



Project: Mesa County, CO
 Site: Bruton 30-03 Pad
 Well: Bruton 30-05W
 Wellbore: Wellbore #1
 Design: Design #1
 Latitude: 39.252672
 Longitude: -107.814303
 Ground Level: 7512.0
 well @ 7534.0usft (H&P #290)



PROJECT DETAILS: Mesa County, CO

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone
 System Datum: Mean Sea Level

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Bruton 30-05W, True North
 Vertical (TVD) Reference: well @ 7534.0usft (H&P #290)
 Section (VS) Reference: Slot - (0.0N, 0.0E)
 Measured Depth Reference: well @ 7534.0usft (H&P #290)
 Calculation Method: Minimum Curvature

WELL DETAILS: Bruton 30-05W

Ground Level: 7512.0
 +N/-S 0.0 +E/-W 0.0 Northing 1525267.11 Easting 2344715.72 Latitude 39.252672 Longitude -107.814303

DESIGN TARGET DETAILS

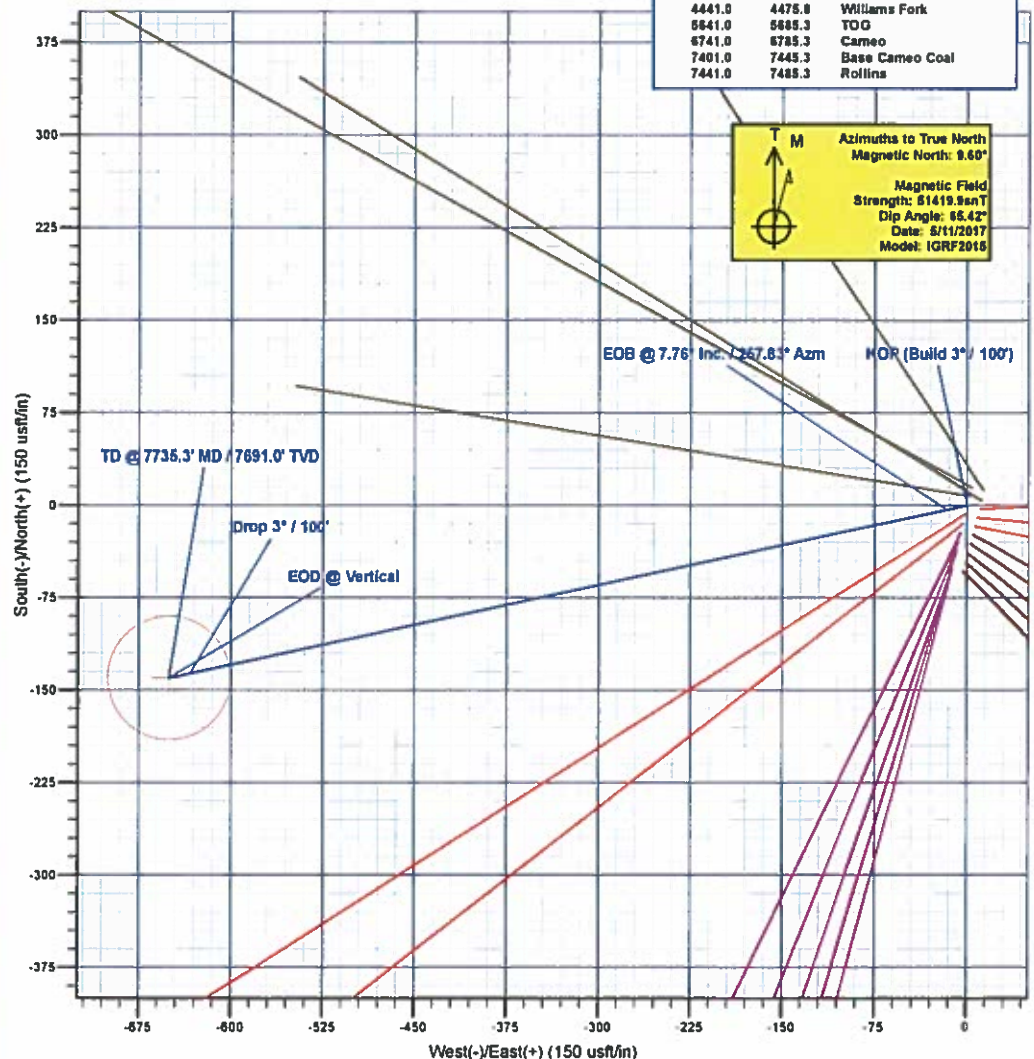
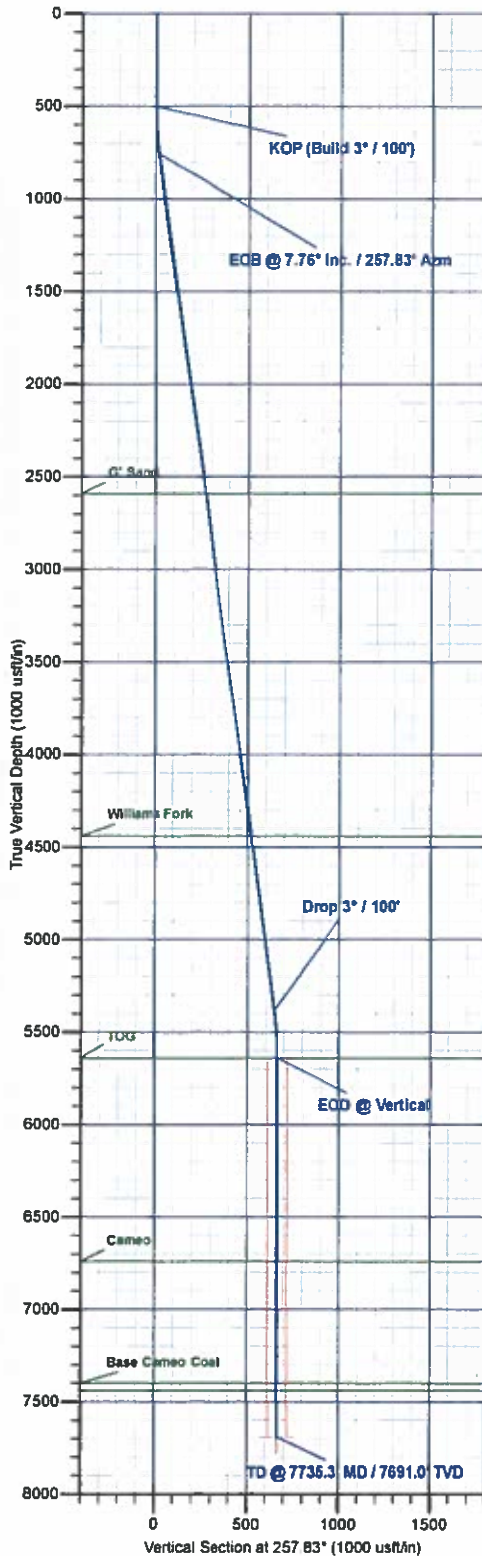
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL - Bruton 30-05W	7691.0	-140.2	-650.2	1525143.52	2344062.19	39.252267	-107.816599

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	KOP (Build 3° / 100')
756.6	7.76	257.83	757.8	-3.7	-17.1	3.00	257.83	17.5	EOB @ 7.76° Inc. / 257.83° Azm
5426.7	7.76	257.83	5383.2	-136.5	-633.1	0.00	0.00	647.6	Drop 3° / 100'
5685.3	0.00	0.00	5641.0	-140.2	-650.2	3.00	180.00	665.1	EOD @ Vertical
7735.3	0.00	0.00	7691.0	-140.2	-650.2	0.00	0.00	665.1	TD @ 7735.3' MD / 7691.0' TVD

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2591.0	2508.7	G' Sand
4441.0	4475.8	Williams Fork
5641.0	5605.3	TOG
6741.0	6785.3	Cameo
7401.0	7445.3	Base Cameo Coal
7441.0	7485.3	Rollins



Plan: Design #1 (Bruton 30-05W/Wellbore #1)

Created By: Will Jircik Date: 11:17, May 15 2017



Laramie Energy, LLC

Mesa County, CO

Bruton 30-03 Pad

Bruton 30-05W

Wellbore #1

Plan: Design #1

QES Well Planning Report

15 May, 2017





Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-05W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534.0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7534.0usft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-05W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Mesa County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	Bruton 30-03 Pad			
Site Position:		Northing:	1,525,281.27 usft	Latitude: 39.252711
From:	Lat/Long	Easting:	2,344,720.08 usft	Longitude: -107.814289
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: -1.46 °

Well	Bruton 30-05W			
Well Position	+N-S	-14.3 usft	Northing:	1,525,267.12 usft
	+E-W	-4.0 usft	Easting:	2,344,715.72 usft
Position Uncertainty	0.0 usft		Wellhead Elevation:	0.0 usft
			Ground Level:	7,512.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/11/2017	9.60	65.42	51,420

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	0.0	0.0	0.0	257.83

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
758.6	7.76	257.83	757.8	-3.7	-17.1	3.00	3.00	0.00	257.83	
5,426.7	7.76	257.83	5,383.2	-136.5	-633.1	0.00	0.00	0.00	0.00	
5,685.3	0.00	0.00	5,641.0	-140.2	-650.2	3.00	-3.00	0.00	180.00	
7,735.3	0.00	0.00	7,691.0	-140.2	-650.2	0.00	0.00	0.00	0.00	PBHL - Bruton 30-05W



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-05W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534 0usft (H&P #280)
Project:	Mesa County, CO	MD Reference:	well @ 7534 0usft (H&P #280)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-05W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP (Build 3° / 100')									
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	3.00	257.83	600.0	-0.6	-2.6	2.6	3.00	3.00	0.00
700.0	6.00	257.83	699.6	-2.2	-10.2	10.5	3.00	3.00	0.00
EOB @ 7.76° Inc. / 257.83° Azm									
758.6	7.76	257.83	757.8	-3.7	-17.1	17.5	3.00	3.00	0.00
800.0	7.76	257.83	798.8	-4.9	-22.6	23.1	0.00	0.00	0.00
900.0	7.76	257.83	897.9	-7.7	-35.7	36.6	0.00	0.00	0.00
1,000.0	7.76	257.83	997.0	-10.6	-48.9	50.1	0.00	0.00	0.00
1,100.0	7.76	257.83	1,096.1	-13.4	-62.1	63.6	0.00	0.00	0.00
1,200.0	7.76	257.83	1,195.2	-16.2	-75.3	77.1	0.00	0.00	0.00
1,300.0	7.76	257.83	1,294.3	-19.1	-88.5	90.6	0.00	0.00	0.00
1,400.0	7.76	257.83	1,393.3	-21.9	-101.7	104.1	0.00	0.00	0.00
1,500.0	7.76	257.83	1,492.4	-24.8	-114.9	117.6	0.00	0.00	0.00
8 5/8"									
1,522.0	7.76	257.83	1,514.2	-25.4	-117.8	120.5	0.00	0.00	0.00
1,600.0	7.76	257.83	1,591.5	-27.6	-128.1	131.1	0.00	0.00	0.00
1,700.0	7.76	257.83	1,690.6	-30.5	-141.3	144.6	0.00	0.00	0.00
1,800.0	7.76	257.83	1,789.7	-33.3	-154.5	158.1	0.00	0.00	0.00
1,900.0	7.76	257.83	1,888.8	-36.2	-167.7	171.6	0.00	0.00	0.00
2,000.0	7.76	257.83	1,987.8	-39.0	-180.9	185.1	0.00	0.00	0.00
2,100.0	7.76	257.83	2,086.9	-41.9	-194.1	198.6	0.00	0.00	0.00
2,200.0	7.76	257.83	2,186.0	-44.7	-207.3	212.1	0.00	0.00	0.00
2,300.0	7.76	257.83	2,285.1	-47.5	-220.5	225.6	0.00	0.00	0.00
2,400.0	7.76	257.83	2,384.2	-50.4	-233.7	239.1	0.00	0.00	0.00
2,500.0	7.76	257.83	2,483.3	-53.2	-246.9	252.6	0.00	0.00	0.00
2,600.0	7.76	257.83	2,582.4	-56.1	-260.1	266.1	0.00	0.00	0.00
G' Sand									
2,608.7	7.76	257.83	2,591.0	-56.3	-261.2	267.2	0.00	0.00	0.00
2,700.0	7.76	257.83	2,681.4	-58.9	-273.3	279.6	0.00	0.00	0.00
2,800.0	7.76	257.83	2,780.5	-61.8	-286.5	293.1	0.00	0.00	0.00
2,900.0	7.76	257.83	2,879.6	-64.6	-299.7	306.6	0.00	0.00	0.00
3,000.0	7.76	257.83	2,978.7	-67.5	-312.9	320.1	0.00	0.00	0.00
3,100.0	7.76	257.83	3,077.8	-70.3	-326.1	333.6	0.00	0.00	0.00
3,200.0	7.76	257.83	3,176.9	-73.2	-339.3	347.1	0.00	0.00	0.00
3,300.0	7.76	257.83	3,275.9	-76.0	-352.4	360.6	0.00	0.00	0.00
3,400.0	7.76	257.83	3,375.0	-78.8	-365.6	374.0	0.00	0.00	0.00
3,500.0	7.76	257.83	3,474.1	-81.7	-378.8	387.5	0.00	0.00	0.00
3,600.0	7.76	257.83	3,573.2	-84.5	-392.0	401.0	0.00	0.00	0.00
3,700.0	7.76	257.83	3,672.3	-87.4	-405.2	414.5	0.00	0.00	0.00
3,800.0	7.76	257.83	3,771.4	-90.2	-418.4	428.0	0.00	0.00	0.00
3,900.0	7.76	257.83	3,870.5	-93.1	-431.6	441.5	0.00	0.00	0.00
4,000.0	7.76	257.83	3,969.5	-95.9	-444.8	455.0	0.00	0.00	0.00
4,100.0	7.76	257.83	4,068.6	-98.8	-458.0	468.5	0.00	0.00	0.00
4,200.0	7.76	257.83	4,167.7	-101.6	-471.2	482.0	0.00	0.00	0.00
4,300.0	7.76	257.83	4,266.8	-104.5	-484.4	495.5	0.00	0.00	0.00
4,400.0	7.76	257.83	4,365.9	-107.3	-497.6	509.0	0.00	0.00	0.00
Williams Fork									
4,475.8	7.76	257.83	4,441.0	-109.5	-507.6	519.3	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-05W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534 0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7534 0usft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-05W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,500.0	7.76	257.83	4,465.0	-110.1	-510.8	522.5	0.00	0.00	0.00
4,600.0	7.76	257.83	4,564.0	-113.0	-524.0	536.0	0.00	0.00	0.00
4,700.0	7.76	257.83	4,663.1	-115.8	-537.2	549.5	0.00	0.00	0.00
4,800.0	7.76	257.83	4,762.2	-118.7	-550.4	563.0	0.00	0.00	0.00
4,900.0	7.76	257.83	4,861.3	-121.5	-563.6	576.5	0.00	0.00	0.00
5,000.0	7.76	257.83	4,960.4	-124.4	-576.8	590.0	0.00	0.00	0.00
5,100.0	7.76	257.83	5,059.5	-127.2	-590.0	603.5	0.00	0.00	0.00
5,200.0	7.76	257.83	5,158.6	-130.1	-603.2	617.0	0.00	0.00	0.00
5,300.0	7.76	257.83	5,257.6	-132.9	-616.4	630.5	0.00	0.00	0.00
5,400.0	7.76	257.83	5,356.7	-135.8	-629.6	644.0	0.00	0.00	0.00
Drop 3° / 100'									
5,426.7	7.76	257.83	5,383.2	-136.5	-633.1	647.6	0.00	0.00	0.00
5,500.0	5.56	257.83	5,456.0	-138.3	-641.4	656.1	3.00	-3.00	0.00
5,600.0	2.56	257.83	5,555.7	-139.8	-648.3	663.2	3.00	-3.00	0.00
EOD @ Vertical - TOG									
5,685.3	0.00	0.00	5,641.0	-140.2	-650.2	665.1	3.00	-3.00	0.00
5,700.0	0.00	0.00	5,655.7	-140.2	-650.2	665.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,755.7	-140.2	-650.2	665.1	0.00	0.00	0.00
5,900.0	0.00	0.00	5,855.7	-140.2	-650.2	665.1	0.00	0.00	0.00
6,000.0	0.00	0.00	5,955.7	-140.2	-650.2	665.1	0.00	0.00	0.00
6,100.0	0.00	0.00	6,055.7	-140.2	-650.2	665.1	0.00	0.00	0.00
6,200.0	0.00	0.00	6,155.7	-140.2	-650.2	665.1	0.00	0.00	0.00
6,300.0	0.00	0.00	6,255.7	-140.2	-650.2	665.1	0.00	0.00	0.00
6,400.0	0.00	0.00	6,355.7	-140.2	-650.2	665.1	0.00	0.00	0.00
6,500.0	0.00	0.00	6,455.7	-140.2	-650.2	665.1	0.00	0.00	0.00
6,600.0	0.00	0.00	6,555.7	-140.2	-650.2	665.1	0.00	0.00	0.00
6,700.0	0.00	0.00	6,655.7	-140.2	-650.2	665.1	0.00	0.00	0.00
Cameo									
6,785.3	0.00	0.00	6,741.0	-140.2	-650.2	665.1	0.00	0.00	0.00
6,800.0	0.00	0.00	6,755.7	-140.2	-650.2	665.1	0.00	0.00	0.00
6,900.0	0.00	0.00	6,855.7	-140.2	-650.2	665.1	0.00	0.00	0.00
7,000.0	0.00	0.00	6,955.7	-140.2	-650.2	665.1	0.00	0.00	0.00
7,100.0	0.00	0.00	7,055.7	-140.2	-650.2	665.1	0.00	0.00	0.00
7,200.0	0.00	0.00	7,155.7	-140.2	-650.2	665.1	0.00	0.00	0.00
7,300.0	0.00	0.00	7,255.7	-140.2	-650.2	665.1	0.00	0.00	0.00
7,400.0	0.00	0.00	7,355.7	-140.2	-650.2	665.1	0.00	0.00	0.00
Base Cameo Coal									
7,445.3	0.00	0.00	7,401.0	-140.2	-650.2	665.1	0.00	0.00	0.00
Rollins									
7,485.3	0.00	0.00	7,441.0	-140.2	-650.2	665.1	0.00	0.00	0.00
7,500.0	0.00	0.00	7,455.7	-140.2	-650.2	665.1	0.00	0.00	0.00
7,600.0	0.00	0.00	7,555.7	-140.2	-650.2	665.1	0.00	0.00	0.00
7,700.0	0.00	0.00	7,655.7	-140.2	-650.2	665.1	0.00	0.00	0.00
TD @ 7735.3' MD / 7691.0' TVD									
7,735.3	0.00	0.00	7,691.0	-140.2	-650.2	665.1	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-05W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534.0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7534.0usft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-05W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL - Bruton 30-05W	0.00	0.00	7,691.0	-140.2	-650.2	1,525,143.52	2,344,062.19	39.252287	-107.816599
- plan hits target center									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,522.0	1,514.2	8 5/8"	8-5/8	11

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,608.7	2,591.0	G' Sand			
4,475.8	4,441.0	Williams Fork			
5,685.3	5,641.0	TOG			
6,785.3	6,741.0	Cameo			
7,445.3	7,401.0	Base Cameo Coal			
7,485.3	7,441.0	Rollins			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.0	500.0	0.0	0.0	KOP (Build 3" / 100')
758.6	757.8	-3.7	-17.1	EOB @ 7.76° Inc. / 257.83° Azm
5,426.7	5,383.2	-136.5	-633.1	Drop 3" / 100'
5,685.3	5,641.0	-140.2	-650.2	EOD @ Vertical
7,735.3	7,691.0	-140.2	-650.2	TD @ 7735.3' MD / 7691.0' TVD