,713.7	1,705.0	5.6	4.1	-175.84	-28.2	92.0	127.2	119.8	7.40	17.201	
1,800.0	1,768.9	1,816.6	1,804.7	6.3	4.6	-178.02	-42.0	113.8	137.4	129.5	7.91	17.369	
1,813.6	1,781.5	1,830.6	1,818.1	6.4	4.7	-178.30	-43.9	116.9	138.8	130.8	7.98	17.385	
1,900.0	1,862.1	1,919.6	1,903.7	7.0	5.1	179.92	-57.2	137.7	146.7	138.2	8.49	17.290	
2,000.0	1,955.3	2,019.2	1,999.0	7.8	5.7	178.09	-72.6	161.9	155.1	146.0	9.09	17.050	
2,100.0	2,048.6	2,118.7	2,094.3	8.5	6.2	176.44	-87.9	186.0	163.6	153.8	9.73	16.806	
2,200.0	2,141.8	2,218.2	2,189.7	9.3	6.8	174.95	-103.3	210.1	172.2	161.8	10.40	16.559	
2,300.0	2,235.0	2,317.8	2,285.0	10.0	7.3	173.61	-118.7	234.3	180.9	169.8	11.09	16.313	
2,400.0	2,328.3	2,417.3	2,380.3	10.8	7.9	172.39	-134.0	258.4	189.7	177.9	11.80	16.071	
2,500.0	2,421.5	2,516.8	2,475.7	11.6	8.5	171.29	-149.4	282.6	198.6	186.0	12.54	15.834	
2,600.0	2,514.7	2,616.4	2,571.0	12.3	9.1	170.27	-164.7	306.7	207.5	194.2	13.30	15.606	
2,700.0	2,607.9	2,715.9	2,666.4	13.1	9.7	169.34	-180.1	330.8	216.5	202.4	14.07	15.386	
2,800.0	2,701.2	2,815.5	2,761.7	13.9	10.3	168.48	-195.4	355.0	225.6	210.7	14.86	15.176	
2,900.0	2,794.4	2,915.0	2,857.0	14.6	10.9	167.69	-210.8	379.1	234.7	219.0	15.67	14.977	
3,000.0	2,887.6	3,014.5	2,952.4	15.4	11.5	166.96	-226.2	403.3	243.8	227.3	16.49	14.787	
3,100.0	2,980.9	3,114.1	3,047.7	16.2	12.1	166.29	-241.5	427.4	253.0	235.7	17.32	14.608	
3,200.0	3,074.1	3,213.6	3,143.0	16.9	12.7	165.66	-256.9	451.5	262.2	244.1	18.16	14.438	
3,300.0	3,167.3	3,313.1	3,238.4	17.7	13.3	165.07	-272.2	475.7	271.5	252.5	19.01	14.278	
3,400.0	3,260.6	3,412.7	3,333.7	18.5	13.9	164.52	-287.6	499.8	280.7	260.9	19.87	14.126	
3,500.0	3,353.8	3,512.2	3,429.0	19.3	14.5	164.01	-302.9	523.9	290.0	269.3	20.74	13.983	
3,600.0	3,447.0	3,611.7	3,524.4	20.0	15.1	163.52	-318.3	548.1	299.3	277.7	21.62	13.848	
3,700.0	3,540.3	3,711.3	3,619.7	20.8	15.7	163.07	-333.7	572.2	308.7	286.2	22.50	13.721	
3,800.0	3,633.5	3,810.8	3,715.0	21.6	16.3	162.64	-349.0	596.4	318.0	294.7	23.39	13.600	
3,900.0	3,726.7	3,910.3	3,810.4	22.4	16.9	162.24	-364.4	620.5	327.4	303.1	24.28	13.486	
4,000.0	3,819.9	4,009.9	3,905.7	23.1	17.5	161.86	-379.7	644.6	336.8	311.6	25.18	13.378	
4,100.0	3,913.2	4,109.4	4,001.0	23.9	18.1	161.50	-395.1	668.8	346.2	320.1	26.08	13.276	
4,200.0	4,006.4	4,208.9	4,096.4	24.7	18.7	161.17	-410.5	692.9	355.6	328.6	26.98	13.179	
4,300.0	4,099.6	4,308.5	4,191.7	25.5	19.3	160.84	-425.8	717.0	365.0	337.1	27.89	13.087	
4,400.0	4,192.9	4,408.0	4,287.0	26.2	20.0	160.54	-441.2	741.2	374.5	345.7	28.81	12.999	
4,500.0	4,286.1	4,507.5	4,382.4	27.0	20.6	160.25	-456.5	765.3	383.9	354.2	29.72	12.916	
4,600.0	4,379.3	4,607.1	4,477.7	27.8	21.2	159.97	-471.9	789.5	393.4	362.7	30.64	12.837	
4,700.0	4,472.6	4,706.6	4,573.0	28.6	21.8	159.70	-487.2	813.6	402.8	371.3	31.56	12.762	
4,800.0	4,565.8	4,806.1	4,668.4	29.4	22.4	159.45	-502.6	837.7	412.3	379.8	32.49	12.691	
4,900.0	4,659.0	4,905.7	4,763.7	30.1	23.0	159.21	-518.0	861.9	421.8	388.4	33.42	12.622	

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 7Q-301
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 7Q-301	**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 (9-11-15)	**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
5,000.0	4,752.2	5,005.2	4,859.0	30.9	23.6	158.98	-533.3	886.0	431.3	396.9	34.34	12.557	
5,100.0	4,845.5	5,104.7	4,954.4	31.7	24.2	158.76	-548.7	910.2	440.8	405.5	35.28	12.495	
5,119.7	4,863.9	5,124.4	4,973.2	31.9	24.4	158.72	-551.7	914.9	442.6	407.2	35.46	12.483	
5,200.0	4,939.1	5,204.4	5,049.8	32.4	24.8	158.55	-564.1	934.3	449.2	413.0	36.24	12.397	
5,300.0	5,033.9	5,295.6	5,137.4	32.9	25.4	158.26	-577.8	955.9	455.2	418.1	37.09	12.272	
5,400.0	5,129.7	5,383.4	5,222.4	33.4	25.7	158.02	-589.6	974.5	460.5	422.7	37.80	12.182	
5,500.0	5,226.5	5,471.3	5,308.0	33.8	26.0	157.80	-600.1	990.9	465.1	426.7	38.42	12.106	
5,600.0	5,324.1	5,559.0	5,394.2	34.2	26.3	157.63	-609.1	1,005.1	469.1	430.2	38.96	12.042	
5,700.0	5,422.3	5,646.8	5,480.7	34.5	26.6	157.48	-616.7	1,017.1	472.5	433.1	39.41	11.990	
5,800.0	5,521.2	5,734.5	5,567.7	34.8	26.8	157.36	-622.9	1,026.8	475.3	435.5	39.78	11.948	
5,900.0	5,620.6	5,822.2	5,654.9	35.0	27.0	157.27	-627.6	1,034.2	477.4	437.3	40.06	11.917	
6,000.0	5,720.2	5,909.8	5,742.4	35.2	27.1	157.21	-630.9	1,039.4	478.9	438.6	40.26	11.895	
6,100.0	5,820.1	6,000.0	5,832.5	35.3	27.3	157.17	-632.8	1,042.4	479.7	439.4	40.38	11.881	
6,100.0	5,820.1	6,000.0	5,832.5	35.3	27.3	157.17	-632.8	1,042.4	479.7	439.4	40.38	11.881	
6,179.9	5,900.0	6,067.5	5,900.0	35.4	27.3	-90.35	-633.3	1,043.1	479.9	439.5	40.42	11.874	
6,200.0	5,920.1	6,087.6	5,920.1	35.4	27.4	-90.35	-633.3	1,043.1	479.9	439.5	40.47	11.859	
6,300.0	6,020.1	6,187.6	6,020.1	35.5	27.5	-90.35	-633.3	1,043.1	479.9	439.2	40.71	11.789	
6,328.8	6,048.9	6,216.4	6,048.9	35.5	27.5	-90.35	-633.3	1,043.1	479.9	439.2	40.78	11.769	
6,350.0	6,070.1	6,237.7	6,070.2	35.5	27.5	-90.35	-633.0	1,043.1	479.9	439.1	40.82	11.756	
6,400.0	6,120.0	6,287.9	6,120.3	35.5	27.5	-90.35	-629.9	1,043.1	479.9	439.0	40.89	11.737	
6,450.0	6,169.6	6,338.1	6,170.1	35.5	27.5	-90.35	-623.6	1,043.1	479.9	439.0	40.90	11.735	
6,500.0	6,218.7	6,388.3	6,219.3	35.5	27.5	-90.34	-614.0	1,043.1	479.9	439.1	40.85	11.749	
6,550.0	6,267.0	6,438.5	6,267.8	35.5	27.5	-90.34	-601.2	1,043.1	479.9	439.2	40.75	11.778	
6,600.0	6,314.4	6,488.7	6,315.4	35.5	27.4	-90.33	-585.3	1,043.1	479.9	439.3	40.60	11.822	
6,650.0	6,360.7	6,538.9	6,361.8	35.4	27.4	-90.32	-566.2	1,043.1	479.9	439.5	40.41	11.878	
6,700.0	6,405.7	6,589.0	6,406.9	35.4	27.3	-90.31	-544.2	1,043.1	479.9	439.8	40.18	11.944	
6,750.0	6,449.1	6,639.2	6,450.4	35.3	27.2	-90.30	-519.2	1,043.1	479.9	440.0	39.93	12.020	
6,800.0	6,490.8	6,689.4	6,492.2	35.2	27.1	-90.29	-491.5	1,043.1	479.9	440.3	39.66	12.102	
6,850.0	6,530.6	6,739.5	6,532.1	35.1	26.9	-90.27	-461.1	1,043.1	479.9	440.6	39.38	12.188	
6,900.0	6,568.3	6,789.7	6,569.8	35.0	26.8	-90.26	-428.1	1,043.1	479.9	440.8	39.10	12.275	
6,950.0	6,603.9	6,839.8	6,605.4	34.9	26.7	-90.24	-392.7	1,043.1	479.9	441.1	38.83	12.359	
7,000.0	6,637.0	6,889.9	6,638.5	34.8	26.5	-90.23	-355.1	1,043.1	479.9	441.3	38.59	12.436	
7,050.0	6,667.6	6,940.1	6,669.1	34.7	26.4	-90.21	-315.4	1,043.1	479.9	441.5	38.38	12.504	
7,100.0	6,695.6	6,990.2	6,697.0	34.6	26.2	-90.19	-273.8	1,043.1	479.9	441.7	38.22	12.557	
7,150.0	6,720.8	7,040.3	6,722.1	34.5	26.0	-90.17	-230.5	1,043.1	479.9	441.8	38.11	12.594	
7,200.0	6,743.2	7,090.3	6,744.3	34.3	25.9	-90.15	-185.6	1,043.1	479.9	441.9	38.06	12.609	
7,250.0	6,762.5	7,140.4	6,763.5	34.2	25.7	-90.13	-139.4	1,043.1	479.9	441.8	38.08	12.602	
7,300.0	6,778.8	7,190.5	6,779.7	34.1	25.6	-90.10	-92.0	1,043.1	479.9	441.7	38.18	12.569	
7,350.0	6,792.0	7,240.5	6,792.7	34.0	25.5	-90.08	-43.7	1,043.1	479.9	441.6	38.36	12.510	
7,400.0	6,802.0	7,290.6	6,802.5	34.0	25.3	-90.06	5.4	1,043.1	479.9	441.3	38.63	12.425	
7,450.0	6,808.8	7,340.6	6,809.1	33.9	25.2	-90.04	55.0	1,043.1	479.9	441.0	38.97	12.314	
7,500.0	6,812.3	7,390.6	6,812.4	33.8	25.1	-90.01	104.9	1,043.1	479.9	440.5	39.40	12.181	
7,526.1	6,812.8	7,416.7	6,812.8	33.8	25.1	-90.00	131.0	1,043.1	479.9	440.3	39.65	12.104	
7,530.4	6,812.8	7,421.0	6,812.8	33.8	25.1	-90.00	135.2	1,043.1	479.9	440.2	39.70	12.090	
7,600.0	6,812.7	7,490.6	6,812.7	33.7	25.0	-90.00	204.9	1,043.1	479.9	439.4	40.50	11.849	
7,700.0	6,812.5	7,590.6	6,812.5	33.7	24.9	-90.00	304.9	1,043.1	479.9	438.0	41.93	11.446	
7,800.0	6,812.3	7,690.6	6,812.3	33.8	25.1	-90.00	404.9	1,043.1	479.9	436.3	43.65	10.996	
7,900.0	6,812.1	7,790.6	6,812.1	33.9	25.4	-90.00	504.9	1,043.1	479.9	434.3	45.62	10.519	
8,000.0	6,811.9	7,890.6	6,811.8	34.2	26.1	-90.00	604.9	1,043.1	479.9	432.1	47.83	10.034	
8,100.0	6,811.6	7,990.6	6,811.6	34.6	27.0	-90.00	704.9	1,043.1	479.9	429.7	50.23	9.554	
8,200.0	6,811.4	8,090.6	6,811.4	35.1	28.2	-90.00	804.9	1,043.1	479.9	427.1	52.80	9.089	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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
8,300.0	6,811.2	8,190.6	6,811.2	35.8	29.4	-90.00	904.9	1,043.1	479.9	424.4	55.52	8.644	
8,400.0	6,811.0	8,290.6	6,811.0	36.6	30.8	-90.00	1,004.9	1,043.1	479.9	421.6	58.37	8.222	
8,500.0	6,810.8	8,390.6	6,810.8	37.5	32.2	-90.00	1,104.9	1,043.1	479.9	418.6	61.32	7.826	
8,600.0	6,810.6	8,490.6	6,810.6	38.6	33.7	-90.00	1,204.9	1,043.1	479.9	415.6	64.37	7.456	
8,700.0	6,810.4	8,590.6	6,810.4	39.8	35.2	-90.00	1,304.9	1,043.1	479.9	412.4	67.50	7.110	
8,800.0	6,810.2	8,690.6	6,810.2	41.1	36.8	-90.00	1,404.9	1,043.1	479.9	409.2	70.70	6.788	
8,900.0	6,810.0	8,790.6	6,810.0	42.4	38.4	-90.00	1,504.9	1,043.1	479.9	406.0	73.96	6.489	
9,000.0	6,809.8	8,890.6	6,809.7	43.8	40.0	-90.00	1,604.9	1,043.1	479.9	402.7	77.27	6.211	
9,100.0	6,809.5	8,990.6	6,809.5	45.3	41.6	-90.00	1,704.9	1,043.1	479.9	399.3	80.63	5.952	
9,200.0	6,809.3	9,090.6	6,809.3	46.8	43.3	-90.00	1,804.9	1,043.1	479.9	395.9	84.04	5.711	
9,300.0	6,809.1	9,190.6	6,809.1	48.3	45.0	-90.00	1,904.9	1,043.1	479.9	392.5	87.47	5.487	
9,400.0	6,808.9	9,290.6	6,808.9	49.9	46.7	-90.00	2,004.9	1,043.1	479.9	389.0	90.94	5.277	
9,500.0	6,808.7	9,390.6	6,808.7	51.5	48.4	-90.00	2,104.9	1,043.1	479.9	385.5	94.44	5.082	
9,600.0	6,808.5	9,490.6	6,808.5	53.1	50.1	-90.00	2,204.9	1,043.1	479.9	382.0	97.97	4.899	
9,700.0	6,808.3	9,590.6	6,808.3	54.8	51.9	-90.00	2,304.9	1,043.1	479.9	378.4	101.52	4.728	
9,800.0	6,808.1	9,690.6	6,808.1	56.5	53.6	-90.00	2,404.9	1,043.1	479.9	374.8	105.08	4.567	
9,900.0	6,807.9	9,790.6	6,807.9	58.2	55.4	-90.00	2,504.9	1,043.1	479.9	371.3	108.67	4.416	
10,000.0	6,807.7	9,890.6	6,807.7	59.9	57.2	-90.00	2,604.9	1,043.1	479.9	367.7	112.27	4.275	
10,100.0	6,807.5	9,990.6	6,807.4	61.6	59.0	-90.00	2,704.9	1,043.1	479.9	364.0	115.89	4.141	
10,200.0	6,807.2	10,090.6	6,807.2	63.3	60.8	-90.00	2,804.9	1,043.1	479.9	360.4	119.53	4.015	
10,300.0	6,807.0	10,190.6	6,807.0	65.0	62.6	-90.00	2,904.8	1,043.1	479.9	356.8	123.17	3.896	
10,400.0	6,806.8	10,290.6	6,806.8	66.8	64.4	-90.00	3,004.8	1,043.1	479.9	353.1	126.83	3.784	
10,500.0	6,806.6	10,390.6	6,806.6	68.5	66.2	-90.00	3,104.8	1,043.1	479.9	349.4	130.50	3.678	
10,600.0	6,806.4	10,490.6	6,806.4	70.3	68.0	-90.00	3,204.8	1,043.1	479.9	345.8	134.17	3.577	
10,700.0	6,806.2	10,590.6	6,806.2	72.1	69.8	-90.00	3,304.8	1,043.1	479.9	342.1	137.86	3.481	
10,800.0	6,806.0	10,690.6	6,806.0	73.9	71.6	-90.00	3,404.8	1,043.1	479.9	338.4	141.55	3.390	
10,900.0	6,805.8	10,790.6	6,805.8	75.6	73.5	-90.00	3,504.8	1,043.1	479.9	334.7	145.26	3.304	
11,000.0	6,805.6	10,890.6	6,805.6	77.4	75.3	-90.00	3,604.8	1,043.1	479.9	331.0	148.97	3.222	
11,100.0	6,805.4	10,990.6	6,805.4	79.2	77.1	-90.00	3,704.8	1,043.1	479.9	327.2	152.68	3.143	
11,200.0	6,805.2	11,090.6	6,805.1	81.0	79.0	-90.00	3,804.8	1,043.1	479.9	323.5	156.40	3.069	
11,300.0	6,804.9	11,190.6	6,804.9	82.9	80.8	-90.00	3,904.8	1,043.1	479.9	319.8	160.13	2.997	
11,400.0	6,804.7	11,290.6	6,804.7	84.7	82.7	-90.00	4,004.8	1,043.1	479.9	316.1	163.86	2.929	
11,500.0	6,804.5	11,390.6	6,804.5	86.5	84.5	-90.00	4,104.8	1,043.1	479.9	312.3	167.60	2.864	
11,600.0	6,804.3	11,490.6	6,804.3	88.3	86.4	-90.00	4,204.8	1,043.1	479.9	308.6	171.34	2.801	
11,700.0	6,804.1	11,590.6	6,804.1	90.1	88.2	-90.00	4,304.8	1,043.1	479.9	304.8	175.09	2.741	
11,800.0	6,803.9	11,690.6	6,803.9	92.0	90.1	-90.00	4,404.8	1,043.1	479.9	301.1	178.84	2.684	
11,900.0	6,803.7	11,790.6	6,803.7	93.8	92.0	-90.00	4,504.8	1,043.1	479.9	297.3	182.59	2.628	
12,000.0	6,803.5	11,890.6	6,803.5	95.6	93.8	-90.00	4,604.8	1,043.1	479.9	293.6	186.35	2.575	
12,100.0	6,803.3	11,990.6	6,803.3	97.5	95.7	-90.00	4,704.8	1,043.1	479.9	289.8	190.11	2.524	
12,200.0	6,803.1	12,090.6	6,803.0	99.3	97.6	-90.00	4,804.8	1,043.1	479.9	286.0	193.88	2.475	
12,300.0	6,802.8	12,190.6	6,802.8	101.2	99.4	-90.00	4,904.8	1,043.1	479.9	282.3	197.64	2.428	
12,400.0	6,802.6	12,290.6	6,802.6	103.0	101.3	-90.00	5,004.8	1,043.1	479.9	278.5	201.41	2.383	
12,500.0	6,802.4	12,390.6	6,802.4	104.9	103.2	-90.00	5,104.8	1,043.1	479.9	274.7	205.19	2.339	
12,600.0	6,802.2	12,490.6	6,802.2	106.7	105.1	-90.00	5,204.8	1,043.1	479.9	271.0	208.96	2.297	
12,700.0	6,802.0	12,590.6	6,802.0	108.6	106.9	-90.00	5,304.8	1,043.1	479.9	267.2	212.74	2.256	
12,800.0	6,801.8	12,690.6	6,801.8	110.5	108.8	-90.00	5,404.8	1,043.1	479.9	263.4	216.52	2.217	
12,900.0	6,801.6	12,790.6	6,801.6	112.3	110.7	-90.00	5,504.8	1,043.1	479.9	259.6	220.30	2.179	
13,000.0	6,801.4	12,890.6	6,801.4	114.2	112.6	-90.00	5,604.8	1,043.1	479.9	255.8	224.08	2.142	
13,100.0	6,801.2	12,990.6	6,801.2	116.0	114.5	-90.00	5,704.8	1,043.1	479.9	252.1	227.87	2.106	
13,200.0	6,801.0	13,090.6	6,801.0	117.9	116.4	-90.00	5,804.8	1,043.1	479.9	248.3	231.66	2.072	
13,300.0	6,800.8	13,190.6	6,800.7	119.8	118.2	-90.00	5,904.8	1,043.1	479.9	244.5	235.45	2.038	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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
13,400.0	6,800.5	13,290.6	6,800.5	121.6	120.1	-90.00	6,004.8	1,043.1	479.9	240.7	239.24	2.006	
13,500.0	6,800.3	13,390.6	6,800.3	123.5	122.0	-90.00	6,104.8	1,043.1	479.9	236.9	243.03	1.975	
13,600.0	6,800.1	13,490.6	6,800.1	125.4	123.9	-90.00	6,204.8	1,043.1	479.9	233.1	246.83	1.944	
13,700.0	6,799.9	13,590.6	6,799.9	127.3	125.8	-90.00	6,304.8	1,043.1	479.9	229.3	250.62	1.915	
13,800.0	6,799.7	13,690.6	6,799.7	129.1	127.7	-90.00	6,404.8	1,043.1	479.9	225.5	254.42	1.886	
13,900.0	6,799.5	13,790.6	6,799.5	131.0	129.6	-90.00	6,504.8	1,043.1	479.9	221.7	258.22	1.859	
14,000.0	6,799.3	13,890.6	6,799.3	132.9	131.5	-90.00	6,604.8	1,043.1	479.9	217.9	262.02	1.832	
14,100.0	6,799.1	13,990.6	6,799.1	134.8	133.4	-90.00	6,704.8	1,043.1	479.9	214.1	265.82	1.805	
14,200.0	6,798.9	14,090.6	6,798.9	136.6	135.2	-90.00	6,804.8	1,043.1	479.9	210.3	269.62	1.780	
14,300.0	6,798.7	14,190.6	6,798.6	138.5	137.1	-90.00	6,904.8	1,043.1	479.9	206.5	273.42	1.755	
14,400.0	6,798.4	14,290.6	6,798.4	140.4	139.0	-90.00	7,004.8	1,043.1	479.9	202.7	277.22	1.731	
14,500.0	6,798.2	14,390.6	6,798.2	142.3	140.9	-90.00	7,104.8	1,043.1	479.9	198.9	281.03	1.708	
14,600.0	6,798.0	14,490.6	6,798.0	144.2	142.8	-90.00	7,204.8	1,043.1	479.9	195.1	284.84	1.685	
14,700.0	6,797.8	14,590.6	6,797.8	146.1	144.7	-90.00	7,304.8	1,043.1	479.9	191.3	288.64	1.663	
14,800.0	6,797.6	14,690.6	6,797.6	147.9	146.6	-90.00	7,404.8	1,043.1	479.9	187.5	292.45	1.641	
14,900.0	6,797.4	14,790.6	6,797.4	149.8	148.5	-90.00	7,504.8	1,043.1	479.9	183.7	296.26	1.620	
15,000.0	6,797.2	14,890.6	6,797.2	151.7	150.4	-90.00	7,604.8	1,043.1	479.9	179.9	300.07	1.599	
15,100.0	6,797.0	14,990.6	6,797.0	153.6	152.3	-90.00	7,704.8	1,043.1	479.9	176.0	303.88	1.579	
15,200.0	6,796.8	15,090.6	6,796.8	155.5	154.2	-90.00	7,804.8	1,043.1	479.9	172.2	307.69	1.560	
15,300.0	6,796.6	15,190.6	6,796.6	157.4	156.1	-90.00	7,904.8	1,043.1	479.9	168.4	311.50	1.541	
15,400.0	6,796.4	15,290.6	6,796.3	159.3	158.0	-90.00	8,004.8	1,043.1	479.9	164.6	315.31	1.522	
15,500.0	6,796.1	15,390.6	6,796.1	161.2	159.9	-90.00	8,104.8	1,043.1	479.9	160.8	319.13	1.504	
15,600.0	6,795.9	15,490.6	6,795.9	163.1	161.8	-90.00	8,204.8	1,043.1	479.9	157.0	322.94	1.486	Level 3
15,700.0	6,795.7	15,590.6	6,795.7	165.0	163.7	-90.00	8,304.8	1,043.1	479.9	153.2	326.76	1.469	Level 3
15,800.0	6,795.5	15,690.6	6,795.5	166.8	165.6	-90.00	8,404.8	1,043.1	479.9	149.4	330.57	1.452	Level 3
15,900.0	6,795.3	15,790.6	6,795.3	168.7	167.5	-90.00	8,504.8	1,043.1	479.9	145.5	334.39	1.435	Level 3
16,000.0	6,795.1	15,890.6	6,795.1	170.6	169.4	-90.00	8,604.8	1,043.1	479.9	141.7	338.20	1.419	Level 3
16,100.0	6,794.9	15,990.6	6,794.9	172.5	171.3	-90.00	8,704.8	1,043.1	479.9	137.9	342.02	1.403	Level 3
16,200.0	6,794.7	16,090.6	6,794.7	174.4	173.2	-90.00	8,804.8	1,043.1	479.9	134.1	345.84	1.388	Level 3
16,300.0	6,794.5	16,190.6	6,794.5	176.3	175.1	-90.00	8,904.8	1,043.1	479.9	130.3	349.65	1.373	Level 3
16,400.0	6,794.3	16,290.6	6,794.3	178.2	177.0	-90.00	9,004.8	1,043.1	479.9	126.5	353.47	1.358	Level 3
16,500.0	6,794.1	16,390.6	6,794.0	180.1	178.9	-90.00	9,104.8	1,043.1	479.9	122.6	357.29	1.343	Level 3
16,600.0	6,793.8	16,490.6	6,793.8	182.0	180.9	-90.00	9,204.8	1,043.1	479.9	118.8	361.11	1.329	Level 3
16,700.0	6,793.6	16,590.6	6,793.6	183.9	182.8	-90.00	9,304.8	1,043.1	479.9	115.0	364.93	1.315	Level 3
16,800.0	6,793.4	16,690.6	6,793.4	185.8	184.7	-90.00	9,404.8	1,043.1	479.9	111.2	368.75	1.301	Level 3
16,900.0	6,793.2	16,790.6	6,793.2	187.7	186.6	-90.00	9,504.8	1,043.1	479.9	107.4	372.57	1.288	Level 3
16,960.8	6,793.1	16,851.4	6,793.1	188.9	187.7	-90.00	9,565.6	1,043.1	479.9	105.0	374.90	1.280	Level 3
17,001.8	6,793.0	16,888.0	6,793.0	189.6	188.4	-90.00	9,602.2	1,043.1	479.9	103.6	376.38	1.275	Level 3, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn Pad Sec.7-T5N-R64W - Dunn 24-7 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 7062-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
900.0	898.6	885.6	885.6	1.9	17.7	-20.37	-44.1	826.8	797.3	777.8	19.44	41.015	
1,000.0	997.5	984.5	984.5	2.2	19.7	-20.81	-44.1	826.8	783.8	762.2	21.58	36.322	
1,100.0	1,096.1	1,083.1	1,083.1	2.6	21.7	-21.34	-44.1	826.8	768.0	744.3	23.70	32.404	
1,200.0	1,194.2	1,181.2	1,181.2	3.0	23.6	-21.99	-44.1	826.8	749.8	724.0	25.80	29.062	
1,300.0	1,291.7	1,278.7	1,278.7	3.4	25.6	-22.76	-44.1	826.8	729.3	701.4	27.88	26.161	
1,400.0	1,388.6	1,375.6	1,375.6	3.9	27.5	-23.67	-44.1	826.8	706.6	676.7	29.94	23.601	
1,500.0	1,484.9	1,471.8	1,471.8	4.4	29.4	-24.74	-44.1	826.8	681.7	649.7	31.99	21.312	
1,600.0	1,580.4	1,567.3	1,567.3	5.0	31.3	-26.00	-44.1	826.8	654.7	620.6	34.03	19.240	
1,700.0	1,675.0	1,662.0	1,662.0	5.6	33.2	-27.48	-44.1	826.8	625.7	589.6	36.07	17.345	
1,800.0	1,768.9	1,755.9	1,755.9	6.3	35.1	-29.24	-44.1	826.8	594.8	556.6	38.14	15.594	
1,813.6	1,781.5	1,768.5	1,768.5	6.4	35.4	-29.50	-44.1	826.8	590.5	552.0	38.42	15.367	
1,900.0	1,862.1	1,849.1	1,849.1	7.0	37.0	-31.04	-44.1	826.8	563.0	522.5	40.47	13.913	
2,000.0	1,955.3	1,942.3	1,942.3	7.8	38.8	-33.01	-44.1	826.8	531.7	488.8	42.89	12.398	
2,100.0	2,048.6	2,035.6	2,035.6	8.5	40.7	-35.21	-44.1	826.8	501.2	455.8	45.38	11.043	
2,200.0	2,141.8	2,128.8	2,128.8	9.3	42.6	-37.68	-44.1	826.8	471.4	423.4	47.96	9.829	
2,300.0	2,235.0	2,222.0	2,222.0	10.0	44.4	-40.47	-44.1	826.8	442.5	391.9	50.63	8.741	
2,400.0	2,328.3	2,315.2	2,315.2	10.8	46.3	-43.61	-44.1	826.8	414.8	361.4	53.40	7.768	
2,500.0	2,421.5	2,408.5	2,408.5	11.6	48.2	-47.16	-44.1	826.8	388.5	332.2	56.29	6.903	
2,600.0	2,514.7	2,501.7	2,501.7	12.3	50.0	-51.17	-44.1	826.8	363.9	304.6	59.29	6.138	
2,700.0	2,607.9	2,594.9	2,594.9	13.1	51.9	-55.69	-44.1	826.8	341.4	279.0	62.40	5.471	
2,800.0	2,701.2	2,688.2	2,688.2	13.9	53.8	-60.75	-44.1	826.8	321.3	255.7	65.61	4.898	
2,900.0	2,794.4	2,781.4	2,781.4	14.6	55.6	-66.36	-44.1	826.8	304.3	235.4	68.86	4.419	
3,000.0	2,887.6	2,874.6	2,874.6	15.4	57.5	-72.50	-44.1	826.8	290.8	218.7	72.09	4.034	
3,100.0	2,980.9	2,967.9	2,967.9	16.2	59.4	-79.08	-44.1	826.8	281.3	206.1	75.21	3.740	
3,200.0	3,074.1	3,061.1	3,061.1	16.9	61.2	-85.97	-44.1	826.8	276.2	198.1	78.12	3.536	
3,257.6	3,127.8	3,114.7	3,114.7	17.4	62.3	-90.00	-44.1	826.8	275.5	195.8	79.68	3.457	CC
3,300.0	3,167.3	3,154.3	3,154.3	17.7	63.1	-92.97	-44.1	826.8	275.9	195.1	80.76	3.416	ES
3,400.0	3,260.6	3,247.5	3,247.5	18.5	65.0	-99.89	-44.1	826.8	280.2	197.2	83.07	3.374	SF
3,500.0	3,353.8	3,340.8	3,340.8	19.3	66.8	-106.53	-44.1	826.8	289.1	204.0	85.06	3.398	
3,600.0	3,447.0	3,434.0	3,434.0	20.0	68.7	-112.74	-44.1	826.8	302.0	215.2	86.79	3.480	
3,700.0	3,540.3	3,527.2	3,527.2	20.8	70.5	-118.44	-44.1	826.8	318.6	230.2	88.32	3.607	
3,800.0	3,633.5	3,620.5	3,620.5	21.6	72.4	-123.59	-44.1	826.8	338.2	248.5	89.73	3.769	
3,900.0	3,726.7	3,713.7	3,713.7	22.4	74.3	-128.18	-44.1	826.8	360.4	269.3	91.08	3.957	
4,000.0	3,819.9	3,806.9	3,806.9	23.1	76.1	-132.27	-44.1	826.8	384.7	292.3	92.42	4.162	
4,100.0	3,913.2	3,900.2	3,900.2	23.9	78.0	-135.88	-44.1	826.8	410.7	317.0	93.78	4.380	
4,200.0	4,006.4	3,993.4	3,993.4	24.7	79.9	-139.08	-44.1	826.8	438.2	343.1	95.17	4.605	
4,300.0	4,099.6	4,086.6	4,086.6	25.5	81.7	-141.92	-44.1	826.8	466.9	370.3	96.61	4.833	
4,400.0	4,192.9	4,179.9	4,179.9	26.2	83.6	-144.43	-44.1	826.8	496.6	398.5	98.11	5.062	
4,500.0	4,286.1	4,273.1	4,273.1	27.0	85.5	-146.68	-44.1	826.8	527.1	427.4	99.65	5.289	
4,600.0	4,379.3	4,366.3	4,366.3	27.8	87.3	-148.68	-44.1	826.8	558.2	457.0	101.24	5.514	
4,700.0	4,472.6	4,459.5	4,459.5	28.6	89.2	-150.48	-44.1	826.8	590.0	487.1	102.88	5.735	
4,800.0	4,565.8	4,552.8	4,552.8	29.4	91.1	-152.09	-44.1	826.8	622.2	517.6	104.55	5.951	
4,900.0	4,659.0	4,646.0	4,646.0	30.1	92.9	-153.56	-44.1	826.8	654.8	548.5	106.27	6.162	
5,000.0	4,752.2	4,739.2	4,739.2	30.9	94.8	-154.88	-44.1	826.8	687.8	579.8	108.02	6.367	
5,100.0	4,845.5	4,832.5	4,832.5	31.7	96.6	-156.09	-44.1	826.8	721.1	611.3	109.80	6.567	
5,119.7	4,863.9	4,850.9	4,850.9	31.9	97.0	-156.31	-44.1	826.8	727.7	617.5	110.15	6.606	
5,200.0	4,939.1	4,926.1	4,926.1	32.4	98.5	-157.37	-44.1	826.8	753.6	641.3	112.34	6.708	
5,300.0	5,033.9	5,020.9	5,020.9	32.9	100.4	-158.49	-44.1	826.8	783.4	668.3	115.07	6.808	
6,900.0	6,568.3	6,555.3	6,555.3	35.0	131.1	-68.06	-44.1	826.8	794.3	651.8	142.51	5.574	
6,950.0	6,603.9	6,590.9	6,590.9	34.9	131.8	-71.08	-44.1	826.8	778.0	633.8	144.21	5.395	
7,000.0	6,637.0	6,624.0	6,624.0	34.8	132.5	-74.14	-44.1	826.8	762.0	615.9	146.15	5.214	

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 7Q-301
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 7Q-301	**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 (9-11-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn Pad Sec.7-T5N-R64W - Dunn 24-7 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 7062-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
7,050.0	6,667.6	6,654.6	6,654.6	34.7	133.1	-77.17	-44.1	826.8	746.8	598.7	148.15	5.041	
7,100.0	6,695.6	6,682.6	6,682.6	34.6	133.7	-80.07	-44.1	826.8	732.9	582.8	150.05	4.884	
7,150.0	6,720.8	6,707.8	6,707.8	34.5	134.2	-82.77	-44.1	826.8	720.5	568.8	151.72	4.749	
7,200.0	6,743.2	6,730.2	6,730.2	34.3	134.6	-85.17	-44.1	826.8	710.3	557.2	153.09	4.640	
7,250.0	6,762.5	6,749.5	6,749.5	34.2	135.0	-87.21	-44.1	826.8	702.6	548.5	154.13	4.559	
7,300.0	6,778.8	6,765.8	6,765.8	34.1	135.3	-88.84	-44.1	826.8	697.8	542.9	154.90	4.505	
7,349.4	6,791.9	6,778.9	6,778.9	34.0	135.6	-90.00	-44.1	826.8	696.2	540.7	155.45	4.479	
7,350.0	6,792.0	6,779.0	6,779.0	34.0	135.6	-90.01	-44.1	826.8	696.2	540.7	155.45	4.478	
7,400.0	6,802.0	6,789.0	6,789.0	34.0	135.8	-90.68	-44.1	826.8	697.9	542.1	155.86	4.478	
7,450.0	6,808.8	6,795.8	6,795.8	33.9	135.9	-90.84	-44.1	826.8	703.2	547.0	156.19	4.502	
7,500.0	6,812.3	6,799.3	6,799.3	33.8	136.0	-90.46	-44.1	826.8	711.9	555.5	156.44	4.551	
7,530.4	6,812.8	6,799.8	6,799.8	33.8	136.0	-89.97	-44.1	826.8	718.9	562.4	156.55	4.592	
7,600.0	6,812.7	6,799.7	6,799.7	33.7	136.0	-89.96	-44.1	826.8	739.3	582.4	156.94	4.711	
7,700.0	6,812.5	6,799.5	6,799.5	33.7	136.0	-89.94	-44.1	826.8	778.7	621.1	157.64	4.940	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn Pad Sec.7-T5N-R64W - Dunn 7PD (AL) - Wellbore #1 - Design #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				Warning
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	
1,000.0	997.5	1,003.5	1,003.5	2.2	2.1	-24.45	5.5	834.6	791.5	787.3	4.26	185.973	
1,100.0	1,096.1	1,102.1	1,102.1	2.6	2.4	-25.06	5.5	834.6	776.1	771.4	4.73	164.029	
1,200.0	1,194.2	1,200.2	1,200.2	3.0	2.6	-25.80	5.5	834.6	758.4	753.2	5.22	145.278	
1,300.0	1,291.7	1,297.7	1,297.7	3.4	2.8	-26.68	5.5	834.6	738.5	732.8	5.73	128.965	
1,400.0	1,388.6	1,394.6	1,394.6	3.9	3.0	-27.71	5.5	834.6	716.5	710.2	6.25	114.555	
1,500.0	1,484.9	1,490.8	1,490.8	4.4	3.2	-28.93	5.5	834.6	692.4	685.6	6.81	101.666	
1,600.0	1,580.4	1,586.3	1,586.3	5.0	3.5	-30.35	5.5	834.6	666.3	658.9	7.40	90.021	
1,700.0	1,675.0	1,681.0	1,681.0	5.6	3.7	-32.02	5.5	834.6	638.5	630.4	8.04	79.418	
1,800.0	1,768.9	1,774.9	1,774.9	6.3	3.9	-33.97	5.5	834.6	608.9	600.2	8.73	69.712	
1,813.6	1,781.5	1,787.5	1,787.5	6.4	3.9	-34.26	5.5	834.6	604.8	595.9	8.83	68.460	
1,900.0	1,862.1	1,858.0	1,858.0	7.0	4.1	-35.77	5.9	835.1	579.2	569.7	9.47	61.184	
2,000.0	1,955.3	1,937.9	1,937.9	7.8	4.2	-37.73	7.7	837.1	552.5	542.2	10.23	53.978	
2,100.0	2,048.6	2,018.4	2,018.2	8.5	4.4	-39.96	11.1	840.8	529.0	518.0	11.06	47.845	
2,200.0	2,141.8	2,100.0	2,099.5	9.3	4.6	-42.49	16.0	846.3	509.3	497.3	11.94	42.636	
2,300.0	2,235.0	2,180.5	2,179.3	10.0	4.8	-45.22	22.4	853.3	493.5	480.6	12.89	38.287	
2,400.0	2,328.3	2,261.8	2,259.8	10.8	5.0	-48.19	30.4	862.2	482.0	468.1	13.90	34.689	
2,500.0	2,421.5	2,343.1	2,339.8	11.6	5.2	-51.32	39.9	872.7	475.2	460.2	14.95	31.778	
2,600.0	2,514.7	2,433.8	2,428.8	12.3	5.5	-54.91	51.8	885.8	472.5	456.4	16.11	29.332	
2,663.0	2,573.5	2,493.3	2,487.2	12.8	5.6	-57.28	59.6	894.5	472.1	455.2	16.86	27.994	
2,700.0	2,607.9	2,528.3	2,521.4	13.1	5.7	-58.67	64.2	899.6	472.2	454.9	17.31	27.279	
2,800.0	2,701.2	2,622.7	2,614.0	13.9	6.0	-62.42	76.7	913.4	474.2	455.7	18.53	25.594	
2,900.0	2,794.4	2,717.2	2,706.7	14.6	6.4	-66.12	89.1	927.1	478.4	458.7	19.75	24.223	
3,000.0	2,887.6	2,811.6	2,799.3	15.4	6.7	-69.76	101.6	940.9	484.9	463.9	20.97	23.123	
3,100.0	2,980.9	2,906.1	2,891.9	16.2	7.0	-73.29	114.0	954.6	493.4	471.2	22.17	22.251	
3,200.0	3,074.1	3,000.6	2,984.5	16.9	7.4	-76.70	126.4	968.4	503.9	480.5	23.36	21.571	
3,300.0	3,167.3	3,095.0	3,077.1	17.7	7.7	-79.98	138.9	982.1	516.3	491.8	24.52	21.053	
3,400.0	3,260.6	3,189.5	3,169.8	18.5	8.0	-83.11	151.3	995.9	530.4	504.8	25.66	20.670	
3,500.0	3,353.8	3,283.9	3,262.4	19.3	8.4	-86.08	163.8	1,009.7	546.2	519.4	26.78	20.398	
3,600.0	3,447.0	3,378.4	3,355.0	20.0	8.8	-88.89	176.2	1,023.4	563.4	535.5	27.86	20.220	
3,700.0	3,540.3	3,472.9	3,447.6	20.8	9.1	-91.53	188.7	1,037.2	582.0	553.0	28.93	20.118	
3,800.0	3,633.5	3,567.3	3,540.3	21.6	9.5	-94.03	201.1	1,050.9	601.7	571.8	29.97	20.080	
3,900.0	3,726.7	3,661.8	3,632.9	22.4	9.9	-96.37	213.6	1,064.7	622.6	591.6	30.99	20.093	
4,000.0	3,819.9	3,756.2	3,725.5	23.1	10.2	-98.56	226.0	1,078.5	644.5	612.5	31.99	20.149	
4,100.0	3,913.2	3,850.7	3,818.1	23.9	10.6	-100.62	238.4	1,092.2	667.3	634.3	32.97	20.239	
4,200.0	4,006.4	3,945.2	3,910.7	24.7	11.0	-102.55	250.9	1,106.0	690.9	656.9	33.94	20.356	
4,300.0	4,099.6	4,039.6	4,003.4	25.5	11.4	-104.35	263.3	1,119.7	715.2	680.3	34.89	20.496	
4,400.0	4,192.9	4,134.1	4,096.0	26.2	11.8	-106.04	275.8	1,133.5	740.2	704.3	35.84	20.654	
4,500.0	4,286.1	4,228.5	4,188.6	27.0	12.2	-107.62	288.2	1,147.2	765.7	729.0	36.77	20.825	
4,600.0	4,379.3	4,323.0	4,281.2	27.8	12.5	-109.11	300.7	1,161.0	791.8	754.1	37.69	21.007	
7,100.0	6,695.6	6,766.1	6,701.6	34.6	19.3	-24.41	466.5	1,344.4	760.8	733.3	27.48	27.684	
7,150.0	6,720.8	6,791.3	6,726.8	34.5	19.4	-28.33	466.5	1,344.4	718.9	693.4	25.48	28.210	
7,200.0	6,743.2	6,813.6	6,749.2	34.3	19.4	-33.30	466.5	1,344.4	675.7	651.5	24.11	28.027	
7,250.0	6,762.5	6,833.0	6,768.5	34.2	19.4	-39.57	466.5	1,344.4	631.3	607.4	23.94	26.372	
7,300.0	6,778.8	6,849.3	6,784.8	34.1	19.5	-47.32	466.5	1,344.4	586.1	560.7	25.45	23.027	
7,350.0	6,792.0	6,862.5	6,798.0	34.0	19.5	-56.49	466.5	1,344.4	540.4	512.0	28.42	19.018	
7,400.0	6,802.0	6,872.5	6,808.0	34.0	19.5	-66.58	466.5	1,344.4	494.5	462.5	31.91	15.498	
7,450.0	6,808.8	6,879.2	6,814.8	33.9	19.5	-76.66	466.5	1,344.4	448.6	413.7	34.95	12.835	
7,500.0	6,812.3	6,882.7	6,818.3	33.8	19.5	-85.64	466.5	1,344.4	403.4	366.3	37.06	10.885	
7,530.4	6,812.8	6,883.3	6,818.8	33.8	19.5	-90.22	466.5	1,344.4	376.4	338.5	37.89	9.933	
7,600.0	6,812.7	6,883.1	6,818.7	33.7	19.5	-90.18	466.5	1,344.4	316.8	278.5	38.28	8.276	
7,700.0	6,812.5	6,882.9	6,818.5	33.7	19.5	-90.11	466.5	1,344.4	240.9	201.9	38.98	6.180	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Dunn Pad Sec.7-T5N-R64W - Dunn 7PD (AL) - Wellbore #1 - Design #1

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
7,800.0	6,812.3	6,882.7	6,818.3	33.8	19.5	-90.04	466.5	1,344.4	189.0	149.1	39.82	4.745	
7,861.7	6,812.1	6,882.6	6,818.1	33.8	19.5	-90.00	466.5	1,344.4	178.6	138.2	40.41	4.419	CC, ES, SF
7,900.0	6,812.1	6,882.5	6,818.1	33.9	19.5	-89.97	466.5	1,344.4	182.7	141.9	40.78	4.479	
8,000.0	6,811.9	6,882.3	6,817.8	34.2	19.5	-89.91	466.5	1,344.4	225.9	184.0	41.86	5.397	
8,100.0	6,811.6	6,882.1	6,817.6	34.6	19.5	-89.84	466.5	1,344.4	297.8	254.8	43.04	6.920	
8,200.0	6,811.4	6,881.9	6,817.4	35.1	19.5	-89.77	466.5	1,344.4	382.6	338.3	44.30	8.637	
8,300.0	6,811.2	6,881.7	6,817.2	35.8	19.5	-89.71	466.5	1,344.4	473.3	427.7	45.63	10.373	
8,400.0	6,811.0	6,881.5	6,817.0	36.6	19.5	-89.64	466.5	1,344.4	567.2	520.2	47.02	12.061	
8,500.0	6,810.8	6,881.3	6,816.8	37.5	19.5	-89.57	466.5	1,344.4	662.8	614.4	48.48	13.674	
8,600.0	6,810.6	6,881.0	6,816.6	38.6	19.5	-89.50	466.5	1,344.4	759.6	709.6	49.97	15.200	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.7-T5N-R64W - Dunn #23-7 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 7275-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	6,812.1	6,797.1	6,797.1	33.9	135.9	-90.13	1,095.5	995.8	791.7	632.3	159.44	4.966	
8,000.0	6,811.9	6,796.8	6,796.8	34.2	135.9	-90.11	1,095.5	995.8	720.2	559.7	160.52	4.487	
8,100.0	6,811.6	6,796.6	6,796.6	34.6	135.9	-90.09	1,095.5	995.8	656.1	494.5	161.70	4.058	
8,200.0	6,811.4	6,796.4	6,796.4	35.1	135.9	-90.07	1,095.5	995.8	602.0	439.0	162.96	3.694	
8,300.0	6,811.2	6,796.2	6,796.2	35.8	135.9	-90.04	1,095.5	995.8	560.6	396.3	164.29	3.412	
8,400.0	6,811.0	6,796.0	6,796.0	36.6	135.9	-90.02	1,095.5	995.8	534.9	369.2	165.69	3.228	
8,490.7	6,810.8	6,795.8	6,795.8	37.4	135.9	-90.00	1,095.5	995.8	527.2	360.2	167.01	3.157	CC
8,500.0	6,810.8	6,795.8	6,795.8	37.5	135.9	-90.00	1,095.5	995.8	527.3	360.1	167.15	3.155	ES, SF
8,600.0	6,810.6	6,795.6	6,795.6	38.6	135.9	-89.98	1,095.5	995.8	538.4	369.8	168.65	3.192	
8,700.0	6,810.4	6,795.4	6,795.4	39.8	135.9	-89.95	1,095.5	995.8	567.2	397.0	170.19	3.333	
8,800.0	6,810.2	6,795.2	6,795.2	41.1	135.9	-89.93	1,095.5	995.8	611.2	439.5	171.77	3.559	
8,900.0	6,810.0	6,795.0	6,795.0	42.4	135.9	-89.91	1,095.5	995.8	667.5	494.1	173.38	3.850	
9,000.0	6,809.8	6,794.7	6,794.7	43.8	135.9	-89.88	1,095.5	995.8	733.0	558.0	175.02	4.188	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 7000-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
14,800.0	6,797.6	6,782.6	6,782.6	147.9	135.7	-90.12	7,958.8	952.1	795.5	513.3	282.16	2.819	
14,900.0	6,797.4	6,782.4	6,782.4	149.8	135.6	-90.10	7,958.8	952.1	729.4	445.3	284.06	2.568	
15,000.0	6,797.2	6,782.2	6,782.2	151.7	135.6	-90.07	7,958.8	952.1	671.7	385.8	285.95	2.349	
15,100.0	6,797.0	6,782.0	6,782.0	153.6	135.6	-90.05	7,958.8	952.1	624.8	337.0	287.85	2.171	
15,200.0	6,796.8	6,781.8	6,781.8	155.5	135.6	-90.03	7,958.8	952.1	591.3	301.5	289.75	2.041	
15,300.0	6,796.6	6,781.6	6,781.6	157.4	135.6	-90.01	7,958.8	952.1	573.4	281.8	291.65	1.966	
15,354.0	6,796.5	6,781.4	6,781.4	158.4	135.6	-90.00	7,958.8	952.1	570.9	278.2	292.68	1.951	CC, ES, SF
15,400.0	6,796.4	6,781.3	6,781.3	159.3	135.6	-89.99	7,958.8	952.1	572.7	279.2	293.55	1.951	
15,500.0	6,796.1	6,781.1	6,781.1	161.2	135.6	-89.97	7,958.8	952.1	589.3	293.8	295.45	1.994	
15,600.0	6,795.9	6,780.9	6,780.9	163.1	135.6	-89.95	7,958.8	952.1	621.6	324.3	297.35	2.091	
15,700.0	6,795.7	6,780.7	6,780.7	165.0	135.6	-89.93	7,958.8	952.1	667.6	368.3	299.25	2.231	
15,800.0	6,795.5	6,780.5	6,780.5	166.8	135.6	-89.91	7,958.8	952.1	724.5	423.3	301.15	2.406	
15,900.0	6,795.3	6,780.3	6,780.3	168.7	135.6	-89.89	7,958.8	952.1	790.0	486.9	303.05	2.607	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.7-T5N-R64W - Plumb #4 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 6983-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
9,400.0	6,808.9	6,769.9	6,769.9	49.9	135.4	90.16	2,612.2	1,985.1	763.2	581.9	181.31	4.209	
9,500.0	6,808.7	6,769.7	6,769.7	51.5	135.4	90.13	2,612.2	1,985.1	686.3	503.2	183.05	3.749	
9,600.0	6,808.5	6,769.5	6,769.5	53.1	135.4	90.11	2,612.2	1,985.1	616.0	431.2	184.80	3.333	
9,700.0	6,808.3	6,769.3	6,769.3	54.8	135.4	90.08	2,612.2	1,985.1	555.0	368.4	186.56	2.975	
9,800.0	6,808.1	6,769.1	6,769.1	56.5	135.4	90.05	2,612.2	1,985.1	506.5	318.2	188.34	2.689	
9,900.0	6,807.9	6,768.9	6,768.9	58.2	135.4	90.03	2,612.2	1,985.1	474.4	284.3	190.12	2.495	
10,000.0	6,807.7	6,768.7	6,768.7	59.9	135.4	90.00	2,612.2	1,985.1	462.2	270.3	191.92	2.408	
10,007.3	6,807.6	6,768.6	6,768.6	60.0	135.4	90.00	2,612.2	1,985.1	462.1	270.1	192.05	2.406	CC, ES, SF
10,100.0	6,807.5	6,768.4	6,768.4	61.6	135.4	89.98	2,612.2	1,985.1	471.3	277.6	193.72	2.433	
10,200.0	6,807.2	6,768.2	6,768.2	63.3	135.4	89.95	2,612.2	1,985.1	500.7	305.1	195.53	2.561	
10,300.0	6,807.0	6,768.0	6,768.0	65.0	135.4	89.92	2,612.2	1,985.1	547.0	349.6	197.34	2.772	
10,400.0	6,806.8	6,767.8	6,767.8	66.8	135.4	89.90	2,612.2	1,985.1	606.4	407.2	199.16	3.045	
10,500.0	6,806.6	6,767.6	6,767.6	68.5	135.4	89.87	2,612.2	1,985.1	675.5	474.5	200.99	3.361	
10,600.0	6,806.4	6,767.4	6,767.4	70.3	135.3	89.85	2,612.2	1,985.1	751.5	548.7	202.82	3.705	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.7-T5N-R64W - Silva #23-6 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 7100-UNKNOWN

Offset Well Error: 0.0 ft

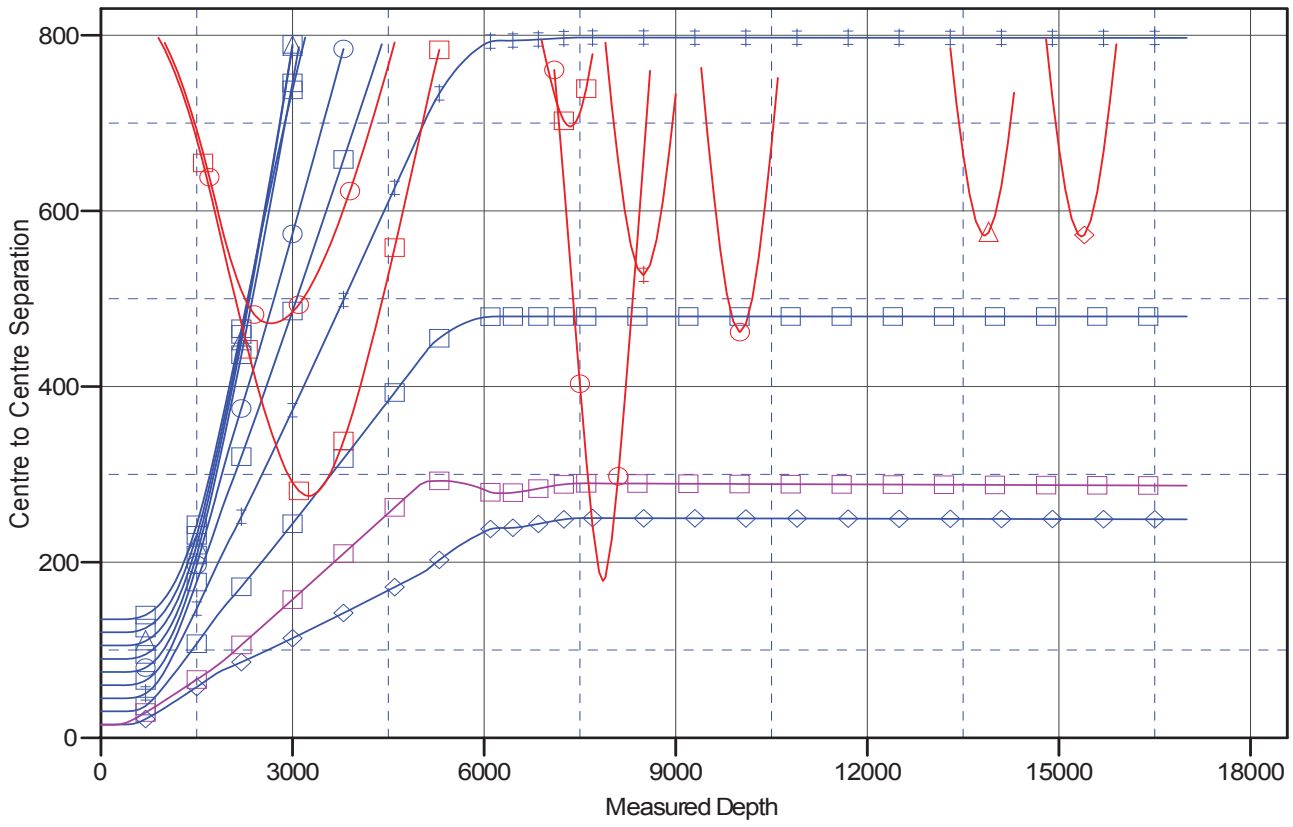
Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,300.0	6,800.8	6,770.7	6,770.7	119.8	135.4	-90.11	6,443.6	951.1	785.8	532.3	253.44	3.100	
13,400.0	6,800.5	6,770.5	6,770.5	121.6	135.4	-90.09	6,443.6	951.1	720.9	465.5	255.33	2.823	
13,500.0	6,800.3	6,770.3	6,770.3	123.5	135.4	-90.07	6,443.6	951.1	664.8	407.5	257.22	2.584	
13,600.0	6,800.1	6,770.1	6,770.1	125.4	135.4	-90.05	6,443.6	951.1	619.8	360.7	259.11	2.392	
13,700.0	6,799.9	6,769.9	6,769.9	127.3	135.4	-90.03	6,443.6	951.1	588.5	327.5	261.00	2.255	
13,800.0	6,799.7	6,769.7	6,769.7	129.1	135.4	-90.01	6,443.6	951.1	573.3	310.4	262.89	2.181	
13,838.8	6,799.6	6,769.6	6,769.6	129.9	135.4	-90.00	6,443.6	951.1	571.9	308.3	263.62	2.170	CC, ES, SF
13,900.0	6,799.5	6,769.5	6,769.5	131.0	135.4	-89.99	6,443.6	951.1	575.2	310.4	264.78	2.172	
14,000.0	6,799.3	6,769.3	6,769.3	132.9	135.4	-89.97	6,443.6	951.1	594.2	327.6	266.67	2.228	
14,100.0	6,799.1	6,769.1	6,769.1	134.8	135.4	-89.95	6,443.6	951.1	628.8	360.2	268.57	2.341	
14,200.0	6,798.9	6,768.9	6,768.9	136.6	135.4	-89.92	6,443.6	951.1	676.5	406.0	270.46	2.501	
14,300.0	6,798.7	6,768.6	6,768.6	138.5	135.4	-89.90	6,443.6	951.1	734.7	462.4	272.35	2.698	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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 7Q-301
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.58°

Ladder Plot



LEGEND

- Little Will #7 (P&A), Wellbore #1, Wellbore #1 V0
- Silva #23-6 (Exist), Wellbore #1, Wellbore #1 V0
- Plumb #4 (Exist.), Wellbore #1, Wellbore #1 V0
- Dunn #23-7 (Exist.), Wellbore #1, Wellbore #1 V0
- Dunn 7I-321, Wellbore #1, Plan #1 (9-10-15) V0
- Dunn 7Q-341, Wellbore #1, Plan #1 (9-11-15) V0
- Dunn 7Q-241, Wellbore #1, Plan #1 (9-11-15) V0
- Dunn 7L-301, Wellbore #1, Plan #1 (9-10-15) V0
- Dunn 7I-201, Wellbore #1, Plan #1 (9-8-15) V0
- Dunn 7L-341, Wellbore #1, Plan #1 (9-10-15) V0
- Dunn 7Q-221, Wellbore #1, Plan #1 (9-11-15) V0
- Dunn 7L-221, Wellbore #1, Plan #1 (9-10-15) V0
- Dunn 7I-221, Wellbore #1, Plan #1 (9-10-15) V0
- Dunn 7L-201, Wellbore #1, Plan #1 (9-10-15) V0
- Dunn 24-7 (Exist.), Wellbore #1, Wellbore #1 V0
- Dunn 7PD (AL), Wellbore #1, Design #1 V0

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Dunn 7Q-301
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 7Q-301	**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 (9-11-15)	**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 7Q-301
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.58°