



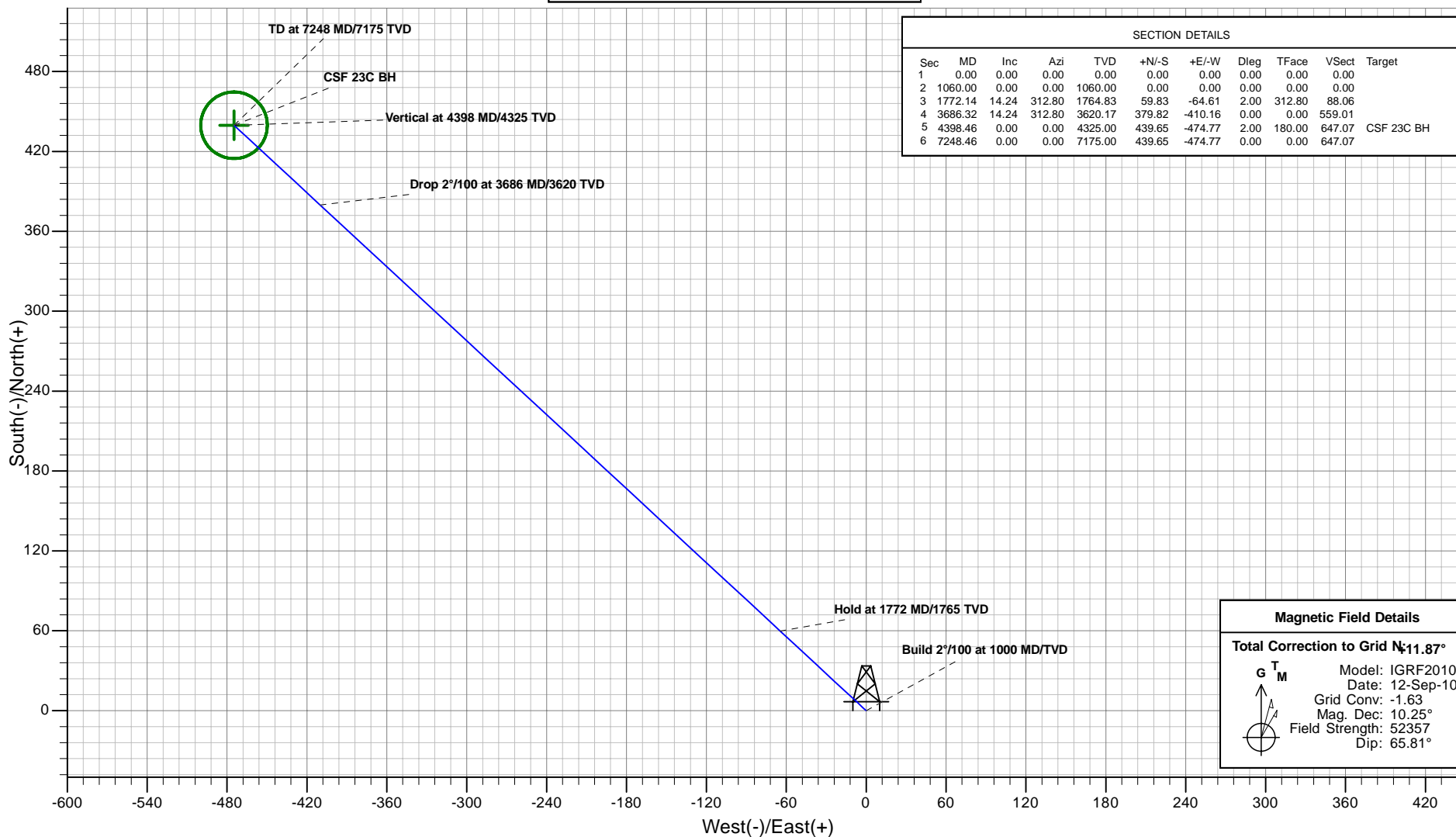
Antero Resources

CSF 23C-09-07-91



PLAN VIEW

Project: Castle Springs Federal Project (E Pad)
Site: Frontier 12
Well: CSF 23C-09-07-91 (111193)
Wellbore: CSF 23C
Design: CSF 23C P01



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1060.00	0.00	0.00	1060.00	0.00	0.00	0.00	0.00	0.00	
3	1772.14	14.24	312.80	1764.83	59.83	-64.61	2.00	312.80	88.06	
4	3686.32	14.24	312.80	3620.17	379.82	-410.16	0.00	0.00	559.01	
5	4398.46	0.00	0.00	4325.00	439.65	-474.77	2.00	180.00	647.07	CSF 23C BH
6	7248.46	0.00	0.00	7175.00	439.65	-474.77	0.00	0.00	647.07	

Magnetic Field Details

Total Correction to Grid N_g 11.87°

Model: IGRF2010
Date: 12-Sep-10
Grid Conv: -1.63
Mag. Dec: 10.25°
Field Strength: 52357
Dip: 65.81°

Plan: CSF 23C P01
Created By: ARK Directional Services
Date: 16:04, July 13 2010

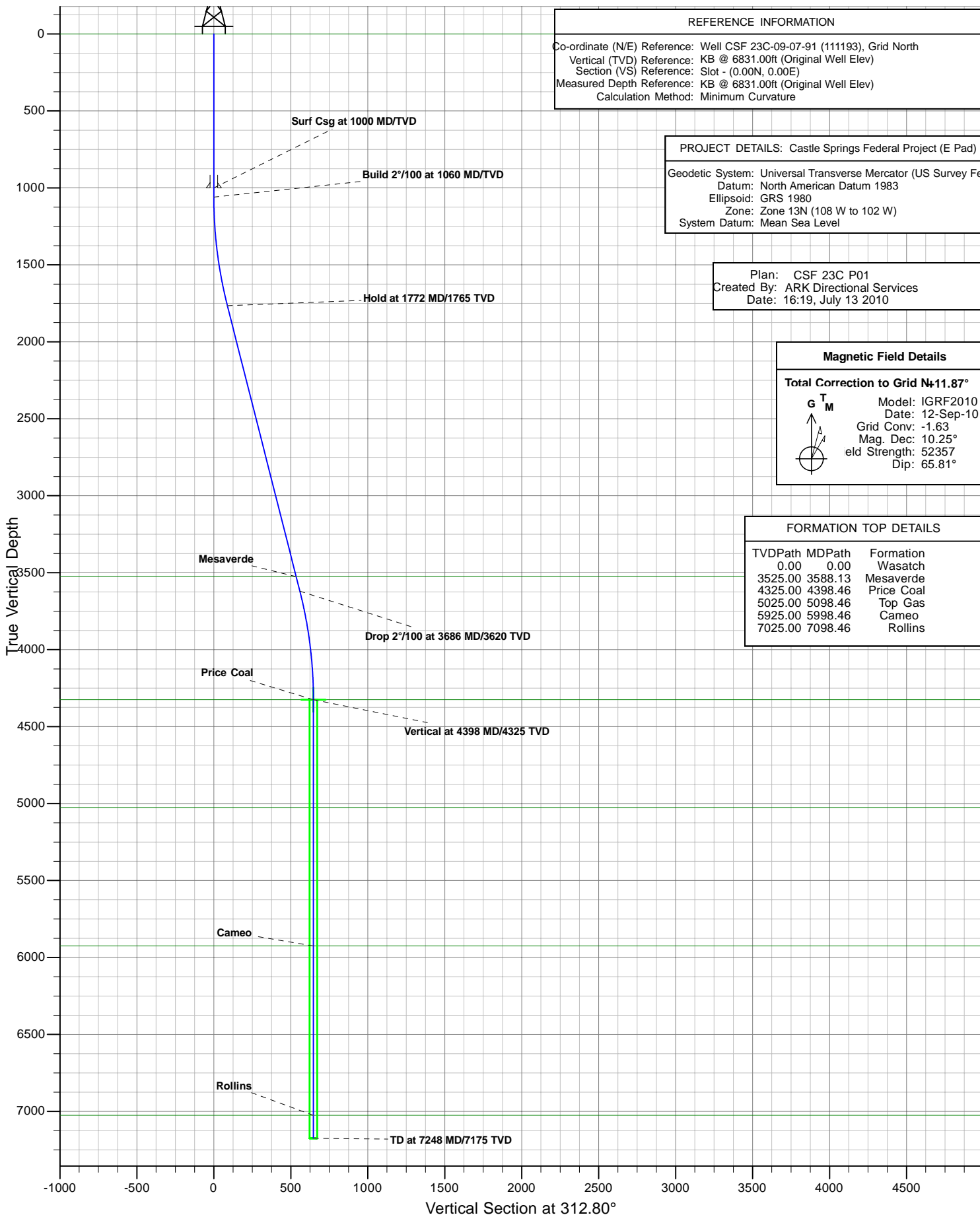
PROJECT DETAILS: Castle Springs Federal Project (E Pad)
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Zone 13N (108 W to 102 W)
System Datum: Mean Sea Level

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CSF 23C-09-07-91 (111193), Grid North
Vertical (TVD) Reference: KB @ 6831.00ft (Original Well Elev)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: KB @ 6831.00ft (Original Well Elev)
Calculation Method: Minimum Curvature



VERTICAL SECTION VIEW



Antero Resources

Castle Springs Federal Project (E Pad)

Frontier 12

CSF 23C-09-07-91 (111193)

CSF 23C

Plan: CSF 23C P01

Standard Planning Report - Geographic

13 July, 2010

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well CSF 23C-09-07-91 (111193)
Company:	Antero Resources	TVD Reference:	KB @ 6831.00ft (Original Well Elev)
Project:	Castle Springs Federal Project (E Pad)	MD Reference:	KB @ 6831.00ft (Original Well Elev)
Site:	Frontier 12	North Reference:	Grid
Well:	CSF 23C-09-07-91 (111193)	Survey Calculation Method:	Minimum Curvature
Wellbore:	CSF 23C		
Design:	CSF 23C P01		

Project	Castle Springs Federal Project (E Pad)		
Map System:	Universal Transverse Mercator (US Survey Feet)	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:	14,339,810.145 usft
From:	Lat/Long	Easting:	918,106.443 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in
		Latitude:	39.458485832°N
		Longitude:	107.558944712°W
		Grid Convergence:	-1.63 °

Well	CSF 23C-09-07-91 (111193)		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	Easting:
Position Uncertainty	0.00 ft	Wellhead Elevation:	Ground Level:
			6,807.00 ft

Wellbore	CSF 23C				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	12/09/2010	10.25	65.81	52,357

Design	CSF 23C P01			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	4,325.00	0.00	0.00	312.80

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(ft)			(ft)			(°/100ft)	(°/100ft)	(°/100ft)		
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	
1,772.14	14.24	312.80	1,764.83	59.83	-64.61	2.00	2.00	0.00	312.80	
3,686.32	14.24	312.80	3,620.17	379.82	-410.16	0.00	0.00	0.00	0.00	
4,398.46	0.00	0.00	4,325.00	439.65	-474.77	2.00	-2.00	0.00	180.00	CSF 23C BH
7,248.46	0.00	0.00	7,175.00	439.65	-474.77	0.00	0.00	0.00	0.00	

ARK Directional Services

Planning Report - Geographic

Database:	EDM SERVER DB	Local Co-ordinate Reference:	Well CSF 23C-09-07-91 (111193)
Company:	Antero Resources	TVD Reference:	KB @ 6831.00ft (Original Well Elev)
Project:	Castle Springs Federal Project (E Pad)	MD Reference:	KB @ 6831.00ft (Original Well Elev)
Site:	Frontier 12	North Reference:	Grid
Well:	CSF 23C-09-07-91 (111193)	Survey Calculation Method:	Minimum Curvature
Wellbore:	CSF 23C		
Design:	CSF 23C 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	14,339,810.145	918,106.443	39.458485832°N	107.558944712°W	
Wasatch										
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,339,810.145	918,106.443	39.458485832°N	107.558944712°W	
Surf Csg at 1000 MD/TVD										
1,060.00	0.00	0.00	1,060.00	0.00	0.00	14,339,810.145	918,106.443	39.458485832°N	107.558944712°W	
Build 2°/100 at 1060 MD/TVD										
1,772.14	14.24	312.80	1,764.83	59.83	-64.61	14,339,869.976	918,041.832	39.458644955°N	107.559179411°W	
Hold at 1772 MD/1765 TVD										
3,588.13	14.24	312.80	3,525.00	363.40	-392.43	14,340,173.545	917,714.010	39.459452305°N	107.560370244°W	
Mesaverde										
3,686.32	14.24	312.80	3,620.17	379.82	-410.16	14,340,189.959	917,696.285	39.459495957°N	107.560434632°W	
Drop 2°/100 at 3686 MD/3620 TVD										
4,398.46	0.00	0.00	4,325.00	439.65	-474.77	14,340,249.790	917,631.675	39.459655077°N	107.560669338°W	
Vertical at 4398 MD/4325 TVD - Price Coal - CSF 23C BH										
5,098.46	0.00	0.00	5,025.00	439.65	-474.77	14,340,249.790	917,631.675	39.459655077°N	107.560669338°W	
Top Gas										
5,998.46	0.00	0.00	5,925.00	439.65	-474.77	14,340,249.790	917,631.675	39.459655077°N	107.560669338°W	
Cameo										
7,098.46	0.00	0.00	7,025.00	439.65	-474.77	14,340,249.790	917,631.675	39.459655077°N	107.560669338°W	
Rollins										
7,248.46	0.00	0.00	7,175.00	439.65	-474.77	14,340,249.790	917,631.675	39.459655077°N	107.560669338°W	
TD at 7248 MD/7175 TVD										

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
CSF 23C BH - plan hits target center - Circle (radius 25.00)	0.00	360.00	4,325.00	439.65	-474.77	14,340,249.790	917,631.675	39.459655077°N	107.560669338°W	

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,000.00	1,000.00	Surf Csg at 1000 MD/TVD	5.50	6.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
0.00	0.00	Wasatch				
3,588.13	3,525.00	Mesaverde				
4,398.46	4,325.00	Price Coal				
5,098.46	5,025.00	Top Gas				
5,998.46	5,925.00	Cameo				
7,098.46	7,025.00	Rollins				

ARK Directional Services

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Site:	Frontier 12	North Reference:	Grid
Well:	CSF 23C-09-07-91 (111193)	Survey Calculation Method:	Minimum Curvature
Wellbore:	CSF 23C		
Design:	CSF 23C P01		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,060.00	1,060.00	0.00	0.00	Build 2°/100 at 1060 MD/TVD	
1,772.14	1,764.83	59.83	-64.61	Hold at 1772 MD/1765 TVD	
3,686.32	3,620.17	379.82	-410.16	Drop 2°/100 at 3686 MD/3620 TVD	
4,398.46	4,325.00	439.65	-474.77	Vertical at 4398 MD/4325 TVD	
7,248.46	7,175.00	439.65	-474.77	TD at 7248 MD/7175 TVD	