



# Scientific Drilling

Rocky Mountain Operations

Project: Garfield County, CO NAD 83  
Site: 696-5A Pad  
Well: 696-5A-12  
Wellbore: OH  
Design: Plan #1

Marathon Oil Co.

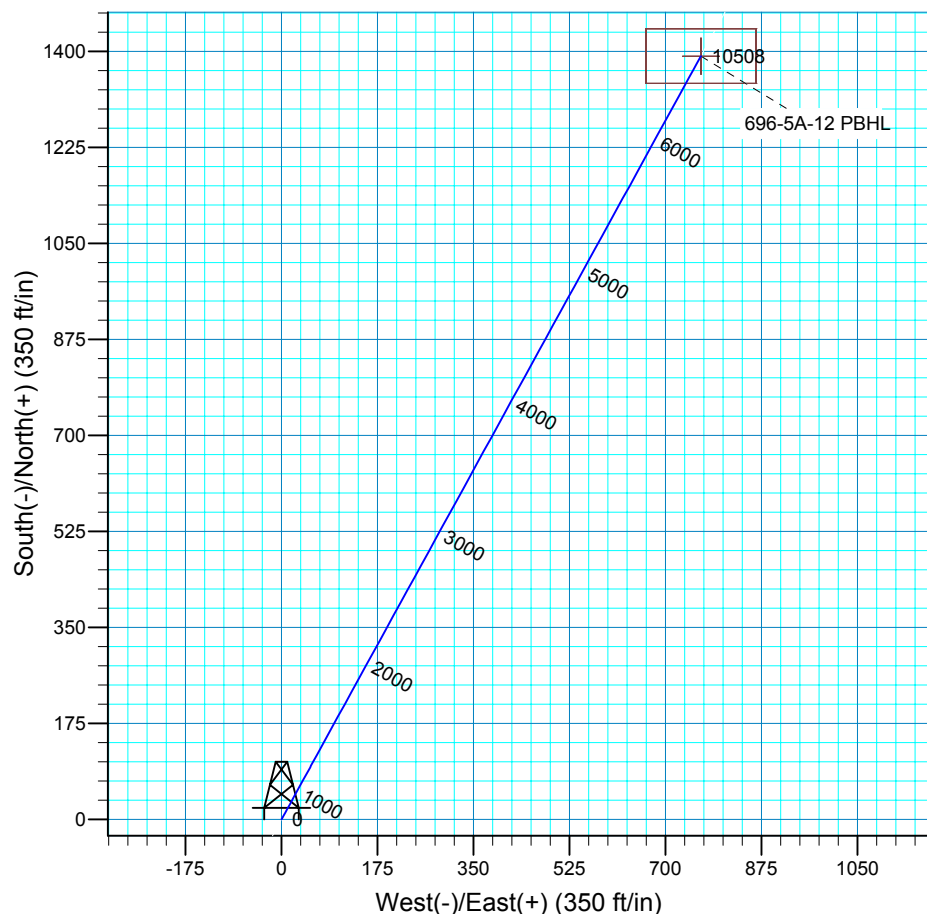
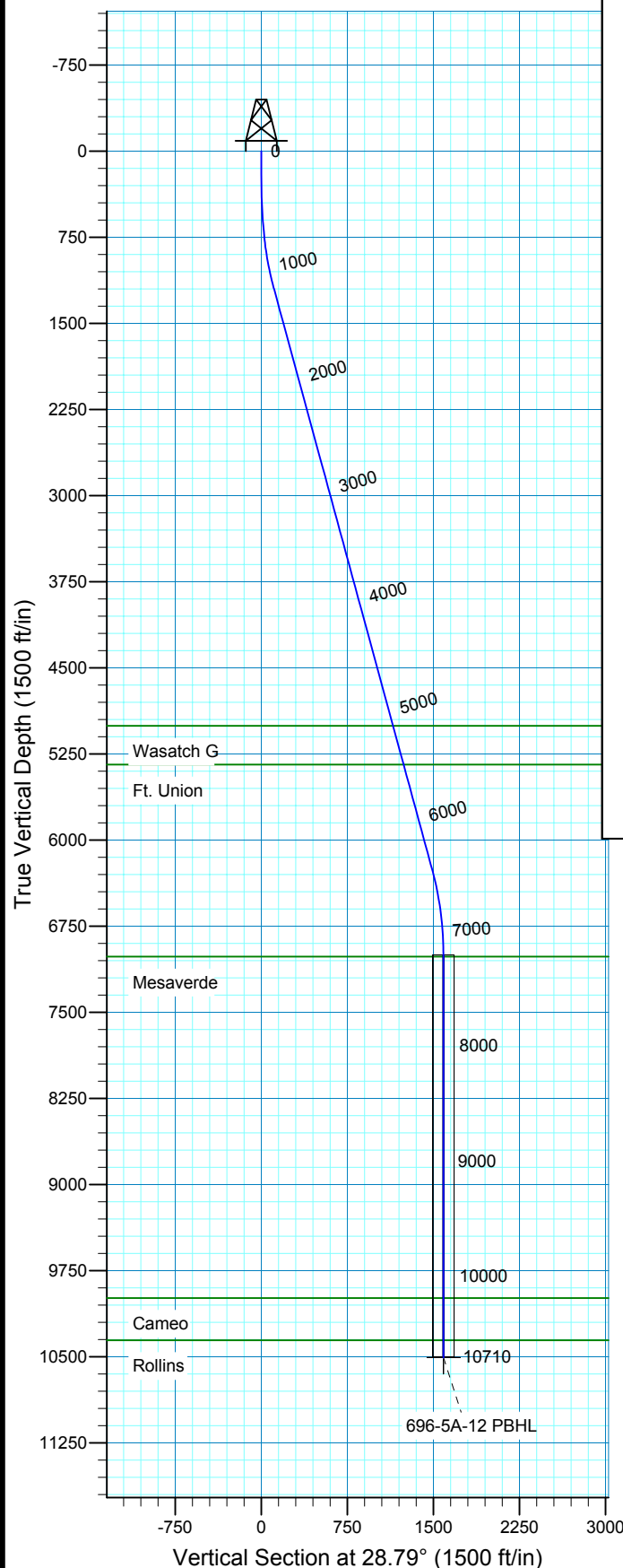


Azimuths to True North  
Magnetic North: 10.75°

Magnetic Field  
Strength: 52547.3snT  
Dip Angle: 65.85°  
Date: 2008-09-26  
Model: IGRF2005-10

## WELL DETAILS: 696-5A-12

GL 8101' & RKB 24' @ 8125.00ft 8101.00  
+N/-S +E/-W Northing Easting Latitude Longitude  
0.00 0.00 1639281.43 2258399.00 39° 33' 32.852 N 108° 7' 50.395 W



Plan: Plan #1 (696-5A-12/OH)	
Created By: Julie Cruse	Date: 2008-10-01
PROJECT DETAILS: Garfield County, CO NAD 83	
Geodetic System: US State Plane 1983	
Datum: North American Datum 1983	
Ellipsoid: GRS 1980	
Zone: Colorado Central Zone	
Location: Sec 5 T6S R96W	
System Datum: Mean Sea Level	
Local North: True	

## SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
700.00	5.00	28.79	699.37	19.11	10.50	1.00	28.79	21.80	696-5A-12 PBHL
1212.58	15.25	28.79	1203.29	97.98	53.84	2.00	0.00	111.80	
6439.79	15.25	28.79	6246.39	1303.11	716.00	0.00	0.00	1486.86	
7202.37	0.00	0.00	7000.00	1391.54	764.59	2.00	180.00	1587.76	
10708.37	0.00	0.00	10506.00	1391.54	764.59	0.00	0.00	1587.76	696-5A-12 PBHL
10709.37	0.00	0.00	10507.00	1391.54	764.59	0.00	0.00	1587.76	



**Scientific Drilling**  
Rocky Mountain Operations

## **Marathon Oil Co.**

**Garfield County, CO NAD 83**

**696-5A Pad**

**696-5A-12 - Slot A**

**OH**

**Plan: Plan #1**

## **Standard Planning Report**

**02 October, 2008**

<b>Database:</b>	EDM 2003.16 Multiuser DB	<b>Local Co-ordinate Reference:</b>	Well 696-5A-12 - Slot A
<b>Company:</b>	Marathon Oil Co.	<b>TVD Reference:</b>	GL 8101' & RKB 24' @ 8125.00ft
<b>Project:</b>	Garfield County, CO NAD 83	<b>MD Reference:</b>	GL 8101' & RKB 24' @ 8125.00ft
<b>Site:</b>	696-5A Pad	<b>North Reference:</b>	True
<b>Well:</b>	696-5A-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

<b>Project</b>	Garfield County, CO NAD 83		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

Site	696-5A Pad, Sec 5 T6S R96W				
Site Position:		Northing:	1,639,219.87 ft	Latitude:	39° 33' 32.257 N
From:	Map	Easting:	2,258,442.99 ft	Longitude:	108° 7' 49.811 W
Position Uncertainty:	0.00 ft	Slot Radius:	in	Grid Convergence:	-1.66 °

Well	696-5A-12 - Slot A					
Well Position	+N/-S	0.00 ft	Northing:	1,639,281.43 ft	Latitude:	39° 33' 32.852 N
	+E/-W	0.00 ft	Easting:	2,258,399.00 ft	Longitude:	108° 7' 50.395 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,101.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2005-10	2008-09-26	10.75	65.85	52,547

<b>Design</b>	Plan #1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	28.79	

<b>Plan Sections</b>										
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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	5.00	28.79	699.37	19.11	10.50	1.00	1.00	0.00	28.79	696-5A-12 PBHL
1,212.58	15.25	28.79	1,203.29	97.98	53.84	2.00	2.00	0.00	0.00	
6,439.79	15.25	28.79	6,246.39	1,303.11	716.00	0.00	0.00	0.00	0.00	
7,202.37	0.00	0.00	7,000.00	1,391.54	764.59	2.00	-2.00	0.00	180.00	
10,708.37	0.00	0.00	10,506.00	1,391.54	764.59	0.00	0.00	0.00	0.00	696-5A-12 PBHL
10,709.37	0.00	0.00	10,507.00	1,391.54	764.59	0.00	0.00	0.00	0.00	

<b>Database:</b>	EDM 2003.16 Multiuser DB	<b>Local Co-ordinate Reference:</b>	Well 696-5A-12 - Slot A
<b>Company:</b>	Marathon Oil Co.	<b>TVD Reference:</b>	GL 8101' & RKB 24' @ 8125.00ft
<b>Project:</b>	Garfield County, CO NAD 83	<b>MD Reference:</b>	GL 8101' & RKB 24' @ 8125.00ft
<b>Site:</b>	696-5A Pad	<b>North Reference:</b>	True
<b>Well:</b>	696-5A-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	1.00	28.79	299.99	0.76	0.42	0.87	1.00	1.00	0.00
400.00	2.00	28.79	399.96	3.06	1.68	3.49	1.00	1.00	0.00
500.00	3.00	28.79	499.86	6.88	3.78	7.85	1.00	1.00	0.00
600.00	4.00	28.79	599.68	12.23	6.72	13.96	1.00	1.00	0.00
700.00	5.00	28.79	699.37	19.11	10.50	21.80	1.00	1.00	0.00
800.00	7.00	28.79	798.81	28.27	15.53	32.26	2.00	2.00	0.00
900.00	9.00	28.79	897.83	40.47	22.23	46.17	2.00	2.00	0.00
1,000.00	11.00	28.79	996.31	55.68	30.60	63.54	2.00	2.00	0.00
1,100.00	13.00	28.79	1,094.12	73.90	40.61	84.33	2.00	2.00	0.00
1,200.00	15.00	28.79	1,191.14	95.11	52.26	108.52	2.00	2.00	0.00
1,212.58	15.25	28.79	1,203.29	97.98	53.84	111.80	2.00	2.00	0.00
1,300.00	15.25	28.79	1,287.63	118.14	64.91	134.80	0.00	0.00	0.00
1,400.00	15.25	28.79	1,384.11	141.19	77.58	161.10	0.00	0.00	0.00
1,500.00	15.25	28.79	1,480.59	164.25	90.25	187.41	0.00	0.00	0.00
1,600.00	15.25	28.79	1,577.06	187.30	102.91	213.71	0.00	0.00	0.00
1,700.00	15.25	28.79	1,673.54	210.36	115.58	240.02	0.00	0.00	0.00
1,800.00	15.25	28.79	1,770.02	233.41	128.25	266.33	0.00	0.00	0.00
1,900.00	15.25	28.79	1,866.50	256.47	140.92	292.63	0.00	0.00	0.00
2,000.00	15.25	28.79	1,962.98	279.52	153.59	318.94	0.00	0.00	0.00
2,100.00	15.25	28.79	2,059.45	302.58	166.25	345.24	0.00	0.00	0.00
2,200.00	15.25	28.79	2,155.93	325.63	178.92	371.55	0.00	0.00	0.00
2,300.00	15.25	28.79	2,252.41	348.69	191.59	397.85	0.00	0.00	0.00
2,400.00	15.25	28.79	2,348.89	371.74	204.26	424.16	0.00	0.00	0.00
2,500.00	15.25	28.79	2,445.37	394.80	216.92	450.47	0.00	0.00	0.00
2,600.00	15.25	28.79	2,541.84	417.85	229.59	476.77	0.00	0.00	0.00
2,700.00	15.25	28.79	2,638.32	440.91	242.26	503.08	0.00	0.00	0.00
2,800.00	15.25	28.79	2,734.80	463.96	254.93	529.38	0.00	0.00	0.00
2,900.00	15.25	28.79	2,831.28	487.02	267.59	555.69	0.00	0.00	0.00
3,000.00	15.25	28.79	2,927.76	510.07	280.26	582.00	0.00	0.00	0.00
3,100.00	15.25	28.79	3,024.23	533.13	292.93	608.30	0.00	0.00	0.00
3,200.00	15.25	28.79	3,120.71	556.18	305.60	634.61	0.00	0.00	0.00
3,300.00	15.25	28.79	3,217.19	579.24	318.27	660.91	0.00	0.00	0.00
3,400.00	15.25	28.79	3,313.67	602.29	330.93	687.22	0.00	0.00	0.00
3,500.00	15.25	28.79	3,410.15	625.35	343.60	713.53	0.00	0.00	0.00
3,600.00	15.25	28.79	3,506.62	648.40	356.27	739.83	0.00	0.00	0.00
3,700.00	15.25	28.79	3,603.10	671.46	368.94	766.14	0.00	0.00	0.00
3,800.00	15.25	28.79	3,699.58	694.51	381.60	792.44	0.00	0.00	0.00
3,900.00	15.25	28.79	3,796.06	717.57	394.27	818.75	0.00	0.00	0.00
4,000.00	15.25	28.79	3,892.54	740.62	406.94	845.05	0.00	0.00	0.00
4,100.00	15.25	28.79	3,989.01	763.68	419.61	871.36	0.00	0.00	0.00
4,200.00	15.25	28.79	4,085.49	786.73	432.27	897.67	0.00	0.00	0.00
4,300.00	15.25	28.79	4,181.97	809.79	444.94	923.97	0.00	0.00	0.00
4,400.00	15.25	28.79	4,278.45	832.84	457.61	950.28	0.00	0.00	0.00
4,500.00	15.25	28.79	4,374.93	855.90	470.28	976.58	0.00	0.00	0.00
4,600.00	15.25	28.79	4,471.40	878.95	482.94	1,002.89	0.00	0.00	0.00
4,700.00	15.25	28.79	4,567.88	902.01	495.61	1,029.20	0.00	0.00	0.00
4,800.00	15.25	28.79	4,664.36	925.06	508.28	1,055.50	0.00	0.00	0.00
4,900.00	15.25	28.79	4,760.84	948.12	520.95	1,081.81	0.00	0.00	0.00
5,000.00	15.25	28.79	4,857.32	971.17	533.62	1,108.11	0.00	0.00	0.00
5,100.00	15.25	28.79	4,953.79	994.22	546.28	1,134.42	0.00	0.00	0.00
5,154.11	15.25	28.79	5,006.00	1,006.70	553.14	1,148.65	0.00	0.00	0.00

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<b>Company:</b>	Marathon Oil Co.	<b>TVD Reference:</b>	GL 8101' & RKB 24' @ 8125.00ft
<b>Project:</b>	Garfield County, CO NAD 83	<b>MD Reference:</b>	GL 8101' & RKB 24' @ 8125.00ft
<b>Site:</b>	696-5A Pad	<b>North Reference:</b>	True
<b>Well:</b>	696-5A-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
Wasatch G										
5,200.00	15.25	28.79	5,050.27	1,017.28	558.95	1,160.73	0.00	0.00	0.00	
5,300.00	15.25	28.79	5,146.75	1,040.33	571.62	1,187.03	0.00	0.00	0.00	
5,400.00	15.25	28.79	5,243.23	1,063.39	584.29	1,213.34	0.00	0.00	0.00	
5,500.00	15.25	28.79	5,339.71	1,086.44	596.95	1,239.64	0.00	0.00	0.00	
5,503.42	15.25	28.79	5,343.00	1,087.23	597.39	1,240.54	0.00	0.00	0.00	
Ft. Union										
5,600.00	15.25	28.79	5,436.18	1,109.50	609.62	1,265.95	0.00	0.00	0.00	
5,700.00	15.25	28.79	5,532.66	1,132.55	622.29	1,292.26	0.00	0.00	0.00	
5,800.00	15.25	28.79	5,629.14	1,155.61	634.96	1,318.56	0.00	0.00	0.00	
5,900.00	15.25	28.79	5,725.62	1,178.66	647.62	1,344.87	0.00	0.00	0.00	
6,000.00	15.25	28.79	5,822.09	1,201.72	660.29	1,371.17	0.00	0.00	0.00	
6,100.00	15.25	28.79	5,918.57	1,224.77	672.96	1,397.48	0.00	0.00	0.00	
6,200.00	15.25	28.79	6,015.05	1,247.83	685.63	1,423.78	0.00	0.00	0.00	
6,300.00	15.25	28.79	6,111.53	1,270.88	698.30	1,450.09	0.00	0.00	0.00	
6,400.00	15.25	28.79	6,208.01	1,293.94	710.96	1,476.40	0.00	0.00	0.00	
6,439.79	15.25	28.79	6,246.39	1,303.11	716.00	1,486.86	0.00	0.00	0.00	
6,500.00	14.05	28.79	6,304.65	1,316.46	723.34	1,502.09	2.00	-2.00	0.00	
6,600.00	12.05	28.79	6,402.06	1,336.24	734.21	1,524.67	2.00	-2.00	0.00	
6,700.00	10.05	28.79	6,500.20	1,353.04	743.43	1,543.83	2.00	-2.00	0.00	
6,800.00	8.05	28.79	6,598.95	1,366.82	751.01	1,559.55	2.00	-2.00	0.00	
6,900.00	6.05	28.79	6,698.19	1,377.57	756.91	1,571.82	2.00	-2.00	0.00	
7,000.00	4.05	28.79	6,797.80	1,385.28	761.15	1,580.62	2.00	-2.00	0.00	
7,100.00	2.05	28.79	6,897.65	1,389.94	763.71	1,585.93	2.00	-2.00	0.00	
7,200.00	0.05	28.79	6,997.63	1,391.54	764.59	1,587.76	2.00	-2.00	0.00	
7,202.37	0.00	0.00	7,000.00	1,391.54	764.59	1,587.76	2.00	-2.00	0.00	
7,217.37	0.00	0.00	7,015.00	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
Mesaverde										
7,300.00	0.00	0.00	7,097.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,197.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,297.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
7,600.00	0.00	0.00	7,397.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
7,700.00	0.00	0.00	7,497.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
7,800.00	0.00	0.00	7,597.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
7,900.00	0.00	0.00	7,697.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
8,000.00	0.00	0.00	7,797.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
8,100.00	0.00	0.00	7,897.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
8,200.00	0.00	0.00	7,997.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
8,300.00	0.00	0.00	8,097.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
8,400.00	0.00	0.00	8,197.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
8,500.00	0.00	0.00	8,297.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
8,600.00	0.00	0.00	8,397.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
8,700.00	0.00	0.00	8,497.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
8,800.00	0.00	0.00	8,597.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
8,900.00	0.00	0.00	8,697.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
9,000.00	0.00	0.00	8,797.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
9,100.00	0.00	0.00	8,897.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
9,200.00	0.00	0.00	8,997.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
9,300.00	0.00	0.00	9,097.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
9,400.00	0.00	0.00	9,197.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
9,500.00	0.00	0.00	9,297.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
9,600.00	0.00	0.00	9,397.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	
9,700.00	0.00	0.00	9,497.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00	

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<b>Project:</b>	Garfield County, CO NAD 83	<b>MD Reference:</b>	GL 8101' & RKB 24' @ 8125.00ft
<b>Site:</b>	696-5A Pad	<b>North Reference:</b>	True
<b>Well:</b>	696-5A-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,800.00	0.00	0.00	9,597.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00
9,900.00	0.00	0.00	9,697.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00
10,000.00	0.00	0.00	9,797.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00
10,100.00	0.00	0.00	9,897.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00
10,190.37	0.00	0.00	9,988.00	1,391.54	764.59	1,587.76	0.00	0.00	0.00
<b>Cameo</b>									
10,200.00	0.00	0.00	9,997.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00
10,300.00	0.00	0.00	10,097.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00
10,400.00	0.00	0.00	10,197.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00
10,500.00	0.00	0.00	10,297.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00
10,558.37	0.00	0.00	10,356.00	1,391.54	764.59	1,587.76	0.00	0.00	0.00
<b>Rollins</b>									
10,600.00	0.00	0.00	10,397.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00
10,700.00	0.00	0.00	10,497.63	1,391.54	764.59	1,587.76	0.00	0.00	0.00
10,708.37	0.00	0.00	10,506.00	1,391.54	764.59	1,587.76	0.00	0.00	0.00
10,709.37	0.00	0.00	10,507.00	1,391.54	764.59	1,587.76	0.00	0.00	0.00

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
696-5A-12 PBHL	0.00	0.00	10,506.00	1,391.54	764.59	1,640,650.25	2,259,203.56	39° 33' 46.606 N	108° 7' 40.632 W
- plan hits target center									
- Rectangle (sides W100.00 H200.00 D0.00)									

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,154.11	5,006.00	Wasatch G		0.00	
5,503.42	5,343.00	Ft. Union		0.00	
7,217.37	7,015.00	Mesaverde		0.00	
10,190.37	9,988.00	Cameo		0.00	
10,558.37	10,356.00	Rollins		0.00	