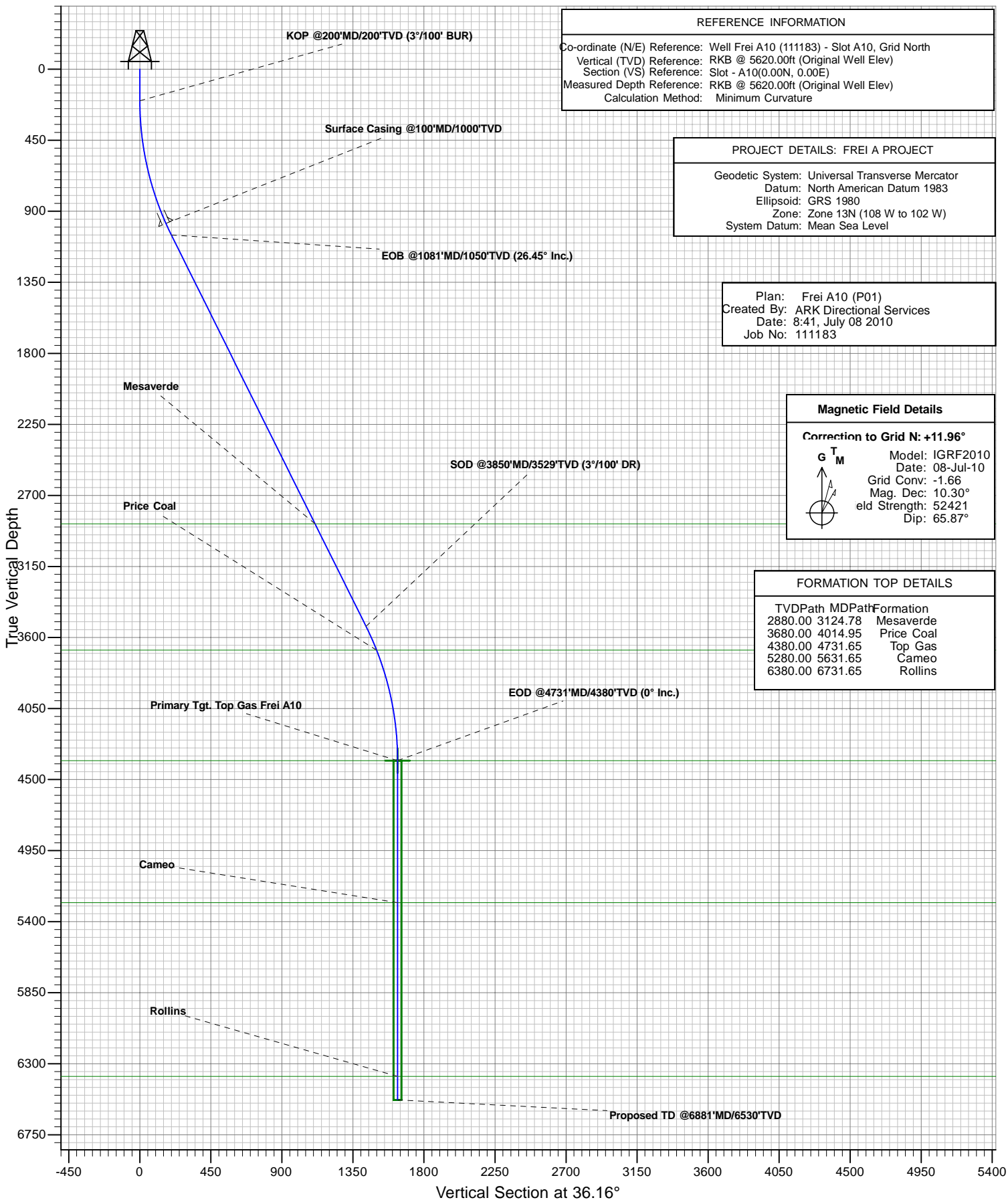




# Antero Resources

Frei A10



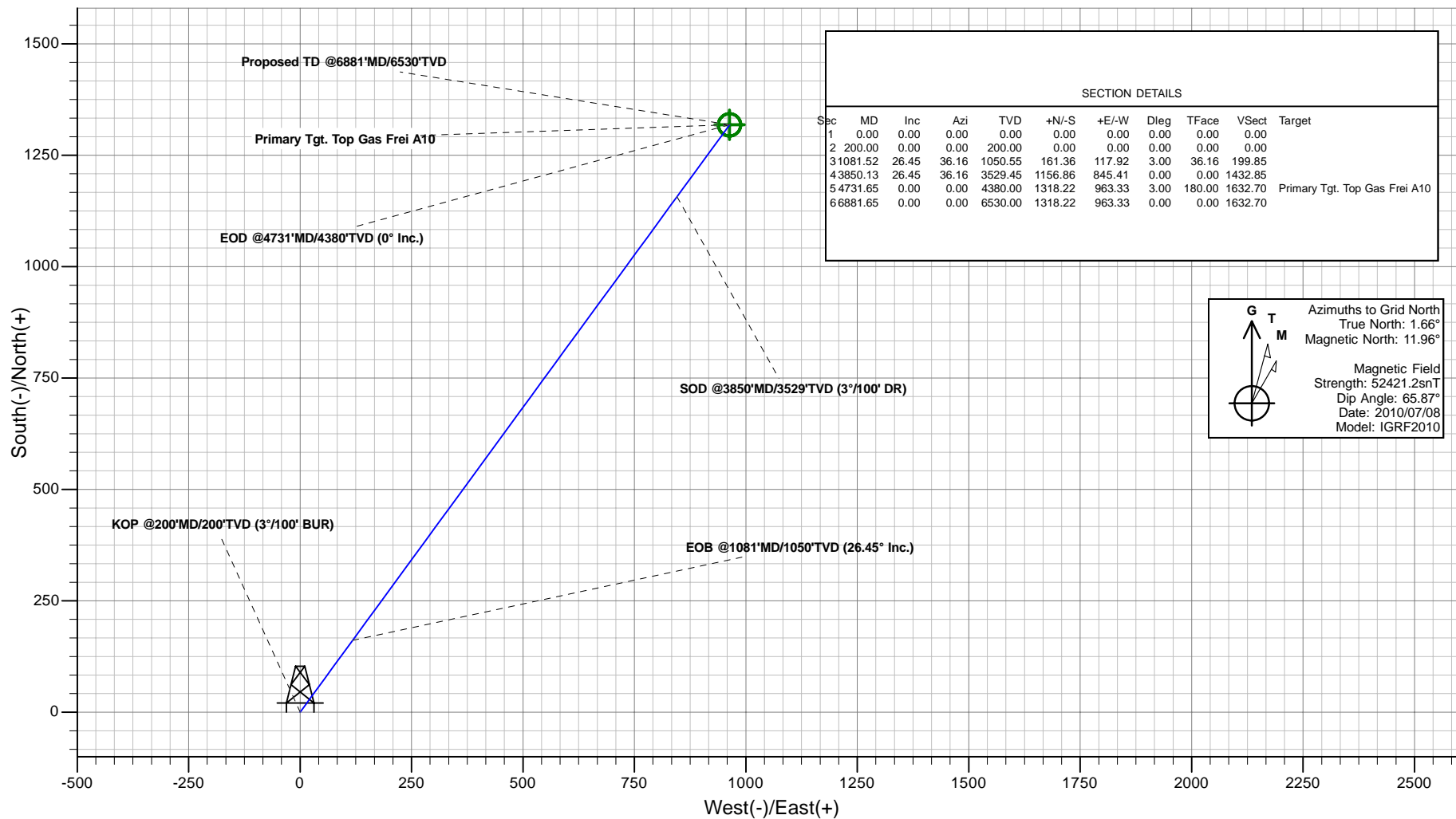


## Antero Resources



### PLAN VIEW

Project: FREI A PROJECT  
Site: FRONTIER 12  
Well: Frei A10 (111183)  
Wellbore: Frei A10  
Design: Frei A10 (P01)  
JOB # 111183



Plan: Frei A10 (P01)  
Created By: ARK Directional Services  
Date: 8:43, July 08 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 A10 (111183), Grid North  
Vertical (TVD) Reference: RKB @ 5620.00ft (Original Well Elev)  
Section (VS) Reference: Slot - A10(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 A10 (P01)**

## **Standard Planning Report - Geographic**

**08 July, 2010**

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Frei A10 (111183) - Slot A10
<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 A10 (111183)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A10		
<b>Design:</b>	Frei A10 (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 A10 (111183) - Slot A10					
Well Position	+N/-S	0.00 ft	Northing:	14,368,415.11 usft	Latitude:	39.536048353°N
	+E/-W	0.00 ft	Easting:	906,422.05 usft	Longitude:	107.603227310°W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,596.00 ft

<b>Wellbore</b>	Frei A10				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2010/07/08	10.30	65.87	52,421

<b>Design</b>	Frei A10 (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	36.16	

<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	
1,081.52	26.45	36.16	1,050.55	161.36	117.92	3.00	3.00	0.00	36.16	
3,850.13	26.45	36.16	3,529.45	1,156.86	845.41	0.00	0.00	0.00	0.00	
4,731.65	0.00	0.00	4,380.00	1,318.22	963.33	3.00	-3.00	0.00	180.00	Primary Tgt. Top Gas
6,881.65	0.00	0.00	6,530.00	1,318.22	963.33	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 A10 (111183) - Slot A10
<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 A10 (111183)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A10		
<b>Design:</b>	Frei A10 (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	14,368,415.11	906,422.05	39.536048353°N	107.603227310°W
200.00	0.00	0.00	200.00	0.00	0.00	14,368,415.11	906,422.05	39.536048353°N	107.603227310°W
<b>KOP @200'MD/200'TVD (3°/100' BUR)</b>									
1,000.00	24.00	36.16	976.81	133.31	97.42	14,368,548.42	906,519.47	39.536421840°N	107.602895791°W
<b>Surface Casing @100'MD/1000'TVD</b>									
1,081.52	26.45	36.16	1,050.55	161.36	117.92	14,368,576.46	906,539.97	39.536500412°N	107.602826047°W
<b>EOB @1081'MD/1050'TVD (26.45° Inc.)</b>									
3,124.78	26.45	36.16	2,880.00	896.05	654.82	14,369,311.15	907,076.86	39.538558695°N	107.600998965°W
<b>Mesaverde</b>									
3,850.00	26.45	36.16	3,529.33	1,156.81	845.38	14,369,571.92	907,267.43	39.539289242°N	107.600350448°W
<b>SOD @3850'MD/3529'TVD (3°/100' DR)</b>									
3,850.13	26.45	36.16	3,529.45	1,156.86	845.41	14,369,571.96	907,267.46	39.539289373°N	107.600350331°W
4,014.95	21.50	36.16	3,680.00	1,210.91	884.91	14,369,626.02	907,306.96	39.539440799°N	107.600215906°W
<b>Price Coal</b>									
4,731.00	0.02	36.16	4,379.35	1,318.22	963.33	14,369,733.32	907,385.38	39.539741422°N	107.599949032°W
<b>EOD @4731'MD/4380'TVD (0° Inc.)</b>									
4,731.65	0.00	0.00	4,380.00	1,318.22	963.33	14,369,733.32	907,385.38	39.539741422°N	107.599949032°W
<b>Top Gas - Primary Tgt. Top Gas Frei A10</b>									
5,631.65	0.00	0.00	5,280.00	1,318.22	963.33	14,369,733.32	907,385.38	39.539741422°N	107.599949032°W
<b>Cameo</b>									
6,731.65	0.00	0.00	6,380.00	1,318.22	963.33	14,369,733.32	907,385.38	39.539741422°N	107.599949032°W
<b>Rollins</b>									
6,881.62	0.00	0.00	6,529.97	1,318.22	963.33	14,369,733.32	907,385.38	39.539741422°N	107.599949032°W
<b>Proposed TD @6881'MD/6530'TVD</b>									
6,881.65	0.00	0.00	6,530.00	1,318.22	963.33	14,369,733.32	907,385.38	39.539741422°N	107.599949032°W

Design Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
Primary Tgt. Top Gas Fr	0.00	0.00	4,380.00	1,318.22	963.33	14,369,733.32	907,385.38	39.539741422°N	107.599949032°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	976.81	Surface Casing @100'MD/1000'TVD	5.50	6.00	

# ARK Directional Services

## Planning Report - Geographic

<b>Database:</b>	EDM SERVER DB	<b>Local Co-ordinate Reference:</b>	Well Frei A10 (111183) - Slot A10
<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 A10 (111183)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Frei A10		
<b>Design:</b>	Frei A10 (P01)		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,124.78	2,880.00	Mesaverde		0.00	
4,014.95	3,680.00	Price Coal		0.00	
4,731.65	4,380.00	Top Gas		0.00	
5,631.65	5,280.00	Cameo		0.00	
6,731.65	6,380.00	Rollins		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.00	200.00	0.00	0.00	KOP @200'MD/200'TVD (3°/100' BUR)	
1,081.52	1,050.55	161.36	117.92	EOB @1081'MD/1050'TVD (26.45° Inc.)	
3,850.00	3,529.33	1,156.81	845.38	SOD @3850'MD/3529'TVD (3°/100' DR)	
4,731.00	4,379.35	1,318.22	963.33	EOD @4731'MD/4380'TVD (0° Inc.)	
6,881.62	6,529.97	1,318.22	963.33	Proposed TD @6881'MD/6530'TVD	