

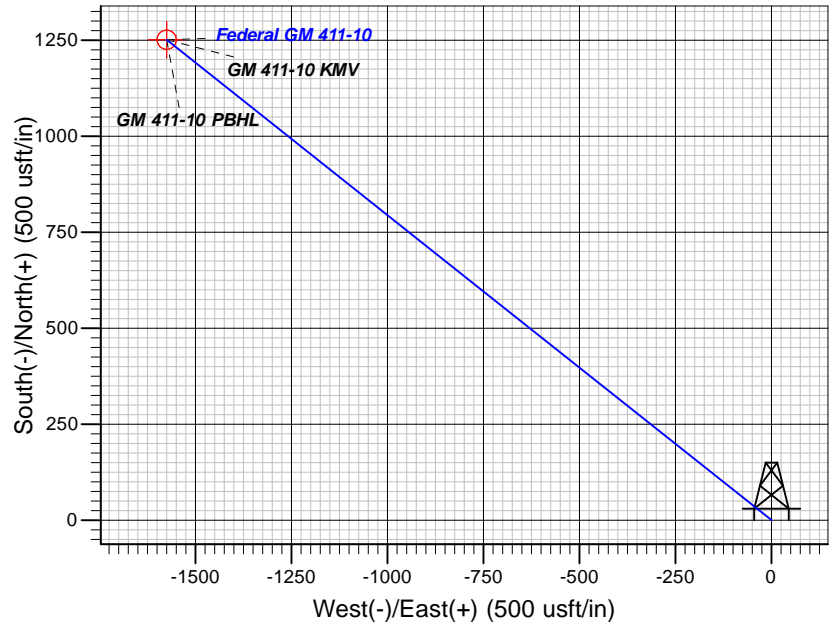
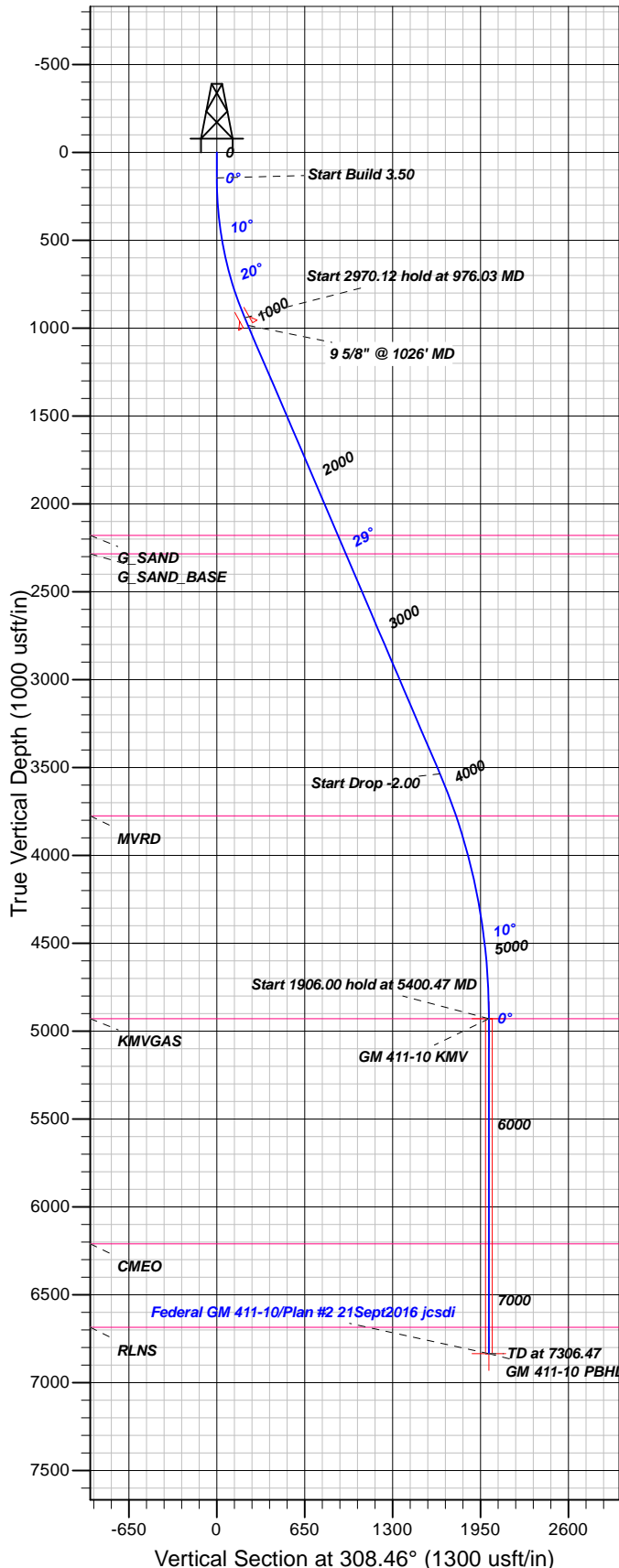
## Well Details: Federal GM 411-10

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

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1600351.80	2266871.40	39.4529696	-108.0966663	B8

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

Magnetic Field  
 Strength: 51587.4snT  
 Dip Angle: 65.58°  
 Date: 9/13/2016  
 Model: BGGM2016



### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2179.00	2392.92	G_SAND
2284.00	2513.07	G_SAND_BASE
3775.00	4212.73	MVRD
4929.00	5400.47	KMVGAS
6210.00	6681.47	CMEQ
6685.00	7156.47	RLNS

Plan: Plan #2 21Sept2016 jcsdi

19:49, 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

TVD	MD	Name	Size
984.49	1026.03	9 5/8" @ 1026' 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	976.03	29.09	308.46	940.80	128.41	-161.65	3.50	308.46	206.45	
4	3946.16	29.09	308.46	3536.36	1026.48	-1292.21	0.00	0.00	1650.30	
5	5400.47	0.00	0.00	4929.00	1251.20	-1575.10	2.00	180.00	2011.58	GM 411-10 KMV
6	7306.47	0.00	0.00	6835.00	1251.20	-1575.10	0.00	0.00	2011.58	GM 411-10 PBHL

### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
GM 411-10 KMV	4929.00	1251.20	-1575.10	1601647.50	2265332.70	39.4564046	-108.1022446	Circle (Radius: 25.00)
- plan hits target center								
GM 411-10 PBHL	6835.00	1251.20	-1575.10	1601647.50	2265332.70	39.4564046	-108.1022446	Point
- plan hits target center								



## **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**MV 5-10 Pad**

**Federal GM 411-10 - Slot B8**

**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 411-10 - Slot B8
<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 411-10	<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		

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

<b>Well</b>	Federal GM 411-10 - Slot B8			
<b>Well Position</b>	<b>+N/-S</b> 6.80 usft	<b>Northing:</b>	1,600,351.80 usft	<b>Latitude:</b> 39.4529696
	<b>+E/-W</b> -10.50 usft	<b>Easting:</b>	2,266,871.40 usft	<b>Longitude:</b> -108.0966663
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b> 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	51,587

<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	308.46

<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	
976.03	29.09	308.46	940.80	128.41	-161.65	3.50	3.50	0.00	308.46	
3,946.16	29.09	308.46	3,536.36	1,026.48	-1,292.21	0.00	0.00	0.00	0.00	
5,400.47	0.00	0.00	4,929.00	1,251.20	-1,575.10	2.00	-2.00	0.00	180.00	GM 411-10 KMW
7,306.47	0.00	0.00	6,835.00	1,251.20	-1,575.10	0.00	0.00	0.00	0.00	GM 411-10 PBHL

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Federal GM 411-10 - Slot B8
<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 411-10	<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	1.93	308.46	199.99	0.57	-0.72	0.92	3.50	3.50	0.00	
300.00	5.43	308.46	299.77	4.56	-5.74	7.33	3.50	3.50	0.00	
400.00	8.93	308.46	398.97	12.33	-15.52	19.82	3.50	3.50	0.00	
500.00	12.43	308.46	497.22	23.85	-30.02	38.34	3.50	3.50	0.00	
600.00	15.93	308.46	594.16	39.08	-49.19	62.83	3.50	3.50	0.00	
700.00	19.43	308.46	689.43	57.96	-72.96	93.18	3.50	3.50	0.00	
800.00	22.93	308.46	782.66	80.42	-101.24	129.30	3.50	3.50	0.00	
900.00	26.43	308.46	873.52	106.39	-133.93	171.04	3.50	3.50	0.00	
976.03	29.09	308.46	940.80	128.41	-161.65	206.45	3.50	3.50	0.00	
1,000.00	29.09	308.46	961.74	135.66	-170.77	218.10	0.00	0.00	0.00	
1,026.03	29.09	308.46	984.49	143.53	-180.68	230.75	0.00	0.00	0.00	
<b>9 5/8" @ 1026' MD</b>										
1,100.00	29.09	308.46	1,049.13	165.89	-208.84	266.71	0.00	0.00	0.00	
1,200.00	29.09	308.46	1,136.52	196.13	-246.90	315.32	0.00	0.00	0.00	
1,300.00	29.09	308.46	1,223.91	226.37	-284.97	363.93	0.00	0.00	0.00	
1,400.00	29.09	308.46	1,311.30	256.60	-323.03	412.55	0.00	0.00	0.00	
1,500.00	29.09	308.46	1,398.69	286.84	-361.10	461.16	0.00	0.00	0.00	
1,600.00	29.09	308.46	1,486.07	317.08	-399.16	509.77	0.00	0.00	0.00	
1,700.00	29.09	308.46	1,573.46	347.31	-437.22	558.38	0.00	0.00	0.00	
1,800.00	29.09	308.46	1,660.85	377.55	-475.29	607.00	0.00	0.00	0.00	
1,900.00	29.09	308.46	1,748.24	407.79	-513.35	655.61	0.00	0.00	0.00	
2,000.00	29.09	308.46	1,835.63	438.02	-551.42	704.22	0.00	0.00	0.00	
2,100.00	29.09	308.46	1,923.02	468.26	-589.48	752.83	0.00	0.00	0.00	
2,200.00	29.09	308.46	2,010.41	498.50	-627.55	801.45	0.00	0.00	0.00	
2,300.00	29.09	308.46	2,097.80	528.73	-665.61	850.06	0.00	0.00	0.00	
2,392.92	29.09	308.46	2,179.00	556.83	-700.98	895.23	0.00	0.00	0.00	
<b>G_SAND</b>										
2,400.00	29.09	308.46	2,185.19	558.97	-703.68	898.67	0.00	0.00	0.00	
2,500.00	29.09	308.46	2,272.57	589.21	-741.74	947.28	0.00	0.00	0.00	
2,513.07	29.09	308.46	2,284.00	593.16	-746.72	953.64	0.00	0.00	0.00	
<b>G_SAND_BASE</b>										
2,600.00	29.09	308.46	2,359.96	619.45	-779.81	995.90	0.00	0.00	0.00	
2,700.00	29.09	308.46	2,447.35	649.68	-817.87	1,044.51	0.00	0.00	0.00	
2,800.00	29.09	308.46	2,534.74	679.92	-855.93	1,093.12	0.00	0.00	0.00	
2,900.00	29.09	308.46	2,622.13	710.16	-894.00	1,141.73	0.00	0.00	0.00	
3,000.00	29.09	308.46	2,709.52	740.39	-932.06	1,190.35	0.00	0.00	0.00	
3,100.00	29.09	308.46	2,796.91	770.63	-970.13	1,238.96	0.00	0.00	0.00	
3,200.00	29.09	308.46	2,884.30	800.87	-1,008.19	1,287.57	0.00	0.00	0.00	
3,300.00	29.09	308.46	2,971.69	831.10	-1,046.26	1,336.18	0.00	0.00	0.00	
3,400.00	29.09	308.46	3,059.08	861.34	-1,084.32	1,384.80	0.00	0.00	0.00	
3,500.00	29.09	308.46	3,146.46	891.58	-1,122.39	1,433.41	0.00	0.00	0.00	
3,600.00	29.09	308.46	3,233.85	921.81	-1,160.45	1,482.02	0.00	0.00	0.00	
3,700.00	29.09	308.46	3,321.24	952.05	-1,198.51	1,530.63	0.00	0.00	0.00	
3,800.00	29.09	308.46	3,408.63	982.29	-1,236.58	1,579.25	0.00	0.00	0.00	
3,900.00	29.09	308.46	3,496.02	1,012.52	-1,274.64	1,627.86	0.00	0.00	0.00	
3,946.16	29.09	308.46	3,536.36	1,026.48	-1,292.21	1,650.30	0.00	0.00	0.00	
4,000.00	28.01	308.46	3,583.65	1,042.49	-1,312.36	1,676.03	2.00	-2.00	0.00	
4,100.00	26.01	308.46	3,672.74	1,070.73	-1,347.92	1,721.44	2.00	-2.00	0.00	
4,200.00	24.01	308.46	3,763.36	1,097.03	-1,381.02	1,763.71	2.00	-2.00	0.00	

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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 411-10	<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)
4,212.73	23.75	308.46	3,775.00	1,100.23	-1,385.06	1,768.87	2.00	-2.00	0.00
<b>MVRD</b>									
4,300.00	22.01	308.46	3,855.40	1,121.34	-1,411.63	1,802.80	2.00	-2.00	0.00
4,400.00	20.01	308.46	3,948.75	1,143.64	-1,439.70	1,838.65	2.00	-2.00	0.00
4,500.00	18.01	308.46	4,043.29	1,163.89	-1,465.20	1,871.22	2.00	-2.00	0.00
4,600.00	16.01	308.46	4,138.91	1,182.09	-1,488.10	1,900.47	2.00	-2.00	0.00
4,700.00	14.01	308.46	4,235.49	1,198.20	-1,508.38	1,926.37	2.00	-2.00	0.00
4,800.00	12.01	308.46	4,332.92	1,212.20	-1,526.01	1,948.88	2.00	-2.00	0.00
4,900.00	10.01	308.46	4,431.08	1,224.07	-1,540.96	1,967.97	2.00	-2.00	0.00
5,000.00	8.01	308.46	4,529.84	1,233.81	-1,553.22	1,983.63	2.00	-2.00	0.00
5,100.00	6.01	308.46	4,629.09	1,241.40	-1,562.78	1,995.83	2.00	-2.00	0.00
5,200.00	4.01	308.46	4,728.70	1,246.84	-1,569.61	2,004.56	2.00	-2.00	0.00
5,300.00	2.01	308.46	4,828.56	1,250.10	-1,573.72	2,009.81	2.00	-2.00	0.00
5,400.00	0.01	308.46	4,928.53	1,251.20	-1,575.10	2,011.58	2.00	-2.00	0.00
5,400.47	0.00	0.00	4,929.00	1,251.20	-1,575.10	2,011.58	2.00	-2.00	11,077.53
<b>KMVGAS - GM 411-10 KMW</b>									
5,500.00	0.00	0.00	5,028.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
5,600.00	0.00	0.00	5,128.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
5,700.00	0.00	0.00	5,228.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
5,800.00	0.00	0.00	5,328.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
5,900.00	0.00	0.00	5,428.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
6,000.00	0.00	0.00	5,528.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
6,100.00	0.00	0.00	5,628.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
6,200.00	0.00	0.00	5,728.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
6,300.00	0.00	0.00	5,828.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
6,400.00	0.00	0.00	5,928.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
6,500.00	0.00	0.00	6,028.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
6,600.00	0.00	0.00	6,128.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
6,681.47	0.00	0.00	6,210.00	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
<b>CME0</b>									
6,700.00	0.00	0.00	6,228.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
6,800.00	0.00	0.00	6,328.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
6,900.00	0.00	0.00	6,428.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
7,000.00	0.00	0.00	6,528.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
7,100.00	0.00	0.00	6,628.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
7,156.47	0.00	0.00	6,685.00	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
<b>RLNS</b>									
7,200.00	0.00	0.00	6,728.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
7,300.00	0.00	0.00	6,828.53	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
7,306.47	0.00	0.00	6,835.00	1,251.20	-1,575.10	2,011.58	0.00	0.00	0.00
<b>GM 411-10 PBHL</b>									

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Federal GM 411-10 - Slot B8
<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 411-10	<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 411-10 KMV - plan hits target center - Circle (radius 25.00)	0.00	0.00	4,929.00	1,251.20	-1,575.10	1,601,647.50	2,265,332.70	39.4564046	-108.1022447
GM 411-10 PBHL - plan hits target center - Point	0.00	0.00	6,835.00	1,251.20	-1,575.10	1,601,647.50	2,265,332.70	39.4564046	-108.1022447

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,026.03	984.49	9 5/8" @ 1026' MD	9.62	9.62	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,392.92	2,179.00	G_SAND		0.00	0.00	
2,513.07	2,284.00	G_SAND_BASE		0.00	0.00	
4,212.73	3,775.00	MVRD		0.00	0.00	
5,400.47	4,929.00	KMVGAS		0.00	0.00	
6,681.47	6,210.00	CME0		0.00	0.00	
7,156.47	6,685.00	RLNS		0.00	0.00	