

# PETROLEUM DEVELOPMENT CORP Weld County CO

## Well Name: Waste Management 2I-401

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

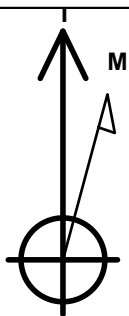
Ground Elevation: 4939.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1302935.67	3272203.76	40.160850	-104.526060	

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

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape Point
BHL 500'FNL, 150'FWL	7064.0	4517.3	-449.9	



Azimuths to True North  
Magnetic North: 8.50°

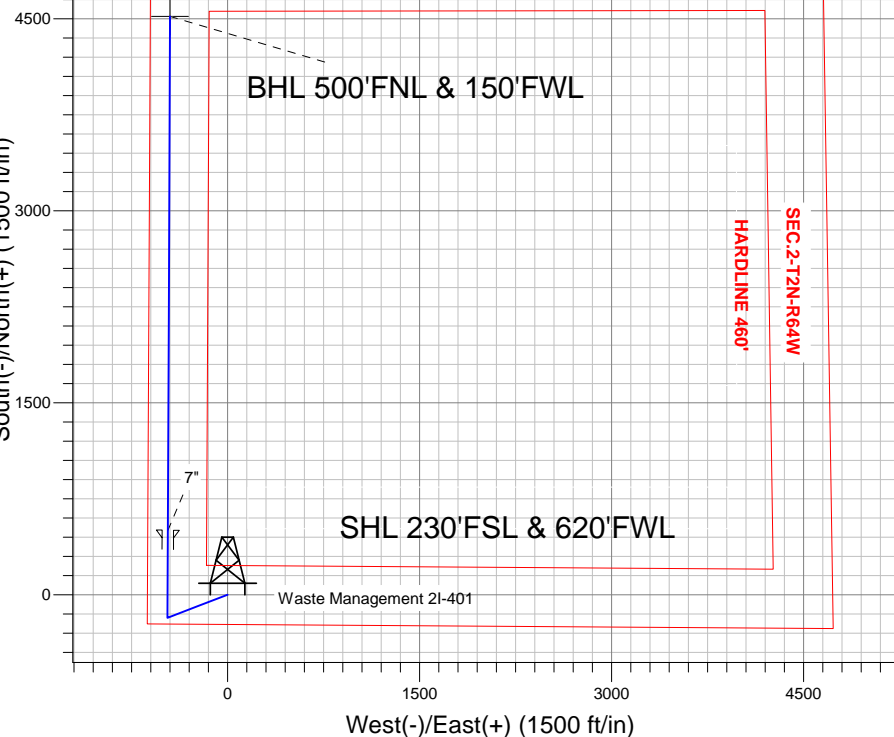
Magnetic Field  
Strength: 52860.6snT  
Dip Angle: 66.84°  
Date: 1/23/2013  
Model: IGRF2010

## ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP #1
6270.3	6297.8	KOP #2
7044.0	7605.8	End of Build

Waste Management 2IL-HZ Pad Sec.2-T2N-R64W  
Waste Management 2I-401  
Plan #1 (1-23-13)  
11:16, January 24 2013

South(-)/North(+) (1500 ft/in)



West(-)/East(+) (1500 ft/in)

## 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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	520.6	6.41	249.04	519.9	-6.4	-16.7	2.00	249.04	-4.7	
4	4707.0	6.41	249.04	4680.1	-173.6	-453.3	0.00	0.00	-127.8	
5	5027.5	0.00	0.00	5000.0	-180.0	-470.0	2.00	180.00	-132.5	
6	6297.8	0.00	0.00	6270.3	-180.0	-470.0	0.00	0.00	-132.5	
7	7417.8	84.00	0.25	7030.0	504.1	-467.0	7.50	0.25	547.9	
8	7491.8	84.00	0.25	7037.8	577.7	-466.7	0.00	0.00	621.1	
9	7605.8	89.70	0.24	7044.0	691.5	-466.2	5.00	-0.06	734.3	
10	11431.7	89.70	0.24	7064.0	4517.3	-449.9	0.00	0.00	4539.7	BHL 500'FNL, 150'FWL

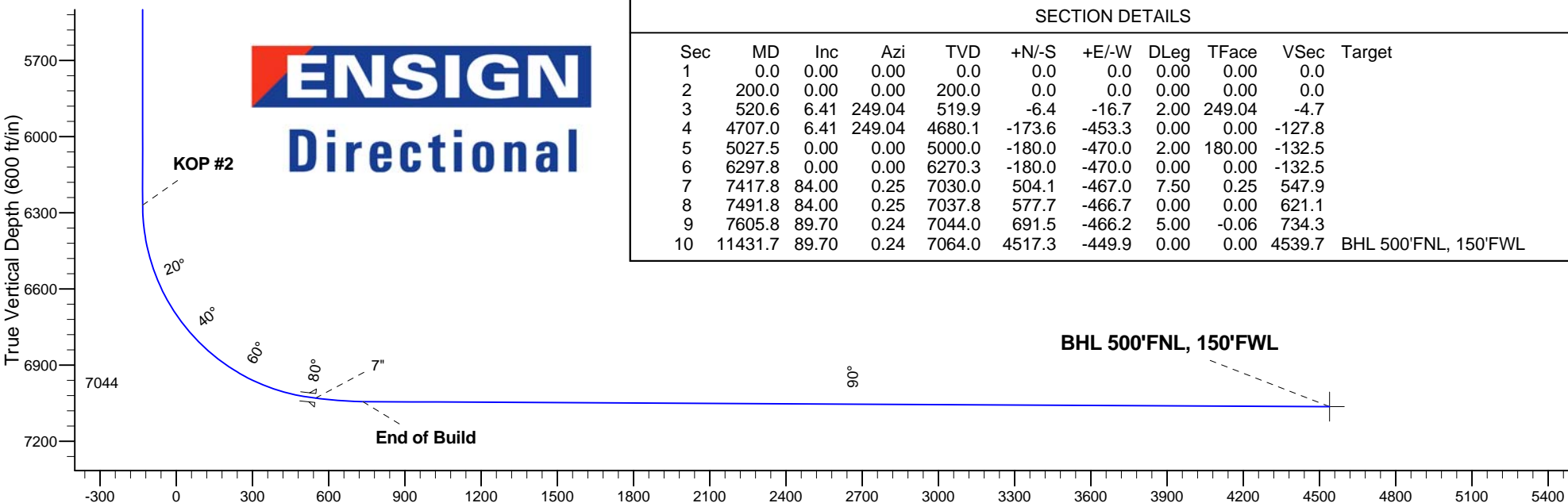
BHL 500'FNL, 150'FWL

90°

End of Build

**ENSIGN**  
Directional

KOP #2



Vertical Section at 354.31° (600 ft/in)



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T2N-R64W**

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

**Waste Management 2I-401**

**Wellbore #1**

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

## **Standard Planning Report**

**24 January, 2013**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-401
<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 Management 2I-401	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-23-13)		

<b>Project</b>	SEC.2-T2N-R64W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site						Waste Management 2IL-HZ Pad Sec.2-T2N-R64W											
<b>Site Position:</b>						<b>Northing:</b>			1,302,936.01 ft			<b>Latitude:</b>			40.160850		
<b>From:</b>			Lat/Long			<b>Easting:</b>			3,272,234.50 ft			<b>Longitude:</b>			-104.525950		
<b>Position Uncertainty:</b>			0.0 ft			<b>Slot Radius:</b>			"			<b>Grid Convergence:</b>			0.63 °		

Well	Waste Management 2I-401					
Well Position	+N/-S	0.0 ft	Northing:	1,302,935.67 ft	Latitude:	40.160850
	+E/-W	-30.7 ft	Easting:	3,272,203.76 ft	Longitude:	-104.526060
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,939.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	1/23/2013	8.50	66.84	52,861

<b>Design</b>	Plan #1 (1-23-13)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	7,064.0	0.0	0.0	354.31

<b>Plan Sections</b>										
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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
520.6	6.41	249.04	519.9	-6.4	-16.7	2.00	2.00	0.00	249.04	
4,707.0	6.41	249.04	4,680.1	-173.6	-453.3	0.00	0.00	0.00	0.00	
5,027.5	0.00	0.00	5,000.0	-180.0	-470.0	2.00	-2.00	0.00	180.00	
6,297.8	0.00	0.00	6,270.3	-180.0	-470.0	0.00	0.00	0.00	0.00	
7,417.8	84.00	0.25	7,030.0	504.1	-467.0	7.50	7.50	0.00	0.25	
7,491.8	84.00	0.25	7,037.8	577.7	-466.7	0.00	0.00	0.00	0.00	
7,605.8	89.70	0.24	7,044.0	691.5	-466.2	5.00	5.00	-0.01	-0.06	
11,431.7	89.70	0.24	7,064.0	4,517.3	-449.9	0.00	0.00	0.00	0.00	BHL 500'FNL, 150'

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-401
<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 Management 2I-401	<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	0.80	249.04	240.0	-0.1	-0.3	-0.1	2.00	2.00	0.00
280.0	1.60	249.04	280.0	-0.4	-1.0	-0.3	2.00	2.00	0.00
320.0	2.40	249.04	320.0	-0.9	-2.3	-0.7	2.00	2.00	0.00
360.0	3.20	249.04	359.9	-1.6	-4.2	-1.2	2.00	2.00	0.00
400.0	4.00	249.04	399.8	-2.5	-6.5	-1.8	2.00	2.00	0.00
440.0	4.80	249.04	439.7	-3.6	-9.4	-2.6	2.00	2.00	0.00
480.0	5.60	249.04	479.6	-4.9	-12.8	-3.6	2.00	2.00	0.00
520.0	6.40	249.04	519.3	-6.4	-16.7	-4.7	2.00	2.00	0.00
520.6	6.41	249.04	519.9	-6.4	-16.7	-4.7	2.00	2.00	0.00
560.0	6.41	249.04	559.1	-8.0	-20.8	-5.9	0.00	0.00	0.00
600.0	6.41	249.04	598.8	-9.6	-25.0	-7.1	0.00	0.00	0.00
640.0	6.41	249.04	638.6	-11.2	-29.2	-8.2	0.00	0.00	0.00
680.0	6.41	249.04	678.3	-12.8	-33.4	-9.4	0.00	0.00	0.00
720.0	6.41	249.04	718.1	-14.4	-37.5	-10.6	0.00	0.00	0.00
760.0	6.41	249.04	757.8	-16.0	-41.7	-11.8	0.00	0.00	0.00
800.0	6.41	249.04	797.6	-17.6	-45.9	-12.9	0.00	0.00	0.00
840.0	6.41	249.04	837.3	-19.2	-50.0	-14.1	0.00	0.00	0.00
880.0	6.41	249.04	877.1	-20.8	-54.2	-15.3	0.00	0.00	0.00
920.0	6.41	249.04	916.8	-22.4	-58.4	-16.5	0.00	0.00	0.00
960.0	6.41	249.04	956.6	-24.0	-62.6	-17.6	0.00	0.00	0.00
1,000.0	6.41	249.04	996.3	-25.6	-66.7	-18.8	0.00	0.00	0.00
1,040.0	6.41	249.04	1,036.1	-27.2	-70.9	-20.0	0.00	0.00	0.00
1,080.0	6.41	249.04	1,075.8	-28.7	-75.1	-21.2	0.00	0.00	0.00
1,120.0	6.41	249.04	1,115.6	-30.3	-79.2	-22.3	0.00	0.00	0.00
1,160.0	6.41	249.04	1,155.3	-31.9	-83.4	-23.5	0.00	0.00	0.00
1,200.0	6.41	249.04	1,195.1	-33.5	-87.6	-24.7	0.00	0.00	0.00
1,240.0	6.41	249.04	1,234.8	-35.1	-91.8	-25.9	0.00	0.00	0.00
1,280.0	6.41	249.04	1,274.6	-36.7	-95.9	-27.0	0.00	0.00	0.00
1,320.0	6.41	249.04	1,314.3	-38.3	-100.1	-28.2	0.00	0.00	0.00
1,360.0	6.41	249.04	1,354.1	-39.9	-104.3	-29.4	0.00	0.00	0.00
1,400.0	6.41	249.04	1,393.8	-41.5	-108.4	-30.6	0.00	0.00	0.00
1,440.0	6.41	249.04	1,433.6	-43.1	-112.6	-31.8	0.00	0.00	0.00
1,480.0	6.41	249.04	1,473.3	-44.7	-116.8	-32.9	0.00	0.00	0.00
1,520.0	6.41	249.04	1,513.1	-46.3	-120.9	-34.1	0.00	0.00	0.00
1,560.0	6.41	249.04	1,552.8	-47.9	-125.1	-35.3	0.00	0.00	0.00
1,600.0	6.41	249.04	1,592.6	-49.5	-129.3	-36.5	0.00	0.00	0.00
1,640.0	6.41	249.04	1,632.3	-51.1	-133.5	-37.6	0.00	0.00	0.00
1,680.0	6.41	249.04	1,672.1	-52.7	-137.6	-38.8	0.00	0.00	0.00
1,720.0	6.41	249.04	1,711.8	-54.3	-141.8	-40.0	0.00	0.00	0.00
1,760.0	6.41	249.04	1,751.6	-55.9	-146.0	-41.2	0.00	0.00	0.00
1,800.0	6.41	249.04	1,791.3	-57.5	-150.1	-42.3	0.00	0.00	0.00
1,840.0	6.41	249.04	1,831.1	-59.1	-154.3	-43.5	0.00	0.00	0.00
1,880.0	6.41	249.04	1,870.8	-60.7	-158.5	-44.7	0.00	0.00	0.00
1,920.0	6.41	249.04	1,910.6	-62.3	-162.7	-45.9	0.00	0.00	0.00
1,960.0	6.41	249.04	1,950.3	-63.9	-166.8	-47.0	0.00	0.00	0.00
2,000.0	6.41	249.04	1,990.1	-65.5	-171.0	-48.2	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 Management 2I-401	<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	6.41	249.04	2,029.8	-67.1	-175.2	-49.4	0.00	0.00	0.00
2,080.0	6.41	249.04	2,069.6	-68.7	-179.3	-50.6	0.00	0.00	0.00
2,120.0	6.41	249.04	2,109.3	-70.3	-183.5	-51.7	0.00	0.00	0.00
2,160.0	6.41	249.04	2,149.1	-71.9	-187.7	-52.9	0.00	0.00	0.00
2,200.0	6.41	249.04	2,188.8	-73.5	-191.9	-54.1	0.00	0.00	0.00
2,240.0	6.41	249.04	2,228.6	-75.1	-196.0	-55.3	0.00	0.00	0.00
2,280.0	6.41	249.04	2,268.3	-76.7	-200.2	-56.5	0.00	0.00	0.00
2,320.0	6.41	249.04	2,308.1	-78.3	-204.4	-57.6	0.00	0.00	0.00
2,360.0	6.41	249.04	2,347.8	-79.9	-208.5	-58.8	0.00	0.00	0.00
2,400.0	6.41	249.04	2,387.6	-81.5	-212.7	-60.0	0.00	0.00	0.00
2,440.0	6.41	249.04	2,427.3	-83.1	-216.9	-61.2	0.00	0.00	0.00
2,480.0	6.41	249.04	2,467.1	-84.7	-221.1	-62.3	0.00	0.00	0.00
2,520.0	6.41	249.04	2,506.8	-86.3	-225.2	-63.5	0.00	0.00	0.00
2,560.0	6.41	249.04	2,546.6	-87.9	-229.4	-64.7	0.00	0.00	0.00
2,600.0	6.41	249.04	2,586.3	-89.5	-233.6	-65.9	0.00	0.00	0.00
2,640.0	6.41	249.04	2,626.1	-91.0	-237.7	-67.0	0.00	0.00	0.00
2,680.0	6.41	249.04	2,665.8	-92.6	-241.9	-68.2	0.00	0.00	0.00
2,720.0	6.41	249.04	2,705.6	-94.2	-246.1	-69.4	0.00	0.00	0.00
2,760.0	6.41	249.04	2,745.3	-95.8	-250.2	-70.6	0.00	0.00	0.00
2,800.0	6.41	249.04	2,785.1	-97.4	-254.4	-71.7	0.00	0.00	0.00
2,840.0	6.41	249.04	2,824.8	-99.0	-258.6	-72.9	0.00	0.00	0.00
2,880.0	6.41	249.04	2,864.6	-100.6	-262.8	-74.1	0.00	0.00	0.00
2,920.0	6.41	249.04	2,904.3	-102.2	-266.9	-75.3	0.00	0.00	0.00
2,960.0	6.41	249.04	2,944.1	-103.8	-271.1	-76.4	0.00	0.00	0.00
3,000.0	6.41	249.04	2,983.8	-105.4	-275.3	-77.6	0.00	0.00	0.00
3,040.0	6.41	249.04	3,023.6	-107.0	-279.4	-78.8	0.00	0.00	0.00
3,080.0	6.41	249.04	3,063.3	-108.6	-283.6	-80.0	0.00	0.00	0.00
3,120.0	6.41	249.04	3,103.1	-110.2	-287.8	-81.2	0.00	0.00	0.00
3,160.0	6.41	249.04	3,142.8	-111.8	-292.0	-82.3	0.00	0.00	0.00
3,200.0	6.41	249.04	3,182.6	-113.4	-296.1	-83.5	0.00	0.00	0.00
3,240.0	6.41	249.04	3,222.3	-115.0	-300.3	-84.7	0.00	0.00	0.00
3,280.0	6.41	249.04	3,262.1	-116.6	-304.5	-85.9	0.00	0.00	0.00
3,320.0	6.41	249.04	3,301.8	-118.2	-308.6	-87.0	0.00	0.00	0.00
3,360.0	6.41	249.04	3,341.6	-119.8	-312.8	-88.2	0.00	0.00	0.00
3,400.0	6.41	249.04	3,381.3	-121.4	-317.0	-89.4	0.00	0.00	0.00
3,440.0	6.41	249.04	3,421.1	-123.0	-321.2	-90.6	0.00	0.00	0.00
3,480.0	6.41	249.04	3,460.8	-124.6	-325.3	-91.7	0.00	0.00	0.00
3,520.0	6.41	249.04	3,500.6	-126.2	-329.5	-92.9	0.00	0.00	0.00
3,560.0	6.41	249.04	3,540.3	-127.8	-333.7	-94.1	0.00	0.00	0.00
3,600.0	6.41	249.04	3,580.1	-129.4	-337.8	-95.3	0.00	0.00	0.00
3,640.0	6.41	249.04	3,619.8	-131.0	-342.0	-96.4	0.00	0.00	0.00
3,680.0	6.41	249.04	3,659.6	-132.6	-346.2	-97.6	0.00	0.00	0.00
3,720.0	6.41	249.04	3,699.3	-134.2	-350.4	-98.8	0.00	0.00	0.00
3,760.0	6.41	249.04	3,739.1	-135.8	-354.5	-100.0	0.00	0.00	0.00
3,800.0	6.41	249.04	3,778.8	-137.4	-358.7	-101.1	0.00	0.00	0.00
3,840.0	6.41	249.04	3,818.6	-139.0	-362.9	-102.3	0.00	0.00	0.00
3,880.0	6.41	249.04	3,858.3	-140.6	-367.0	-103.5	0.00	0.00	0.00
3,920.0	6.41	249.04	3,898.1	-142.2	-371.2	-104.7	0.00	0.00	0.00
3,960.0	6.41	249.04	3,937.8	-143.8	-375.4	-105.9	0.00	0.00	0.00
4,000.0	6.41	249.04	3,977.6	-145.4	-379.6	-107.0	0.00	0.00	0.00
4,040.0	6.41	249.04	4,017.3	-147.0	-383.7	-108.2	0.00	0.00	0.00
4,080.0	6.41	249.04	4,057.1	-148.6	-387.9	-109.4	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-401
<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 Management 2I-401	<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)
4,120.0	6.41	249.04	4,096.8	-150.2	-392.1	-110.6	0.00	0.00	0.00
4,160.0	6.41	249.04	4,136.6	-151.7	-396.2	-111.7	0.00	0.00	0.00
4,200.0	6.41	249.04	4,176.3	-153.3	-400.4	-112.9	0.00	0.00	0.00
4,240.0	6.41	249.04	4,216.1	-154.9	-404.6	-114.1	0.00	0.00	0.00
4,280.0	6.41	249.04	4,255.8	-156.5	-408.7	-115.3	0.00	0.00	0.00
4,320.0	6.41	249.04	4,295.6	-158.1	-412.9	-116.4	0.00	0.00	0.00
4,360.0	6.41	249.04	4,335.3	-159.7	-417.1	-117.6	0.00	0.00	0.00
4,400.0	6.41	249.04	4,375.1	-161.3	-421.3	-118.8	0.00	0.00	0.00
4,440.0	6.41	249.04	4,414.8	-162.9	-425.4	-120.0	0.00	0.00	0.00
4,480.0	6.41	249.04	4,454.6	-164.5	-429.6	-121.1	0.00	0.00	0.00
4,520.0	6.41	249.04	4,494.3	-166.1	-433.8	-122.3	0.00	0.00	0.00
4,560.0	6.41	249.04	4,534.1	-167.7	-437.9	-123.5	0.00	0.00	0.00
4,600.0	6.41	249.04	4,573.8	-169.3	-442.1	-124.7	0.00	0.00	0.00
4,640.0	6.41	249.04	4,613.6	-170.9	-446.3	-125.8	0.00	0.00	0.00
4,680.0	6.41	249.04	4,653.3	-172.5	-450.5	-127.0	0.00	0.00	0.00
4,707.0	6.41	249.04	4,680.1	-173.6	-453.3	-127.8	0.00	0.00	0.00
4,720.0	6.15	249.04	4,693.1	-174.1	-454.6	-128.2	2.00	-2.00	0.00
4,760.0	5.35	249.04	4,732.9	-175.5	-458.3	-129.2	2.00	-2.00	0.00
4,800.0	4.55	249.04	4,772.7	-176.8	-461.6	-130.2	2.00	-2.00	0.00
4,840.0	3.75	249.04	4,812.6	-177.8	-464.3	-130.9	2.00	-2.00	0.00
4,880.0	2.95	249.04	4,852.5	-178.6	-466.5	-131.5	2.00	-2.00	0.00
4,920.0	2.15	249.04	4,892.5	-179.3	-468.1	-132.0	2.00	-2.00	0.00
4,960.0	1.35	249.04	4,932.5	-179.7	-469.3	-132.3	2.00	-2.00	0.00
5,000.0	0.55	249.04	4,972.5	-180.0	-469.9	-132.5	2.00	-2.00	0.00
5,027.5	0.00	0.00	5,000.0	-180.0	-470.0	-132.5	2.00	-2.00	0.00
5,040.0	0.00	0.00	5,012.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,080.0	0.00	0.00	5,052.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,120.0	0.00	0.00	5,092.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,160.0	0.00	0.00	5,132.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,200.0	0.00	0.00	5,172.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,240.0	0.00	0.00	5,212.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,280.0	0.00	0.00	5,252.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,320.0	0.00	0.00	5,292.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,360.0	0.00	0.00	5,332.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,400.0	0.00	0.00	5,372.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,440.0	0.00	0.00	5,412.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,480.0	0.00	0.00	5,452.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,520.0	0.00	0.00	5,492.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,560.0	0.00	0.00	5,532.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,600.0	0.00	0.00	5,572.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,640.0	0.00	0.00	5,612.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,680.0	0.00	0.00	5,652.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,720.0	0.00	0.00	5,692.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,760.0	0.00	0.00	5,732.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,800.0	0.00	0.00	5,772.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,840.0	0.00	0.00	5,812.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,880.0	0.00	0.00	5,852.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,920.0	0.00	0.00	5,892.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
5,960.0	0.00	0.00	5,932.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
6,000.0	0.00	0.00	5,972.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
6,040.0	0.00	0.00	6,012.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
6,080.0	0.00	0.00	6,052.5	-180.0	-470.0	-132.5	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-401
<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 Management 2I-401	<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)
6,120.0	0.00	0.00	6,092.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
6,160.0	0.00	0.00	6,132.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
6,200.0	0.00	0.00	6,172.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
6,240.0	0.00	0.00	6,212.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
6,280.0	0.00	0.00	6,252.5	-180.0	-470.0	-132.5	0.00	0.00	0.00
6,297.8	0.00	0.00	6,270.3	-180.0	-470.0	-132.5	0.00	0.00	0.00
6,320.0	1.66	0.25	6,292.5	-179.7	-470.0	-132.2	7.50	7.50	0.00
6,360.0	4.66	0.25	6,332.4	-177.5	-470.0	-130.0	7.50	7.50	0.00
6,400.0	7.66	0.25	6,372.2	-173.2	-470.0	-125.7	7.50	7.50	0.00
6,440.0	10.66	0.25	6,411.7	-166.8	-469.9	-119.4	7.50	7.50	0.00
6,480.0	13.66	0.25	6,450.8	-158.4	-469.9	-111.0	7.50	7.50	0.00
6,520.0	16.66	0.25	6,489.4	-147.9	-469.9	-100.6	7.50	7.50	0.00
6,560.0	19.66	0.25	6,527.4	-135.4	-469.8	-88.2	7.50	7.50	0.00
6,600.0	22.66	0.25	6,564.7	-121.0	-469.7	-73.9	7.50	7.50	0.00
6,640.0	25.66	0.25	6,601.2	-104.6	-469.7	-57.6	7.50	7.50	0.00
6,680.0	28.66	0.25	6,636.7	-86.4	-469.6	-39.4	7.50	7.50	0.00
6,720.0	31.66	0.25	6,671.3	-66.3	-469.5	-19.4	7.50	7.50	0.00
6,760.0	34.66	0.25	6,704.8	-44.4	-469.4	2.3	7.50	7.50	0.00
6,800.0	37.66	0.25	6,737.1	-20.8	-469.3	25.8	7.50	7.50	0.00
6,840.0	40.66	0.25	6,768.1	4.5	-469.2	50.9	7.50	7.50	0.00
6,880.0	43.66	0.25	6,797.7	31.3	-469.1	77.6	7.50	7.50	0.00
6,920.0	46.66	0.25	6,825.9	59.7	-469.0	105.9	7.50	7.50	0.00
6,960.0	49.66	0.25	6,852.6	89.5	-468.8	135.5	7.50	7.50	0.00
7,000.0	52.66	0.25	6,877.7	120.6	-468.7	166.5	7.50	7.50	0.00
7,040.0	55.66	0.25	6,901.1	153.1	-468.5	198.7	7.50	7.50	0.00
7,080.0	58.66	0.25	6,922.8	186.7	-468.4	232.2	7.50	7.50	0.00
7,120.0	61.66	0.25	6,942.7	221.3	-468.2	266.7	7.50	7.50	0.00
7,160.0	64.66	0.25	6,960.8	257.0	-468.1	302.2	7.50	7.50	0.00
7,200.0	67.66	0.25	6,976.9	293.6	-467.9	338.6	7.50	7.50	0.00
7,240.0	70.66	0.25	6,991.1	331.0	-467.8	375.7	7.50	7.50	0.00
7,280.0	73.66	0.25	7,003.4	369.1	-467.6	413.6	7.50	7.50	0.00
7,320.0	76.66	0.25	7,013.6	407.7	-467.4	452.1	7.50	7.50	0.00
7,360.0	79.66	0.25	7,021.8	446.9	-467.3	491.0	7.50	7.50	0.00
7,400.0	82.66	0.25	7,028.0	486.4	-467.1	530.3	7.50	7.50	0.00
7,417.8	84.00	0.25	7,030.0	504.1	-467.0	547.9	7.50	7.50	0.00
7,440.0	84.00	0.25	7,032.4	526.2	-466.9	569.8	0.00	0.00	0.00
7,480.0	84.00	0.25	7,036.5	565.9	-466.7	609.4	0.00	0.00	0.00
7,491.8	84.00	0.25	7,037.8	577.7	-466.7	621.1	0.00	0.00	0.00
7,520.0	85.41	0.25	7,040.4	605.8	-466.6	649.0	5.00	5.00	-0.01
7,560.0	87.41	0.25	7,042.9	645.7	-466.4	688.7	5.00	5.00	-0.01
7,600.0	89.41	0.24	7,044.0	685.7	-466.2	728.5	5.00	5.00	-0.01
7,605.8	89.70	0.24	7,044.0	691.5	-466.2	734.3	5.00	5.00	-0.01
7,640.0	89.70	0.24	7,044.2	725.7	-466.1	768.3	0.00	0.00	0.00
7,680.0	89.70	0.24	7,044.4	765.7	-465.9	808.1	0.00	0.00	0.00
7,720.0	89.70	0.24	7,044.6	805.7	-465.7	847.8	0.00	0.00	0.00
7,760.0	89.70	0.24	7,044.8	845.6	-465.5	887.6	0.00	0.00	0.00
7,800.0	89.70	0.24	7,045.1	885.6	-465.4	927.4	0.00	0.00	0.00
7,840.0	89.70	0.24	7,045.3	925.6	-465.2	967.2	0.00	0.00	0.00
7,880.0	89.70	0.24	7,045.5	965.6	-465.0	1,007.0	0.00	0.00	0.00
7,920.0	89.70	0.24	7,045.7	1,005.6	-464.9	1,046.8	0.00	0.00	0.00
7,960.0	89.70	0.24	7,045.9	1,045.6	-464.7	1,086.6	0.00	0.00	0.00
8,000.0	89.70	0.24	7,046.1	1,085.6	-464.5	1,126.3	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-401
<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 Management 2I-401	<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)
8,040.0	89.70	0.24	7,046.3	1,125.6	-464.4	1,166.1	0.00	0.00	0.00
8,080.0	89.70	0.24	7,046.5	1,165.6	-464.2	1,205.9	0.00	0.00	0.00
8,120.0	89.70	0.24	7,046.7	1,205.6	-464.0	1,245.7	0.00	0.00	0.00
8,160.0	89.70	0.24	7,046.9	1,245.6	-463.8	1,285.5	0.00	0.00	0.00
8,200.0	89.70	0.24	7,047.1	1,285.6	-463.7	1,325.3	0.00	0.00	0.00
8,240.0	89.70	0.24	7,047.4	1,325.6	-463.5	1,365.0	0.00	0.00	0.00
8,280.0	89.70	0.24	7,047.6	1,365.6	-463.3	1,404.8	0.00	0.00	0.00
8,320.0	89.70	0.24	7,047.8	1,405.6	-463.2	1,444.6	0.00	0.00	0.00
8,360.0	89.70	0.24	7,048.0	1,445.6	-463.0	1,484.4	0.00	0.00	0.00
8,400.0	89.70	0.24	7,048.2	1,485.6	-462.8	1,524.2	0.00	0.00	0.00
8,440.0	89.70	0.24	7,048.4	1,525.6	-462.7	1,564.0	0.00	0.00	0.00
8,480.0	89.70	0.24	7,048.6	1,565.6	-462.5	1,603.8	0.00	0.00	0.00
8,520.0	89.70	0.24	7,048.8	1,605.6	-462.3	1,643.5	0.00	0.00	0.00
8,560.0	89.70	0.24	7,049.0	1,645.6	-462.1	1,683.3	0.00	0.00	0.00
8,600.0	89.70	0.24	7,049.2	1,685.6	-462.0	1,723.1	0.00	0.00	0.00
8,640.0	89.70	0.24	7,049.4	1,725.6	-461.8	1,762.9	0.00	0.00	0.00
8,680.0	89.70	0.24	7,049.6	1,765.6	-461.6	1,802.7	0.00	0.00	0.00
8,720.0	89.70	0.24	7,049.9	1,805.6	-461.5	1,842.5	0.00	0.00	0.00
8,760.0	89.70	0.24	7,050.1	1,845.6	-461.3	1,882.3	0.00	0.00	0.00
8,800.0	89.70	0.24	7,050.3	1,885.6	-461.1	1,922.0	0.00	0.00	0.00
8,840.0	89.70	0.24	7,050.5	1,925.6	-461.0	1,961.8	0.00	0.00	0.00
8,880.0	89.70	0.24	7,050.7	1,965.6	-460.8	2,001.6	0.00	0.00	0.00
8,920.0	89.70	0.24	7,050.9	2,005.6	-460.6	2,041.4	0.00	0.00	0.00
8,960.0	89.70	0.24	7,051.1	2,045.6	-460.4	2,081.2	0.00	0.00	0.00
9,000.0	89.70	0.24	7,051.3	2,085.6	-460.3	2,121.0	0.00	0.00	0.00
9,040.0	89.70	0.24	7,051.5	2,125.6	-460.1	2,160.8	0.00	0.00	0.00
9,080.0	89.70	0.24	7,051.7	2,165.6	-459.9	2,200.5	0.00	0.00	0.00
9,120.0	89.70	0.24	7,051.9	2,205.6	-459.8	2,240.3	0.00	0.00	0.00
9,160.0	89.70	0.24	7,052.1	2,245.6	-459.6	2,280.1	0.00	0.00	0.00
9,200.0	89.70	0.24	7,052.4	2,285.6	-459.4	2,319.9	0.00	0.00	0.00
9,240.0	89.70	0.24	7,052.6	2,325.6	-459.2	2,359.7	0.00	0.00	0.00
9,280.0	89.70	0.24	7,052.8	2,365.6	-459.1	2,399.5	0.00	0.00	0.00
9,320.0	89.70	0.24	7,053.0	2,405.6	-458.9	2,439.3	0.00	0.00	0.00
9,360.0	89.70	0.24	7,053.2	2,445.6	-458.7	2,479.0	0.00	0.00	0.00
9,400.0	89.70	0.24	7,053.4	2,485.6	-458.6	2,518.8	0.00	0.00	0.00
9,440.0	89.70	0.24	7,053.6	2,525.6	-458.4	2,558.6	0.00	0.00	0.00
9,480.0	89.70	0.24	7,053.8	2,565.6	-458.2	2,598.4	0.00	0.00	0.00
9,520.0	89.70	0.24	7,054.0	2,605.6	-458.1	2,638.2	0.00	0.00	0.00
9,560.0	89.70	0.24	7,054.2	2,645.6	-457.9	2,678.0	0.00	0.00	0.00
9,600.0	89.70	0.24	7,054.4	2,685.6	-457.7	2,717.7	0.00	0.00	0.00
9,640.0	89.70	0.24	7,054.7	2,725.6	-457.5	2,757.5	0.00	0.00	0.00
9,680.0	89.70	0.24	7,054.9	2,765.6	-457.4	2,797.3	0.00	0.00	0.00
9,720.0	89.70	0.24	7,055.1	2,805.6	-457.2	2,837.1	0.00	0.00	0.00
9,760.0	89.70	0.24	7,055.3	2,845.6	-457.0	2,876.9	0.00	0.00	0.00
9,800.0	89.70	0.24	7,055.5	2,885.6	-456.9	2,916.7	0.00	0.00	0.00
9,840.0	89.70	0.24	7,055.7	2,925.6	-456.7	2,956.5	0.00	0.00	0.00
9,880.0	89.70	0.24	7,055.9	2,965.6	-456.5	2,996.2	0.00	0.00	0.00
9,920.0	89.70	0.24	7,056.1	3,005.6	-456.4	3,036.0	0.00	0.00	0.00
9,960.0	89.70	0.24	7,056.3	3,045.6	-456.2	3,075.8	0.00	0.00	0.00
10,000.0	89.70	0.24	7,056.5	3,085.6	-456.0	3,115.6	0.00	0.00	0.00
10,040.0	89.70	0.24	7,056.7	3,125.6	-455.8	3,155.4	0.00	0.00	0.00
10,080.0	89.70	0.24	7,056.9	3,165.6	-455.7	3,195.2	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-401
<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 Management 2I-401	<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)
10,120.0	89.70	0.24	7,057.2	3,205.6	-455.5	3,235.0	0.00	0.00	0.00
10,160.0	89.70	0.24	7,057.4	3,245.6	-455.3	3,274.7	0.00	0.00	0.00
10,200.0	89.70	0.24	7,057.6	3,285.6	-455.2	3,314.5	0.00	0.00	0.00
10,240.0	89.70	0.24	7,057.8	3,325.6	-455.0	3,354.3	0.00	0.00	0.00
10,280.0	89.70	0.24	7,058.0	3,365.6	-454.8	3,394.1	0.00	0.00	0.00
10,320.0	89.70	0.24	7,058.2	3,405.6	-454.7	3,433.9	0.00	0.00	0.00
10,360.0	89.70	0.24	7,058.4	3,445.6	-454.5	3,473.7	0.00	0.00	0.00
10,400.0	89.70	0.24	7,058.6	3,485.6	-454.3	3,513.5	0.00	0.00	0.00
10,440.0	89.70	0.24	7,058.8	3,525.6	-454.1	3,553.2	0.00	0.00	0.00
10,480.0	89.70	0.24	7,059.0	3,565.6	-454.0	3,593.0	0.00	0.00	0.00
10,520.0	89.70	0.24	7,059.2	3,605.6	-453.8	3,632.8	0.00	0.00	0.00
10,560.0	89.70	0.24	7,059.5	3,645.6	-453.6	3,672.6	0.00	0.00	0.00
10,600.0	89.70	0.24	7,059.7	3,685.6	-453.5	3,712.4	0.00	0.00	0.00
10,640.0	89.70	0.24	7,059.9	3,725.6	-453.3	3,752.2	0.00	0.00	0.00
10,680.0	89.70	0.24	7,060.1	3,765.6	-453.1	3,792.0	0.00	0.00	0.00
10,720.0	89.70	0.24	7,060.3	3,805.6	-453.0	3,831.7	0.00	0.00	0.00
10,760.0	89.70	0.24	7,060.5	3,845.6	-452.8	3,871.5	0.00	0.00	0.00
10,800.0	89.70	0.24	7,060.7	3,885.6	-452.6	3,911.3	0.00	0.00	0.00
10,840.0	89.70	0.24	7,060.9	3,925.6	-452.4	3,951.1	0.00	0.00	0.00
10,880.0	89.70	0.24	7,061.1	3,965.6	-452.3	3,990.9	0.00	0.00	0.00
10,920.0	89.70	0.24	7,061.3	4,005.6	-452.1	4,030.7	0.00	0.00	0.00
10,960.0	89.70	0.24	7,061.5	4,045.6	-451.9	4,070.4	0.00	0.00	0.00
11,000.0	89.70	0.24	7,061.7	4,085.6	-451.8	4,110.2	0.00	0.00	0.00
11,040.0	89.70	0.24	7,062.0	4,125.6	-451.6	4,150.0	0.00	0.00	0.00
11,080.0	89.70	0.24	7,062.2	4,165.6	-451.4	4,189.8	0.00	0.00	0.00
11,120.0	89.70	0.24	7,062.4	4,205.6	-451.2	4,229.6	0.00	0.00	0.00
11,160.0	89.70	0.24	7,062.6	4,245.6	-451.1	4,269.4	0.00	0.00	0.00
11,200.0	89.70	0.24	7,062.8	4,285.6	-450.9	4,309.2	0.00	0.00	0.00
11,240.0	89.70	0.24	7,063.0	4,325.6	-450.7	4,348.9	0.00	0.00	0.00
11,280.0	89.70	0.24	7,063.2	4,365.6	-450.6	4,388.7	0.00	0.00	0.00
11,320.0	89.70	0.24	7,063.4	4,405.6	-450.4	4,428.5	0.00	0.00	0.00
11,360.0	89.70	0.24	7,063.6	4,445.6	-450.2	4,468.3	0.00	0.00	0.00
11,400.0	89.70	0.24	7,063.8	4,485.6	-450.1	4,508.1	0.00	0.00	0.00
11,431.7	89.70	0.24	7,064.0	4,517.3	-449.9	4,539.7	0.00	0.00	0.00

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,417.8	7,030.0	7"	7	8-3/4

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
200.0	200.0	0.0	0.0	KOP #1
6,297.8	6,270.3	-180.0	-470.0	KOP #2
7,605.8	7,044.0	691.5	-466.2	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T2N-R64W**

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

**Waste Management 2I-401**

**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-401
<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-401	<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-221 - 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		
2,200.0	2,188.8	2,202.6	2,198.5	6.2	4.9	-160.24	-70.2	-33.6	158.5	148.6	9.92	15.988		
2,300.0	2,288.2	2,302.5	2,298.0	6.5	5.2	-159.31	-76.8	-39.6	163.0	152.5	10.43	15.621		
2,400.0	2,387.6	2,402.3	2,397.5	6.8	5.4	-158.44	-83.3	-45.6	167.4	156.5	10.95	15.286		
2,500.0	2,487.0	2,502.2	2,497.0	7.2	5.7	-157.61	-89.8	-51.6	171.9	160.4	11.48	14.980		
2,600.0	2,586.3	2,602.1	2,596.5	7.5	6.0	-156.82	-96.3	-57.6	176.4	164.4	12.00	14.699		
2,700.0	2,685.7	2,702.0	2,695.9	7.8	6.3	-156.08	-102.8	-63.5	181.0	168.5	12.53	14.441		
2,800.0	2,785.1	2,801.8	2,795.4	8.1	6.5	-155.37	-109.4	-69.5	185.6	172.5	13.07	14.202		
2,900.0	2,884.5	2,901.7	2,894.9	8.4	6.8	-154.69	-115.9	-75.5	190.2	176.6	13.60	13.982		
3,000.0	2,983.8	3,001.6	2,994.4	8.7	7.1	-154.05	-122.4	-81.5	194.8	180.7	14.14	13.778		
3,100.0	3,083.2	3,101.4	3,093.8	9.0	7.4	-153.43	-128.9	-87.4	199.5	184.8	14.68	13.589		
3,200.0	3,182.6	3,201.3	3,193.3	9.3	7.6	-152.85	-135.4	-93.4	204.2	189.0	15.22	13.412		
3,300.0	3,281.9	3,301.2	3,292.8	9.6	7.9	-152.29	-142.0	-99.4	208.9	193.1	15.77	13.248		
3,400.0	3,381.3	3,401.0	3,392.3	10.0	8.2	-151.75	-148.5	-105.4	213.6	197.3	16.31	13.094		
3,500.0	3,480.7	3,500.9	3,491.7	10.3	8.5	-151.24	-155.0	-111.4	218.4	201.5	16.86	12.950		
3,600.0	3,580.1	3,600.8	3,591.2	10.6	8.7	-150.75	-161.5	-117.3	223.1	205.7	17.41	12.816		
3,700.0	3,679.4	3,700.6	3,690.7	10.9	9.0	-150.28	-168.1	-123.3	227.9	209.9	17.96	12.689		
3,800.0	3,778.8	3,798.6	3,788.3	11.2	9.3	-149.91	-174.2	-129.0	232.9	214.4	18.49	12.595		
3,900.0	3,878.2	3,894.1	3,883.6	11.5	9.5	-150.10	-178.3	-132.7	239.4	220.5	18.93	12.649		
4,000.0	3,977.6	3,989.1	3,978.6	11.8	9.6	-150.88	-179.9	-134.2	247.8	228.5	19.31	12.831		
4,100.0	4,076.9	4,087.4	4,076.9	12.1	9.8	-152.06	-180.0	-134.3	257.6	237.9	19.68	13.085		
4,200.0	4,176.3	4,186.8	4,176.3	12.5	10.0	-153.18	-180.0	-134.3	267.5	247.4	20.05	13.339		
4,300.0	4,275.7	4,286.2	4,275.7	12.8	10.2	-154.22	-180.0	-134.3	277.5	257.1	20.43	13.585		
4,400.0	4,375.1	4,385.6	4,375.1	13.1	10.3	-155.19	-180.0	-134.3	287.6	266.8	20.81	13.823		
4,500.0	4,474.4	4,484.9	4,474.4	13.4	10.5	-156.09	-180.0	-134.3	297.8	276.6	21.19	14.053		
4,600.0	4,573.8	4,584.3	4,573.8	13.7	10.7	-156.93	-180.0	-134.3	308.0	286.5	21.58	14.275		
4,707.0	4,680.1	4,690.6	4,680.1	14.0	10.9	-157.77	-180.0	-134.3	319.1	297.1	22.00	14.504		
4,800.0	4,772.7	4,783.2	4,772.7	14.3	11.1	-158.42	-180.0	-134.3	327.3	305.0	22.35	14.648		
4,900.0	4,872.5	4,883.0	4,872.5	14.5	11.2	-158.85	-180.0	-134.3	333.1	310.4	22.68	14.689		
5,000.0	4,972.5	4,983.0	4,972.5	14.6	11.4	-159.04	-180.0	-134.3	335.6	312.6	23.00	14.595		
5,027.5	5,000.0	5,010.5	5,000.0	14.6	11.5	90.00	-180.0	-134.3	335.7	312.7	23.07	14.552		
5,100.0	5,072.5	5,083.0	5,072.5	14.8	11.6	90.00	-180.0	-134.3	335.7	312.4	23.34	14.383		
5,200.0	5,172.5	5,183.0	5,172.5	14.9	11.8	90.00	-180.0	-134.3	335.7	312.0	23.71	14.159		
5,300.0	5,272.5	5,283.0	5,272.5	15.0	12.0	90.00	-180.0	-134.3	335.7	311.7	24.08	13.940		
5,400.0	5,372.5	5,383.0	5,372.5	15.2	12.2	90.00	-180.0	-134.3	335.7	311.3	24.46	13.727		
5,500.0	5,472.5	5,483.0	5,472.5	15.4	12.4	90.00	-180.0	-134.3	335.7	310.9	24.84	13.519		
5,600.0	5,572.5	5,583.0	5,572.5	15.5	12.6	90.00	-180.0	-134.3	335.7	310.5	25.21	13.316		
5,700.0	5,672.5	5,683.0	5,672.5	15.7	12.8	90.00	-180.0	-134.3	335.7	310.1	25.60	13.117		
5,800.0	5,772.5	5,783.0	5,772.5	15.8	13.0	90.00	-180.0	-134.3	335.7	309.8	25.98	12.924		
5,900.0	5,872.5	5,883.0	5,872.5	16.0	13.2	90.00	-180.0	-134.3	335.7	309.4	26.36	12.735		
6,000.0	5,972.5	5,983.0	5,972.5	16.1	13.4	90.00	-180.0	-134.3	335.7	309.0	26.75	12.550		
6,100.0	6,072.5	6,083.0	6,072.5	16.3	13.6	90.00	-180.0	-134.3	335.7	308.6	27.14	12.370		
6,115.4	6,087.9	6,098.4	6,087.9	16.3	13.6	89.98	-179.9	-134.3	335.7	308.5	27.20	12.343		
6,200.0	6,172.5	6,182.3	6,171.5	16.5	13.7	88.96	-173.9	-134.2	335.8	308.4	27.46	12.231		
6,297.8	6,270.3	6,276.4	6,263.9	16.6	13.9	85.98	-156.4	-134.2	336.7	309.1	27.64	12.183		
6,300.0	6,272.5	6,278.4	6,265.9	16.6	13.9	85.64	-155.9	-134.2	336.8	309.1	27.65	12.178		
6,350.0	6,322.4	6,325.0	6,310.6	16.7	13.9	83.63	-142.9	-134.1	338.0	310.2	27.71	12.196		
6,400.0	6,372.2	6,370.8	6,353.8	16.8	14.0	81.67	-127.5	-134.0	339.5	311.8	27.76	12.230		
6,450.0	6,421.5	6,416.1	6,395.4	16.8	14.0	79.76	-109.8	-134.0	341.5	313.7	27.81	12.279		
6,500.0	6,470.1	6,460.8	6,435.4	16.9	14.1	77.93	-89.9	-133.9	343.7	315.9	27.85	12.340		
6,550.0	6,517.9	6,505.0	6,473.8	16.9	14.1	76.16	-67.9	-133.8	346.2	318.3	27.90	12.409		
6,600.0	6,564.7	6,550.0	6,511.5	17.0	14.2	74.44	-43.3	-133.7	349.0	321.0	27.95	12.484		

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

Offset Design				Waste Management 21L-HZ Pad Sec.2-T2N-R64W - Waste Mangagement 21-221 - 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			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
6,650.0	6,610.1	6,592.0	6,545.3	17.0	14.2	72.88	-18.5	-133.6	351.9	323.9	28.01	12.563				
6,700.0	6,654.2	6,634.8	6,578.3	17.0	14.2	71.37	8.8	-133.5	355.0	326.9	28.07	12.644				
6,750.0	6,696.5	6,677.3	6,609.5	17.1	14.3	69.95	37.6	-133.3	358.1	329.9	28.14	12.723				
6,800.0	6,737.1	6,719.4	6,638.8	17.1	14.3	68.62	67.9	-133.2	361.2	333.0	28.23	12.798				
6,850.0	6,775.6	6,761.2	6,666.1	17.1	14.4	67.38	99.5	-133.1	364.4	336.1	28.31	12.872				
6,900.0	6,812.0	6,800.0	6,690.0	17.2	14.6	66.30	130.1	-133.0	367.5	339.0	28.41	12.935				
6,950.0	6,846.1	6,843.9	6,715.0	17.2	14.8	65.20	166.1	-132.8	370.4	341.9	28.54	12.977				
7,000.0	6,877.7	6,884.9	6,736.5	17.3	15.0	64.25	201.0	-132.7	373.2	344.5	28.70	13.004				
7,050.0	6,906.7	6,925.6	6,756.0	17.3	15.3	63.40	236.8	-132.5	375.9	347.0	28.89	13.011				
7,100.0	6,933.0	6,966.2	6,773.5	17.4	15.6	62.64	273.4	-132.4	378.4	349.2	29.12	12.993				
7,150.0	6,956.4	7,006.6	6,788.9	17.6	15.9	61.97	310.8	-132.2	380.6	351.2	29.39	12.948				
7,200.0	6,976.9	7,050.0	6,803.3	17.8	16.3	61.37	351.7	-132.0	382.6	352.8	29.74	12.864				
7,250.0	6,994.4	7,087.0	6,813.6	18.1	16.6	60.92	387.2	-131.9	384.3	354.1	30.11	12.760				
7,300.0	7,008.8	7,127.0	6,822.9	18.4	17.0	60.53	426.2	-131.7	385.7	355.1	30.57	12.617				
7,350.0	7,020.0	7,167.0	6,830.2	18.8	17.4	60.23	465.5	-131.6	386.7	355.7	31.09	12.440				
7,400.0	7,028.0	7,206.9	6,835.3	19.3	17.9	60.02	505.0	-131.4	387.5	355.8	31.68	12.233				
7,417.8	7,030.0	7,221.1	6,836.7	19.5	18.0	59.96	519.1	-131.3	387.7	355.8	31.91	12.151				
7,491.8	7,037.8	7,279.9	6,839.4	20.2	18.7	59.53	577.9	-131.1	389.9	356.7	33.12	11.771				
7,500.0	7,038.6	7,286.4	6,839.4	20.3	18.8	59.43	584.3	-131.1	390.3	357.0	33.22	11.746				
7,605.8	7,044.0	7,390.8	6,838.7	21.6	20.1	58.55	688.8	-130.6	393.4	358.4	34.98	11.247				
7,700.0	7,044.5	7,484.9	6,838.1	22.8	21.4	58.41	782.9	-130.2	394.0	356.9	37.12	10.613				
7,800.0	7,045.1	7,584.9	6,837.5	24.2	22.9	58.26	882.9	-129.8	394.6	355.1	39.53	9.981				
7,900.0	7,045.6	7,684.9	6,836.8	25.6	24.4	58.12	982.9	-129.4	395.2	353.1	42.06	9.395				
8,000.0	7,046.1	7,784.9	6,836.2	27.1	25.9	57.98	1,082.9	-129.0	395.8	351.1	44.69	8.858				
8,100.0	7,046.6	7,884.9	6,835.6	28.6	27.5	57.83	1,182.9	-128.5	396.4	349.0	47.39	8.366				
8,200.0	7,047.1	7,984.9	6,834.9	30.2	29.2	57.69	1,282.9	-128.1	397.0	346.9	50.15	7.917				
8,300.0	7,047.7	8,084.9	6,834.3	31.8	30.8	57.55	1,382.9	-127.7	397.7	344.7	52.97	7.508				
8,400.0	7,048.2	8,184.9	6,833.6	33.5	32.5	57.40	1,482.8	-127.3	398.3	342.5	55.82	7.135				
8,500.0	7,048.7	8,284.9	6,833.0	35.2	34.3	57.26	1,582.8	-126.9	398.9	340.2	58.72	6.794				
8,600.0	7,049.2	8,384.9	6,832.3	36.9	36.0	57.12	1,682.8	-126.5	399.5	337.9	61.64	6.482				
8,700.0	7,049.8	8,484.9	6,831.7	38.6	37.8	56.98	1,782.8	-126.0	400.2	335.6	64.58	6.196				
8,800.0	7,050.3	8,584.9	6,831.0	40.3	39.5	56.84	1,882.8	-125.6	400.8	333.2	67.54	5.934				
8,900.0	7,050.8	8,684.9	6,830.4	42.1	41.3	56.70	1,982.8	-125.2	401.4	330.9	70.52	5.692				
9,000.0	7,051.3	8,784.9	6,829.7	43.8	43.1	56.56	2,082.8	-124.8	402.1	328.6	73.51	5.469				
9,100.0	7,051.8	8,884.8	6,829.1	45.6	44.9	56.42	2,182.8	-124.4	402.7	326.2	76.51	5.263				
9,200.0	7,052.4	8,984.8	6,828.5	47.4	46.7	56.28	2,282.8	-123.9	403.3	323.8	79.52	5.072				
9,300.0	7,052.9	9,084.8	6,827.8	49.2	48.6	56.14	2,382.8	-123.5	404.0	321.4	82.54	4.895				
9,400.0	7,053.4	9,184.8	6,827.2	51.0	50.4	56.01	2,482.7	-123.1	404.6	319.1	85.56	4.729				
9,500.0	7,053.9	9,284.8	6,826.5	52.8	52.2	55.87	2,582.7	-122.7	405.3	316.7	88.58	4.575				
9,600.0	7,054.4	9,384.8	6,825.9	54.7	54.1	55.73	2,682.7	-122.3	405.9	314.3	91.60	4.431				
9,700.0	7,055.0	9,484.8	6,825.2	56.5	55.9	55.60	2,782.7	-121.8	406.6	312.0	94.63	4.297				
9,800.0	7,055.5	9,584.8	6,824.6	58.3	57.8	55.46	2,882.7	-121.4	407.2	309.6	97.65	4.170				
9,900.0	7,056.0	9,684.8	6,823.9	60.2	59.6	55.32	2,982.7	-121.0	407.9	307.2	100.68	4.052				
10,000.0	7,056.5	9,784.8	6,823.3	62.0	61.5	55.19	3,082.7	-120.6	408.6	304.9	103.70	3.940				
10,100.0	7,057.1	9,884.8	6,822.6	63.8	63.4	55.05	3,182.7	-120.2	409.2	302.5	106.72	3.835				
10,200.0	7,057.6	9,984.8	6,822.0	65.7	65.2	54.92	3,282.7	-119.8	409.9	300.1	109.74	3.735				
10,300.0	7,058.1	10,084.8	6,821.4	67.6	67.1	54.79	3,382.7	-119.3	410.5	297.8	112.75	3.641				
10,400.0	7,058.6	10,184.8	6,820.7	69.4	69.0	54.65	3,482.6	-118.9	411.2	295.5	115.76	3.552				
10,500.0	7,059.1	10,284.8	6,820.1	71.3	70.8	54.52	3,582.6	-118.5	411.9	293.1	118.77	3.468				
10,600.0	7,059.7	10,384.7	6,819.4	73.1	72.7	54.39	3,682.6	-118.1	412.6	290.8	121.77	3.388				

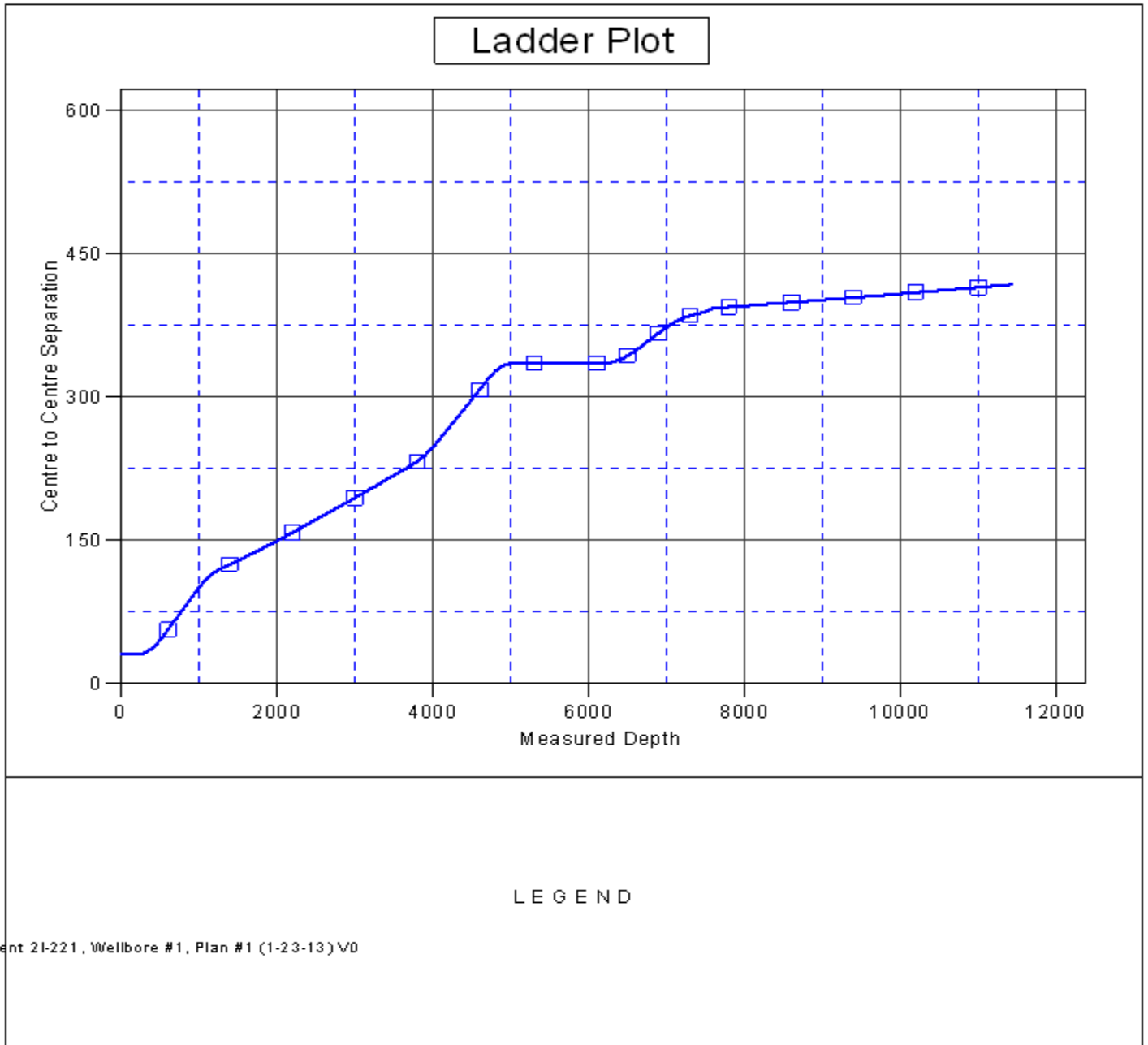
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-401
<b>Project:</b>	SEC.2-T2N-R64W	<b>TVD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Reference Site:</b>	Waste Management 2IL-HZ Pad Sec.2-T2N-R64W	<b>MD Reference:</b>	WELL @ 4954.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Waste Management 2I-401	<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 Mangagement 2I-221 - 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	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)				
10,700.0	7,060.2	10,484.7	6,818.8	75.0	74.6	54.25	3,782.6	-117.7	413.2	288.5	124.77	3.312			
10,800.0	7,060.7	10,584.7	6,818.1	76.9	76.5	54.12	3,882.6	-117.2	413.9	286.2	127.76	3.240			
10,900.0	7,061.2	10,684.7	6,817.5	78.7	78.4	53.99	3,982.6	-116.8	414.6	283.8	130.75	3.171			
11,000.0	7,061.7	10,784.7	6,816.8	80.6	80.2	53.86	4,082.6	-116.4	415.3	281.5	133.73	3.105			
11,100.0	7,062.3	10,884.7	6,816.2	82.5	82.1	53.73	4,182.6	-116.0	416.0	279.2	136.71	3.043			
11,200.0	7,062.8	10,984.7	6,815.5	84.4	84.0	53.60	4,282.6	-115.6	416.6	277.0	139.68	2.983			
11,300.0	7,063.3	11,084.7	6,814.9	86.3	85.9	53.47	4,382.6	-115.1	417.3	274.7	142.65	2.926			
11,400.0	7,063.8	11,184.7	6,814.2	88.1	87.8	53.34	4,482.6	-114.7	418.0	272.4	145.61	2.871			
11,431.7	7,064.0	11,216.4	6,814.0	88.7	88.4	53.30	4,514.3	-114.6	418.2	271.7	146.55	2.854 SF			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Waste Management 2I-401
<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-401	<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 Management 2I-401  
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 Management 2I-401
<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-401	<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')  
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Coordinates are relative to: Waste Management 2I-401  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
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