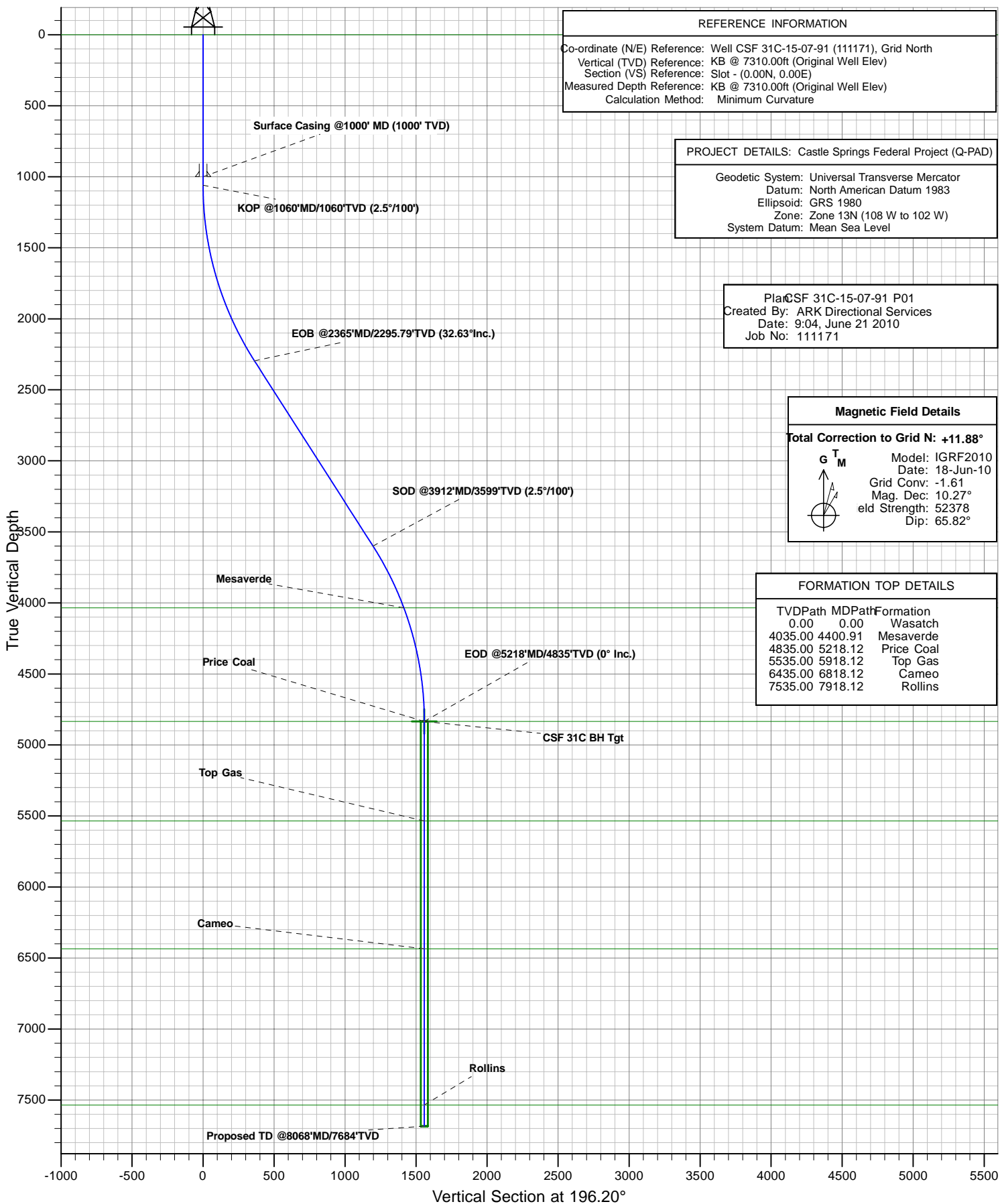




ANTERO RESOURCES

CSF 31C-15-07-91

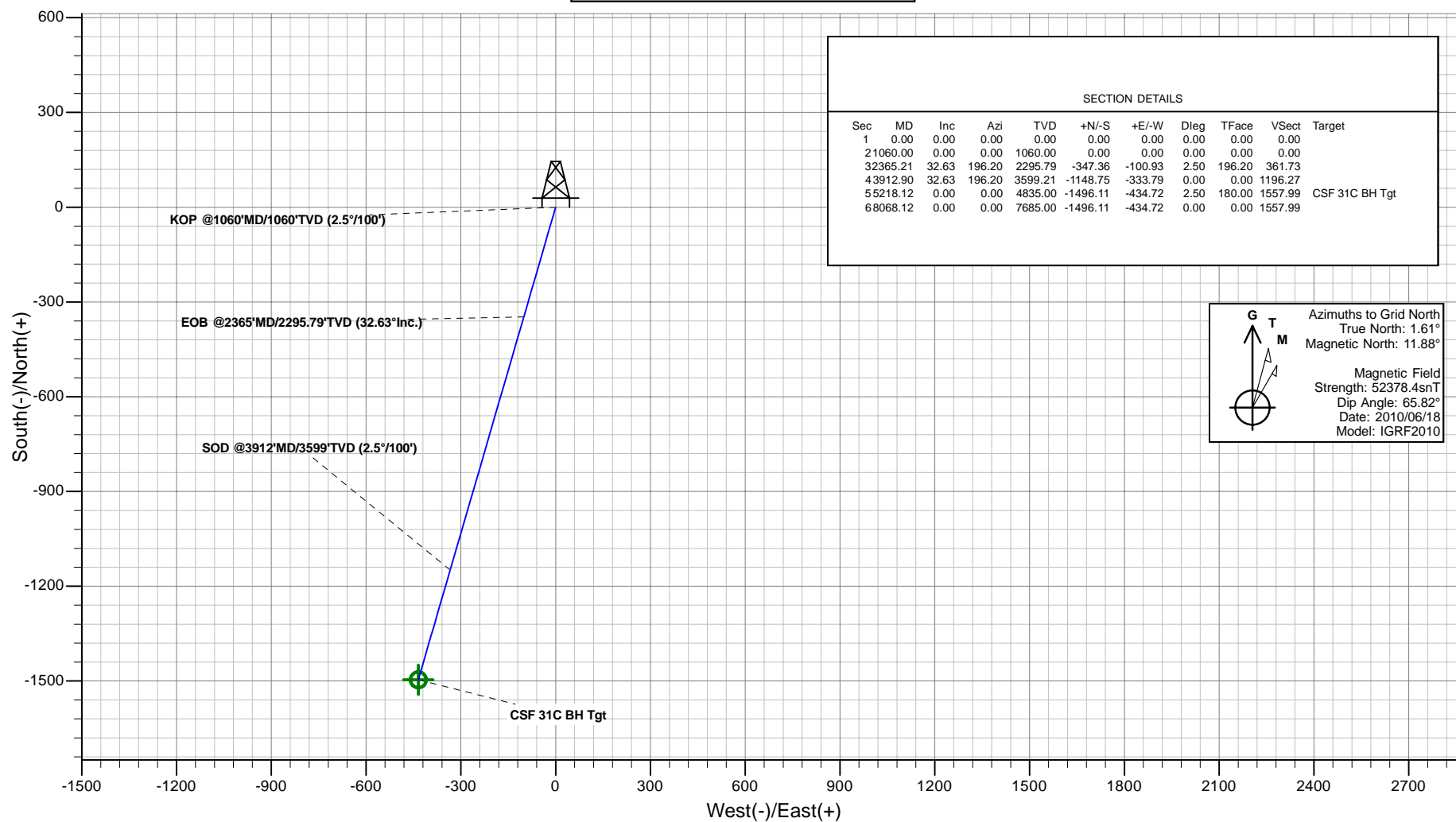




PLAN VIEW

ANTERO RESOURCES

Project: Castle Springs Federal Project (Q-PAD)
Site: FRONTIER 12
Well: CSF 31C-15-07-91 (111171)
Wellbore: CSF 31C-15-07-91
Design: CSF 31C-15-07-91 P01
JOB # 111171



Plan: CSF 31C-15-07-91 P01
Created By: ARK Directional Services
Date: 9:12, June 21 2010

PROJECT DETAILS: Castle Springs Federal Project (Q-PAD)

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 CSF 31C-15-07-91, Grid North
Vertical (TVD) Reference: KB @ 7310.00ft (Original Well Elev)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: KB @ 7310.00ft (Original Well Elev)
Calculation Method: Minimum Curvature

ANTERO RESOURCES

**Castle Springs Federal Project (Q-PAD)
FRONTIER 12**

Plan: CSF 31C-15-07-91 P01

Standard Planning Report - Geographic

21 June, 2010

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well CSF 31C-15-07-91 (111171)
Company:	ANTERO RESOURCES	TVD Reference:	KB @ 7310.00ft (Original Well Elev)
Project:	Castle Springs Federal Project (Q-PAD)	MD Reference:	KB @ 7310.00ft (Original Well Elev)
Site:	FRONTIER 12	North Reference:	Grid
Well:	CSF 31C-15-07-91 (111171)	Survey Calculation Method:	Minimum Curvature
Wellbore:	CSF 31C-15-07-91		
Design:	CSF 31C-15-07-91 P01		

Project	Castle Springs Federal Project (Q-PAD)		
Map System:	Universal Transverse Mercator	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site		FRONTIER 12			
Site Position:		Northing:	14,338,814.56 usft	Latitude:	39° 27' 22.523 N
From:	Lat/Long	Easting:	924,580.87 usft	Longitude:	107° 32' 9.346 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence:	-1.61 °

Well		CSF 31C-15-07-91 (111171)				
Well Position	+N/-S	0.00 ft	Northing:	14,338,820.77 usft	Latitude:	39° 27' 22.581 N
	+E/-W	0.00 ft	Easting:	924,567.22 usft	Longitude:	107° 32' 9.523 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	7,285.00 ft

Wellbore	CSF 31C-15-07-91				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2010/06/18	10.27	65.82	52,378

Design	CSF 31C-15-07-91 P01				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	196.20	

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,060.00	0.00	0.00	1,060.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,365.21	32.63	196.20	2,295.79	-347.36	-100.93	2.50	2.50	0.00	196.20	
3,912.90	32.63	196.20	3,599.21	-1,148.75	-333.79	0.00	0.00	0.00	0.00	
5,218.12	0.00	0.00	4,835.00	-1,496.11	-434.72	2.50	-2.50	0.00	180.00	CSF 31C BH Tgt
8,068.12	0.00	0.00	7,685.00	-1,496.11	-434.72	0.00	0.00	0.00	0.00	

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well CSF 31C-15-07-91 (111171)
Company:	ANTERO RESOURCES	TVD Reference:	KB @ 7310.00ft (Original Well Elev)
Project:	Castle Springs Federal Project (Q-PAD)	MD Reference:	KB @ 7310.00ft (Original Well Elev)
Site:	FRONTIER 12	North Reference:	Grid
Well:	CSF 31C-15-07-91 (111171)	Survey Calculation Method:	Minimum Curvature
Wellbore:	CSF 31C-15-07-91		
Design:	CSF 31C-15-07-91 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	14,338,820.77	924,567.22	39° 27' 22.581 N	107° 32' 9.523 W
Wasatch									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,338,820.77	924,567.22	39° 27' 22.581 N	107° 32' 9.523 W
Surface Casing @1000' MD (1000' TVD)									
1,060.00	0.00	0.00	1,060.00	0.00	0.00	14,338,820.77	924,567.22	39° 27' 22.581 N	107° 32' 9.523 W
KOP @1060'MD/1060'TVD (2.5°/100')									
2,365.21	32.63	196.20	2,295.79	-347.36	-100.93	14,338,473.41	924,466.29	39° 27' 19.122 N	107° 32' 10.684 W
EOB @2365'MD/2295.79'TVD (32.63°Inc.)									
3,912.90	32.63	196.20	3,599.20	-1,148.75	-333.79	14,337,672.02	924,233.43	39° 27' 11.141 N	107° 32' 13.364 W
SOD @3912'MD/3599'TVD (2.5°/100')									
4,400.91	20.43	196.20	4,035.00	-1,357.68	-394.50	14,337,463.09	924,172.72	39° 27' 9.061 N	107° 32' 14.062 W
Mesaverde									
5,218.12	0.00	0.00	4,835.00	-1,496.11	-434.72	14,337,324.66	924,132.50	39° 27' 7.682 N	107° 32' 14.525 W
EOD @5218'MD/4835'TVD (0° Inc.) - Price Coal - CSF 31C BH Tgt									
5,918.12	0.00	0.00	5,535.00	-1,496.11	-434.72	14,337,324.66	924,132.50	39° 27' 7.682 N	107° 32' 14.525 W
Top Gas									
6,818.12	0.00	0.00	6,435.00	-1,496.11	-434.72	14,337,324.66	924,132.50	39° 27' 7.682 N	107° 32' 14.525 W
Cameo									
7,918.12	0.00	0.00	7,535.00	-1,496.11	-434.72	14,337,324.66	924,132.50	39° 27' 7.682 N	107° 32' 14.525 W
Rollins									
8,068.09	0.00	0.00	7,684.98	-1,496.11	-434.72	14,337,324.66	924,132.50	39° 27' 7.682 N	107° 32' 14.525 W
Proposed TD @8068'MD/7684'TVD									
8,068.12	0.00	0.00	7,685.00	-1,496.11	-434.72	14,337,324.66	924,132.50	39° 27' 7.682 N	107° 32' 14.525 W

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
CSF 31C BH Tgt	0.00	360.00	4,835.00	-1,496.11	-434.72	14,337,324.66	924,132.50	39° 27' 7.682 N	107° 32' 14.525 W	
- hit/miss target										
- Shape										
- 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	1,000.00	Surface Casing @1000' MD (1000' TVD)	5.50	6.00	

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well CSF 31C-15-07-91 (111171)
Company:	ANTERO RESOURCES	TVD Reference:	KB @ 7310.00ft (Original Well Elev)
Project:	Castle Springs Federal Project (Q-PAD)	MD Reference:	KB @ 7310.00ft (Original Well Elev)
Site:	FRONTIER 12	North Reference:	Grid
Well:	CSF 31C-15-07-91 (111171)	Survey Calculation Method:	Minimum Curvature
Wellbore:	CSF 31C-15-07-91		
Design:	CSF 31C-15-07-91 P01		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
0.00	0.00	Wasatch		0.00	
4,400.91	4,035.00	Mesaverde		0.00	
5,218.12	4,835.00	Price Coal		0.00	
5,918.12	5,535.00	Top Gas		0.00	
6,818.12	6,435.00	Cameo		0.00	
7,918.12	7,535.00	Rollins		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,060.00	1,060.00	0.00	0.00	KOP @1060'MD/1060'TVD (2.5°/100')	
2,365.21	2,295.79	-347.36	-100.93	EOB @2365'MD/2295.79'TVD (32.63°Inc.)	
3,912.90	3,599.20	-1,148.75	-333.79	SOD @3912'MD/3599'TVD (2.5°/100')	
5,218.12	4,835.00	-1,496.11	-434.72	EOD @5218'MD/4835'TVD (0° Inc.)	
8,068.09	7,684.98	-1,496.11	-434.72	Proposed TD @8068'MD/7684'TVD	