



Project: Mesa County, CO
 Site: Bruton 30-01 Pad
 Well: Bruton 19-13E
 Wellbore: Wellbore #1
 Design: Design #1
 Latitude: 39.255319
 Longitude: -107.806236
 Ground Level: 7425.0
 well @ 7455.0ustf (H&P #522)



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 19-13E, True North
 Vertical (TVD) Reference: well @ 7455.0ustf (H&P #522)
 Section (V/S) Reference: Slot - (0.0N, 0.0E)
 Measured Depth Reference: well @ 7455.0ustf (H&P #522)
 Calculation Method: Minimum Curvature

WELL DETAILS: Bruton 19-13E

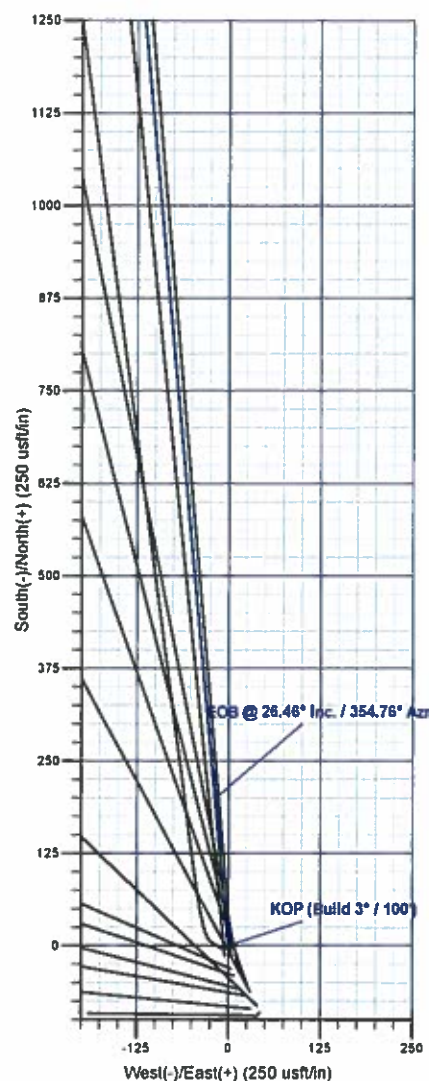
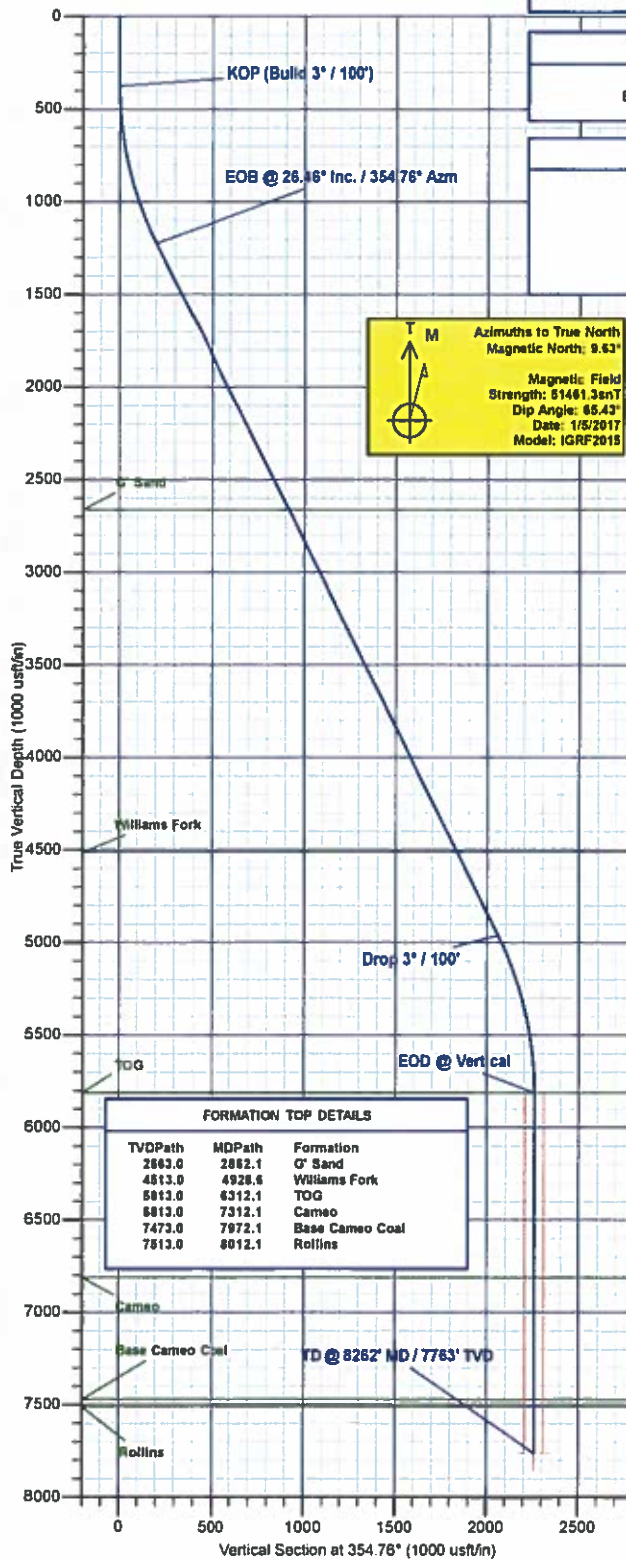
+N/-S	+E/-W	Northing	Ground Level: 7425.0 Easting	Latitude	Longitude
0.0	0.0	1526172.96	2347023.81	39.255319	-107.806236

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BRUTON 19-13E	7763.0	2250.0	-206.4	1526427.46	2346874.61	39.261497	-107.806965

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	KOP (Build 3° / 100')
375.0	0.00	0.00	375.0	0.0	0.0	0.00	0.00	0.0	EOB @ 26.46° Inc. / 354.76° Azm
1258.9	26.46	354.76	1225.9	199.2	-18.3	3.00	354.76	200.0	Drop 3° / 100'
5430.2	26.46	354.76	4962.1	2050.8	-188.1	0.00	0.00	2059.4	EOD @ Vertical
8312.1	0.00	0.00	8613.0	2250.0	-206.4	3.00	180.00	2259.4	TD @ 8262' MD / 7763' TVD
8262.1	0.00	0.00	7763.0	2250.0	-206.4	0.00	0.00	2259.4	



Plan: Design #1 (Bruton 19-13E/Wellbore #1)

Created By: Will Jircik Date: 14:36, January 09 2017



Laramie Energy, LLC

Mesa County, CO

Bruton 30-01 Pad

Bruton 19-13E

Wellbore #1

Plan: Design #1

QES Well Planning Report

09 January, 2017





Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-13E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7455.0usft (H&P #522)
Project:	Mesa County, CO	MD Reference:	well @ 7455.0usft (H&P #522)
Site:	Bruton 30-01 Pad	North Reference:	True
Well:	Bruton 19-13E	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 30-01 Pad			
Site Position:		Northing:	1,526,078.02 usft	Latitude: 39.255061
From:	Lat/Long	Easting:	2,347,056.81 usft	Longitude: -107.806111
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence: -1.45°

Well	Bruton 19-13E			
Well Position	+N/-S	94.1 usft	Northing:	1,526,172.97 usft
	+E/-W	-35.4 usft	Easting:	2,347,023.81 usft
Position Uncertainty	0.0 usft		Wellhead Elevation:	0.0 usft
			Ground Level:	7,425.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/5/2017	9.63	65.43	51,461

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	354.76

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	
375.0	0.00	0.00	375.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,256.9	26.46	354.76	1,225.9	199.2	-18.3	3.00	3.00	0.00	354.76	
5,430.2	26.46	354.76	4,962.1	2,050.8	-188.1	0.00	0.00	0.00	0.00	
6,312.1	0.00	0.00	5,813.0	2,250.0	-206.4	3.00	-3.00	0.00	180.00	
8,262.1	0.00	0.00	7,763.0	2,250.0	-206.4	0.00	0.00	0.00	0.00	BRUTON 19-13E



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-13E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7455.0usft (H&P #522)
Project:	Mesa County, CO	MD Reference:	well @ 7455.0usft (H&P #522)
Site:	Bruton 30-01 Pad	North Reference:	True
Well:	Bruton 19-13E	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
KOP (Build 3° / 100')									
375.0	0.00	0.00	375.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.75	354.76	400.0	0.2	0.0	0.2	3.00	3.00	0.00
500.0	3.75	354.76	499.9	4.1	-0.4	4.1	3.00	3.00	0.00
600.0	6.75	354.76	599.5	13.2	-1.2	13.2	3.00	3.00	0.00
700.0	9.75	354.76	698.4	27.5	-2.5	27.6	3.00	3.00	0.00
800.0	12.75	354.76	796.5	46.9	-4.3	47.1	3.00	3.00	0.00
900.0	15.75	354.76	893.4	71.4	-6.5	71.7	3.00	3.00	0.00
1,000.0	18.75	354.76	988.9	100.9	-9.3	101.4	3.00	3.00	0.00
1,100.0	21.75	354.76	1,082.7	135.4	-12.4	136.0	3.00	3.00	0.00
1,200.0	24.75	354.76	1,174.6	174.7	-16.0	175.4	3.00	3.00	0.00
EOB @ 26.46° Inc. / 354.76° Azm									
1,256.9	26.46	354.76	1,225.9	199.2	-18.3	200.0	3.00	3.00	0.00
1,300.0	26.46	354.76	1,264.5	218.3	-20.0	219.2	0.00	0.00	0.00
1,400.0	26.46	354.76	1,354.0	262.7	-24.1	263.8	0.00	0.00	0.00
1,500.0	26.46	354.76	1,443.5	307.0	-28.2	308.3	0.00	0.00	0.00
8 5/8"									
1,530.0	26.46	354.76	1,470.4	320.4	-29.4	321.7	0.00	0.00	0.00
1,600.0	26.46	354.76	1,533.1	351.4	-32.2	352.9	0.00	0.00	0.00
1,700.0	26.46	354.76	1,622.6	395.8	-36.3	397.4	0.00	0.00	0.00
1,800.0	26.46	354.76	1,712.1	440.1	-40.4	442.0	0.00	0.00	0.00
1,900.0	26.46	354.76	1,801.6	484.5	-44.4	486.5	0.00	0.00	0.00
2,000.0	26.46	354.76	1,891.2	528.9	-48.5	531.1	0.00	0.00	0.00
2,100.0	26.46	354.76	1,980.7	573.3	-52.6	575.7	0.00	0.00	0.00
2,200.0	26.46	354.76	2,070.2	617.6	-56.7	620.2	0.00	0.00	0.00
2,300.0	26.46	354.76	2,159.7	662.0	-60.7	664.8	0.00	0.00	0.00
2,400.0	26.46	354.76	2,249.3	706.4	-64.8	709.3	0.00	0.00	0.00
2,500.0	26.46	354.76	2,338.8	750.7	-68.9	753.9	0.00	0.00	0.00
2,600.0	26.46	354.76	2,428.3	795.1	-72.9	798.4	0.00	0.00	0.00
2,700.0	26.46	354.76	2,517.8	839.5	-77.0	843.0	0.00	0.00	0.00
2,800.0	26.46	354.76	2,607.4	883.8	-81.1	887.5	0.00	0.00	0.00
G' Sand									
2,862.1	26.46	354.76	2,663.0	911.4	-83.6	915.2	0.00	0.00	0.00
2,900.0	26.46	354.76	2,696.9	928.2	-85.1	932.1	0.00	0.00	0.00
3,000.0	26.46	354.76	2,786.4	972.6	-89.2	976.6	0.00	0.00	0.00
3,100.0	26.46	354.76	2,875.9	1,016.9	-93.3	1,021.2	0.00	0.00	0.00
3,200.0	26.46	354.76	2,965.5	1,061.3	-97.3	1,065.8	0.00	0.00	0.00
3,300.0	26.46	354.76	3,055.0	1,105.7	-101.4	1,110.3	0.00	0.00	0.00
3,400.0	26.46	354.76	3,144.5	1,150.0	-105.5	1,154.9	0.00	0.00	0.00
3,500.0	26.46	354.76	3,234.1	1,194.4	-109.6	1,199.4	0.00	0.00	0.00
3,600.0	26.46	354.76	3,323.6	1,238.8	-113.6	1,244.0	0.00	0.00	0.00
3,700.0	26.46	354.76	3,413.1	1,283.1	-117.7	1,288.5	0.00	0.00	0.00
3,800.0	26.46	354.76	3,502.6	1,327.5	-121.8	1,333.1	0.00	0.00	0.00
3,900.0	26.46	354.76	3,592.2	1,371.9	-125.8	1,377.6	0.00	0.00	0.00
4,000.0	26.46	354.76	3,681.7	1,416.2	-129.9	1,422.2	0.00	0.00	0.00
4,100.0	26.46	354.76	3,771.2	1,460.6	-134.0	1,466.7	0.00	0.00	0.00
4,200.0	26.46	354.76	3,860.7	1,505.0	-138.0	1,511.3	0.00	0.00	0.00
4,300.0	26.46	354.76	3,950.3	1,549.3	-142.1	1,555.8	0.00	0.00	0.00
4,400.0	26.46	354.76	4,039.8	1,593.7	-146.2	1,600.4	0.00	0.00	0.00
4,500.0	26.46	354.76	4,129.3	1,638.1	-150.3	1,645.0	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-13E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7455 Ousft (H&P #522)
Project:	Mesa County, CO	MD Reference:	well @ 7455 Ousft (H&P #522)
Site:	Bruton 30-01 Pad	North Reference:	True
Well:	Bruton 19-13E	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)
4,600.0	26.46	354.76	4,218.8	1,682.4	-154.3	1,689.5	0.00	0.00	0.00
4,700.0	26.46	354.76	4,308.4	1,726.6	-158.4	1,734.1	0.00	0.00	0.00
4,800.0	26.46	354.76	4,397.9	1,771.2	-162.5	1,778.6	0.00	0.00	0.00
4,900.0	26.46	354.76	4,487.4	1,815.5	-166.5	1,823.2	0.00	0.00	0.00
Williams Fork									
4,928.6	26.46	354.76	4,513.0	1,828.2	-167.7	1,835.9	0.00	0.00	0.00
5,000.0	26.46	354.76	4,576.9	1,859.9	-170.6	1,867.7	0.00	0.00	0.00
5,100.0	26.46	354.76	4,666.5	1,904.3	-174.7	1,912.3	0.00	0.00	0.00
5,200.0	26.46	354.76	4,756.0	1,948.7	-178.7	1,956.8	0.00	0.00	0.00
5,300.0	26.46	354.76	4,845.5	1,993.0	-182.8	2,001.4	0.00	0.00	0.00
5,400.0	26.46	354.76	4,935.1	2,037.4	-186.9	2,045.9	0.00	0.00	0.00
Drop 3° / 100'									
5,430.2	26.46	354.76	4,962.1	2,050.8	-188.1	2,059.4	0.00	0.00	0.00
5,500.0	24.36	354.76	5,025.1	2,080.6	-190.8	2,089.3	3.00	-3.00	0.00
5,600.0	21.36	354.76	5,117.3	2,119.3	-194.4	2,128.2	3.00	-3.00	0.00
5,700.0	18.36	354.76	5,211.3	2,153.1	-197.5	2,162.2	3.00	-3.00	0.00
5,800.0	15.36	354.76	5,307.0	2,182.0	-200.1	2,191.2	3.00	-3.00	0.00
5,900.0	12.36	354.76	5,404.1	2,205.9	-202.3	2,215.1	3.00	-3.00	0.00
6,000.0	9.36	354.76	5,502.3	2,224.6	-204.1	2,234.0	3.00	-3.00	0.00
6,100.0	6.36	354.76	5,601.3	2,238.3	-205.3	2,247.7	3.00	-3.00	0.00
6,200.0	3.36	354.76	5,700.9	2,248.7	-206.1	2,256.1	3.00	-3.00	0.00
6,300.0	0.36	354.76	5,800.9	2,249.9	-206.4	2,259.4	3.00	-3.00	0.00
EOD @ Vertical - TOG									
6,312.1	0.00	0.00	5,813.0	2,250.0	-206.4	2,259.4	3.00	-3.00	43.23
6,400.0	0.00	0.00	5,900.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
6,500.0	0.00	0.00	6,000.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
6,600.0	0.00	0.00	6,100.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
6,700.0	0.00	0.00	6,200.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
6,800.0	0.00	0.00	6,300.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
6,900.0	0.00	0.00	6,400.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
7,000.0	0.00	0.00	6,500.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
7,100.0	0.00	0.00	6,600.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
7,200.0	0.00	0.00	6,700.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
7,300.0	0.00	0.00	6,800.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
Cameo									
7,312.1	0.00	0.00	6,813.0	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
7,400.0	0.00	0.00	6,900.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
7,500.0	0.00	0.00	7,000.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
7,600.0	0.00	0.00	7,100.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
7,700.0	0.00	0.00	7,200.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
7,800.0	0.00	0.00	7,300.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
7,900.0	0.00	0.00	7,400.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
Base Cameo Coal									
7,972.1	0.00	0.00	7,473.0	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
8,000.0	0.00	0.00	7,500.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
Rollins									
8,012.1	0.00	0.00	7,513.0	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
8,100.0	0.00	0.00	7,600.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
8,200.0	0.00	0.00	7,700.9	2,250.0	-206.4	2,259.4	0.00	0.00	0.00
TD @ 8262' MD / 7763' TVD									
8,262.1	0.00	0.00	7,763.0	2,250.0	-206.4	2,259.4	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-13E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7455.0usft (H&P #522)
Project:	Mesa County, CO	MD Reference:	well @ 7455.0usft (H&P #522)
Site:	Bruton 30-01 Pad	North Reference:	True
Well:	Bruton 19-13E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
BRUTON 19-13E	0.00	0.00	7,763.0	2,250.0	-206.4	1,528,427.47	2,346,874.61	39.261497	-107.806965
- plan hits target center									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,530.0	1,470.4	8 5/8"	8-5/8	11

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,862.1	2,663.0	G' Sand			
4,928.6	4,513.0	Williams Fork			
6,312.1	5,813.0	TOG			
7,312.1	6,813.0	Cameo			
7,972.1	7,473.0	Base Cameo Coal			
8,012.1	7,513.0	Rollins			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
375.0	375.0	0.0	0.0	KOP (Build 3" / 100')
1,256.9	1,225.9	199.2	-18.3	EOB @ 26.46° Inc. / 354.76° Azm
5,430.2	4,962.1	2,050.8	-188.1	Drop 3" / 100'
6,312.1	5,813.0	2,250.0	-206.4	EOD @ Vertical
8,262.1	7,763.0	2,250.0	-206.4	TD @ 8262' MD / 7763' TVD