



Project: Mesa County, CO  
 Site: H Thomas 0993 26-06 Pad  
 Well: H. Thomas 0993-26-03E  
 Wellbore: A-2  
 Design: Design #1  
 Latitude: 39.249190  
 Longitude: -107.742494  
 Ground Level: 7631.0  
 well @ 7655.0usft (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

#### 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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	KOP (Build 3" / 100')
1112.1	27.36	68.51	1077.8	76.3	198.8	3.00	68.51	213.7	EOB @ 27.36" Inc. / 68.51" Azm
6031.9	27.36	68.51	6447.2	906.7	2302.8	0.00	0.00	2474.9	Drop 3" / 100'
6944.0	0.00	0.00	6325.0	985.0	2501.6	3.00	180.00	2688.5	EOO @ Vertical
8844.0	0.00	0.00	8225.0	985.0	2501.6	0.00	0.00	2688.5	TD @ 8844.0" MD / 8225.0" TVD

#### DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
PBHL - H. Thomas 0993-26-03E	8225.0	985.0	2501.6	1524412.30	2367537.77	39.251894	-107.733660

#### WELL DETAILS: H. Thomas 0993-26-03E

	7631.0				
+N-S	+E-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1523489.37	2365012.61	39.249190	-107.742494

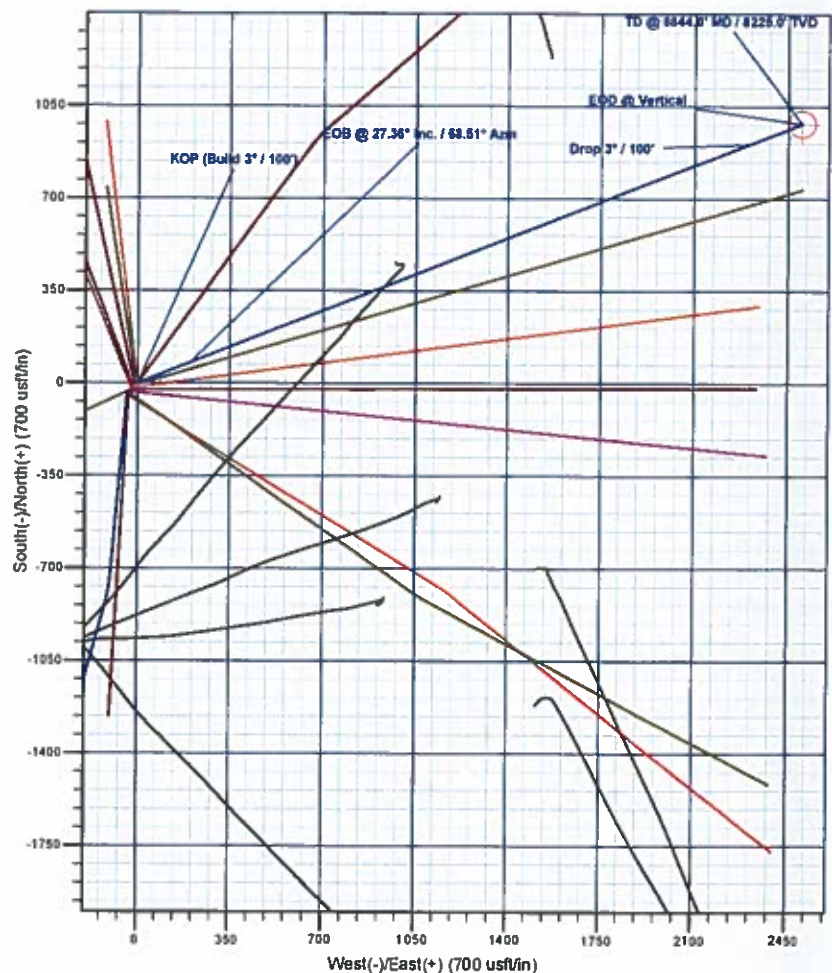
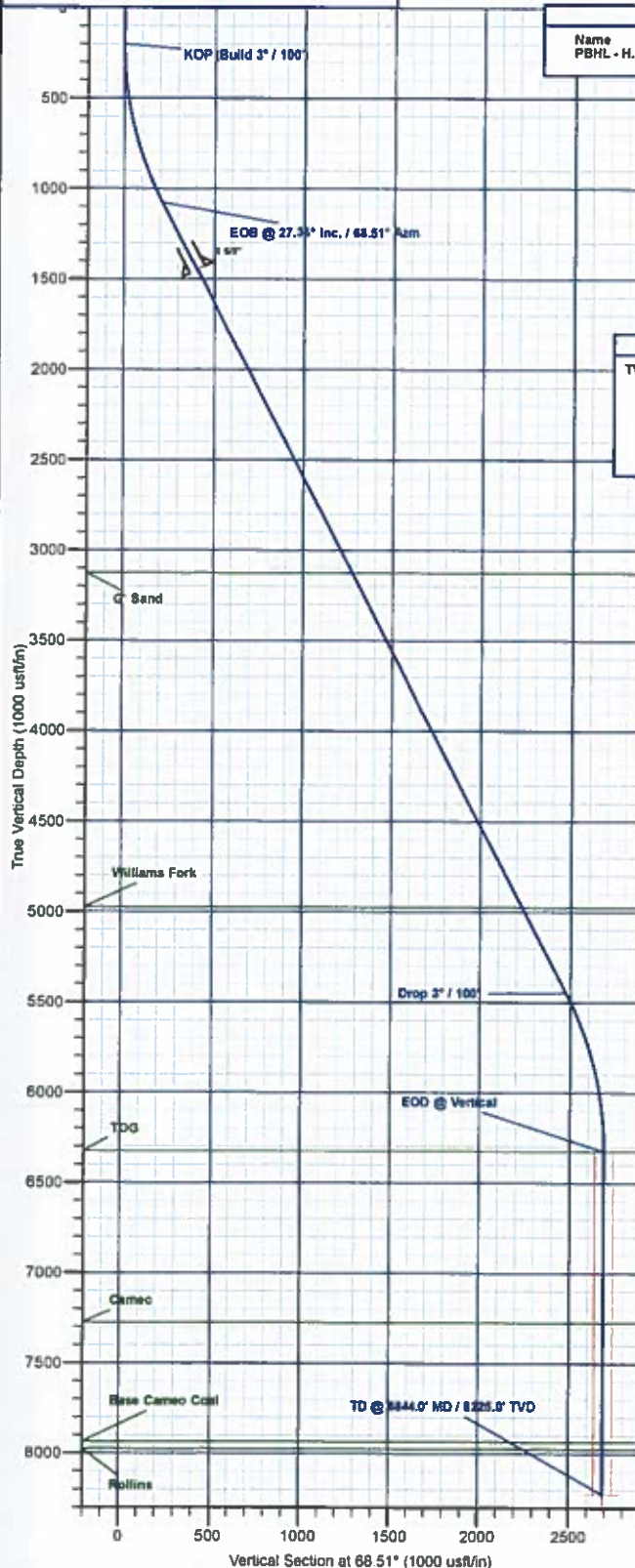
#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well H. Thomas 0993-26-03E, True North  
 Vertical (TVD) Reference: well @ 7655.0usft (H&P #290)  
 Section (VS) Reference: Slot - (0.0N, 0.0E)  
 Measured Depth Reference: well @ 7655.0usft (H&P #290)  
 Calculation Method: Minimum Curvature



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3125.0	3417.2	G' Sand
4975.0	5500.2	Williams Fork
6325.0	6944.0	TOG
7275.0	7894.0	Cameo
7935.0	8554.0	Base Cameo Coal
7975.0	8594.0	Rollins



Plan: Design #1 (H. Thomas 0993-26-03E/A-2)

Created By: Will Jircik

Date: 17:35, January 18 2018



# **Laramie Energy, LLC**

**Mesa County, CO**

**H Thomas 0993 26-06 Pad**

**H. Thomas 0993-26-03E**

**A-2**

**Plan: Design #1**

## **QES Well Planning Report**

**18 January, 2018**





# Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well: H. Thomas 0993-26-03E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7655.0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7655.0usft (H&P #290)
Site:	H Thomas 0993 26-06 Pad	North Reference:	True
Well:	H. Thomas 0993-26-03E	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-2		
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	H Thomas 0993 26-06 Pad		
Site Position:	Northing:	1,523,440.69 usft	Latitude: 39.249054
From: Lat/Long	Easting:	2,364,977.70 usft	Longitude: -107.742613
Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16 "	Grid Convergence: -1.41 "	

Well	H. Thomas 0993-26-03E		
Well Position	+N/-S 49.5 usft	Northing: 1,523,489.37 usft	Latitude: 39.249190
	+E/-W 33.7 usft	Easting: 2,365,012.62 usft	Longitude: -107.742494
Position Uncertainty	0.0 usft	Wellhead Elevation:	Ground Level: 7,631.0 usft

Wellbore	A-2				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/15/2018	9.50	65.42	51,350.38350104

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	68.51

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,112.1	27.36	68.51	1,077.8	78.3	198.8	3.00	3.00	0.00	68.51	
6,031.9	27.36	68.51	5,447.2	906.7	2,302.8	0.00	0.00	0.00	0.00	
6,944.0	0.00	0.00	6,325.0	985.0	2,501.6	3.00	-3.00	0.00	180.00	
8,844.0	0.00	0.00	8,225.0	985.0	2,501.6	0.00	0.00	0.00	0.00	PBHL - H. Thomas 09





# Well Planning Report



<b>Database:</b>	EDM 5000 1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well H. Thomas 0993-26-03E
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7655 0usft (H&P #290)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7655 0usft (H&P #290)
<b>Site:</b>	H Thomas 0993 26-06 Pad	<b>North Reference:</b>	True
<b>Well:</b>	H. Thomas 0993-26-03E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	A-2		
<b>Design:</b>	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
<b>KOP (Build 3° / 100')</b>									
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	3.00	68.51	300.0	1.0	2.4	2.6	3.00	3.00	0.00
400.0	6.00	68.51	399.6	3.8	9.7	10.5	3.00	3.00	0.00
500.0	9.00	68.51	498.8	8.6	21.9	23.5	3.00	3.00	0.00
600.0	12.00	68.51	597.1	15.3	38.8	41.7	3.00	3.00	0.00
700.0	15.00	68.51	694.3	23.8	60.6	65.1	3.00	3.00	0.00
800.0	18.00	68.51	790.2	34.2	87.0	93.5	3.00	3.00	0.00
900.0	21.00	68.51	884.4	46.5	118.0	126.9	3.00	3.00	0.00
1,000.0	24.00	68.51	976.8	60.5	153.6	165.1	3.00	3.00	0.00
1,100.0	27.00	68.51	1,067.1	76.3	193.7	208.2	3.00	3.00	0.00
<b>EOB @ 27.36° Inc. / 68.51° Azm</b>									
1,112.1	27.36	68.51	1,077.8	78.3	198.8	213.7	3.00	3.00	0.00
1,200.0	27.36	68.51	1,155.9	93.1	236.4	254.1	0.00	0.00	0.00
1,300.0	27.36	68.51	1,244.7	109.9	279.2	300.0	0.00	0.00	0.00
1,400.0	27.36	68.51	1,333.5	126.8	322.0	346.0	0.00	0.00	0.00
1,500.0	27.36	68.51	1,422.3	143.6	364.7	392.0	0.00	0.00	0.00
<b>8 5/8"</b>									
1,530.0	27.36	68.51	1,449.0	148.7	377.5	405.8	0.00	0.00	0.00
1,600.0	27.36	68.51	1,511.1	160.4	407.5	437.9	0.00	0.00	0.00
1,700.0	27.36	68.51	1,599.9	177.3	450.2	483.9	0.00	0.00	0.00
1,800.0	27.36	68.51	1,688.8	194.1	493.0	529.9	0.00	0.00	0.00
1,900.0	27.36	68.51	1,777.6	211.0	535.8	575.8	0.00	0.00	0.00
2,000.0	27.36	68.51	1,866.4	227.8	578.5	621.8	0.00	0.00	0.00
2,100.0	27.36	68.51	1,955.2	244.6	621.3	667.7	0.00	0.00	0.00
2,200.0	27.36	68.51	2,044.0	261.5	664.1	713.7	0.00	0.00	0.00
2,300.0	27.36	68.51	2,132.8	278.3	706.8	759.7	0.00	0.00	0.00
2,400.0	27.36	68.51	2,221.6	295.1	749.6	805.6	0.00	0.00	0.00
2,500.0	27.36	68.51	2,310.4	312.0	792.4	851.6	0.00	0.00	0.00
2,600.0	27.36	68.51	2,399.3	328.8	835.1	897.5	0.00	0.00	0.00
2,700.0	27.36	68.51	2,488.1	345.7	877.9	943.5	0.00	0.00	0.00
2,800.0	27.36	68.51	2,576.9	362.5	920.7	989.5	0.00	0.00	0.00
2,900.0	27.36	68.51	2,665.7	379.3	963.4	1,035.4	0.00	0.00	0.00
3,000.0	27.36	68.51	2,754.5	396.2	1,006.2	1,081.4	0.00	0.00	0.00
3,100.0	27.36	68.51	2,843.3	413.0	1,049.0	1,127.3	0.00	0.00	0.00
3,200.0	27.36	68.51	2,932.1	429.9	1,091.7	1,173.3	0.00	0.00	0.00
3,300.0	27.36	68.51	3,020.9	446.7	1,134.5	1,219.3	0.00	0.00	0.00
3,400.0	27.36	68.51	3,109.8	463.5	1,177.3	1,265.2	0.00	0.00	0.00
<b>G' Sand</b>									
3,417.2	27.36	68.51	3,125.0	466.4	1,184.6	1,273.1	0.00	0.00	0.00
3,500.0	27.36	68.51	3,198.6	480.4	1,220.0	1,311.2	0.00	0.00	0.00
3,600.0	27.36	68.51	3,287.4	497.2	1,262.8	1,357.1	0.00	0.00	0.00
3,700.0	27.36	68.51	3,376.2	514.0	1,305.5	1,403.1	0.00	0.00	0.00
3,800.0	27.36	68.51	3,465.0	530.9	1,348.3	1,449.1	0.00	0.00	0.00
3,900.0	27.36	68.51	3,553.8	547.7	1,391.1	1,495.0	0.00	0.00	0.00
4,000.0	27.36	68.51	3,642.6	564.6	1,433.8	1,541.0	0.00	0.00	0.00
4,100.0	27.36	68.51	3,731.4	581.4	1,476.6	1,586.9	0.00	0.00	0.00
4,200.0	27.36	68.51	3,820.3	598.2	1,519.4	1,632.9	0.00	0.00	0.00
4,300.0	27.36	68.51	3,909.1	615.1	1,562.1	1,678.9	0.00	0.00	0.00
4,400.0	27.36	68.51	3,997.9	631.9	1,604.9	1,724.8	0.00	0.00	0.00
4,500.0	27.36	68.51	4,086.7	648.7	1,647.7	1,770.8	0.00	0.00	0.00
4,600.0	27.36	68.51	4,175.5	665.6	1,690.4	1,816.7	0.00	0.00	0.00



## Well Planning Report



Database: EDM 5000.1 Single User Db  
 Company: Laramie Energy, LLC  
 Project: Mesa County, CO  
 Site: H Thomas 0993 26-06 Pad  
 Well: H. Thomas 0993-26-03E  
 Wellbore: A-2  
 Design: Design #1

Local Co-ordinate Reference:  
 TVD Reference:  
 MD Reference:  
 North Reference:  
 Survey Calculation Method:

Well H. Thomas 0993-26-03E  
 well @ 7655 0usft (H&P #290)  
 well @ 7655 0usft (H&P #290)  
 True  
 Minimum Curvature

## 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)
4,700.0	27.36	68.51	4,264.3	682.4	1,733.2	1,862.7	0.00	0.00	0.00
4,800.0	27.36	68.51	4,353.1	699.3	1,776.0	1,908.7	0.00	0.00	0.00
4,900.0	27.36	68.51	4,441.9	716.1	1,818.7	1,954.6	0.00	0.00	0.00
5,000.0	27.36	68.51	4,530.8	732.9	1,861.5	2,000.6	0.00	0.00	0.00
5,100.0	27.36	68.51	4,619.6	749.8	1,904.3	2,046.6	0.00	0.00	0.00
5,200.0	27.36	68.51	4,708.4	766.6	1,947.0	2,092.5	0.00	0.00	0.00
5,300.0	27.36	68.51	4,797.2	783.5	1,989.8	2,138.5	0.00	0.00	0.00
5,400.0	27.36	68.51	4,886.0	800.3	2,032.6	2,184.4	0.00	0.00	0.00
5,500.0	27.36	68.51	4,974.8	817.1	2,075.3	2,230.4	0.00	0.00	0.00
<b>Williams Fork</b>									
5,500.2	27.36	68.51	4,975.0	817.2	2,075.4	2,230.5	0.00	0.00	0.00
5,600.0	27.36	68.51	5,063.6	834.0	2,118.1	2,276.4	0.00	0.00	0.00
5,700.0	27.36	68.51	5,152.4	850.8	2,160.9	2,322.3	0.00	0.00	0.00
5,800.0	27.36	68.51	5,241.3	867.6	2,203.6	2,368.3	0.00	0.00	0.00
5,900.0	27.36	68.51	5,330.1	884.5	2,246.4	2,414.2	0.00	0.00	0.00
6,000.0	27.36	68.51	5,418.9	901.3	2,289.1	2,460.2	0.00	0.00	0.00
<b>Drop 3° / 100'</b>									
6,031.9	27.36	68.51	5,447.2	906.7	2,302.8	2,474.9	0.00	0.00	0.00
6,100.0	25.32	68.51	5,508.2	917.8	2,330.9	2,505.1	3.00	-3.00	0.00
6,200.0	22.32	68.51	5,599.7	932.6	2,368.5	2,545.5	3.00	-3.00	0.00
6,300.0	19.32	68.51	5,693.2	945.6	2,401.5	2,581.0	3.00	-3.00	0.00
6,400.0	16.32	68.51	5,788.4	956.8	2,430.0	2,611.6	3.00	-3.00	0.00
6,500.0	13.32	68.51	5,885.0	966.2	2,453.8	2,637.2	3.00	-3.00	0.00
6,600.0	10.32	68.51	5,982.9	973.7	2,472.9	2,657.6	3.00	-3.00	0.00
6,700.0	7.32	68.51	6,081.7	979.3	2,487.1	2,673.0	3.00	-3.00	0.00
6,800.0	4.32	68.51	6,181.2	983.0	2,496.6	2,683.1	3.00	-3.00	0.00
6,900.0	1.32	68.51	6,281.0	984.8	2,501.1	2,688.0	3.00	-3.00	0.00
<b>EOD @ Vertical - TOG</b>									
6,944.0	0.00	0.00	6,325.0	985.0	2,501.6	2,688.5	3.00	-3.00	0.00
7,000.0	0.00	0.00	6,381.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
7,100.0	0.00	0.00	6,481.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
7,200.0	0.00	0.00	6,581.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
7,300.0	0.00	0.00	6,681.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
7,400.0	0.00	0.00	6,781.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
7,500.0	0.00	0.00	6,881.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
7,600.0	0.00	0.00	6,981.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
7,700.0	0.00	0.00	7,081.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
7,800.0	0.00	0.00	7,181.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
<b>Cameo</b>									
7,894.0	0.00	0.00	7,275.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
7,900.0	0.00	0.00	7,281.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
8,000.0	0.00	0.00	7,381.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
8,100.0	0.00	0.00	7,481.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
8,200.0	0.00	0.00	7,581.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
8,300.0	0.00	0.00	7,681.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
8,400.0	0.00	0.00	7,781.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
8,500.0	0.00	0.00	7,881.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
<b>Base Cameo Coal</b>									
8,554.0	0.00	0.00	7,935.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
<b>Rollins</b>									
8,594.0	0.00	0.00	7,975.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
8,600.0	0.00	0.00	7,981.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
8,700.0	0.00	0.00	8,081.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00



# Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well H. Thomas 0993-28-03E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7655.0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7655.0usft (H&P #290)
Site:	H Thomas 0993 28-06 Pad	North Reference:	True
Well:	H. Thomas 0993-28-03E	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-2		
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)
8,800.0	0.00	0.00	8,181.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00
TD @ 8844.0' MD / 8225.0' TVD									
8,844.0	0.00	0.00	8,225.0	985.0	2,501.6	2,688.5	0.00	0.00	0.00

## 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 - H. Thomas 0993	0.00	0.00	8,225.0	985.0	2,501.6	1,524,412.30	2,367,537.77	39.251894	-107.733660
- plan hits target center									
- Circle (radius 50.0)									

## Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,530.0	1,449.0	8 5/8"	8-5/8	11

## Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,417.2	3,125.0	G' Sand			
5,500.2	4,975.0	Williams Fork			
6,944.0	6,325.0	TOG			
7,894.0	7,275.0	Cameo			
8,554.0	7,935.0	Base Cameo Coal			
8,594.0	7,975.0	Rollins			

## Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.0	200.0	0.0	0.0	KOP (Build 3" / 100')
1,112.1	1,077.8	78.3	198.8	EOB @ 27.36° Inc. / 68.51° Azm
6,031.9	5,447.2	906.7	2,302.8	Drop 3" / 100'
6,944.0	6,325.0	985.0	2,501.6	EOD @ Vertical
8,844.0	8,225.0	985.0	2,501.6	TD @ 8844.0' MD / 8225.0' TVD