

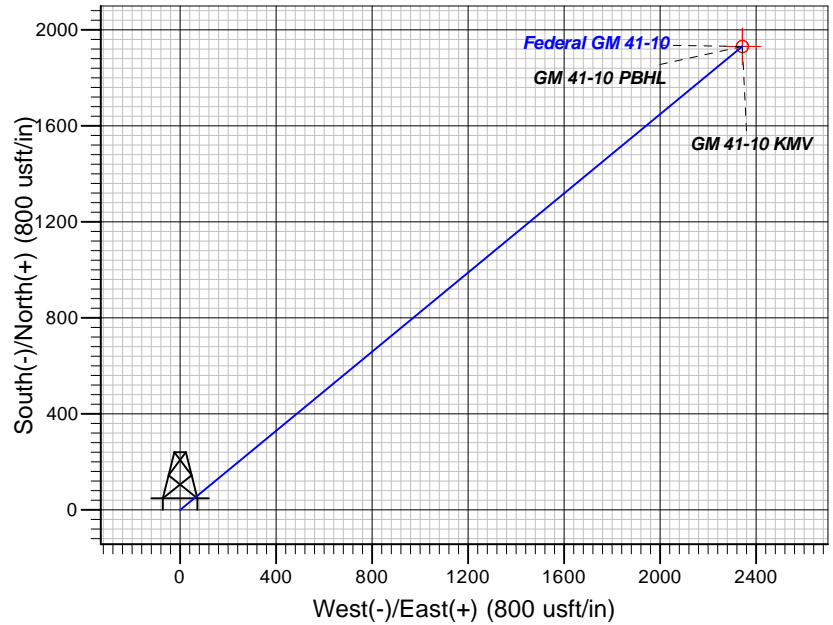
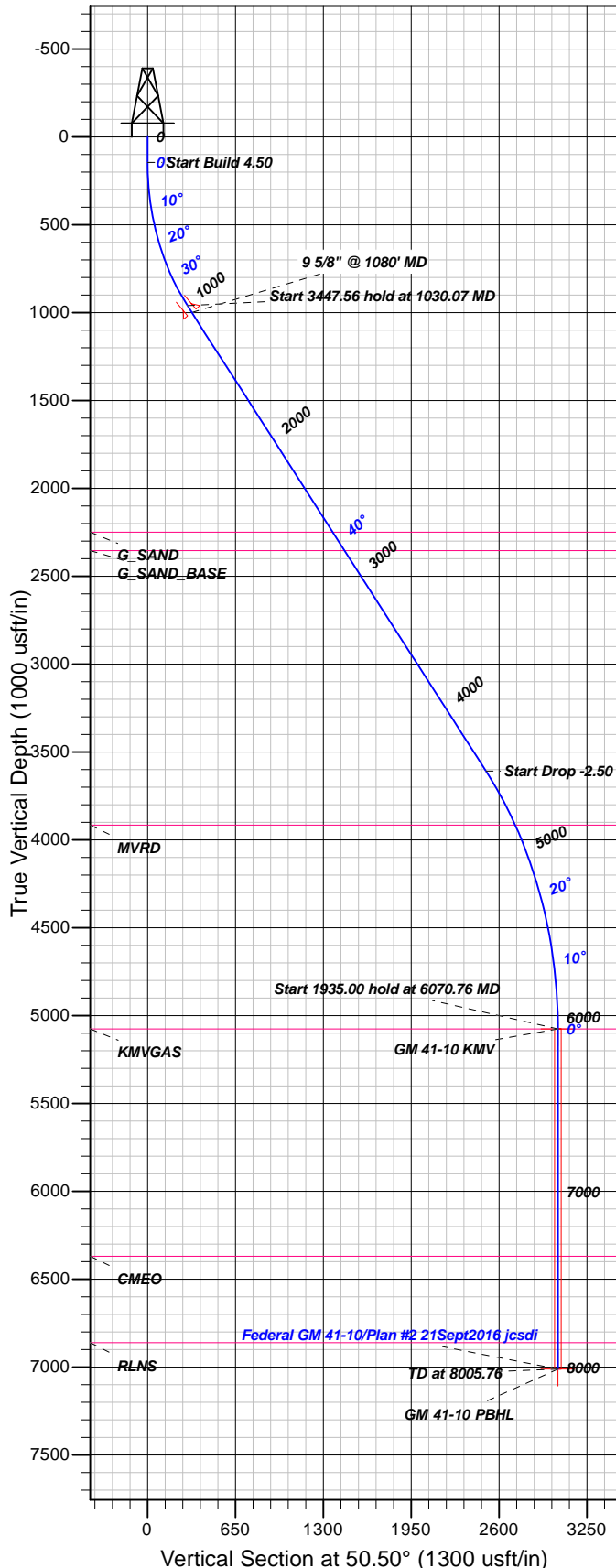
## Well Details: Federal GM 41-10

GL 6148' & RKB 24' @ 6172.00usft (H&P 318)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1600365.80	2266914.20	39.4530113	-108.0965162	B14

**T M** Azimuths to True North  
 Magnetic North: 9.71°

Magnetic Field  
 Strength: 51587.6snT  
 Dip Angle: 65.58°  
 Date: 9/13/2016  
 Model: BGGM2016



### FORMATION TOP DETAILS

TVDPth	MDPath	Formation
2249.00	2707.88	G_SAND
2354.00	2844.61	G_SAND_BASE
3916.00	4854.46	MVRD
5076.00	6070.76	KMGAS
6369.00	7363.76	CMEQ
6861.00	7855.76	RLNS

Plan: Plan #2 21Sept2016 jcsdi

20:03, September 22 2016  
 Created By: Janie Collins

PROJECT DETAILS: Garfield County, CO NAD83

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

System Datum: Mean Sea Level

### CASING DETAILS

TVDP	MD	Name	Size
998.89	1080.07	9 5/8" @ 1080' MD	9.62

### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	145.00	0.00	0.00	145.00	0.00	0.00	0.00	0.00	0.00	
3	1030.07	39.83	50.50	960.50	187.90	227.98	4.50	50.50	295.43	
4	4477.63	39.83	50.50	3608.11	1592.30	1931.93	0.00	0.00	2503.55	
5	6070.76	0.00	0.00	5076.00	1930.53	2342.29	2.50	180.00	3035.33	GM 41-10 KMV
6	8005.76	0.00	0.00	7011.00	1930.53	2342.29	0.00	0.00	3035.33	GM 41-10 PBHL

### DESIGN TARGET DETAILS

Name	TVDP	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
GM 41-10 KMV	5076.00	1930.53	2342.29	1602228.60	2269310.70	39.4583113	-108.0882205	Circle (Radius: 25.00)
- plan hits target center								
GM 41-10 PBHL	7011.00	1930.53	2342.29	1602228.60	2269310.70	39.4583113	-108.0882205	Point
- plan hits target center								



# **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**MV 5-10 Pad**

**Federal GM 41-10 - Slot B14**

**OH**

**Plan: Plan #2 21Sept2016 jcsdi**

## **Standard Planning Report**

**22 September, 2016**



[www.scientificdrilling.com](http://www.scientificdrilling.com)



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Federal GM 41-10 - Slot B14
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Site:</b>	MV 5-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal GM 41-10	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 21Sept2016 jcsdi		

<b>Project</b>	Garfield County, CO NAD83		
<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		MV 5-10 Pad			
Site Position:		Northing:	1,600,344.70 usft	Latitude:	39.4529509
From:	Map	Easting:	2,266,881.70 usft	Longitude:	-108.0966291
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.64 °

Well	Federal GM 41-10 - Slot B14					
Well Position	+N/-S	22.02 usft	Northing:	1,600,365.80 usft	Latitude:	39.4530114
	+E/-W	31.88 usft	Easting:	2,266,914.20 usft	Longitude:	-108.0965162
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,148.00 usft

<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>
	BGGM2016	9/13/2016	9.72	65.58	51,588

<b>Design</b>	Plan #2 21Sept2016 jcsdi			
<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) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	50.50

<b>Plan Sections</b>										
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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
145.00	0.00	0.00	145.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,030.07	39.83	50.50	960.50	187.90	227.98	4.50	4.50	0.00	50.50	
4,477.63	39.83	50.50	3,608.11	1,592.30	1,931.93	0.00	0.00	0.00	0.00	
6,070.76	0.00	0.00	5,076.00	1,930.53	2,342.29	2.50	-2.50	0.00	180.00	GM 41-10 KMV
8,005.76	0.00	0.00	7,011.00	1,930.53	2,342.29	0.00	0.00	0.00	0.00	GM 41-10 PBHL

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Federal GM 41-10 - Slot B14
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Site:</b>	MV 5-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal GM 41-10	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 21Sept2016 jcsdi		

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)	
0.00	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	
145.00	0.00	0.00	145.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	2.48	50.50	199.98	0.76	0.92	1.19	4.50	4.50	0.00	
300.00	6.98	50.50	299.62	5.99	7.27	9.42	4.50	4.50	0.00	
400.00	11.48	50.50	398.30	16.19	19.64	25.45	4.50	4.50	0.00	
500.00	15.98	50.50	495.42	31.27	37.94	49.17	4.50	4.50	0.00	
600.00	20.48	50.50	590.38	51.16	62.07	80.44	4.50	4.50	0.00	
700.00	24.98	50.50	682.59	75.72	91.87	119.06	4.50	4.50	0.00	
800.00	29.48	50.50	771.49	104.81	127.17	164.79	4.50	4.50	0.00	
900.00	33.98	50.50	856.53	138.25	167.74	217.37	4.50	4.50	0.00	
1,000.00	38.48	50.50	937.18	175.82	213.33	276.45	4.50	4.50	0.00	
1,030.07	39.83	50.50	960.50	187.90	227.98	295.43	4.50	4.50	0.00	
1,080.07	39.83	50.50	998.89	208.27	252.69	327.46	0.00	0.00	0.00	
<b>9 5/8" @ 1080' MD</b>										
1,100.00	39.83	50.50	1,014.20	216.39	262.54	340.22	0.00	0.00	0.00	
1,200.00	39.83	50.50	1,090.99	257.12	311.96	404.27	0.00	0.00	0.00	
1,300.00	39.83	50.50	1,167.79	297.86	361.39	468.32	0.00	0.00	0.00	
1,400.00	39.83	50.50	1,244.59	338.59	410.81	532.37	0.00	0.00	0.00	
1,500.00	39.83	50.50	1,321.38	379.33	460.24	596.42	0.00	0.00	0.00	
1,600.00	39.83	50.50	1,398.18	420.07	509.66	660.46	0.00	0.00	0.00	
1,700.00	39.83	50.50	1,474.98	460.80	559.09	724.51	0.00	0.00	0.00	
1,800.00	39.83	50.50	1,551.78	501.54	608.51	788.56	0.00	0.00	0.00	
1,900.00	39.83	50.50	1,628.57	542.28	657.94	852.61	0.00	0.00	0.00	
2,000.00	39.83	50.50	1,705.37	583.01	707.36	916.66	0.00	0.00	0.00	
2,100.00	39.83	50.50	1,782.17	623.75	756.79	980.71	0.00	0.00	0.00	
2,200.00	39.83	50.50	1,858.96	664.48	806.21	1,044.76	0.00	0.00	0.00	
2,300.00	39.83	50.50	1,935.76	705.22	855.64	1,108.81	0.00	0.00	0.00	
2,400.00	39.83	50.50	2,012.56	745.96	905.06	1,172.86	0.00	0.00	0.00	
2,500.00	39.83	50.50	2,089.35	786.69	954.49	1,236.90	0.00	0.00	0.00	
2,600.00	39.83	50.50	2,166.15	827.43	1,003.91	1,300.95	0.00	0.00	0.00	
2,700.00	39.83	50.50	2,242.95	868.17	1,053.34	1,365.00	0.00	0.00	0.00	
2,707.88	39.83	50.50	2,249.00	871.38	1,057.23	1,370.05	0.00	0.00	0.00	
<b>G_SAND</b>										
2,800.00	39.83	50.50	2,319.74	908.90	1,102.76	1,429.05	0.00	0.00	0.00	
2,844.61	39.83	50.50	2,354.00	927.07	1,124.81	1,457.62	0.00	0.00	0.00	
<b>G_SAND_BASE</b>										
2,900.00	39.83	50.50	2,396.54	949.64	1,152.19	1,493.10	0.00	0.00	0.00	
3,000.00	39.83	50.50	2,473.34	990.37	1,201.61	1,557.15	0.00	0.00	0.00	
3,100.00	39.83	50.50	2,550.13	1,031.11	1,251.04	1,621.20	0.00	0.00	0.00	
3,200.00	39.83	50.50	2,626.93	1,071.85	1,300.46	1,685.25	0.00	0.00	0.00	
3,300.00	39.83	50.50	2,703.73	1,112.58	1,349.89	1,749.29	0.00	0.00	0.00	
3,400.00	39.83	50.50	2,780.52	1,153.32	1,399.31	1,813.34	0.00	0.00	0.00	
3,500.00	39.83	50.50	2,857.32	1,194.06	1,448.74	1,877.39	0.00	0.00	0.00	
3,600.00	39.83	50.50	2,934.12	1,234.79	1,498.16	1,941.44	0.00	0.00	0.00	
3,700.00	39.83	50.50	3,010.91	1,275.53	1,547.59	2,005.49	0.00	0.00	0.00	
3,800.00	39.83	50.50	3,087.71	1,316.26	1,597.01	2,069.54	0.00	0.00	0.00	
3,900.00	39.83	50.50	3,164.51	1,357.00	1,646.43	2,133.59	0.00	0.00	0.00	
4,000.00	39.83	50.50	3,241.30	1,397.74	1,695.86	2,197.64	0.00	0.00	0.00	
4,100.00	39.83	50.50	3,318.10	1,438.47	1,745.28	2,261.69	0.00	0.00	0.00	
4,200.00	39.83	50.50	3,394.90	1,479.21	1,794.71	2,325.73	0.00	0.00	0.00	
4,300.00	39.83	50.50	3,471.69	1,519.95	1,844.13	2,389.78	0.00	0.00	0.00	

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Federal GM 41-10 - Slot B14
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<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Site:</b>	MV 5-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal GM 41-10	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 21Sept2016 jcsdi		

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)
4,400.00	39.83	50.50	3,548.49	1,560.68	1,893.56	2,453.83	0.00	0.00	0.00
4,477.63	39.83	50.50	3,608.11	1,592.30	1,931.93	2,503.55	0.00	0.00	0.00
4,500.00	39.27	50.50	3,625.36	1,601.36	1,942.92	2,517.80	2.50	-2.50	0.00
4,600.00	36.77	50.50	3,704.13	1,640.53	1,990.44	2,579.38	2.50	-2.50	0.00
4,700.00	34.27	50.50	3,785.52	1,677.48	2,035.27	2,637.48	2.50	-2.50	0.00
4,800.00	31.77	50.50	3,869.36	1,712.14	2,077.32	2,691.96	2.50	-2.50	0.00
4,854.46	30.41	50.50	3,916.00	1,730.02	2,099.02	2,720.09	2.50	-2.50	0.00
<b>MVRD</b>									
4,900.00	29.27	50.50	3,955.50	1,744.43	2,116.50	2,742.74	2.50	-2.50	0.00
5,000.00	26.77	50.50	4,043.77	1,774.31	2,152.75	2,789.72	2.50	-2.50	0.00
5,100.00	24.27	50.50	4,134.01	1,801.71	2,185.99	2,832.79	2.50	-2.50	0.00
5,200.00	21.77	50.50	4,226.04	1,826.58	2,216.17	2,871.89	2.50	-2.50	0.00
5,300.00	19.27	50.50	4,319.69	1,848.87	2,243.21	2,906.94	2.50	-2.50	0.00
5,400.00	16.77	50.50	4,414.78	1,868.54	2,267.08	2,937.87	2.50	-2.50	0.00
5,500.00	14.27	50.50	4,511.12	1,885.56	2,287.73	2,964.63	2.50	-2.50	0.00
5,600.00	11.77	50.50	4,608.54	1,899.88	2,305.11	2,987.15	2.50	-2.50	0.00
5,700.00	9.27	50.50	4,706.86	1,911.49	2,319.20	3,005.41	2.50	-2.50	0.00
5,800.00	6.77	50.50	4,805.87	1,920.36	2,329.96	3,019.36	2.50	-2.50	0.00
5,900.00	4.27	50.50	4,905.40	1,926.48	2,337.38	3,028.97	2.50	-2.50	0.00
6,000.00	1.77	50.50	5,005.25	1,929.83	2,341.44	3,034.24	2.50	-2.50	0.00
6,070.76	0.00	0.00	5,076.00	1,930.53	2,342.29	3,035.33	2.50	-2.50	0.00
<b>KMVGAS - GM 41-10 KMW</b>									
6,100.00	0.00	0.00	5,105.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
6,200.00	0.00	0.00	5,205.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
6,300.00	0.00	0.00	5,305.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
6,400.00	0.00	0.00	5,405.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
6,500.00	0.00	0.00	5,505.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
6,600.00	0.00	0.00	5,605.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
6,700.00	0.00	0.00	5,705.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
6,800.00	0.00	0.00	5,805.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
6,900.00	0.00	0.00	5,905.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
7,000.00	0.00	0.00	6,005.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
7,100.00	0.00	0.00	6,105.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
7,200.00	0.00	0.00	6,205.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
7,300.00	0.00	0.00	6,305.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
7,363.76	0.00	0.00	6,369.00	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
<b>CME0</b>									
7,400.00	0.00	0.00	6,405.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
7,500.00	0.00	0.00	6,505.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
7,600.00	0.00	0.00	6,605.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
7,700.00	0.00	0.00	6,705.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
7,800.00	0.00	0.00	6,805.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
7,855.76	0.00	0.00	6,861.00	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
<b>RLNS</b>									
7,900.00	0.00	0.00	6,905.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
8,000.00	0.00	0.00	7,005.24	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
8,005.76	0.00	0.00	7,011.00	1,930.53	2,342.29	3,035.33	0.00	0.00	0.00
<b>GM 41-10 PBHL</b>									

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<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Site:</b>	MV 5-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal GM 41-10	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 21Sept2016 jcsdi		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
GM 41-10 KMV - plan hits target center - Circle (radius 25.00)	0.00	0.00	5,076.00	1,930.53	2,342.29	1,602,228.60	2,269,310.70	39.4583113	-108.0882206
GM 41-10 PBHL - plan hits target center - Point	0.00	0.00	7,011.00	1,930.53	2,342.29	1,602,228.60	2,269,310.70	39.4583113	-108.0882206

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,080.07	998.89	9 5/8" @ 1080' MD	9.62	9.62	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,707.88	2,249.00	G_SAND		0.00	0.00	
2,844.61	2,354.00	G_SAND_BASE		0.00	0.00	
4,854.46	3,916.00	MVRD		0.00	0.00	
6,070.76	5,076.00	KMVGAS		0.00	0.00	
7,363.76	6,369.00	CME0		0.00	0.00	
7,855.76	6,861.00	RLNS		0.00	0.00	