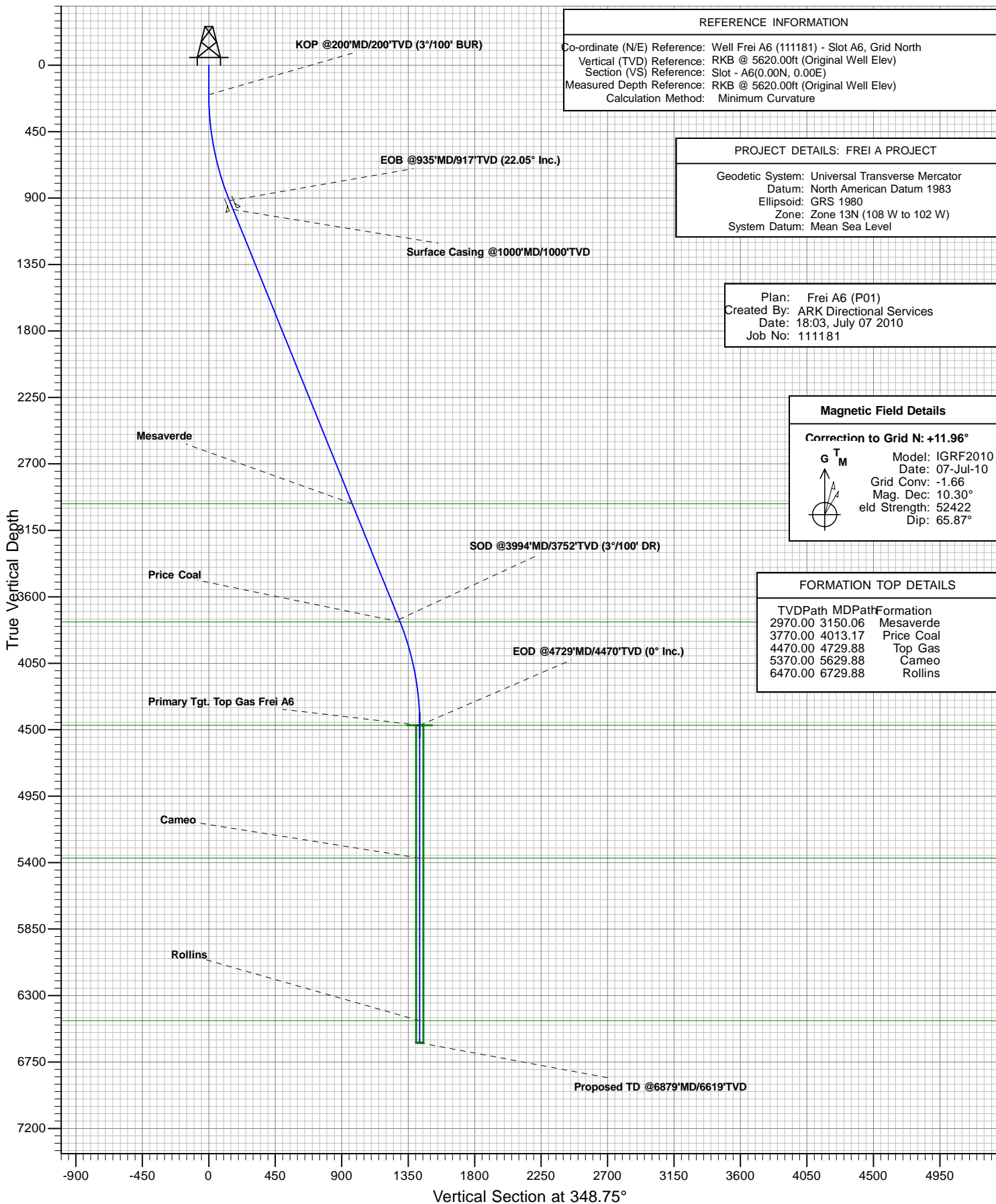




# Antero Resources

Frei A6

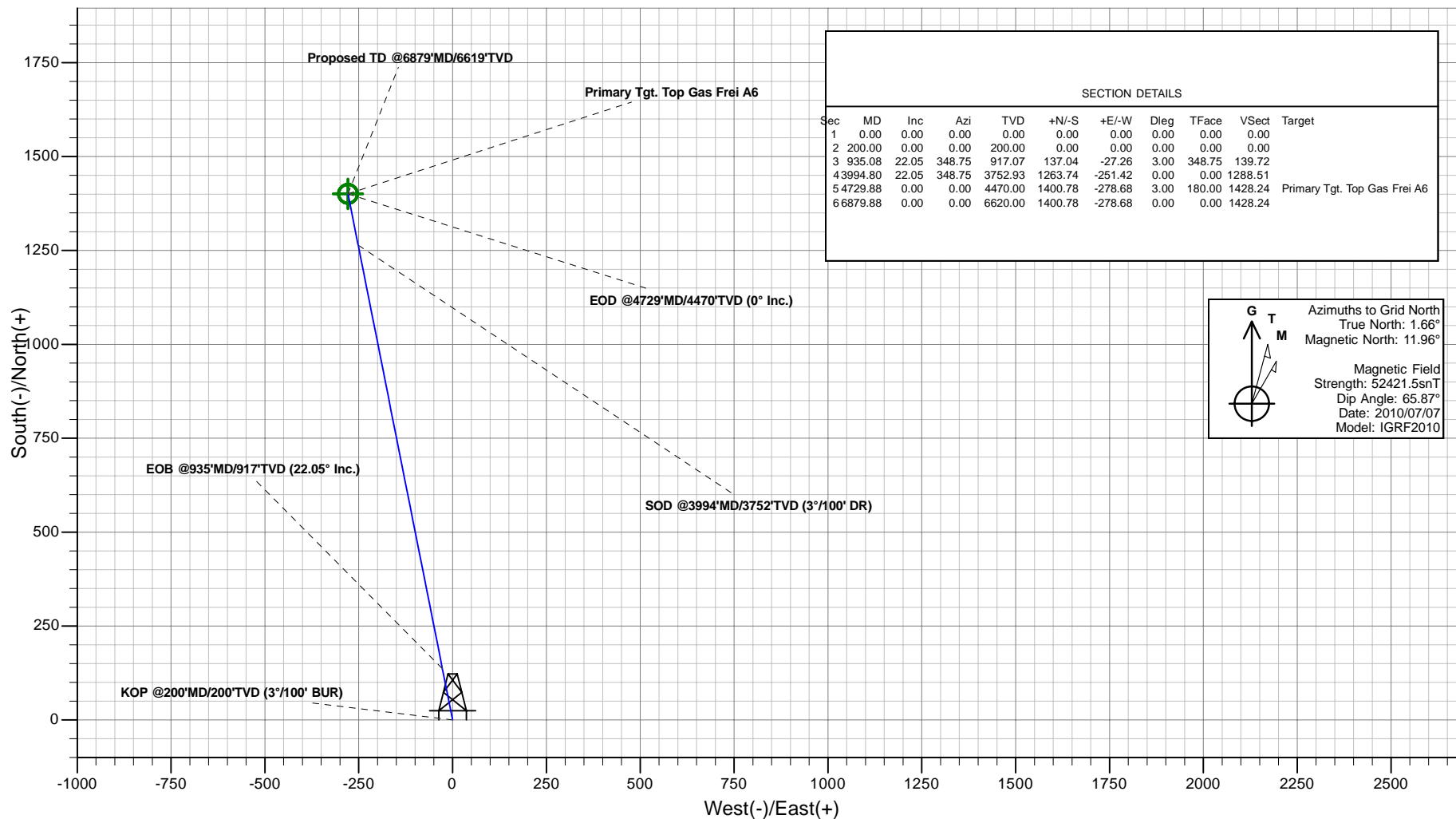




## PLAN VIEW

## Antero Resources

Project: FREI A PROJECT  
Site: FRONTIER 12  
Well: Frei A6 (111181)  
Wellbore: Frei A6  
Design: Frei A6 (P01)  
JOB # 111181



Plan: Frei A6 (P01)  
Created By: ARK Directional Services  
Date: 18:08, July 07 2010

### PROJECT DETAILS: FREI A PROJECT

Geodetic System: Universal Transverse Mercator  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Zone 13N (108 W to 102 W)  
System Datum: Mean Sea Level

### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Frei A6 (111181), Grid North  
Vertical (TVD) Reference: RKB @ 5620.00ft (Original Well Elev)  
Section (VS) Reference: Slot - A6(0.00N, 0.00E)  
Measured Depth Reference: RKB @ 5620.00ft (Original Well Elev)  
Calculation Method: Minimum Curvature

# **Antero Resources**

**FREI A PROJECT  
FRONTIER 12**

**Plan: Frei A6 (P01)**

## **Standard Planning Report - Geographic**

**07 July, 2010**

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Frei A6 (111181) - Slot A6
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Project:</b>	FREI A PROJECT	<b>MD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Site:</b>	FRONTIER 12	<b>North Reference:</b>	Grid
<b>Well:</b>	Frei A6 (111181)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A6		
<b>Design:</b>	Frei A6 (P01)		

<b>Project</b>	FREI A PROJECT		
<b>Map System:</b>	Universal Transverse Mercator	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

Site		FRONTIER 12			
Site Position:		Northing:	14,368,390.50 usft	Latitude:	39.535980489°N
From:	Lat/Long	Easting:	906,417.64 usft	Longitude:	107.603240409°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence:	-1.66 °

Well	Frei A6 (111181) - Slot A6					
Well Position	+N/-S	0.00 ft	Northing:	14,368,431.38 usft	Latitude:	39.536091413°N
	+E/-W	0.00 ft	Easting:	906,402.11 usft	Longitude:	107.603299641°W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,596.00 ft

<b>Wellbore</b>	Frei A6				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2010/07/07	10.30	65.87	52,422

<b>Design</b>	Frei A6 (P01)				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE		<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	348.75	

<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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
935.08	22.05	348.75	917.07	137.04	-27.26	3.00	3.00	0.00	348.75	
3,994.80	22.05	348.75	3,752.93	1,263.74	-251.42	0.00	0.00	0.00	0.00	
4,729.88	0.00	0.00	4,470.00	1,400.78	-278.68	3.00	-3.00	0.00	180.00	Primary Tgt. Top Gas
6,879.88	0.00	0.00	6,620.00	1,400.78	-278.68	0.00	0.00	0.00	0.00	

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Frei A6 (111181) - Slot A6
<b>Company:</b>	Antero Resources	<b>TVD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Project:</b>	FREI A PROJECT	<b>MD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Site:</b>	FRONTIER 12	<b>North Reference:</b>	Grid
<b>Well:</b>	Frei A6 (111181)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A6		
<b>Design:</b>	Frei A6 (P01)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,368,431.38	906,402.11	39.536091413°N	107.603299641°W
200.00	0.00	0.00	200.00	0.00	0.00	14,368,431.38	906,402.11	39.536091413°N	107.603299641°W
<b>KOP @200'MD/200'TVD (3°/100' BUR)</b>									
935.08	22.05	348.75	917.07	137.04	-27.26	14,368,568.42	906,374.84	39.536465221°N	107.603410296°W
<b>EOB @935'MD/917'TVD (22.05° Inc.)</b>									
1,000.00	22.05	348.75	977.24	160.94	-32.02	14,368,592.32	906,370.09	39.536530431°N	107.603429599°W
<b>Surface Casing @1000'MD/1000'TVD</b>									
3,150.06	22.05	348.75	2,970.00	952.68	-189.53	14,369,384.06	906,212.57	39.538690102°N	107.604068934°W
<b>Mesaverde</b>									
3,994.80	22.05	348.75	3,752.94	1,263.75	-251.42	14,369,695.12	906,150.69	39.539538613°N	107.604320133°W
<b>SOD @3994'MD/3752'TVD (3°/100' DR)</b>									
4,013.17	21.50	348.75	3,770.00	1,270.43	-252.75	14,369,701.81	906,149.35	39.539556850°N	107.604325532°W
<b>Price Coal</b>									
4,729.88	0.00	0.00	4,470.00	1,400.78	-278.68	14,369,832.16	906,123.42	39.539912417°N	107.604430799°W
<b>EOD @4729'MD/4470'TVD (0° Inc.) - Top Gas - Primary Tgt. Top Gas Frei A6</b>									
5,629.88	0.00	0.00	5,370.00	1,400.78	-278.68	14,369,832.16	906,123.42	39.539912417°N	107.604430799°W
<b>Cameo</b>									
6,729.88	0.00	0.00	6,470.00	1,400.78	-278.68	14,369,832.16	906,123.42	39.539912417°N	107.604430799°W
<b>Rollins</b>									
6,879.85	0.00	0.00	6,619.97	1,400.78	-278.68	14,369,832.16	906,123.42	39.539912417°N	107.604430799°W
<b>Proposed TD @6879'MD/6619'TVD</b>									
6,879.88	0.00	0.00	6,620.00	1,400.78	-278.68	14,369,832.16	906,123.42	39.539912417°N	107.604430799°W

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Primary Tgt. Top Gas Fr	0.00	0.00	4,470.00	1,400.78	-278.68	14,369,832.16	906,123.42	39.539912417°N	107.604430799°W
- plan hits target center									
- Circle (radius 25.00)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,000.00	977.24	Surface Casing @1000'MD/1000'TVD	5.50	6.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,150.06	2,970.00	Mesaverde		0.00		
4,013.17	3,770.00	Price Coal		0.00		
4,729.88	4,470.00	Top Gas		0.00		
5,629.88	5,370.00	Cameo		0.00		
6,729.88	6,470.00	Rollins		0.00		

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Frei A6 (111181) - Slot A6
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<b>Project:</b>	FREI A PROJECT	<b>MD Reference:</b>	RKB @ 5620.00ft (Original Well Elev)
<b>Site:</b>	FRONTIER 12	<b>North Reference:</b>	Grid
<b>Well:</b>	Frei A6 (111181)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A6		
<b>Design:</b>	Frei A6 (P01)		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
200.00	200.00	0.00	0.00	KOP @200'MD/200'TVD (3°/100' BUR)	
935.08	917.07	137.04	-27.26	EOB @935'MD/917'TVD (22.05° Inc.)	
3,994.80	3,752.94	1,263.75	-251.42	SOD @3994'MD/3752'TVD (3°/100' DR)	
4,729.88	4,470.00	1,400.78	-278.68	EOD @4729'MD/4470'TVD (0° Inc.)	
6,879.85	6,619.97	1,400.78	-278.68	Proposed TD @6879'MD/6619'TVD	