



## Directional Survey Certification

2948 I-70 Business Loop  
Grand Junction, CO 81504  
(970)-245-9447 Fax (970)-245-9454

Operator	TEP Rocky Mountain, LLC.
Well Name & No.	GM 33-10
County & State	Garfield County, CO
SDI Job No.	OP.003807
Rig	H&P 273

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 122 feet to a measured depth of 7,862 feet is true and correct as determined from all available records.

  
Signature

07-Sep-17  
Date

**Mel Mireles Jr.**  
Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well Federal GM 33-10 - Slot A14
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Site:</b>	MV 5-10 Pad	<b>MD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Well:</b>	Federal GM 33-10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Grand Junction District

<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 33-10 - Slot A14						
Well Position		+N/-S	0.00 usft	Northing:		1,600,356.30 usft	Latitude:		39.4529856				
		+E/-W	0.00 usft	Easting:		2,266,917.30 usft	Longitude:		-108.0965043				
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>
	HDGM	8/28/2017	9.53	65.75	51,770

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<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	123.81	

<b>Survey Program</b>	<b>Date</b>	9/7/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
122.00	582.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
655.00	958.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,084.00	7,862.00	Survey #3 - Production MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

<b>Survey</b>									
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
122.00	0.88	122.34	122.00	-0.50	0.79	0.94	0.72	0.72	0.00
<b>First SDI Gyro MWD Survey</b>									
213.00	4.84	130.87	212.86	-3.39	4.29	5.45	4.36	4.35	9.37
305.00	8.62	122.87	304.22	-9.67	13.02	16.20	4.22	4.11	-8.70
397.00	13.28	122.08	394.52	-19.03	27.77	33.66	5.07	5.07	-0.86
489.00	17.77	123.22	483.14	-32.34	48.48	58.27	4.89	4.88	1.24
582.00	22.35	123.93	570.47	-50.00	75.03	90.16	4.93	4.92	0.76

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well Federal GM 33-10 - Slot A14
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Site:</b>	MV 5-10 Pad	<b>MD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Well:</b>	Federal GM 33-10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Grand Junction District

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)
<b>Last SDI Gyro MWD Survey</b>									
655.00	25.20	124.47	637.27	-66.54	99.37	119.59	3.92	3.90	0.74
<b>First SDI Surface MWD Survey</b>									
748.00	29.36	122.41	719.91	-89.98	134.95	162.20	4.59	4.47	-2.22
840.00	34.28	124.56	798.06	-116.78	175.36	210.68	5.49	5.35	2.34
934.00	38.51	125.67	873.71	-148.88	220.95	266.43	4.55	4.50	1.18
958.00	39.57	125.55	892.35	-157.68	233.24	281.54	4.43	4.42	-0.50
<b>Last SDI Surface MWD Survey</b>									
1,084.00	41.28	126.21	988.27	-205.57	299.44	363.19	1.40	1.36	0.52
<b>First SDI Production MWD Survey</b>									
1,179.00	40.55	125.92	1,060.05	-242.20	349.73	425.36	0.79	-0.77	-0.31
1,273.00	40.68	124.35	1,131.41	-277.41	399.77	486.53	1.10	0.14	-1.67
1,368.00	41.15	122.56	1,203.20	-311.71	451.68	548.74	1.33	0.49	-1.88
1,462.00	42.53	123.46	1,273.23	-345.87	504.25	611.43	1.60	1.47	0.96
1,556.00	41.10	122.75	1,343.29	-380.10	556.75	674.10	1.60	-1.52	-0.76
1,651.00	42.30	122.21	1,414.22	-414.04	610.06	737.28	1.32	1.26	-0.57
1,746.00	41.84	123.61	1,484.74	-448.61	663.50	800.92	1.10	-0.48	1.47
1,841.00	41.47	124.59	1,555.72	-484.01	715.78	864.06	0.79	-0.39	1.03
1,935.00	41.58	124.87	1,626.10	-519.51	767.00	926.37	0.23	0.12	0.30
2,030.00	42.25	125.66	1,696.79	-556.16	818.81	989.81	0.90	0.71	0.83
2,124.00	41.55	124.99	1,766.76	-592.46	870.03	1,052.56	0.88	-0.74	-0.71
2,218.00	41.70	125.17	1,837.02	-628.34	921.12	1,114.98	0.20	0.16	0.19
2,313.00	43.71	124.56	1,906.83	-665.17	973.99	1,179.40	2.16	2.12	-0.64
2,407.00	43.26	124.49	1,975.03	-701.83	1,027.28	1,244.08	0.48	-0.48	-0.07
2,502.00	42.86	124.89	2,044.44	-738.74	1,080.62	1,308.94	0.51	-0.42	0.42
2,596.00	40.61	123.52	2,114.59	-773.93	1,132.35	1,371.50	2.58	-2.39	-1.46
2,691.00	41.35	124.67	2,186.31	-808.86	1,183.94	1,433.80	1.11	0.78	1.21
2,785.00	41.61	124.55	2,256.73	-844.22	1,235.18	1,496.06	0.29	0.28	-0.13
2,880.00	42.11	124.01	2,327.48	-879.92	1,287.57	1,559.45	0.65	0.53	-0.57
2,974.00	42.17	123.48	2,397.19	-914.96	1,340.01	1,622.52	0.38	0.06	-0.56
3,068.00	42.29	123.15	2,466.79	-949.66	1,392.80	1,685.69	0.27	0.13	-0.35
3,163.00	42.03	123.60	2,537.21	-984.73	1,446.05	1,749.45	0.42	-0.27	0.47
3,257.00	41.98	124.93	2,607.06	-1,020.15	1,498.04	1,812.35	0.95	-0.05	1.41
3,352.00	42.26	123.75	2,677.53	-1,056.09	1,550.65	1,876.06	0.88	0.29	-1.24
3,445.00	41.91	123.05	2,746.55	-1,090.40	1,602.68	1,938.39	0.63	-0.38	-0.75
3,541.00	43.06	122.16	2,817.34	-1,125.33	1,657.30	2,003.21	1.35	1.20	-0.93
3,635.00	44.28	123.13	2,885.33	-1,160.35	1,711.95	2,068.10	1.48	1.30	1.03
3,730.00	44.54	123.47	2,953.20	-1,196.85	1,767.52	2,134.58	0.37	0.27	0.36
3,825.00	43.78	122.86	3,021.35	-1,233.06	1,822.92	2,200.76	0.92	-0.80	-0.64
3,919.00	42.32	122.93	3,090.04	-1,267.90	1,876.79	2,264.92	1.55	-1.55	0.07
4,013.00	41.73	121.68	3,159.87	-1,301.54	1,929.98	2,327.82	1.09	-0.63	-1.33
4,108.00	39.41	123.86	3,232.03	-1,334.95	1,981.93	2,389.58	2.86	-2.44	2.29
4,203.00	37.90	124.20	3,306.22	-1,368.15	2,031.11	2,448.92	1.61	-1.59	0.36
4,297.00	37.50	123.79	3,380.59	-1,400.29	2,078.77	2,506.40	0.50	-0.43	-0.44

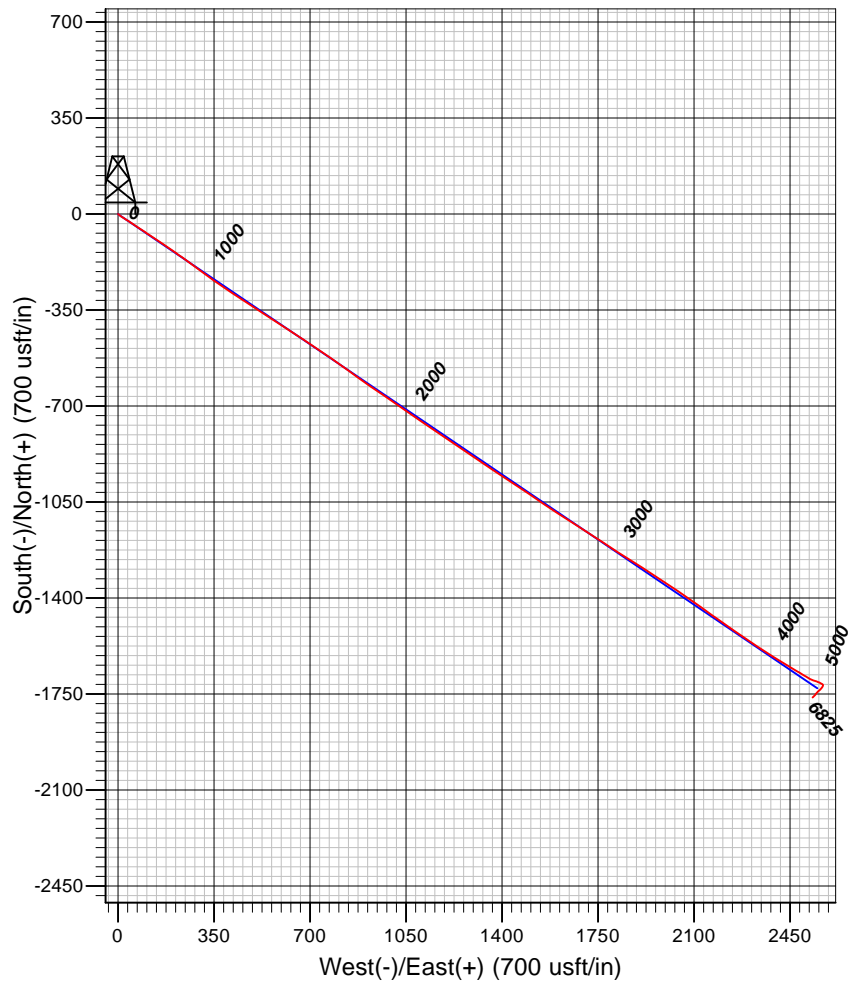
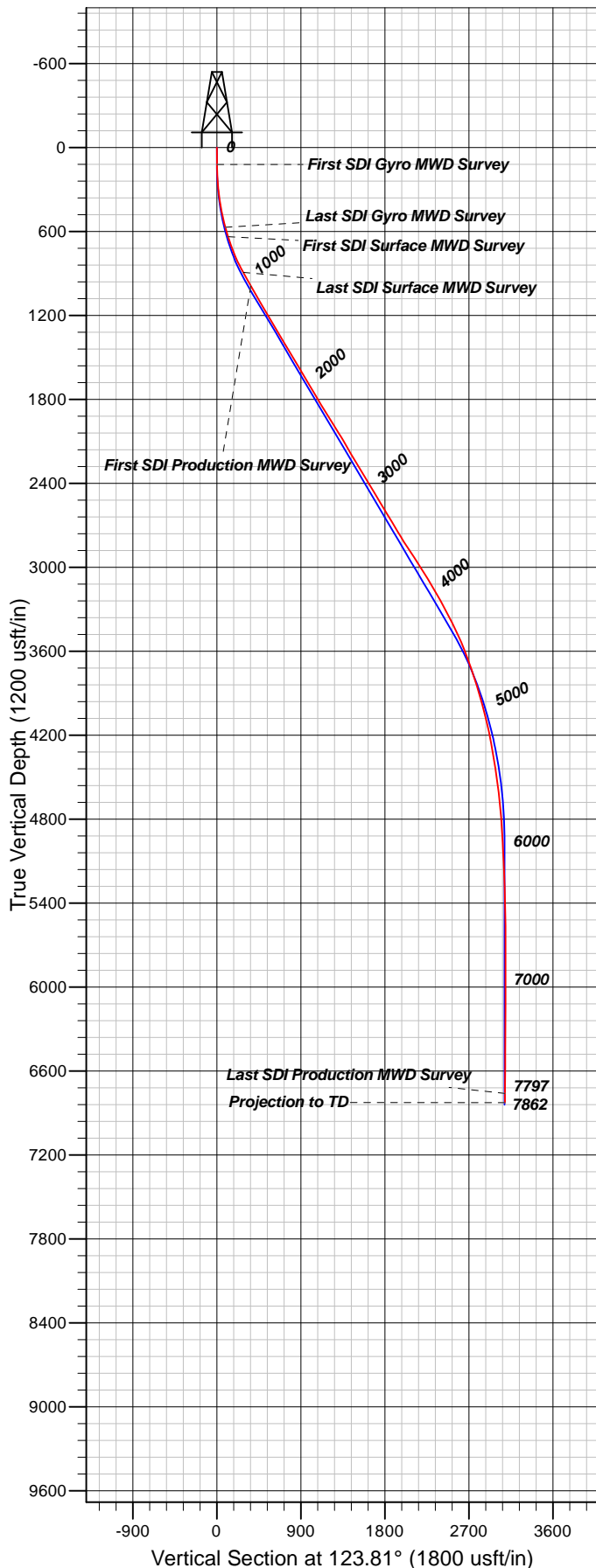
<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well Federal GM 33-10 - Slot A14
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Site:</b>	MV 5-10 Pad	<b>MD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Well:</b>	Federal GM 33-10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Grand Junction District

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)
4,392.00	35.38	126.22	3,457.02	-1,432.63	2,125.00	2,562.81	2.70	-2.23	2.56
4,487.00	32.91	125.92	3,535.63	-1,464.03	2,168.09	2,616.08	2.61	-2.60	-0.32
4,581.00	29.97	124.29	3,615.83	-1,492.24	2,208.18	2,665.09	3.26	-3.13	-1.73
4,676.00	27.81	125.00	3,699.00	-1,518.33	2,245.94	2,710.98	2.30	-2.27	0.75
4,770.00	25.56	124.57	3,782.98	-1,542.41	2,280.61	2,753.19	2.40	-2.39	-0.46
4,865.00	24.97	124.86	3,868.89	-1,565.50	2,313.94	2,793.73	0.63	-0.62	0.31
4,960.00	22.59	122.57	3,955.82	-1,586.79	2,345.77	2,832.02	2.69	-2.51	-2.41
5,054.00	20.66	122.10	4,043.20	-1,605.32	2,375.04	2,866.65	2.06	-2.05	-0.50
5,149.00	19.37	122.37	4,132.46	-1,622.66	2,402.54	2,899.16	1.36	-1.36	0.28
5,244.00	16.20	120.69	4,222.91	-1,637.87	2,427.25	2,928.15	3.38	-3.34	-1.77
5,338.00	14.31	121.18	4,313.60	-1,650.57	2,448.47	2,952.85	2.02	-2.01	0.52
5,433.00	12.96	121.04	4,405.92	-1,662.15	2,467.64	2,975.21	1.42	-1.42	-0.15
5,527.00	11.77	120.03	4,497.74	-1,672.38	2,484.97	2,995.31	1.29	-1.27	-1.07
5,622.00	10.70	122.16	4,590.91	-1,681.92	2,500.83	3,013.79	1.21	-1.13	2.24
5,717.00	8.95	118.91	4,684.52	-1,690.19	2,514.76	3,029.97	1.93	-1.84	-3.42
5,811.00	6.86	116.71	4,777.62	-1,696.25	2,526.18	3,042.83	2.25	-2.22	-2.34
5,905.00	5.88	108.79	4,871.04	-1,700.32	2,535.75	3,053.05	1.40	-1.04	-8.43
5,995.71	5.04	108.24	4,961.34	-1,703.07	2,543.94	3,061.38	0.93	-0.93	-0.61
GM 33-10 KMV REV - GM 33-10 KMV									
6,000.00	5.00	108.21	4,965.61	-1,703.18	2,544.29	3,061.74	0.93	-0.93	-0.71
6,095.00	3.88	111.22	5,060.32	-1,705.64	2,551.22	3,068.87	1.20	-1.18	3.17
6,189.00	3.43	116.19	5,154.13	-1,708.03	2,556.71	3,074.76	0.59	-0.48	5.29
6,284.00	2.95	116.57	5,248.99	-1,710.38	2,561.45	3,080.00	0.51	-0.51	0.40
6,379.00	2.20	113.92	5,343.89	-1,712.21	2,565.30	3,084.22	0.80	-0.79	-2.79
6,473.00	1.82	129.01	5,437.83	-1,713.89	2,568.11	3,087.48	0.69	-0.40	16.05
6,568.00	1.67	153.57	5,532.79	-1,716.07	2,569.90	3,090.19	0.80	-0.16	25.85
6,662.00	1.85	189.79	5,626.75	-1,718.80	2,570.25	3,091.99	1.18	0.19	38.53
6,757.00	2.32	203.82	5,721.69	-1,722.07	2,569.21	3,092.95	0.73	0.49	14.77
6,851.00	2.64	213.17	5,815.60	-1,725.62	2,567.26	3,093.31	0.55	0.34	9.95
6,946.00	2.48	221.54	5,910.50	-1,728.99	2,564.70	3,093.05	0.43	-0.17	8.81
7,041.00	3.15	224.85	6,005.39	-1,732.38	2,561.49	3,092.28	0.73	0.71	3.48
7,135.00	3.07	229.52	6,099.25	-1,735.84	2,557.76	3,091.10	0.28	-0.09	4.97
7,230.00	2.79	228.61	6,194.13	-1,739.02	2,554.09	3,089.82	0.30	-0.29	-0.96
7,324.00	3.00	220.57	6,288.01	-1,742.40	2,550.77	3,088.95	0.49	0.22	-8.55
7,418.00	2.73	220.85	6,381.89	-1,745.97	2,547.71	3,088.38	0.29	-0.29	0.30
7,513.00	2.59	218.99	6,476.79	-1,749.35	2,544.88	3,087.91	0.17	-0.15	-1.96
7,608.00	2.79	221.08	6,571.68	-1,752.76	2,542.01	3,087.43	0.23	0.21	2.20
7,702.00	3.26	224.83	6,665.55	-1,756.38	2,538.62	3,086.63	0.54	0.50	3.99
7,797.00	3.23	229.52	6,760.40	-1,760.03	2,534.68	3,085.38	0.28	-0.03	4.94
Last SDI Production MWD Survey									
7,862.00	3.23	229.52	6,825.29	-1,762.41	2,531.89	3,084.39	0.00	0.00	0.00
Projection to TD - GM 33-10 PBHL - GM 33-10 PBHL REV									

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well Federal GM 33-10 - Slot A14
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<b>Well:</b>	Federal GM 33-10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Grand Junction District

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
122.00	122.00	-0.50	0.79	First SDI Gyro MWD Survey
582.00	570.47	-50.00	75.03	Last SDI Gyro MWD Survey
655.00	637.27	-66.54	99.37	First SDI Surface MWD Survey
958.00	892.35	-157.68	233.24	Last SDI Surface MWD Survey
1,084.00	988.27	-205.57	299.44	First SDI Production MWD Survey
7,797.00	6,760.40	-1,760.03	2,534.68	Last SDI Production MWD Survey
7,862.00	6,825.29	-1,762.41	2,531.89	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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#### Well Details: Federal GM 33-10

TVD Reference: GL 6148' & RKB 24' @ 6172.00usft (H&P 318) & B&B Level: 6148.00						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1600356.30	2266917.30	39.4529855	-108.0965042	A14

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Federal GM 33-10 - Slot A14, True North  
 Vertical (TVD) Reference: GL 6148' & RKB 24' @ 6172.00usft (H&P 318)  
 Section (VS) Reference: Slot - A14(0.00N, 0.00E)  
 Measured Depth Reference: GL 6148' & RKB 24' @ 6172.00usft (H&P 318)  
 Calculation Method: Minimum Curvature

#### 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

Plan: OH

17:12, September 07 2017  
 Created By: Mel Mireles Jr.