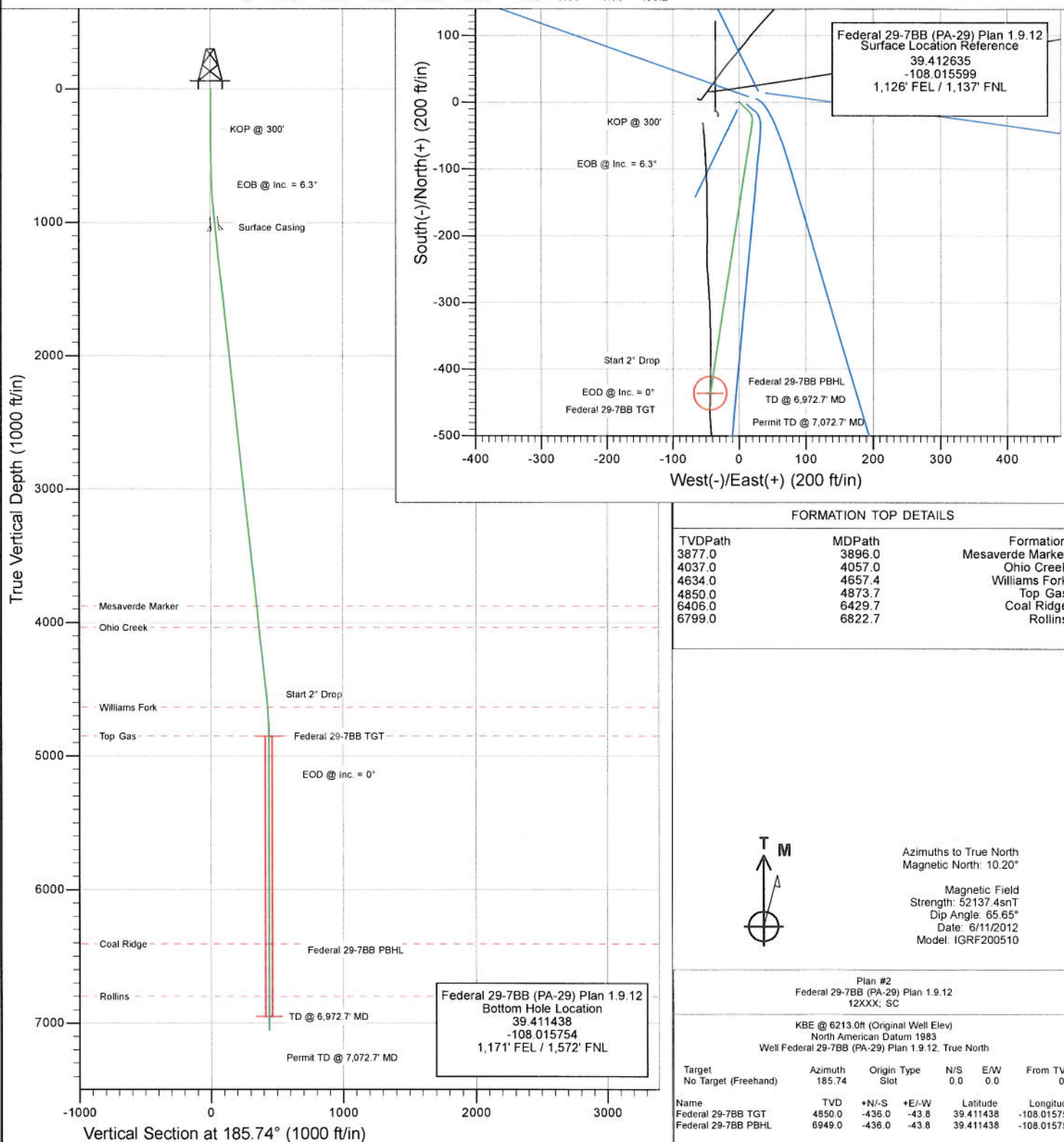


## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSelect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	800.0	5.00	135.00	799.4	-15.4	15.4	1.00	135.00	13.8	
4	474.7	6.30	188.84	973.3	-30.3	19.3	3.00	104.03	28.2	
5	4558.7	6.30	188.84	4535.6	-418.9	-41.1	0.00	0.00	420.9	
6	487.7	0.00	0.00	487.7	-43.8	-43.8	0.00	180.00	438.2	Federal 29-78B TGT
7	6572.7	0.00	0.00	6549.0	-36.0	-36.0	0.00	0.00	438.2	Federal 29-78B FBHL
8	7072.7	0.00	0.00	7049.0	-436.0	-43.8	0.00	0.00	438.2	



# Cathedral Energy Services

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** S. Piceance (Parachute)  
**Site:** PA-29 Pad  
**Well:** Federal 29-7BB (PA-29) Plan 1.9.12  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Federal 29-7BB (PA-29) Plan 1.9.12  
**TVD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**MD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

<b>Project</b>	S. Piceance (Parachute), Garfield County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

<b>Site</b>	PA-29 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,585,028.43 ft	<b>Latitude:</b> 39.412645
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,289,373.78 ft	<b>Longitude:</b> -108.015520
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.59 °

<b>Well</b>	Federal 29-7BB (PA-29) Plan 1.9.12			
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,585,025.40 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,289,351.37 ft
<b>Position Uncertainty</b>	0.0 ft		<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	6,191.0 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	6/11/2012	10.19	65.65	52,137

<b>Design</b>	Plan #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	185.74

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	5.00	135.00	799.4	-15.4	15.4	1.00	1.00	0.00	135.00	
974.7	6.30	188.84	973.3	-30.3	19.3	3.00	0.74	30.83	104.03	
4,558.7	6.30	188.84	4,535.6	-418.9	-41.1	0.00	0.00	0.00	0.00	
4,873.7	0.00	0.00	4,850.0	-436.0	-43.8	2.00	-2.00	0.00	180.00	Federal 29-7BB TGT
6,972.7	0.00	0.00	6,949.0	-436.0	-43.8	0.00	0.00	0.00	0.00	Federal 29-7BB PBH
7,072.7	0.00	0.00	7,049.0	-436.0	-43.8	0.00	0.00	0.00	0.00	



# Cathedral Energy Services

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
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**Site:** PA-29 Pad  
**Well:** Federal 29-7BB (PA-29) Plan 1.9.12  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Federal 29-7BB (PA-29) Plan 1.9.12  
**TVD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**MD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### 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)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	KOP @ 300'
400.0	1.00	135.00	400.0	-0.6	0.6	0.6	1.00	1.00	
500.0	2.00	135.00	500.0	-2.5	2.5	2.2	1.00	1.00	
600.0	3.00	135.00	599.9	-5.6	5.6	5.0	1.00	1.00	
700.0	4.00	135.00	699.7	-9.9	9.9	8.8	1.00	1.00	
800.0	5.00	135.00	799.4	-15.4	15.4	13.8	1.00	1.00	
900.0	5.17	169.31	899.0	-22.9	19.3	20.9	3.00	0.17	
974.7	6.30	188.84	973.3	-30.3	19.3	28.2	3.00	1.52	EOB @ Inc. = 6.3°
1,000.0	6.30	188.84	998.5	-33.0	18.9	31.0	0.00	0.00	
1,060.7	6.30	188.84	1,058.8	-39.6	17.9	37.6	0.00	0.00	Surface Casing
1,100.0	6.30	188.84	1,097.9	-43.9	17.2	41.9	0.00	0.00	
1,200.0	6.30	188.84	1,197.3	-54.7	15.5	52.9	0.00	0.00	
1,300.0	6.30	188.84	1,296.7	-65.6	13.8	63.8	0.00	0.00	
1,400.0	6.30	188.84	1,396.1	-76.4	12.2	74.8	0.00	0.00	
1,500.0	6.30	188.84	1,495.5	-87.2	10.5	85.8	0.00	0.00	
1,600.0	6.30	188.84	1,594.9	-98.1	8.8	96.7	0.00	0.00	
1,700.0	6.30	188.84	1,694.2	-108.9	7.1	107.7	0.00	0.00	
1,800.0	6.30	188.84	1,793.6	-119.8	5.4	118.6	0.00	0.00	
1,900.0	6.30	188.84	1,893.0	-130.6	3.7	129.6	0.00	0.00	
2,000.0	6.30	188.84	1,992.4	-141.5	2.0	140.5	0.00	0.00	
2,100.0	6.30	188.84	2,091.8	-152.3	0.3	151.5	0.00	0.00	
2,200.0	6.30	188.84	2,191.2	-163.1	-1.3	162.5	0.00	0.00	
2,300.0	6.30	188.84	2,290.6	-174.0	-3.0	173.4	0.00	0.00	
2,400.0	6.30	188.84	2,390.0	-184.8	-4.7	184.4	0.00	0.00	
2,500.0	6.30	188.84	2,489.4	-195.7	-6.4	195.3	0.00	0.00	
2,600.0	6.30	188.84	2,588.8	-206.5	-8.1	206.3	0.00	0.00	
2,700.0	6.30	188.84	2,688.2	-217.4	-9.8	217.2	0.00	0.00	
2,800.0	6.30	188.84	2,787.6	-228.2	-11.5	228.2	0.00	0.00	
2,900.0	6.30	188.84	2,887.0	-239.0	-13.2	239.2	0.00	0.00	
3,000.0	6.30	188.84	2,986.4	-249.9	-14.8	250.1	0.00	0.00	
3,100.0	6.30	188.84	3,085.8	-260.7	-16.5	261.1	0.00	0.00	
3,200.0	6.30	188.84	3,185.2	-271.6	-18.2	272.0	0.00	0.00	
3,300.0	6.30	188.84	3,284.6	-282.4	-19.9	283.0	0.00	0.00	
3,400.0	6.30	188.84	3,384.0	-293.3	-21.6	293.9	0.00	0.00	
3,500.0	6.30	188.84	3,483.4	-304.1	-23.3	304.9	0.00	0.00	
3,600.0	6.30	188.84	3,582.8	-314.9	-25.0	315.9	0.00	0.00	
3,700.0	6.30	188.84	3,682.2	-325.8	-26.6	326.8	0.00	0.00	
3,800.0	6.30	188.84	3,781.6	-336.6	-28.3	337.8	0.00	0.00	
3,896.0	6.30	188.84	3,877.0	-347.0	-30.0	348.3	0.00	0.00	Mesaverde Marker
3,900.0	6.30	188.84	3,881.0	-347.5	-30.0	348.7	0.00	0.00	
4,000.0	6.30	188.84	3,980.4	-358.3	-31.7	359.7	0.00	0.00	
4,057.0	6.30	188.84	4,037.0	-364.5	-32.7	365.9	0.00	0.00	Ohio Creek
4,100.0	6.30	188.84	4,079.8	-369.2	-33.4	370.6	0.00	0.00	
4,200.0	6.30	188.84	4,179.1	-380.0	-35.1	381.6	0.00	0.00	
4,300.0	6.30	188.84	4,278.5	-390.8	-36.8	392.6	0.00	0.00	
4,400.0	6.30	188.84	4,377.9	-401.7	-38.5	403.5	0.00	0.00	
4,500.0	6.30	188.84	4,477.3	-412.5	-40.1	414.5	0.00	0.00	
4,558.7	6.30	188.84	4,535.7	-418.9	-41.1	420.9	0.00	0.00	Start 2" Drop
4,600.0	5.47	188.84	4,576.8	-423.1	-41.8	425.1	2.00	-2.00	

# Cathedral Energy Services

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** S. Piceance (Parachute)  
**Site:** PA-29 Pad  
**Well:** Federal 29-7BB (PA-29) Plan 1.9.12  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Federal 29-7BB (PA-29) Plan 1.9.12  
**TVD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**MD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### 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)	Comments / Formations
4,657.4	4.32	188.84	4,634.0	-427.9	-42.5	430.0	2.00	-2.00	Williams Fork
4,700.0	3.47	188.84	4,676.5	-430.8	-43.0	432.9	2.00	-2.00	
4,800.0	1.47	188.84	4,776.4	-435.0	-43.6	437.2	2.00	-2.00	
4,873.7	0.00	0.00	4,850.0	-436.0	-43.8	438.2	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
4,900.0	0.00	0.00	4,876.3	-436.0	-43.8	438.2	0.00	0.00	
5,000.0	0.00	0.00	4,976.3	-436.0	-43.8	438.2	0.00	0.00	
5,100.0	0.00	0.00	5,076.3	-436.0	-43.8	438.2	0.00	0.00	
5,200.0	0.00	0.00	5,176.3	-436.0	-43.8	438.2	0.00	0.00	
5,300.0	0.00	0.00	5,276.3	-436.0	-43.8	438.2	0.00	0.00	
5,400.0	0.00	0.00	5,376.3	-436.0	-43.8	438.2	0.00	0.00	
5,500.0	0.00	0.00	5,476.3	-436.0	-43.8	438.2	0.00	0.00	
5,600.0	0.00	0.00	5,576.3	-436.0	-43.8	438.2	0.00	0.00	
5,700.0	0.00	0.00	5,676.3	-436.0	-43.8	438.2	0.00	0.00	
5,800.0	0.00	0.00	5,776.3	-436.0	-43.8	438.2	0.00	0.00	
5,900.0	0.00	0.00	5,876.3	-436.0	-43.8	438.2	0.00	0.00	
6,000.0	0.00	0.00	5,976.3	-436.0	-43.8	438.2	0.00	0.00	
6,100.0	0.00	0.00	6,076.3	-436.0	-43.8	438.2	0.00	0.00	
6,200.0	0.00	0.00	6,176.3	-436.0	-43.8	438.2	0.00	0.00	
6,300.0	0.00	0.00	6,276.3	-436.0	-43.8	438.2	0.00	0.00	
6,400.0	0.00	0.00	6,376.3	-436.0	-43.8	438.2	0.00	0.00	
6,429.7	0.00	0.00	6,406.0	-436.0	-43.8	438.2	0.00	0.00	Coal Ridge
6,500.0	0.00	0.00	6,476.3	-436.0	-43.8	438.2	0.00	0.00	
6,600.0	0.00	0.00	6,576.3	-436.0	-43.8	438.2	0.00	0.00	
6,700.0	0.00	0.00	6,676.3	-436.0	-43.8	438.2	0.00	0.00	
6,800.0	0.00	0.00	6,776.3	-436.0	-43.8	438.2	0.00	0.00	
6,822.7	0.00	0.00	6,799.0	-436.0	-43.8	438.2	0.00	0.00	Rollins
6,900.0	0.00	0.00	6,876.3	-436.0	-43.8	438.2	0.00	0.00	
6,972.7	0.00	0.00	6,949.0	-436.0	-43.8	438.2	0.00	0.00	TD @ 6,972.7' MD
7,000.0	0.00	0.00	6,976.3	-436.0	-43.8	438.2	0.00	0.00	
7,072.7	0.00	0.00	7,049.0	-436.0	-43.8	438.2	0.00	0.00	Permit TD @ 7,072.7' MD

### Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Federal 29-7BB TGT	0.00	0.00	4,850.0	-436.0	-43.8	1,584,590.80	2,289,295.52	39.411438	-108.015754
- plan hits target center									
- Point									
Federal 29-7BB PBHL	0.00	0.00	6,949.0	-436.0	-43.8	1,584,590.80	2,289,295.52	39.411438	-108.015754
- plan hits target center									
- Circle (radius 25.0)									

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,060.7	1,058.8	Surface Casing	0.000	0.000



# Cathedral Energy Services

## Planning Report

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**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,896.0	3,877.0	Mesaverde Marker			
4,057.0	4,037.0	Ohio Creek			
4,657.4	4,634.0	Williams Fork			
4,873.7	4,850.0	Top Gas			
6,429.7	6,406.0	Coal Ridge			
6,822.7	6,799.0	Rollins			

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
300.0	300.0	0.0	0.0	KOP @ 300'
974.7	973.3	-30.3	19.3	EOB @ Inc. = 6.3°
4,558.7	4,535.7	-418.9	-41.1	Start 2° Drop
4,873.7	4,850.0	-436.0	-43.8	EOD @ Inc. = 0°
6,972.7	6,949.0	-436.0	-43.8	TD @ 6,972.7' MD
7,072.7	7,049.0	-436.0	-43.8	Permit TD @ 7,072.7' MD