

# PETROLEUM DEVELOPMENT CORP Weld County CO

## Well Name: Waste Mangagement 2I-221

Surface Location: Waste Management 2IL-HZ Pad Sec.2-T2N-R64W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

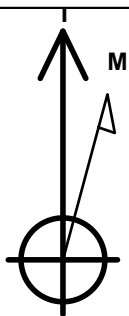
Ground Elevation: 4939.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1302936.01	3272234.50	40.160850	-104.525950	

RKB - 15' WELL @ 4954.0ft (RKB - 15')

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape Point
BHL 500'FNL, 485'FWL	6814.0	4520.9	-145.3	



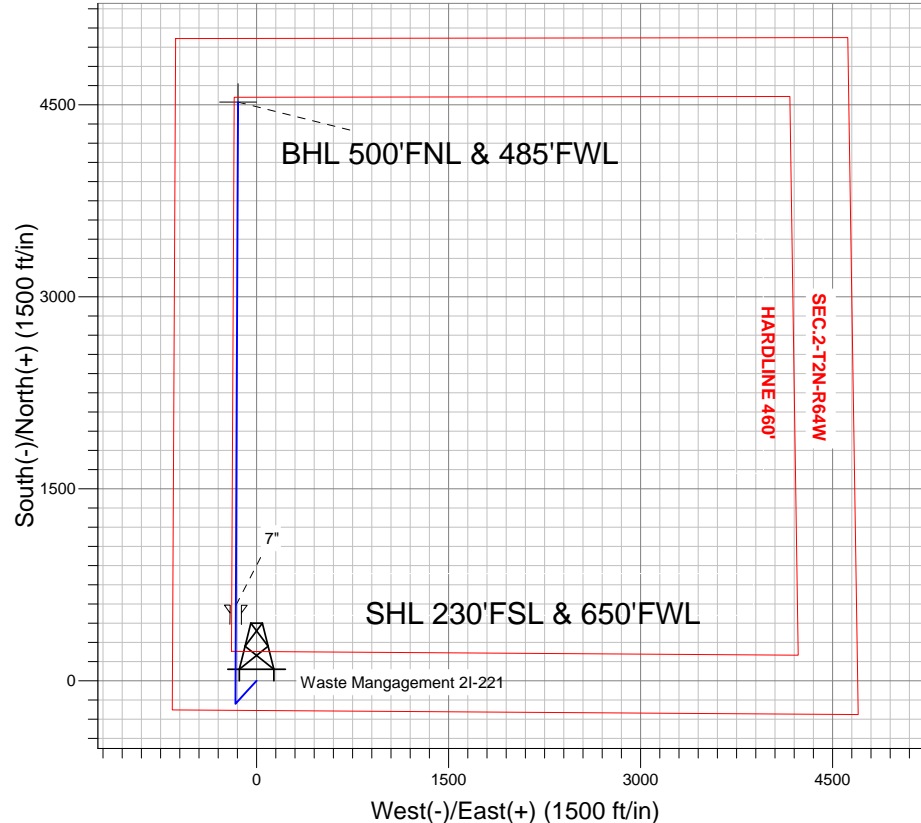
Azimuths to True North  
Magnetic North: 8.50°

Magnetic Field  
Strength: 52860.7nT  
Dip Angle: 66.84°  
Date: 1/23/2013  
Model: IGRF2010

## ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6075.5	6086.0	KOP #2
6839.4	7290.9	End of Build

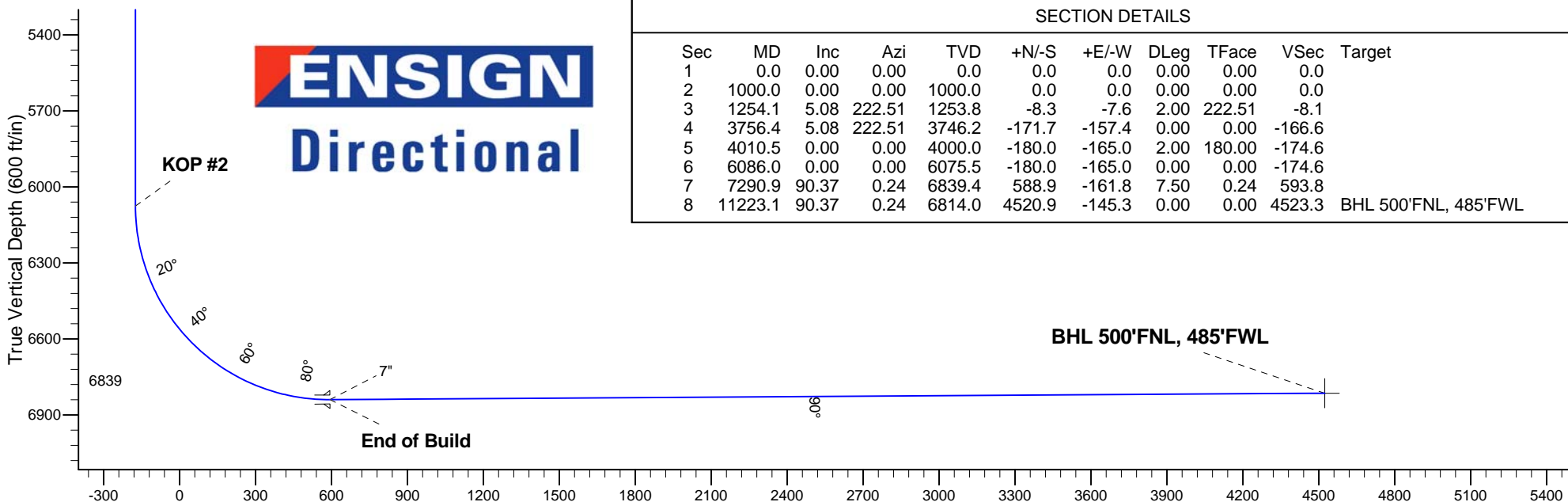
Waste Management 2IL-HZ Pad Sec.2-T2N-R64W  
Waste Management 2I-221  
Plan #1 (1-23-13)  
10:19, January 24 2013



**ENSIGN**  
Directional

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1254.1	5.08	222.51	1253.8	-8.3	-7.6	2.00	222.51	-8.1	
4	3756.4	5.08	222.51	3746.2	-171.7	-157.4	0.00	0.00	-166.6	
5	4010.5	0.00	0.00	4000.0	-180.0	-165.0	2.00	180.00	-174.6	
6	6086.0	0.00	0.00	6075.5	-180.0	-165.0	0.00	0.00	-174.6	
7	7290.9	90.37	0.24	6839.4	588.9	-161.8	7.50	0.24	593.8	
8	11223.1	90.37	0.24	6814.0	4520.9	-145.3	0.00	0.00	4523.3	BHL 500'FNL, 485'FWL



Vertical Section at 358.16° (600 ft/in)



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T2N-R64W**

**Waste Management 2IL-HZ Pad Sec.2-T2N-R64W**

**Waste Mangagement 2I-221**

**Wellbore #1**

**Plan: Plan #1 (1-23-13)**

## **Standard Planning Report**

**24 January, 2013**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,254.1	5.08	222.51	1,253.8	-8.3	-7.6	2.00	2.00	0.00	222.51	
3,756.4	5.08	222.51	3,746.2	-171.7	-157.4	0.00	0.00	0.00	0.00	
4,010.5	0.00	0.00	4,000.0	-180.0	-165.0	2.00	-2.00	0.00	180.00	
6,086.0	0.00	0.00	6,075.5	-180.0	-165.0	0.00	0.00	0.00	0.00	
7,290.9	90.37	0.24	6,839.4	588.9	-161.8	7.50	7.50	0.00	0.24	
11,223.1	90.37	0.24	6,814.0	4,520.9	-145.3	0.00	0.00	0.00	0.00	BHL 500'FNL, 485'

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Waste Mangagement 2I-221
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site:</b>	Waste Mangagement 2IL-HZ Pad Sec.2-T2N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Waste Mangagement 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-23-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	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
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	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
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.80	222.51	1,040.0	-0.2	-0.2	-0.2	2.00	2.00	0.00
1,080.0	1.60	222.51	1,080.0	-0.8	-0.8	-0.8	2.00	2.00	0.00
1,120.0	2.40	222.51	1,120.0	-1.9	-1.7	-1.8	2.00	2.00	0.00
1,160.0	3.20	222.51	1,159.9	-3.3	-3.0	-3.2	2.00	2.00	0.00
1,200.0	4.00	222.51	1,199.8	-5.1	-4.7	-5.0	2.00	2.00	0.00
1,240.0	4.80	222.51	1,239.7	-7.4	-6.8	-7.2	2.00	2.00	0.00
1,254.1	5.08	222.51	1,253.8	-8.3	-7.6	-8.1	2.00	2.00	0.00
1,280.0	5.08	222.51	1,279.6	-10.0	-9.2	-9.7	0.00	0.00	0.00
1,320.0	5.08	222.51	1,319.4	-12.6	-11.6	-12.2	0.00	0.00	0.00
1,360.0	5.08	222.51	1,359.3	-15.2	-13.9	-14.8	0.00	0.00	0.00
1,400.0	5.08	222.51	1,399.1	-17.8	-16.3	-17.3	0.00	0.00	0.00
1,440.0	5.08	222.51	1,438.9	-20.4	-18.7	-19.8	0.00	0.00	0.00
1,480.0	5.08	222.51	1,478.8	-23.1	-21.1	-22.4	0.00	0.00	0.00
1,520.0	5.08	222.51	1,518.6	-25.7	-23.5	-24.9	0.00	0.00	0.00
1,560.0	5.08	222.51	1,558.5	-28.3	-25.9	-27.4	0.00	0.00	0.00
1,600.0	5.08	222.51	1,598.3	-30.9	-28.3	-30.0	0.00	0.00	0.00
1,640.0	5.08	222.51	1,638.1	-33.5	-30.7	-32.5	0.00	0.00	0.00
1,680.0	5.08	222.51	1,678.0	-36.1	-33.1	-35.0	0.00	0.00	0.00
1,720.0	5.08	222.51	1,717.8	-38.7	-35.5	-37.6	0.00	0.00	0.00
1,760.0	5.08	222.51	1,757.7	-41.3	-37.9	-40.1	0.00	0.00	0.00
1,800.0	5.08	222.51	1,797.5	-43.9	-40.3	-42.6	0.00	0.00	0.00
1,840.0	5.08	222.51	1,837.4	-46.6	-42.7	-45.2	0.00	0.00	0.00
1,880.0	5.08	222.51	1,877.2	-49.2	-45.1	-47.7	0.00	0.00	0.00
1,920.0	5.08	222.51	1,917.0	-51.8	-47.5	-50.2	0.00	0.00	0.00
1,960.0	5.08	222.51	1,956.9	-54.4	-49.9	-52.8	0.00	0.00	0.00
2,000.0	5.08	222.51	1,996.7	-57.0	-52.3	-55.3	0.00	0.00	0.00

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<b>Project:</b>	SEC.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Waste Mangagement 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-23-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,040.0	5.08	222.51	2,036.6	-59.6	-54.7	-57.8	0.00	0.00	0.00
2,080.0	5.08	222.51	2,076.4	-62.2	-57.0	-60.4	0.00	0.00	0.00
2,120.0	5.08	222.51	2,116.3	-64.8	-59.4	-62.9	0.00	0.00	0.00
2,160.0	5.08	222.51	2,156.1	-67.5	-61.8	-65.4	0.00	0.00	0.00
2,200.0	5.08	222.51	2,195.9	-70.1	-64.2	-68.0	0.00	0.00	0.00
2,240.0	5.08	222.51	2,235.8	-72.7	-66.6	-70.5	0.00	0.00	0.00
2,280.0	5.08	222.51	2,275.6	-75.3	-69.0	-73.0	0.00	0.00	0.00
2,320.0	5.08	222.51	2,315.5	-77.9	-71.4	-75.6	0.00	0.00	0.00
2,360.0	5.08	222.51	2,355.3	-80.5	-73.8	-78.1	0.00	0.00	0.00
2,400.0	5.08	222.51	2,395.2	-83.1	-76.2	-80.6	0.00	0.00	0.00
2,440.0	5.08	222.51	2,435.0	-85.7	-78.6	-83.2	0.00	0.00	0.00
2,480.0	5.08	222.51	2,474.8	-88.4	-81.0	-85.7	0.00	0.00	0.00
2,520.0	5.08	222.51	2,514.7	-91.0	-83.4	-88.2	0.00	0.00	0.00
2,560.0	5.08	222.51	2,554.5	-93.6	-85.8	-90.8	0.00	0.00	0.00
2,600.0	5.08	222.51	2,594.4	-96.2	-88.2	-93.3	0.00	0.00	0.00
2,640.0	5.08	222.51	2,634.2	-98.8	-90.6	-95.8	0.00	0.00	0.00
2,680.0	5.08	222.51	2,674.1	-101.4	-93.0	-98.4	0.00	0.00	0.00
2,720.0	5.08	222.51	2,713.9	-104.0	-95.4	-100.9	0.00	0.00	0.00
2,760.0	5.08	222.51	2,753.7	-106.6	-97.7	-103.4	0.00	0.00	0.00
2,800.0	5.08	222.51	2,793.6	-109.2	-100.1	-106.0	0.00	0.00	0.00
2,840.0	5.08	222.51	2,833.4	-111.9	-102.5	-108.5	0.00	0.00	0.00
2,880.0	5.08	222.51	2,873.3	-114.5	-104.9	-111.0	0.00	0.00	0.00
2,920.0	5.08	222.51	2,913.1	-117.1	-107.3	-113.6	0.00	0.00	0.00
2,960.0	5.08	222.51	2,953.0	-119.7	-109.7	-116.1	0.00	0.00	0.00
3,000.0	5.08	222.51	2,992.8	-122.3	-112.1	-118.6	0.00	0.00	0.00
3,040.0	5.08	222.51	3,032.6	-124.9	-114.5	-121.2	0.00	0.00	0.00
3,080.0	5.08	222.51	3,072.5	-127.5	-116.9	-123.7	0.00	0.00	0.00
3,120.0	5.08	222.51	3,112.3	-130.1	-119.3	-126.2	0.00	0.00	0.00
3,160.0	5.08	222.51	3,152.2	-132.8	-121.7	-128.8	0.00	0.00	0.00
3,200.0	5.08	222.51	3,192.0	-135.4	-124.1	-131.3	0.00	0.00	0.00
3,240.0	5.08	222.51	3,231.9	-138.0	-126.5	-133.8	0.00	0.00	0.00
3,280.0	5.08	222.51	3,271.7	-140.6	-128.9	-136.4	0.00	0.00	0.00
3,320.0	5.08	222.51	3,311.5	-143.2	-131.3	-138.9	0.00	0.00	0.00
3,360.0	5.08	222.51	3,351.4	-145.8	-133.7	-141.4	0.00	0.00	0.00
3,400.0	5.08	222.51	3,391.2	-148.4	-136.1	-144.0	0.00	0.00	0.00
3,440.0	5.08	222.51	3,431.1	-151.0	-138.5	-146.5	0.00	0.00	0.00
3,480.0	5.08	222.51	3,470.9	-153.6	-140.8	-149.0	0.00	0.00	0.00
3,520.0	5.08	222.51	3,510.8	-156.3	-143.2	-151.6	0.00	0.00	0.00
3,560.0	5.08	222.51	3,550.6	-158.9	-145.6	-154.1	0.00	0.00	0.00
3,600.0	5.08	222.51	3,590.4	-161.5	-148.0	-156.6	0.00	0.00	0.00
3,640.0	5.08	222.51	3,630.3	-164.1	-150.4	-159.2	0.00	0.00	0.00
3,680.0	5.08	222.51	3,670.1	-166.7	-152.8	-161.7	0.00	0.00	0.00
3,720.0	5.08	222.51	3,710.0	-169.3	-155.2	-164.2	0.00	0.00	0.00
3,756.4	5.08	222.51	3,746.2	-171.7	-157.4	-166.6	0.00	0.00	0.00
3,760.0	5.01	222.51	3,749.8	-171.9	-157.6	-166.8	2.00	-2.00	0.00
3,800.0	4.21	222.51	3,789.7	-174.3	-159.8	-169.1	2.00	-2.00	0.00
3,840.0	3.41	222.51	3,829.6	-176.3	-161.6	-171.0	2.00	-2.00	0.00
3,880.0	2.61	222.51	3,869.5	-177.8	-163.0	-172.5	2.00	-2.00	0.00
3,920.0	1.81	222.51	3,909.5	-178.9	-164.0	-173.6	2.00	-2.00	0.00
3,960.0	1.01	222.51	3,949.5	-179.7	-164.7	-174.3	2.00	-2.00	0.00
4,000.0	0.21	222.51	3,989.5	-180.0	-165.0	-174.6	2.00	-2.00	0.00
4,010.5	0.00	0.00	4,000.0	-180.0	-165.0	-174.6	2.00	-2.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Waste Mangagement 2I-221
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site:</b>	Waste Mangagement 2IL-HZ Pad Sec.2-T2N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Waste Mangagement 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-23-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,040.0	0.00	0.00	4,029.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,080.0	0.00	0.00	4,069.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,120.0	0.00	0.00	4,109.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,160.0	0.00	0.00	4,149.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,200.0	0.00	0.00	4,189.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,240.0	0.00	0.00	4,229.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,280.0	0.00	0.00	4,269.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,320.0	0.00	0.00	4,309.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,360.0	0.00	0.00	4,349.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,400.0	0.00	0.00	4,389.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,440.0	0.00	0.00	4,429.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,480.0	0.00	0.00	4,469.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,520.0	0.00	0.00	4,509.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,560.0	0.00	0.00	4,549.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,600.0	0.00	0.00	4,589.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,640.0	0.00	0.00	4,629.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,680.0	0.00	0.00	4,669.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,720.0	0.00	0.00	4,709.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,760.0	0.00	0.00	4,749.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,800.0	0.00	0.00	4,789.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,840.0	0.00	0.00	4,829.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,880.0	0.00	0.00	4,869.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,920.0	0.00	0.00	4,909.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
4,960.0	0.00	0.00	4,949.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,000.0	0.00	0.00	4,989.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,040.0	0.00	0.00	5,029.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,080.0	0.00	0.00	5,069.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,120.0	0.00	0.00	5,109.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,160.0	0.00	0.00	5,149.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,189.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,240.0	0.00	0.00	5,229.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,280.0	0.00	0.00	5,269.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,320.0	0.00	0.00	5,309.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,360.0	0.00	0.00	5,349.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,389.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,440.0	0.00	0.00	5,429.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,480.0	0.00	0.00	5,469.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,520.0	0.00	0.00	5,509.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,560.0	0.00	0.00	5,549.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,589.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,640.0	0.00	0.00	5,629.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,680.0	0.00	0.00	5,669.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,720.0	0.00	0.00	5,709.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,760.0	0.00	0.00	5,749.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,789.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,840.0	0.00	0.00	5,829.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,880.0	0.00	0.00	5,869.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,920.0	0.00	0.00	5,909.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
5,960.0	0.00	0.00	5,949.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,989.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
6,040.0	0.00	0.00	6,029.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
6,080.0	0.00	0.00	6,069.5	-180.0	-165.0	-174.6	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-221
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Waste Mangagement 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-23-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,086.0	0.00	0.00	6,075.5	-180.0	-165.0	-174.6	0.00	0.00	0.00
6,120.0	2.55	0.24	6,109.5	-179.2	-165.0	-173.8	7.50	7.50	0.00
6,160.0	5.55	0.24	6,149.4	-176.4	-165.0	-171.0	7.50	7.50	0.00
6,200.0	8.55	0.24	6,189.1	-171.5	-165.0	-166.1	7.50	7.50	0.00
6,240.0	11.55	0.24	6,228.5	-164.5	-164.9	-159.1	7.50	7.50	0.00
6,280.0	14.55	0.24	6,267.4	-155.5	-164.9	-150.1	7.50	7.50	0.00
6,320.0	17.55	0.24	6,305.9	-144.4	-164.9	-139.1	7.50	7.50	0.00
6,360.0	20.55	0.24	6,343.7	-131.4	-164.8	-126.0	7.50	7.50	0.00
6,400.0	23.55	0.24	6,380.7	-116.4	-164.7	-111.0	7.50	7.50	0.00
6,440.0	26.55	0.24	6,417.0	-99.4	-164.7	-94.1	7.50	7.50	0.00
6,480.0	29.55	0.24	6,452.3	-80.6	-164.6	-75.3	7.50	7.50	0.00
6,520.0	32.55	0.24	6,486.5	-60.0	-164.5	-54.7	7.50	7.50	0.00
6,560.0	35.55	0.24	6,519.7	-37.6	-164.4	-32.3	7.50	7.50	0.00
6,600.0	38.55	0.24	6,551.6	-13.5	-164.3	-8.2	7.50	7.50	0.00
6,640.0	41.55	0.24	6,582.2	12.2	-164.2	17.5	7.50	7.50	0.00
6,680.0	44.55	0.24	6,611.4	39.5	-164.1	44.8	7.50	7.50	0.00
6,720.0	47.55	0.24	6,639.2	68.3	-164.0	73.6	7.50	7.50	0.00
6,760.0	50.55	0.24	6,665.4	98.6	-163.8	103.8	7.50	7.50	0.00
6,800.0	53.55	0.24	6,690.0	130.1	-163.7	135.3	7.50	7.50	0.00
6,840.0	56.55	0.24	6,712.9	162.9	-163.6	168.0	7.50	7.50	0.00
6,880.0	59.55	0.24	6,734.1	196.8	-163.4	202.0	7.50	7.50	0.00
6,920.0	62.55	0.24	6,753.4	231.8	-163.3	236.9	7.50	7.50	0.00
6,960.0	65.55	0.24	6,770.9	267.8	-163.1	272.9	7.50	7.50	0.00
7,000.0	68.55	0.24	6,786.5	304.6	-163.0	309.7	7.50	7.50	0.00
7,040.0	71.55	0.24	6,800.2	342.2	-162.8	347.3	7.50	7.50	0.00
7,080.0	74.55	0.24	6,811.8	380.5	-162.7	385.5	7.50	7.50	0.00
7,120.0	77.55	0.24	6,821.5	419.3	-162.5	424.3	7.50	7.50	0.00
7,160.0	80.55	0.24	6,829.0	458.5	-162.3	463.5	7.50	7.50	0.00
7,200.0	83.55	0.24	6,834.6	498.2	-162.2	503.1	7.50	7.50	0.00
7,240.0	86.55	0.24	6,838.0	538.0	-162.0	542.9	7.50	7.50	0.00
7,280.0	89.55	0.24	6,839.4	578.0	-161.8	582.9	7.50	7.50	0.00
7,290.9	90.37	0.24	6,839.4	588.9	-161.8	593.8	7.50	7.50	0.00
7,320.0	90.37	0.24	6,839.2	618.0	-161.7	622.8	0.00	0.00	0.00
7,360.0	90.37	0.24	6,838.9	658.0	-161.5	662.8	0.00	0.00	0.00
7,400.0	90.37	0.24	6,838.7	698.0	-161.3	702.8	0.00	0.00	0.00
7,440.0	90.37	0.24	6,838.4	738.0	-161.2	742.8	0.00	0.00	0.00
7,480.0	90.37	0.24	6,838.2	778.0	-161.0	782.7	0.00	0.00	0.00
7,520.0	90.37	0.24	6,837.9	818.0	-160.8	822.7	0.00	0.00	0.00
7,560.0	90.37	0.24	6,837.7	858.0	-160.7	862.7	0.00	0.00	0.00
7,600.0	90.37	0.24	6,837.4	898.0	-160.5	902.7	0.00	0.00	0.00
7,640.0	90.37	0.24	6,837.1	938.0	-160.3	942.6	0.00	0.00	0.00
7,680.0	90.37	0.24	6,836.9	978.0	-160.2	982.6	0.00	0.00	0.00
7,720.0	90.37	0.24	6,836.6	1,018.0	-160.0	1,022.6	0.00	0.00	0.00
7,760.0	90.37	0.24	6,836.4	1,058.0	-159.8	1,062.5	0.00	0.00	0.00
7,800.0	90.37	0.24	6,836.1	1,098.0	-159.6	1,102.5	0.00	0.00	0.00
7,840.0	90.37	0.24	6,835.8	1,138.0	-159.5	1,142.5	0.00	0.00	0.00
7,880.0	90.37	0.24	6,835.6	1,178.0	-159.3	1,182.5	0.00	0.00	0.00
7,920.0	90.37	0.24	6,835.3	1,218.0	-159.1	1,222.4	0.00	0.00	0.00
7,960.0	90.37	0.24	6,835.1	1,257.9	-159.0	1,262.4	0.00	0.00	0.00
8,000.0	90.37	0.24	6,834.8	1,297.9	-158.8	1,302.4	0.00	0.00	0.00
8,040.0	90.37	0.24	6,834.6	1,337.9	-158.6	1,342.4	0.00	0.00	0.00
8,080.0	90.37	0.24	6,834.3	1,377.9	-158.5	1,382.3	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-221
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Waste Mangagement 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-23-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,120.0	90.37	0.24	6,834.0	1,417.9	-158.3	1,422.3	0.00	0.00	0.00
8,160.0	90.37	0.24	6,833.8	1,457.9	-158.1	1,462.3	0.00	0.00	0.00
8,200.0	90.37	0.24	6,833.5	1,497.9	-158.0	1,502.2	0.00	0.00	0.00
8,240.0	90.37	0.24	6,833.3	1,537.9	-157.8	1,542.2	0.00	0.00	0.00
8,280.0	90.37	0.24	6,833.0	1,577.9	-157.6	1,582.2	0.00	0.00	0.00
8,320.0	90.37	0.24	6,832.7	1,617.9	-157.5	1,622.2	0.00	0.00	0.00
8,360.0	90.37	0.24	6,832.5	1,657.9	-157.3	1,662.1	0.00	0.00	0.00
8,400.0	90.37	0.24	6,832.2	1,697.9	-157.1	1,702.1	0.00	0.00	0.00
8,440.0	90.37	0.24	6,832.0	1,737.9	-157.0	1,742.1	0.00	0.00	0.00
8,480.0	90.37	0.24	6,831.7	1,777.9	-156.8	1,782.1	0.00	0.00	0.00
8,520.0	90.37	0.24	6,831.5	1,817.9	-156.6	1,822.0	0.00	0.00	0.00
8,560.0	90.37	0.24	6,831.2	1,857.9	-156.5	1,862.0	0.00	0.00	0.00
8,600.0	90.37	0.24	6,830.9	1,897.9	-156.3	1,902.0	0.00	0.00	0.00
8,640.0	90.37	0.24	6,830.7	1,937.9	-156.1	1,941.9	0.00	0.00	0.00
8,680.0	90.37	0.24	6,830.4	1,977.9	-156.0	1,981.9	0.00	0.00	0.00
8,720.0	90.37	0.24	6,830.2	2,017.9	-155.8	2,021.9	0.00	0.00	0.00
8,760.0	90.37	0.24	6,829.9	2,057.9	-155.6	2,061.9	0.00	0.00	0.00
8,800.0	90.37	0.24	6,829.6	2,097.9	-155.5	2,101.8	0.00	0.00	0.00
8,840.0	90.37	0.24	6,829.4	2,137.9	-155.3	2,141.8	0.00	0.00	0.00
8,880.0	90.37	0.24	6,829.1	2,177.9	-155.1	2,181.8	0.00	0.00	0.00
8,920.0	90.37	0.24	6,828.9	2,217.9	-155.0	2,221.8	0.00	0.00	0.00
8,960.0	90.37	0.24	6,828.6	2,257.9	-154.8	2,261.7	0.00	0.00	0.00
9,000.0	90.37	0.24	6,828.4	2,297.9	-154.6	2,301.7	0.00	0.00	0.00
9,040.0	90.37	0.24	6,828.1	2,337.9	-154.5	2,341.7	0.00	0.00	0.00
9,080.0	90.37	0.24	6,827.8	2,377.9	-154.3	2,381.6	0.00	0.00	0.00
9,120.0	90.37	0.24	6,827.6	2,417.9	-154.1	2,421.6	0.00	0.00	0.00
9,160.0	90.37	0.24	6,827.3	2,457.9	-154.0	2,461.6	0.00	0.00	0.00
9,200.0	90.37	0.24	6,827.1	2,497.9	-153.8	2,501.6	0.00	0.00	0.00
9,240.0	90.37	0.24	6,826.8	2,537.9	-153.6	2,541.5	0.00	0.00	0.00
9,280.0	90.37	0.24	6,826.5	2,577.9	-153.5	2,581.5	0.00	0.00	0.00
9,320.0	90.37	0.24	6,826.3	2,617.9	-153.3	2,621.5	0.00	0.00	0.00
9,360.0	90.37	0.24	6,826.0	2,657.9	-153.1	2,661.5	0.00	0.00	0.00
9,400.0	90.37	0.24	6,825.8	2,697.9	-152.9	2,701.4	0.00	0.00	0.00
9,440.0	90.37	0.24	6,825.5	2,737.9	-152.8	2,741.4	0.00	0.00	0.00
9,480.0	90.37	0.24	6,825.3	2,777.9	-152.6	2,781.4	0.00	0.00	0.00
9,520.0	90.37	0.24	6,825.0	2,817.9	-152.4	2,821.3	0.00	0.00	0.00
9,560.0	90.37	0.24	6,824.7	2,857.9	-152.3	2,861.3	0.00	0.00	0.00
9,600.0	90.37	0.24	6,824.5	2,897.9	-152.1	2,901.3	0.00	0.00	0.00
9,640.0	90.37	0.24	6,824.2	2,937.9	-151.9	2,941.3	0.00	0.00	0.00
9,680.0	90.37	0.24	6,824.0	2,977.9	-151.8	2,981.2	0.00	0.00	0.00
9,720.0	90.37	0.24	6,823.7	3,017.9	-151.6	3,021.2	0.00	0.00	0.00
9,760.0	90.37	0.24	6,823.4	3,057.9	-151.4	3,061.2	0.00	0.00	0.00
9,800.0	90.37	0.24	6,823.2	3,097.9	-151.3	3,101.2	0.00	0.00	0.00
9,840.0	90.37	0.24	6,822.9	3,137.9	-151.1	3,141.1	0.00	0.00	0.00
9,880.0	90.37	0.24	6,822.7	3,177.9	-150.9	3,181.1	0.00	0.00	0.00
9,920.0	90.37	0.24	6,822.4	3,217.9	-150.8	3,221.1	0.00	0.00	0.00
9,960.0	90.37	0.24	6,822.2	3,257.9	-150.6	3,261.0	0.00	0.00	0.00
10,000.0	90.37	0.24	6,821.9	3,297.9	-150.4	3,301.0	0.00	0.00	0.00
10,040.0	90.37	0.24	6,821.6	3,337.9	-150.3	3,341.0	0.00	0.00	0.00
10,080.0	90.37	0.24	6,821.4	3,377.9	-150.1	3,381.0	0.00	0.00	0.00
10,120.0	90.37	0.24	6,821.1	3,417.9	-149.9	3,420.9	0.00	0.00	0.00
10,160.0	90.37	0.24	6,820.9	3,457.9	-149.8	3,460.9	0.00	0.00	0.00



Plan Annotations					
	Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
			+N/-S (ft)	+E/-W (ft)	
	1,000.0	1,000.0	0.0	0.0	
	6,086.0	6,075.5	-180.0	-165.0	
	7,290.9	6,839.4	588.9	-161.8	
					End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T2N-R64W**

**Waste Management 2IL-HZ Pad Sec.2-T2N-R64W**

**Waste Mangagement 2I-221**

**Wellbore #1**

**Plan #1 (1-23-13)**

## **Anticollision Report**

**24 January, 2013**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-221
<b>Project:</b>	SEC.2-T2N-R64W	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Reference Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Waste Management 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (1-23-13)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (1-23-13)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 1/23/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,223.1	Plan #1 (1-23-13) (Wellbore #1)	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Waste Management 2IL-HZ Pad Sec.2-T2N-R64W						
Waste Management 2I-401 - Wellbore #1 - Plan #1 (1-23	200.0	200.0	30.7	30.1	45.596	CC, ES
Waste Management 2I-401 - Wellbore #1 - Plan #1 (1-23	11,223.1	11,431.7	418.3	271.7	2.854	SF
Waste Management 2L-441 - Wellbore #1 - Plan #1 (1-2	1,000.0	1,000.0	28.2	23.9	6.601	CC, ES
Waste Management 2L-441 - Wellbore #1 - Plan #1 (1-2	11,223.1	11,421.7	412.4	263.2	2.763	SF

<b>Offset Design</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W - Waste Management 2I-401 - Wellbore #1 - Plan #1												<b>Offset Site Error:</b>	0.0 ft
<b>Survey Program:</b>	0-MWD												<b>Offset Well Error:</b>	0.0 ft
<b>Reference</b>	<b>Offset</b>	<b>Semi Major Axis</b>	<b>Distance</b>	<b>Warning</b>										
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>Offset Wellbore Centre +E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>		
0.0	0.0	0.0	0.0	0.0	0.0	-90.01	0.0	-30.7	30.7					
100.0	100.0	100.0	100.0	0.1	0.1	-90.01	0.0	-30.7	30.7	30.5	0.22	136.789		
200.0	200.0	200.0	200.0	0.3	0.3	-90.01	0.0	-30.7	30.7	30.1	0.67	45.596	CC, ES	
300.0	300.0	299.0	298.9	0.6	0.5	-91.09	-0.6	-32.3	32.4	31.3	1.11	29.202		
400.0	400.0	397.7	397.5	0.8	0.8	-93.77	-2.4	-37.1	37.3	35.7	1.55	24.068		
500.0	500.0	496.0	495.4	1.0	1.0	-96.93	-5.5	-45.0	45.6	43.6	2.00	22.742		
600.0	600.0	595.0	593.8	1.2	1.3	-99.64	-9.4	-55.2	56.4	53.9	2.47	22.816		
700.0	700.0	694.3	692.6	1.5	1.6	-101.50	-13.4	-65.6	67.4	64.4	2.94	22.921		
800.0	800.0	793.7	791.3	1.7	1.9	-102.84	-17.3	-76.0	78.4	75.0	3.41	22.964		
900.0	900.0	893.1	890.1	1.9	2.2	-103.85	-21.3	-86.3	89.5	85.6	3.89	22.977		
1,000.0	1,000.0	992.5	988.8	2.1	2.5	-104.64	-25.3	-96.7	100.5	96.2	4.38	22.976		
1,100.0	1,100.0	1,092.0	1,087.7	2.3	2.8	32.60	-29.2	-107.1	110.2	105.5	4.70	23.463		
1,200.0	1,199.8	1,191.7	1,186.9	2.5	3.1	33.33	-33.2	-117.5	116.9	111.8	5.11	22.869		
1,254.1	1,253.8	1,245.8	1,240.6	2.6	3.3	34.08	-35.4	-123.1	119.4	114.0	5.34	22.341		
1,300.0	1,299.5	1,291.6	1,286.1	2.7	3.4	34.84	-37.2	-127.9	121.1	115.5	5.54	21.842		
1,400.0	1,399.1	1,391.5	1,385.4	2.9	3.7	36.42	-41.2	-138.3	124.9	118.9	5.99	20.851		
1,500.0	1,498.7	1,491.3	1,484.6	3.2	4.0	37.90	-45.2	-148.7	128.9	122.4	6.45	19.978		
1,600.0	1,598.3	1,591.2	1,583.8	3.4	4.3	39.29	-49.2	-159.1	132.9	125.9	6.92	19.203		
1,700.0	1,697.9	1,691.1	1,683.1	3.6	4.6	40.60	-53.2	-169.5	137.0	129.6	7.40	18.515		
1,800.0	1,797.5	1,790.9	1,782.3	3.9	4.9	41.84	-57.1	-179.9	141.1	133.2	7.88	17.900		
1,900.0	1,897.1	1,890.8	1,881.6	4.1	5.3	43.00	-61.1	-190.4	145.3	136.9	8.38	17.349		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-221
<b>Project:</b>	SEC.2-T2N-R64W	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Reference Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Waste Management 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (1-23-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Waste Management 2IL-HZ Pad Sec.2-T2N-R64W - Waste Management 2I-401 - Wellbore #1 - Plan #1										Offset Site Error:		0.0 ft		
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
2,000.0	1,996.7	1,990.7	1,980.8	4.4	5.6	44.10	-65.1	-200.8	149.6	140.7	8.88	16.854				
2,100.0	2,096.3	2,090.6	2,080.1	4.6	5.9	45.13	-69.1	-211.2	153.9	144.5	9.38	16.407				
2,200.0	2,195.9	2,190.4	2,179.3	4.9	6.2	46.11	-73.1	-221.6	158.3	148.4	9.89	16.001				
2,300.0	2,295.6	2,290.3	2,278.6	5.2	6.5	47.04	-77.1	-232.0	162.7	152.3	10.41	15.633				
2,400.0	2,395.2	2,390.2	2,377.8	5.4	6.8	47.92	-81.1	-242.4	167.1	156.2	10.93	15.297				
2,500.0	2,494.8	2,490.0	2,477.0	5.7	7.1	48.75	-85.1	-252.8	171.6	160.2	11.45	14.990				
2,600.0	2,594.4	2,589.9	2,576.3	6.0	7.4	49.54	-89.1	-263.3	176.2	164.2	11.98	14.708				
2,700.0	2,694.0	2,689.8	2,675.5	6.3	7.7	50.28	-93.0	-273.7	180.7	168.2	12.51	14.449				
2,800.0	2,793.6	2,789.6	2,774.8	6.5	8.1	51.00	-97.0	-284.1	185.3	172.3	13.04	14.210				
2,900.0	2,893.2	2,889.5	2,874.0	6.8	8.4	51.67	-101.0	-294.5	189.9	176.3	13.58	13.989				
3,000.0	2,992.8	2,989.4	2,973.3	7.1	8.7	52.32	-105.0	-304.9	194.6	180.4	14.11	13.785				
3,100.0	3,092.4	3,089.2	3,072.5	7.3	9.0	52.94	-109.0	-315.3	199.2	184.6	14.65	13.595				
3,200.0	3,192.0	3,189.1	3,171.8	7.6	9.3	53.52	-113.0	-325.7	203.9	188.7	15.20	13.418				
3,300.0	3,291.6	3,289.0	3,271.0	7.9	9.6	54.08	-117.0	-336.2	208.6	192.9	15.74	13.253				
3,400.0	3,391.2	3,388.9	3,370.2	8.2	9.9	54.62	-121.0	-346.6	213.3	197.0	16.29	13.099				
3,500.0	3,490.8	3,488.7	3,469.5	8.5	10.2	55.13	-124.9	-357.0	218.1	201.2	16.83	12.955				
3,600.0	3,590.4	3,588.6	3,568.7	8.7	10.5	55.62	-128.9	-367.4	222.8	205.4	17.38	12.820				
3,700.0	3,690.1	3,688.5	3,668.0	9.0	10.9	56.09	-132.9	-377.8	227.6	209.7	17.93	12.693				
3,756.4	3,746.2	3,744.8	3,724.0	9.2	11.0	56.35	-135.2	-383.7	230.3	212.1	18.24	12.625				
3,800.0	3,789.7	3,788.3	3,767.2	9.3	11.2	56.52	-136.9	-388.2	232.6	214.1	18.46	12.596				
3,900.0	3,889.5	3,888.1	3,866.4	9.5	11.5	56.40	-140.9	-398.6	239.2	220.3	18.90	12.653				
4,000.0	3,989.5	3,987.7	3,965.3	9.6	11.8	55.66	-144.9	-409.0	247.7	228.4	19.28	12.848				
4,010.5	4,000.0	3,998.1	3,975.7	9.7	11.8	-81.94	-145.3	-410.1	248.7	229.4	19.30	12.885				
4,100.0	4,089.5	4,087.0	4,064.1	9.8	12.1	-83.02	-148.8	-419.4	257.5	237.9	19.64	13.115				
4,200.0	4,189.5	4,186.4	4,162.8	10.0	12.4	-84.14	-152.8	-429.7	267.5	247.5	20.00	13.371				
4,300.0	4,289.5	4,285.8	4,261.6	10.2	12.7	-85.17	-156.8	-440.1	277.5	257.1	20.38	13.618				
4,400.0	4,389.5	4,385.2	4,360.3	10.4	13.0	-86.14	-160.7	-450.5	287.6	266.8	20.75	13.856				
4,500.0	4,489.5	4,484.5	4,459.1	10.5	13.3	-87.04	-164.7	-460.8	297.8	276.6	21.14	14.087				
4,600.0	4,589.5	4,583.9	4,557.8	10.7	13.7	-87.88	-168.7	-471.2	308.0	286.5	21.53	14.310				
4,700.0	4,689.5	4,683.3	4,656.6	10.9	14.0	-88.67	-172.7	-481.5	318.3	296.4	21.92	14.525				
4,800.0	4,789.5	4,791.7	4,764.4	11.1	14.3	-89.39	-176.5	-491.7	327.7	305.4	22.30	14.691				
4,900.0	4,889.5	4,903.5	4,876.0	11.3	14.5	-89.84	-179.0	-498.2	333.5	310.8	22.66	14.716				
5,000.0	4,989.5	5,015.7	4,988.2	11.5	14.6	-90.00	-180.0	-500.7	335.7	312.7	23.03	14.577				
5,100.0	5,089.5	5,117.0	5,089.5	11.7	14.8	-90.00	-180.0	-500.7	335.7	312.3	23.41	14.344				
5,200.0	5,189.5	5,217.0	5,189.5	11.8	14.9	-90.00	-180.0	-500.7	335.7	312.0	23.78	14.121				
5,300.0	5,289.5	5,317.0	5,289.5	12.0	15.1	-90.00	-180.0	-500.7	335.7	311.6	24.15	13.903				
5,400.0	5,389.5	5,417.0	5,389.5	12.2	15.2	-90.00	-180.0	-500.7	335.7	311.2	24.52	13.691				
5,500.0	5,489.5	5,517.0	5,489.5	12.4	15.4	-90.00	-180.0	-500.7	335.7	310.8	24.90	13.484				
5,600.0	5,589.5	5,617.0	5,589.5	12.6	15.5	-90.00	-180.0	-500.7	335.7	310.5	25.28	13.281				
5,700.0	5,689.5	5,717.0	5,689.5	12.8	15.7	-90.00	-180.0	-500.7	335.7	310.1	25.66	13.084				
5,800.0	5,789.5	5,817.0	5,789.5	13.0	15.8	-90.00	-180.0	-500.7	335.7	309.7	26.05	12.891				
5,900.0	5,889.5	5,917.0	5,889.5	13.2	16.0	-90.00	-180.0	-500.7	335.7	309.3	26.43	12.703				
6,000.0	5,989.5	6,017.0	5,989.5	13.4	16.2	-90.00	-180.0	-500.7	335.7	308.9	26.82	12.519				
6,086.0	6,075.5	6,103.0	6,075.5	13.6	16.3	-90.00	-180.0	-500.7	335.7	308.6	27.15	12.365				
6,100.0	6,089.5	6,117.0	6,089.5	13.6	16.3	-90.26	-180.0	-500.7	335.7	308.5	27.22	12.335				
6,150.0	6,139.4	6,166.9	6,139.4	13.7	16.4	-90.70	-180.0	-500.7	335.8	308.4	27.38	12.262				
6,200.0	6,189.1	6,216.6	6,189.1	13.8	16.5	-91.67	-180.0	-500.7	335.9	308.4	27.51	12.212				
6,250.0	6,238.2	6,265.8	6,238.2	13.8	16.6	-93.16	-180.0	-500.7	336.3	308.7	27.59	12.187				
6,300.0	6,286.7	6,314.9	6,287.4	13.9	16.7	-95.10	-179.8	-500.7	337.2	309.5	27.65	12.196				
6,350.0	6,334.3	6,365.8	6,338.2	14.0	16.7	-97.18	-177.0	-500.7	338.6	310.9	27.69	12.229				
6,400.0	6,380.7	6,417.5	6,389.5	14.0	16.8	-99.23	-170.6	-500.7	340.4	312.7	27.71	12.284				

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-221
<b>Project:</b>	SEC.2-T2N-R64W	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Reference Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Waste Management 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (1-23-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Waste Management 2IL-HZ Pad Sec.2-T2N-R64W - Waste Management 2I-401 - Wellbore #1 - Plan #1										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
6,450.0	6,425.9	6,470.3	6,441.3	14.1	16.9	-101.24	-160.6	-500.7	342.7	315.0	27.73	12.358		
6,500.0	6,469.5	6,524.0	6,493.2	14.1	16.9	-103.20	-146.7	-500.6	345.4	317.7	27.75	12.448		
6,550.0	6,511.5	6,578.8	6,545.0	14.2	17.0	-105.09	-128.9	-500.5	348.4	320.7	27.76	12.552		
6,600.0	6,551.6	6,634.7	6,596.4	14.2	17.0	-106.91	-106.9	-500.4	351.7	324.0	27.77	12.665		
6,650.0	6,589.6	6,691.7	6,646.9	14.2	17.0	-108.65	-80.7	-500.3	355.3	327.5	27.79	12.782		
6,700.0	6,625.5	6,749.7	6,696.3	14.3	17.1	-110.29	-50.2	-500.2	358.9	331.1	27.83	12.898		
6,750.0	6,659.0	6,808.9	6,744.1	14.3	17.1	-111.83	-15.3	-500.0	362.7	334.8	27.89	13.003		
6,800.0	6,690.0	6,869.2	6,789.9	14.6	17.1	-113.26	23.9	-499.9	366.4	338.4	27.99	13.092		
6,850.0	6,718.3	6,930.5	6,833.1	14.8	17.2	-114.57	67.4	-499.7	370.1	341.9	28.13	13.154		
6,900.0	6,744.0	6,992.9	6,873.4	15.1	17.2	-115.75	115.0	-499.5	373.6	345.3	28.31	13.193		
6,950.0	6,766.7	7,056.3	6,910.2	15.5	17.3	-116.81	166.6	-499.2	376.8	348.2	28.60	13.178		
7,000.0	6,786.5	7,120.6	6,943.0	15.8	17.5	-117.72	221.8	-499.0	379.8	350.8	28.95	13.117		
7,050.0	6,803.3	7,185.6	6,971.3	16.3	17.7	-118.50	280.4	-498.7	382.4	353.0	29.41	13.002		
7,100.0	6,816.9	7,251.4	6,994.8	16.7	18.1	-119.13	341.8	-498.5	384.5	354.6	29.97	12.831		
7,150.0	6,827.3	7,317.7	7,013.1	17.2	18.6	-119.61	405.5	-498.2	386.2	355.6	30.65	12.601		
7,200.0	6,834.6	7,384.5	7,025.8	17.8	19.1	-119.93	471.0	-497.9	387.4	355.9	31.44	12.320		
7,250.0	6,838.6	7,442.9	7,032.7	18.4	19.7	-120.14	529.0	-497.7	388.2	356.0	32.27	12.033		
7,290.9	6,839.4	7,483.7	7,036.9	18.9	20.2	-120.46	569.6	-497.5	390.0	357.1	32.87	11.866		
7,300.0	6,839.3	7,492.9	7,037.9	19.0	20.3	-120.59	578.8	-497.4	390.5	357.5	33.01	11.828		
7,400.0	6,838.7	7,612.7	7,044.1	20.2	21.7	-121.47	698.3	-496.9	393.5	358.3	35.12	11.203		
7,500.0	6,838.0	7,712.7	7,044.6	21.6	23.0	-121.61	798.3	-496.5	394.1	356.7	37.41	10.533		
7,600.0	6,837.4	7,812.7	7,045.1	23.1	24.3	-121.76	898.3	-496.1	394.7	354.8	39.84	9.906		
7,700.0	6,836.8	7,912.7	7,045.6	24.6	25.8	-121.90	998.3	-495.6	395.3	352.9	42.38	9.327		
7,800.0	6,836.1	8,012.6	7,046.2	26.2	27.3	-122.04	1,098.3	-495.2	395.9	350.9	45.01	8.795		
7,900.0	6,835.5	8,112.6	7,046.7	27.8	28.8	-122.19	1,198.3	-494.8	396.5	348.8	47.72	8.309		
8,000.0	6,834.8	8,212.6	7,047.2	29.4	30.4	-122.33	1,298.3	-494.4	397.1	346.6	50.49	7.865		
8,100.0	6,834.2	8,312.6	7,047.7	31.1	32.0	-122.47	1,398.3	-493.9	397.7	344.4	53.31	7.461		
8,200.0	6,833.5	8,412.6	7,048.3	32.8	33.7	-122.62	1,498.3	-493.5	398.4	342.2	56.18	7.092		
8,300.0	6,832.9	8,512.6	7,048.8	34.5	35.4	-122.76	1,598.2	-493.1	399.0	339.9	59.07	6.755		
8,400.0	6,832.2	8,612.6	7,049.3	36.3	37.1	-122.90	1,698.2	-492.7	399.6	337.6	61.99	6.446		
8,500.0	6,831.6	8,712.6	7,049.8	38.0	38.8	-123.04	1,798.2	-492.2	400.2	335.3	64.94	6.163		
8,600.0	6,830.9	8,812.6	7,050.3	39.8	40.5	-123.18	1,898.2	-491.8	400.9	333.0	67.90	5.904		
8,700.0	6,830.3	8,912.6	7,050.9	41.6	42.3	-123.32	1,998.2	-491.4	401.5	330.6	70.88	5.664		
8,800.0	6,829.6	9,012.6	7,051.4	43.4	44.1	-123.46	2,098.2	-491.0	402.2	328.3	73.88	5.444		
8,900.0	6,829.0	9,112.6	7,051.9	45.2	45.8	-123.60	2,198.2	-490.5	402.8	325.9	76.88	5.239		
9,000.0	6,828.4	9,212.6	7,052.4	47.0	47.6	-123.74	2,298.2	-490.1	403.4	323.5	79.89	5.050		
9,100.0	6,827.7	9,312.6	7,052.9	48.8	49.4	-123.88	2,398.2	-489.7	404.1	321.2	82.90	4.874		
9,200.0	6,827.1	9,412.6	7,053.5	50.7	51.2	-124.01	2,498.2	-489.3	404.7	318.8	85.92	4.710		
9,300.0	6,826.4	9,512.5	7,054.0	52.5	53.1	-124.15	2,598.2	-488.8	405.4	316.4	88.94	4.558		
9,400.0	6,825.8	9,612.5	7,054.5	54.4	54.9	-124.29	2,698.1	-488.4	406.0	314.1	91.97	4.415		
9,500.0	6,825.1	9,712.5	7,055.0	56.2	56.7	-124.42	2,798.1	-488.0	406.7	311.7	94.99	4.281		
9,600.0	6,824.5	9,812.5	7,055.6	58.1	58.5	-124.56	2,898.1	-487.6	407.3	309.3	98.02	4.156		
9,700.0	6,823.8	9,912.5	7,056.1	59.9	60.4	-124.70	2,998.1	-487.1	408.0	306.9	101.04	4.038		
9,800.0	6,823.2	10,012.5	7,056.6	61.8	62.2	-124.83	3,098.1	-486.7	408.6	304.6	104.06	3.927		
9,900.0	6,822.5	10,112.5	7,057.1	63.6	64.1	-124.97	3,198.1	-486.3	409.3	302.2	107.08	3.822		
10,000.0	6,821.9	10,212.5	7,057.6	65.5	65.9	-125.10	3,298.1	-485.9	410.0	299.9	110.10	3.724		
10,100.0	6,821.3	10,312.5	7,058.2	67.4	67.8	-125.23	3,398.1	-485.4	410.6	297.5	113.11	3.630		
10,200.0	6,820.6	10,412.5	7,058.7	69.2	69.6	-125.37	3,498.1	-485.0	411.3	295.2	116.12	3.542		
10,300.0	6,820.0	10,512.5	7,059.2	71.1	71.5	-125.50	3,598.1	-484.6	412.0	292.9	119.13	3.458		
10,400.0	6,819.3	10,612.5	7,059.7	73.0	73.4	-125.63	3,698.1	-484.2	412.7	290.5	122.13	3.379		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-221
<b>Project:</b>	SEC.2-T2N-R64W	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Reference Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Waste Management 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (1-23-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Waste Management 2IL-HZ Pad Sec.2-T2N-R64W - Waste Management 2I-401 - Wellbore #1 - Plan #1		Offset Site Error:		0.0 ft	
Survey Program: 0-MWD													Offset Well Error:		0.0 ft			
Reference		Offset		Semi Major Axis			Distance							Warning				
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor						
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)							
10,500.0	6,818.7	10,712.5	7,060.2	74.9	75.2	-125.76	3,798.0	-483.7	413.3	288.2	125.13	3.303						
10,600.0	6,818.0	10,812.5	7,060.8	76.8	77.1	-125.90	3,898.0	-483.3	414.0	285.9	128.12	3.231						
10,700.0	6,817.4	10,912.4	7,061.3	78.6	79.0	-126.03	3,998.0	-482.9	414.7	283.6	131.11	3.163						
10,800.0	6,816.7	11,012.4	7,061.8	80.5	80.9	-126.16	4,098.0	-482.5	415.4	281.3	134.09	3.098						
10,900.0	6,816.1	11,112.4	7,062.3	82.4	82.7	-126.29	4,198.0	-482.0	416.1	279.0	137.06	3.035						
11,000.0	6,815.4	11,212.4	7,062.9	84.3	84.6	-126.42	4,298.0	-481.6	416.7	276.7	140.03	2.976						
11,100.0	6,814.8	11,312.4	7,063.4	86.2	86.5	-126.55	4,398.0	-481.2	417.4	274.4	143.00	2.919						
11,200.0	6,814.1	11,412.4	7,063.9	88.1	88.4	-126.68	4,498.0	-480.7	418.1	272.2	145.96	2.865						
11,223.1	6,814.0	11,431.7	7,064.0	88.5	88.7	-126.70	4,517.3	-480.7	418.3	271.7	146.59	2.854 SF						

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-221
<b>Project:</b>	SEC.2-T2N-R64W	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Reference Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Waste Management 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (1-23-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Waste Management 2IL-HZ Pad Sec.2-T2N-R64W - Waste Management 2L-441 - Wellbore #1 - Plan #													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	97.45	-3.7	28.0	28.2					
100.0	100.0	100.0	100.0	0.1	0.1	97.45	-3.7	28.0	28.2	28.0	0.22	125.413		
200.0	200.0	200.0	200.0	0.3	0.3	97.45	-3.7	28.0	28.2	27.5	0.67	41.804		
300.0	300.0	300.0	300.0	0.6	0.6	97.45	-3.7	28.0	28.2	27.1	1.12	25.083		
400.0	400.0	400.0	400.0	0.8	0.8	97.45	-3.7	28.0	28.2	26.6	1.57	17.916		
500.0	500.0	500.0	500.0	1.0	1.0	97.45	-3.7	28.0	28.2	26.2	2.02	13.935		
600.0	600.0	600.0	600.0	1.2	1.2	97.45	-3.7	28.0	28.2	25.7	2.47	11.401		
700.0	700.0	700.0	700.0	1.5	1.5	97.45	-3.7	28.0	28.2	25.3	2.92	9.647		
800.0	800.0	800.0	800.0	1.7	1.7	97.45	-3.7	28.0	28.2	24.8	3.37	8.361		
900.0	900.0	900.0	900.0	1.9	1.9	97.45	-3.7	28.0	28.2	24.4	3.82	7.377		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	97.45	-3.7	28.0	28.2	23.9	4.27	6.601 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	-127.84	-3.7	28.0	29.2	24.5	4.69	6.225		
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-135.05	-3.7	28.0	32.7	27.6	5.10	6.413		
1,254.1	1,253.8	1,253.8	1,253.8	2.6	2.7	-139.84	-3.7	28.0	35.9	30.5	5.32	6.742		
1,300.0	1,299.5	1,299.5	1,299.5	2.7	2.8	-143.69	-3.7	28.0	39.1	33.6	5.51	7.090		
1,400.0	1,399.1	1,399.1	1,399.1	2.9	3.0	-150.16	-3.7	28.0	46.5	40.6	5.93	7.843		
1,500.0	1,498.7	1,498.7	1,498.7	3.2	3.3	-154.80	-3.7	28.0	54.4	48.0	6.35	8.557		
1,600.0	1,598.3	1,598.3	1,598.3	3.4	3.5	-158.26	-3.7	28.0	62.5	55.7	6.78	9.215		
1,700.0	1,697.9	1,697.9	1,697.9	3.6	3.7	-160.91	-3.7	28.0	70.8	63.6	7.22	9.814		
1,800.0	1,797.5	1,797.5	1,797.5	3.9	3.9	-163.01	-3.7	28.0	79.2	71.6	7.65	10.358		
1,900.0	1,897.1	1,897.1	1,897.1	4.1	4.2	-164.70	-3.7	28.0	87.8	79.7	8.09	10.850		
2,000.0	1,996.7	1,996.7	1,996.7	4.4	4.4	-166.09	-3.7	28.0	96.3	87.8	8.53	11.296		
2,100.0	2,096.3	2,096.3	2,096.3	4.6	4.6	-167.25	-3.7	28.0	105.0	96.0	8.97	11.702		
2,200.0	2,195.9	2,195.9	2,195.9	4.9	4.8	-168.24	-3.7	28.0	113.6	104.2	9.41	12.072		
2,300.0	2,295.6	2,295.6	2,295.6	5.2	5.0	-169.08	-3.7	28.0	122.3	112.4	9.85	12.410		
2,400.0	2,395.2	2,395.2	2,395.2	5.4	5.3	-169.82	-3.7	28.0	131.0	120.7	10.30	12.719		
2,500.0	2,494.8	2,494.8	2,494.8	5.7	5.5	-170.46	-3.7	28.0	139.7	129.0	10.75	13.004		
2,600.0	2,594.4	2,594.4	2,594.4	6.0	5.7	-171.03	-3.7	28.0	148.5	137.3	11.19	13.266		
2,700.0	2,694.0	2,694.0	2,694.0	6.3	5.9	-171.53	-3.7	28.0	157.2	145.6	11.64	13.508		
2,800.0	2,793.6	2,793.6	2,793.6	6.5	6.2	-171.98	-3.7	28.0	166.0	153.9	12.09	13.733		
2,900.0	2,893.2	2,893.2	2,893.2	6.8	6.4	-172.38	-3.7	28.0	174.8	162.2	12.54	13.941		
3,000.0	2,992.8	2,992.8	2,992.8	7.1	6.6	-172.75	-3.7	28.0	183.6	170.6	12.99	14.135		
3,100.0	3,092.4	3,092.7	3,092.7	7.3	6.8	-172.64	-4.8	28.9	192.3	178.9	13.41	14.335		
3,200.0	3,192.0	3,192.4	3,192.3	7.6	7.0	-171.54	-8.8	31.9	200.9	187.1	13.82	14.534		
3,300.0	3,291.6	3,291.8	3,291.3	7.9	7.2	-169.59	-15.4	37.1	209.6	195.4	14.24	14.718		
3,400.0	3,391.2	3,390.9	3,389.8	8.2	7.4	-167.08	-24.2	43.9	218.7	204.0	14.68	14.901		
3,500.0	3,490.8	3,490.0	3,488.3	8.5	7.6	-164.70	-33.2	50.9	228.2	213.1	15.12	15.088		
3,600.0	3,590.4	3,589.2	3,586.7	8.7	7.8	-162.51	-42.2	57.9	238.0	222.5	15.58	15.276		
3,700.0	3,690.1	3,688.3	3,685.2	9.0	8.0	-160.50	-51.2	64.9	248.2	232.2	16.05	15.466		
3,756.4	3,746.2	3,744.2	3,740.7	9.2	8.1	-159.43	-56.2	68.9	254.1	237.7	16.32	15.572		
3,800.0	3,789.7	3,787.4	3,783.6	9.3	8.2	-158.65	-60.2	71.9	258.3	241.8	16.52	15.635		
3,900.0	3,889.5	3,886.7	3,882.3	9.5	8.4	-156.72	-69.2	78.9	266.0	249.1	16.97	15.675		
4,000.0	3,989.5	3,986.0	3,981.0	9.6	8.7	-154.59	-78.2	85.9	270.9	253.5	17.41	15.560		
4,010.5	4,000.0	3,996.5	3,991.3	9.7	8.7	68.16	-79.2	86.7	271.3	253.8	17.45	15.542		
4,100.0	4,089.5	4,085.4	4,079.6	9.8	8.9	70.22	-87.2	92.9	274.3	256.4	17.86	15.355		
4,200.0	4,189.5	4,184.7	4,178.3	10.0	9.1	72.46	-96.2	100.0	278.1	259.8	18.32	15.182		
4,300.0	4,289.5	4,284.1	4,277.0	10.2	9.4	74.63	-105.3	107.0	282.3	263.6	18.77	15.039		
4,400.0	4,389.5	4,383.4	4,375.7	10.4	9.6	76.75	-114.3	114.0	287.0	267.7	19.23	14.922		
4,500.0	4,489.5	4,482.7	4,474.3	10.5	9.9	78.79	-123.3	121.0	292.0	272.3	19.69	14.830		
4,600.0	4,589.5	4,582.1	4,573.0	10.7	10.1	80.76	-132.3	128.0	297.3	277.2	20.15	14.760		
4,700.0	4,689.5	4,681.4	4,671.7	10.9	10.4	82.66	-141.3	135.0	303.0	282.4	20.60	14.709		

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-221
<b>Project:</b>	SEC.2-T2N-R64W	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Reference Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Waste Management 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (1-23-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Waste Management 2IL-HZ Pad Sec.2-T2N-R64W - Waste Management 2L-441 - Wellbore #1 - Plan #										Offset Site Error:		0.0 ft		
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
4,800.0	4,789.5	4,780.7	4,770.4	11.1	10.7	84.49	-150.4	142.1	309.1	288.0	21.06	14.678				
4,900.0	4,889.5	4,880.1	4,869.1	11.3	10.9	86.24	-159.4	149.1	315.4	293.9	21.51	14.662				
5,000.0	4,989.5	4,979.4	4,967.7	11.5	11.2	87.93	-168.4	156.1	322.0	300.1	21.97	14.661				
5,100.0	5,089.5	5,086.0	5,073.8	11.7	11.4	89.40	-176.6	162.5	327.9	305.4	22.42	14.626				
5,200.0	5,189.5	5,193.4	5,181.0	11.8	11.7	90.29	-181.7	166.4	331.5	308.7	22.85	14.509				
5,300.0	5,289.5	5,301.1	5,288.7	12.0	11.9	90.63	-183.6	167.9	333.0	309.7	23.27	14.307				
5,400.0	5,389.5	5,401.9	5,389.5	12.2	12.1	90.63	-183.7	168.0	333.0	309.3	23.67	14.067				
5,500.0	5,489.5	5,501.9	5,489.5	12.4	12.3	90.63	-183.7	168.0	333.0	308.9	24.08	13.830				
5,600.0	5,589.5	5,601.9	5,589.5	12.6	12.5	90.63	-183.7	168.0	333.0	308.5	24.48	13.601				
5,700.0	5,689.5	5,701.9	5,689.5	12.8	12.7	90.63	-183.7	168.0	333.0	308.1	24.89	13.377				
5,800.0	5,789.5	5,801.9	5,789.5	13.0	12.9	90.63	-183.7	168.0	333.0	307.7	25.30	13.161				
5,900.0	5,889.5	5,901.9	5,889.5	13.2	13.1	90.63	-183.7	168.0	333.0	307.3	25.71	12.950				
6,000.0	5,989.5	6,001.9	5,989.5	13.4	13.3	90.63	-183.7	168.0	333.0	306.8	26.12	12.746				
6,086.0	6,075.5	6,087.9	6,075.5	13.6	13.5	90.63	-183.7	168.0	333.0	306.5	26.48	12.575				
6,100.0	6,089.5	6,101.9	6,089.5	13.6	13.5	90.41	-183.7	168.0	333.0	306.4	26.54	12.547				
6,150.0	6,139.4	6,151.8	6,139.4	13.7	13.6	90.85	-183.7	168.0	333.0	306.3	26.74	12.456				
6,200.0	6,189.1	6,201.5	6,189.1	13.8	13.8	91.83	-183.7	168.0	333.1	306.2	26.92	12.375				
6,250.0	6,238.2	6,250.7	6,238.2	13.8	13.9	93.33	-183.7	168.0	333.6	306.5	27.09	12.311				
6,300.0	6,286.7	6,299.8	6,287.4	13.9	14.0	95.29	-183.5	168.0	334.5	307.2	27.25	12.274				
6,350.0	6,334.3	6,350.7	6,338.2	14.0	14.1	97.38	-180.6	168.0	335.9	308.5	27.39	12.267				
6,400.0	6,380.7	6,402.6	6,389.6	14.0	14.1	99.44	-174.3	168.0	337.8	310.4	27.49	12.288				
6,450.0	6,425.9	6,455.3	6,441.5	14.1	14.2	101.46	-164.2	168.0	340.2	312.6	27.58	12.337				
6,500.0	6,469.5	6,509.1	6,493.4	14.1	14.3	103.43	-150.3	168.1	342.9	315.3	27.63	12.410				
6,550.0	6,511.5	6,564.0	6,545.3	14.2	14.4	105.33	-132.5	168.2	346.0	318.3	27.67	12.505				
6,600.0	6,551.6	6,619.9	6,596.6	14.2	14.4	107.16	-110.4	168.3	349.4	321.7	27.69	12.615				
6,650.0	6,589.6	6,676.9	6,647.2	14.2	14.5	108.90	-84.2	168.4	352.9	325.2	27.72	12.734				
6,700.0	6,625.5	6,735.0	6,696.6	14.3	14.5	110.54	-53.6	168.6	356.7	328.9	27.74	12.855				
6,750.0	6,659.0	6,794.3	6,744.5	14.3	14.6	112.08	-18.7	168.7	360.5	332.7	27.79	12.969				
6,800.0	6,690.0	6,854.6	6,790.2	14.6	14.7	113.51	20.6	168.9	364.2	336.4	27.88	13.064				
6,850.0	6,718.3	6,916.0	6,833.5	14.8	14.7	114.81	64.2	169.1	367.9	339.9	28.03	13.127				
6,900.0	6,744.0	6,978.5	6,873.8	15.1	14.9	115.99	111.9	169.3	371.5	343.2	28.24	13.156				
6,950.0	6,766.7	7,041.9	6,910.5	15.5	15.2	117.04	163.5	169.6	374.8	346.2	28.55	13.129				
7,000.0	6,786.5	7,106.2	6,943.3	15.8	15.6	117.95	218.8	169.8	377.8	348.8	28.96	13.046				
7,050.0	6,803.3	7,171.3	6,971.6	16.3	16.1	118.72	277.4	170.1	380.4	350.9	29.49	12.898				
7,100.0	6,816.9	7,237.1	6,995.1	16.7	16.6	119.34	338.9	170.4	382.5	352.4	30.15	12.687				
7,150.0	6,827.3	7,303.4	7,013.3	17.2	17.2	119.81	402.7	170.7	384.2	353.3	30.95	12.415				
7,200.0	6,834.6	7,370.2	7,026.0	17.8	17.9	120.12	468.2	171.0	385.4	353.5	31.89	12.086				
7,250.0	6,838.6	7,428.4	7,032.7	18.4	18.5	120.32	526.0	171.3	386.3	353.4	32.87	11.754				
7,290.9	6,839.4	7,469.2	7,037.0	18.9	19.0	120.64	566.5	171.5	388.1	354.5	33.60	11.549				
7,300.0	6,839.3	7,478.5	7,038.0	19.0	19.1	120.77	575.8	171.5	388.6	354.8	33.76	11.510				
7,400.0	6,838.7	7,598.8	7,044.1	20.2	20.6	121.63	695.9	172.1	391.6	355.7	35.94	10.896				
7,500.0	6,838.0	7,698.8	7,044.3	21.6	21.9	121.74	795.9	172.6	392.1	353.8	38.27	10.246				
7,600.0	6,837.4	7,798.8	7,044.6	23.1	23.3	121.85	895.9	173.0	392.6	351.9	40.73	9.640				
7,700.0	6,836.8	7,898.8	7,044.8	24.6	24.8	121.96	995.9	173.5	393.2	349.9	43.30	9.080				
7,800.0	6,836.1	7,998.8	7,045.1	26.2	26.4	122.06	1,095.8	174.0	393.7	347.7	45.96	8.565				
7,900.0	6,835.5	8,098.7	7,045.4	27.8	28.0	122.17	1,195.8	174.4	394.2	345.5	48.70	8.095				
8,000.0	6,834.8	8,198.7	7,045.6	29.4	29.6	122.28	1,295.8	174.9	394.7	343.2	51.49	7.666				
8,100.0	6,834.2	8,298.7	7,045.9	31.1	31.3	122.39	1,395.8	175.4	395.3	340.9	54.34	7.274				
8,200.0	6,833.5	8,398.7	7,046.1	32.8	32.9	122.49	1,495.8	175.8	395.8	338.6	57.23	6.916				
8,300.0	6,832.9	8,498.7	7,046.4	34.5	34.7	122.60	1,595.8	176.3	396.3	336.2	60.15	6.589				

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



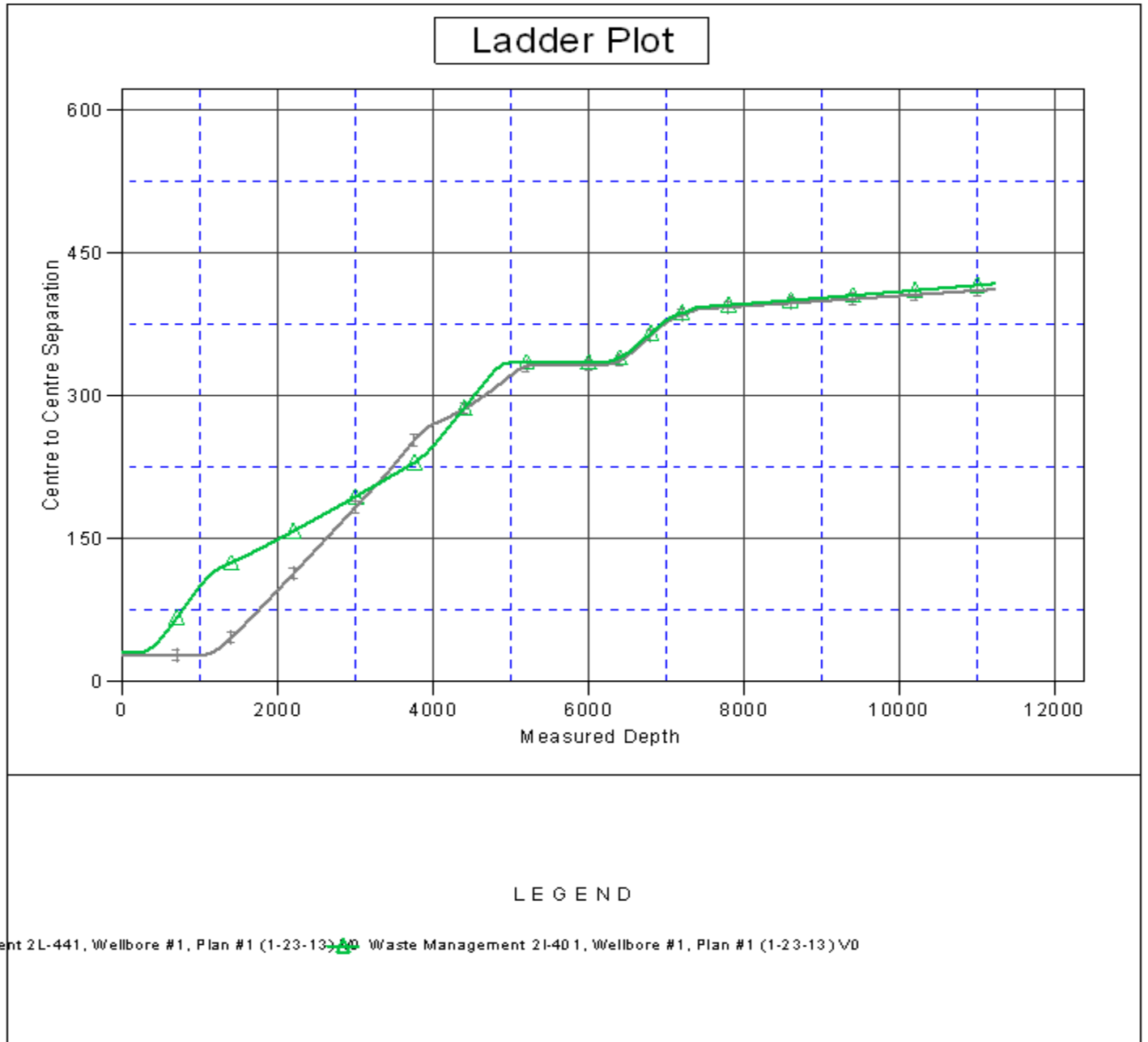
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-221
<b>Project:</b>	SEC.2-T2N-R64W	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Reference Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Waste Management 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (1-23-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Waste Management 2IL-HZ Pad Sec.2-T2N-R64W - Waste Management 2L-441 - Wellbore #1 - Plan #													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
8,400.0	6,832.2	8,598.7	7,046.7	36.3	36.4	122.70	1,695.8	176.8	396.8	333.7	63.10	6.289		
8,500.0	6,831.6	8,698.7	7,046.9	38.0	38.1	122.81	1,795.8	177.3	397.4	331.3	66.07	6.014		
8,600.0	6,830.9	8,798.7	7,047.2	39.8	39.9	122.92	1,895.8	177.7	397.9	328.8	69.07	5.761		
8,700.0	6,830.3	8,898.7	7,047.4	41.6	41.7	123.02	1,995.8	178.2	398.4	326.4	72.08	5.528		
8,800.0	6,829.6	8,998.7	7,047.7	43.4	43.5	123.13	2,095.8	178.7	399.0	323.9	75.11	5.312		
8,900.0	6,829.0	9,098.7	7,048.0	45.2	45.3	123.23	2,195.8	179.1	399.5	321.4	78.14	5.113		
9,000.0	6,828.4	9,198.7	7,048.2	47.0	47.1	123.34	2,295.8	179.6	400.1	318.9	81.19	4.927		
9,100.0	6,827.7	9,298.7	7,048.5	48.8	48.9	123.44	2,395.8	180.1	400.6	316.4	84.24	4.755		
9,200.0	6,827.1	9,398.7	7,048.7	50.7	50.7	123.54	2,495.8	180.5	401.1	313.8	87.31	4.595		
9,300.0	6,826.4	9,498.7	7,049.0	52.5	52.6	123.65	2,595.8	181.0	401.7	311.3	90.37	4.445		
9,400.0	6,825.8	9,598.7	7,049.3	54.4	54.4	123.75	2,695.8	181.5	402.2	308.8	93.44	4.305		
9,500.0	6,825.1	9,698.7	7,049.5	56.2	56.3	123.85	2,795.8	181.9	402.8	306.3	96.51	4.173		
9,600.0	6,824.5	9,798.7	7,049.8	58.1	58.1	123.96	2,895.7	182.4	403.3	303.7	99.59	4.050		
9,700.0	6,823.8	9,898.7	7,050.0	59.9	60.0	124.06	2,995.7	182.9	403.9	301.2	102.66	3.934		
9,800.0	6,823.2	9,998.7	7,050.3	61.8	61.8	124.16	3,095.7	183.3	404.4	298.7	105.74	3.825		
9,900.0	6,822.5	10,098.7	7,050.6	63.6	63.7	124.26	3,195.7	183.8	405.0	296.2	108.81	3.722		
10,000.0	6,821.9	10,198.7	7,050.8	65.5	65.5	124.37	3,295.7	184.3	405.5	293.6	111.89	3.624		
10,100.0	6,821.3	10,298.7	7,051.1	67.4	67.4	124.47	3,395.7	184.8	406.1	291.1	114.96	3.532		
10,200.0	6,820.6	10,398.7	7,051.3	69.2	69.3	124.57	3,495.7	185.2	406.6	288.6	118.03	3.445		
10,300.0	6,820.0	10,498.7	7,051.6	71.1	71.1	124.67	3,595.7	185.7	407.2	286.1	121.10	3.362		
10,400.0	6,819.3	10,598.6	7,051.9	73.0	73.0	124.77	3,695.7	186.2	407.7	283.6	124.17	3.284		
10,500.0	6,818.7	10,698.6	7,052.1	74.9	74.9	124.87	3,795.7	186.6	408.3	281.1	127.23	3.209		
10,600.0	6,818.0	10,798.6	7,052.4	76.8	76.8	124.97	3,895.7	187.1	408.9	278.6	130.30	3.138		
10,700.0	6,817.4	10,898.6	7,052.6	78.6	78.6	125.07	3,995.7	187.6	409.4	276.1	133.36	3.070		
10,800.0	6,816.7	10,998.6	7,052.9	80.5	80.5	125.17	4,095.7	188.0	410.0	273.6	136.41	3.006		
10,900.0	6,816.1	11,098.6	7,053.2	82.4	82.4	125.27	4,195.7	188.5	410.5	271.1	139.46	2.944		
11,000.0	6,815.4	11,198.6	7,053.4	84.3	84.3	125.37	4,295.7	189.0	411.1	268.6	142.51	2.885		
11,100.0	6,814.8	11,298.6	7,053.7	86.2	86.2	125.47	4,395.7	189.4	411.7	266.1	145.56	2.828		
11,200.0	6,814.1	11,398.6	7,053.9	88.1	88.1	125.57	4,495.7	189.9	412.2	263.6	148.60	2.774		
11,223.1	6,814.0	11,421.7	7,054.0	88.5	88.4	125.59	4,518.7	190.0	412.4	263.2	149.22	2.763 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Mangement 2I-221
<b>Project:</b>	SEC.2-T2N-R64W	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Reference Site:</b>	Waste Mangement 2IL-HZ Pad Sec.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Waste Mangement 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (1-23-13)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4954.0ft (RKB - 15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Waste Mangement 2I-221  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.63°

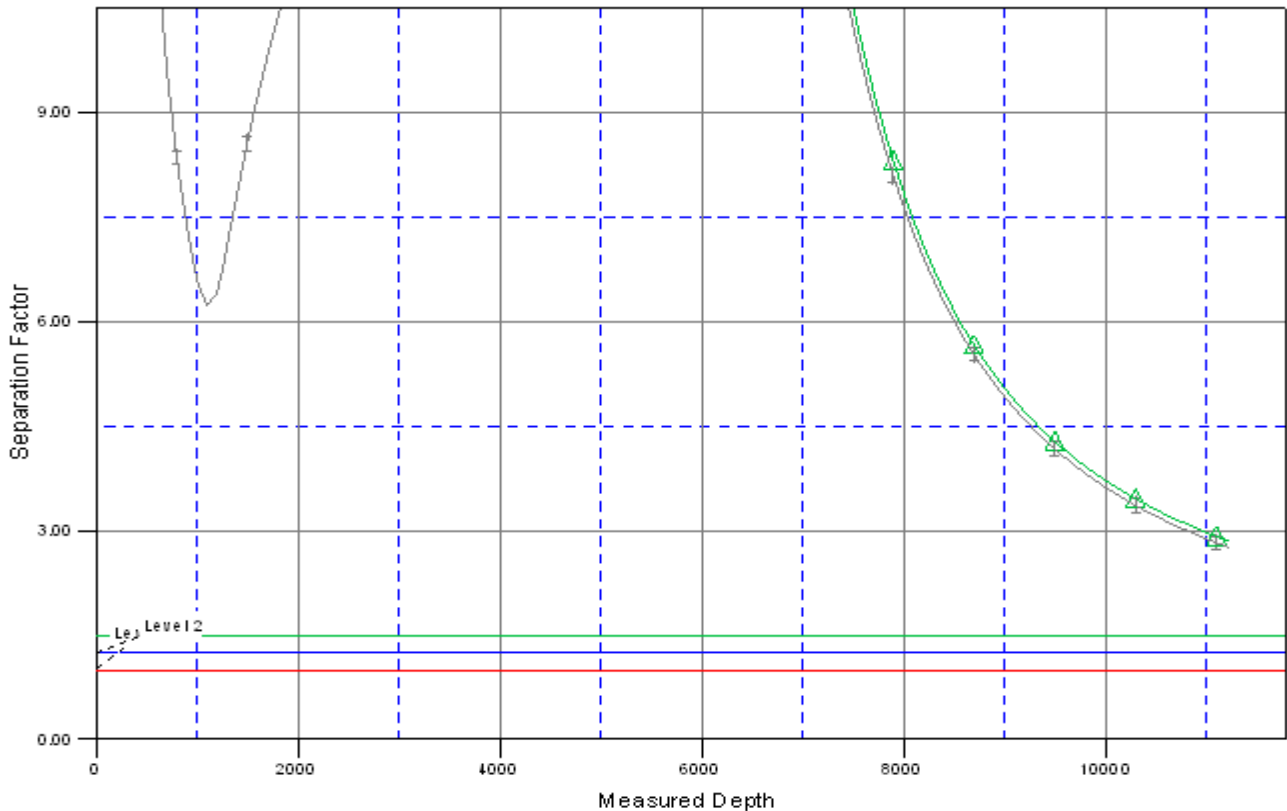


<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Mangagement 2I-221
<b>Project:</b>	SEC.2-T2N-R64W	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Reference Site:</b>	Waste Mangagement 2IL-HZ Pad Sec.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Waste Mangagement 2I-221	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (1-23-13)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4954.0ft (RKB - 15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Waste Mangagement 2I-221  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.63°

### Separation Factor Plot



### LEGEND

Waste Management 2I-401, Wellbore #1, Plan #1 (1-23-13) Waste Management 2I-401, Wellbore #1, Plan #1 (1-23-13)