



Company: TEP Rocky Mountain LLC  
Project: Garfield County, CO NAD83  
Site: GM 12-20 Pad  
Well: GM 443-19

Plan: Plan 2 13Jan2020 sbsdi

### Well Details: GM 443-19

+N/-S	+E/-W	Northing	GL 5752.1' & KB 24' @ 5776.10usft (H&P 318)	Easting	Latitude	Longitude	Slot
0.00	0.00	1622103.7000		2255423.6000	39.5117580	-108.1394283	GM 443-19

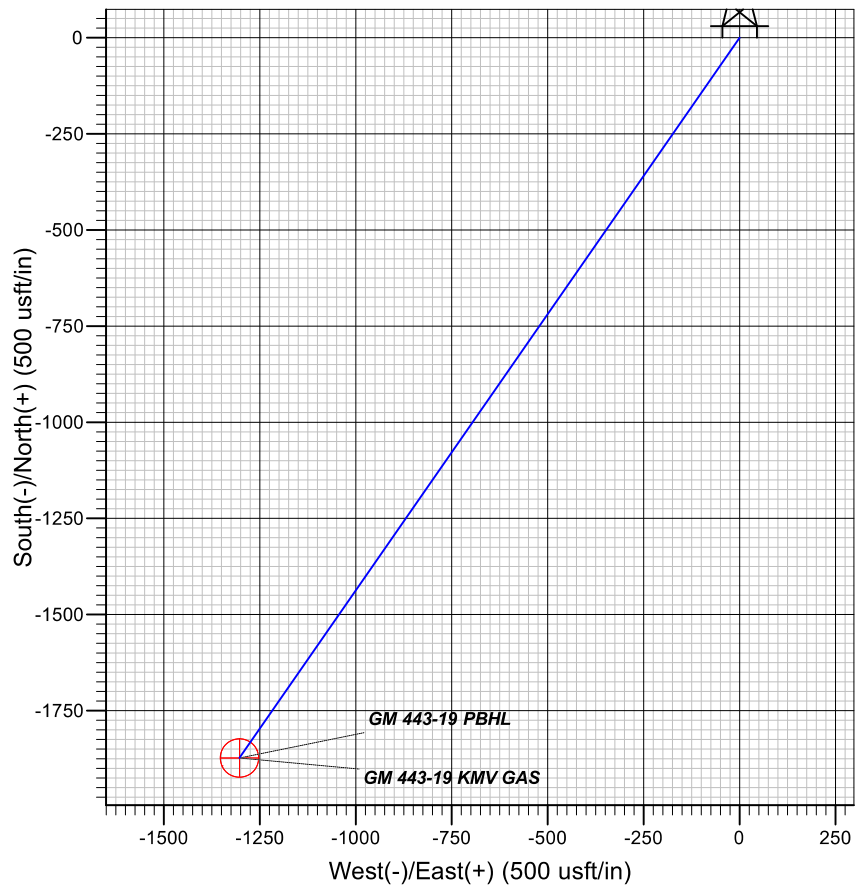
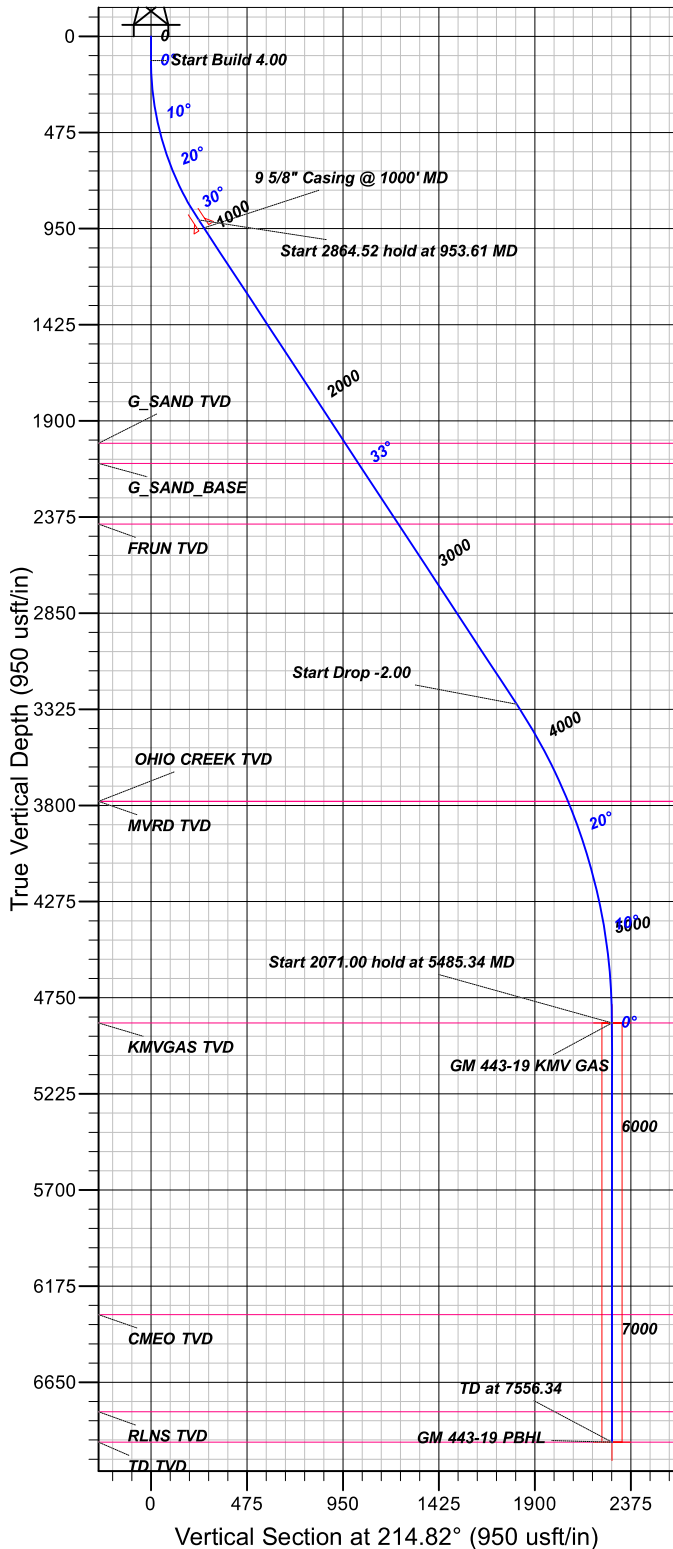


Azimuths to True North  
Magnetic North: 9.42°

Magnetic Field  
Strength: 51454.3nT  
Dip Angle: 65.77°  
Date: 1/13/2020  
Model: HDGM\_FILE

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
GM 443-19 KMV GAS	4875.00	-1873.25	-1303.13	1620269.1000	2254066.6000	39.5066151	-108.1440468	Circle (Radius: 50.00)
GM 443-19 PBHL	6946.00	-1873.25	-1303.13	1620269.1000	2254066.6000	39.5066151	-108.1440468	Point



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2010.00	2273.55	G_SAND TVD
2110.00	2393.26	G_SAND_BASE
2410.00	2752.37	FRUN TVD
3780.00	4361.76	MVRD TVD
3780.00	4361.76	OHIO CREEK TVD
4875.00	5485.34	KMGAS TVD
6316.00	6926.34	CMEO TVD
6796.00	7406.34	RLNS TVD
6946.00	7556.34	TD TVD

#### 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
946.10	1000.00	9 5/8" Casing @ 1000' MD	9.62

#### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00
953.61	33.34	214.82	907.34	-193.57	-134.66	4.00	214.82	235.80
3818.13	33.34	214.82	3300.31	-1486.11	-1033.82	0.00	0.00	1810.34
5485.34	0.00	0.00	4875.00	-1873.25	-1303.13	2.00	180.00	2281.93
7556.34	0.00	0.00	6946.00	-1873.25	-1303.13	0.00	0.00	2281.93

# **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**GM 12-20 Pad**

**GM 443-19 - Slot GM 443-19**

**OH**

**Plan: Plan 2 13Jan2020 sbsdi**

## **Standard Planning Report**

**13 January, 2020**



# Scientific Drilling, Intl

## Planning Report

<b>Database:</b>	Grand Junction	<b>Local Co-ordinate Reference:</b>	Well GM 443-19 - Slot GM 443-19
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5752.1' & KB 24' @ 5776.10usft (H&P 318)
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5752.1' & KB 24' @ 5776.10usft (H&P 318)
<b>Site:</b>	GM 12-20 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 443-19	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 2 13Jan2020 sbsdi		

<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>	GM 12-20 Pad, Site Center : GM 31-19		
<b>Site Position:</b>		<b>Northing:</b>	1,622,131.3600 usft
<b>From:</b>	Map	<b>Easting:</b>	2,255,369.4200 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in
		<b>Latitude:</b>	39.5118297
		<b>Longitude:</b>	-108.1396232
		<b>Grid Convergence:</b>	-1.66 °

Well	GM 443-19 - Slot GM 443-19					
Well Position	+N/-S	-26.07 usft	Northing:	1,622,103.7000 usft	Latitude:	39.5117581
	+E/-W	54.96 usft	Easting:	2,255,423.6000 usft	Longitude:	-108.1394284
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,752.10 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_FILE	1/13/2020	9.42	65.77	51,454.30000000

<b>Design</b>	Plan 2 13Jan2020 sbsdi			
<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	214.82

<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	
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	
953.61	33.34	214.82	907.34	-193.57	-134.66	4.00	4.00	0.00	214.82	
3,818.13	33.34	214.82	3,300.31	-1,486.11	-1,033.82	0.00	0.00	0.00	0.00	
5,485.35	0.00	0.00	4,875.00	-1,873.25	-1,303.13	2.00	-2.00	0.00	180.00	GM 443-19 KMV GAS
7,556.35	0.00	0.00	6,946.00	-1,873.25	-1,303.13	0.00	0.00	0.00	0.00	GM 443-19 PBHL

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<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5752.1' & KB 24' @ 5776.10usft (H&P 318)
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5752.1' & KB 24' @ 5776.10usft (H&P 318)
<b>Site:</b>	GM 12-20 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 443-19	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 2 13Jan2020 sbsdi		

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	
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	
Start Build 4.00										
200.00	3.20	214.82	199.96	-1.83	-1.28	2.23	4.00	4.00	0.00	
300.00	7.20	214.82	299.53	-9.27	-6.45	11.29	4.00	4.00	0.00	
400.00	11.20	214.82	398.22	-22.39	-15.58	27.28	4.00	4.00	0.00	
500.00	15.20	214.82	495.56	-41.14	-28.62	50.11	4.00	4.00	0.00	
600.00	19.20	214.82	591.07	-65.41	-45.50	79.67	4.00	4.00	0.00	
700.00	23.20	214.82	684.28	-95.08	-66.15	115.83	4.00	4.00	0.00	
800.00	27.20	214.82	774.74	-130.03	-90.46	158.40	4.00	4.00	0.00	
900.00	31.20	214.82	862.02	-170.07	-118.31	207.17	4.00	4.00	0.00	
953.61	33.34	214.82	907.34	-193.57	-134.66	235.80	4.00	4.00	0.00	
Start 2864.52 hold at 953.61 MD										
1,000.00	33.34	214.82	946.10	-214.50	-149.22	261.30	0.00	0.00	0.00	
9 5/8" Casing @ 1000' MD										
1,100.00	33.34	214.82	1,029.63	-259.62	-180.61	316.26	0.00	0.00	0.00	
1,200.00	33.34	214.82	1,113.17	-304.74	-212.00	371.23	0.00	0.00	0.00	
1,300.00	33.34	214.82	1,196.71	-349.87	-243.39	426.20	0.00	0.00	0.00	
1,400.00	33.34	214.82	1,280.25	-394.99	-274.78	481.16	0.00	0.00	0.00	
1,500.00	33.34	214.82	1,363.79	-440.11	-306.17	536.13	0.00	0.00	0.00	
1,600.00	33.34	214.82	1,447.33	-485.23	-337.56	591.10	0.00	0.00	0.00	
1,700.00	33.34	214.82	1,530.86	-530.36	-368.95	646.06	0.00	0.00	0.00	
1,800.00	33.34	214.82	1,614.40	-575.48	-400.33	701.03	0.00	0.00	0.00	
1,900.00	33.34	214.82	1,697.94	-620.60	-431.72	756.00	0.00	0.00	0.00	
2,000.00	33.34	214.82	1,781.48	-665.72	-463.11	810.96	0.00	0.00	0.00	
2,100.00	33.34	214.82	1,865.02	-710.85	-494.50	865.93	0.00	0.00	0.00	
2,200.00	33.34	214.82	1,948.55	-755.97	-525.89	920.90	0.00	0.00	0.00	
2,273.55	33.34	214.82	2,010.00	-789.16	-548.98	961.33	0.00	0.00	0.00	
G_SAND TVD										
2,300.00	33.34	214.82	2,032.09	-801.09	-557.28	975.86	0.00	0.00	0.00	
2,393.26	33.34	214.82	2,110.00	-843.17	-586.56	1,027.13	0.00	0.00	0.00	
G_SAND_BASE										
2,400.00	33.34	214.82	2,115.63	-846.21	-588.67	1,030.83	0.00	0.00	0.00	
2,500.00	33.34	214.82	2,199.17	-891.34	-620.06	1,085.80	0.00	0.00	0.00	
2,599.99	33.34	214.82	2,282.71	-936.46	-651.45	1,140.77	0.00	0.00	0.00	
2,699.99	33.34	214.82	2,366.24	-981.58	-682.84	1,195.73	0.00	0.00	0.00	
2,752.37	33.34	214.82	2,410.00	-1,005.22	-699.28	1,224.52	0.00	0.00	0.00	
FRUN TVD										
2,799.99	33.34	214.82	2,449.78	-1,026.70	-714.23	1,250.70	0.00	0.00	0.00	
2,899.99	33.34	214.82	2,533.32	-1,071.83	-745.62	1,305.67	0.00	0.00	0.00	
2,999.99	33.34	214.82	2,616.86	-1,116.95	-777.01	1,360.63	0.00	0.00	0.00	
3,099.99	33.34	214.82	2,700.40	-1,162.07	-808.40	1,415.60	0.00	0.00	0.00	
3,199.99	33.34	214.82	2,783.93	-1,207.19	-839.79	1,470.57	0.00	0.00	0.00	
3,299.99	33.34	214.82	2,867.47	-1,252.32	-871.18	1,525.53	0.00	0.00	0.00	
3,399.99	33.34	214.82	2,951.01	-1,297.44	-902.57	1,580.50	0.00	0.00	0.00	
3,499.99	33.34	214.82	3,034.55	-1,342.56	-933.96	1,635.47	0.00	0.00	0.00	
3,599.99	33.34	214.82	3,118.09	-1,387.68	-965.35	1,690.43	0.00	0.00	0.00	
3,699.99	33.34	214.82	3,201.62	-1,432.81	-996.74	1,745.40	0.00	0.00	0.00	
3,799.99	33.34	214.82	3,285.16	-1,477.93	-1,028.13	1,800.37	0.00	0.00	0.00	
3,818.13	33.34	214.82	3,300.31	-1,486.11	-1,033.82	1,810.34	0.00	0.00	0.00	
Start Drop -2.00										

# Scientific Drilling, Intl

## Planning Report

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<b>Site:</b>	GM 12-20 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 443-19	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 2 13Jan2020 sbsdi		

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)
3,899.99	31.71	214.82	3,369.33	-1,522.24	-1,058.96	1,854.35	2.00	-2.00	0.00
3,999.99	29.71	214.82	3,455.31	-1,564.16	-1,088.12	1,905.41	2.00	-2.00	0.00
4,099.99	27.71	214.82	3,543.01	-1,603.59	-1,115.54	1,953.44	2.00	-2.00	0.00
4,199.99	25.71	214.82	3,632.34	-1,640.48	-1,141.21	1,998.38	2.00	-2.00	0.00
4,299.99	23.71	214.82	3,723.18	-1,674.79	-1,165.08	2,040.18	2.00	-2.00	0.00
4,361.76	22.47	214.82	3,780.00	-1,694.68	-1,178.91	2,064.40	2.00	-2.00	0.00
OHIO CREEK TVD - MVRD TVD									
4,399.99	21.71	214.82	3,815.43	-1,706.48	-1,187.12	2,078.78	2.00	-2.00	0.00
4,499.99	19.71	214.82	3,908.96	-1,735.50	-1,207.31	2,114.14	2.00	-2.00	0.00
4,599.99	17.71	214.82	4,003.67	-1,761.83	-1,225.63	2,146.21	2.00	-2.00	0.00
4,699.99	15.71	214.82	4,099.45	-1,785.43	-1,242.04	2,174.95	2.00	-2.00	0.00
4,799.99	13.71	214.82	4,196.16	-1,806.27	-1,256.54	2,200.34	2.00	-2.00	0.00
4,899.99	11.71	214.82	4,293.71	-1,824.33	-1,269.10	2,222.34	2.00	-2.00	0.00
4,999.99	9.71	214.82	4,391.96	-1,839.58	-1,279.71	2,240.91	2.00	-2.00	0.00
5,099.99	7.71	214.82	4,490.81	-1,852.00	-1,288.35	2,256.05	2.00	-2.00	0.00
5,199.99	5.71	214.82	4,590.12	-1,861.59	-1,295.02	2,267.73	2.00	-2.00	0.00
5,299.99	3.71	214.82	4,689.77	-1,868.33	-1,299.71	2,275.94	2.00	-2.00	0.00
5,399.99	1.71	214.82	4,789.66	-1,872.20	-1,302.41	2,280.66	2.00	-2.00	0.00
5,485.35	0.00	0.00	4,875.00	-1,873.25	-1,303.13	2,281.93	2.00	-2.00	0.00
Start 2071.00 hold at 5485.34 MD - KMGAS TVD									
5,499.99	0.00	0.00	4,889.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
5,599.99	0.00	0.00	4,989.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
5,699.99	0.00	0.00	5,089.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
5,799.99	0.00	0.00	5,189.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
5,899.99	0.00	0.00	5,289.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
5,999.99	0.00	0.00	5,389.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
6,099.99	0.00	0.00	5,489.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
6,199.99	0.00	0.00	5,589.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
6,299.99	0.00	0.00	5,689.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
6,399.99	0.00	0.00	5,789.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
6,499.99	0.00	0.00	5,889.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
6,599.99	0.00	0.00	5,989.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
6,699.99	0.00	0.00	6,089.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
6,799.99	0.00	0.00	6,189.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
6,899.99	0.00	0.00	6,289.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
6,926.35	0.00	0.00	6,316.00	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
CMEO TVD									
6,999.99	0.00	0.00	6,389.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
7,099.99	0.00	0.00	6,489.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
7,199.99	0.00	0.00	6,589.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
7,299.99	0.00	0.00	6,689.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
7,399.99	0.00	0.00	6,789.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
7,406.35	0.00	0.00	6,796.00	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
RLNS TVD									
7,499.99	0.00	0.00	6,889.64	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
7,556.35	0.00	0.00	6,946.00	-1,873.25	-1,303.13	2,281.93	0.00	0.00	0.00
TD at 7556.34 - TD TVD									

# Scientific Drilling, Intl

## Planning Report

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<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5752.1' & KB 24' @ 5776.10usft (H&P 318)
<b>Site:</b>	GM 12-20 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 443-19	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 2 13Jan2020 sbsdi		

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 443-19 KMV GAS - plan hits target center - Circle (radius 50.00)	0.00	0.00	4,875.00	-1,873.25	-1,303.13	1,620,269.1000	2,254,066.6000	39.5066151	-108.1440468
GM 443-19 PBHL - plan hits target center - Point	0.00	0.00	6,946.00	-1,873.25	-1,303.13	1,620,269.1000	2,254,066.6000	39.5066151	-108.1440468

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,000.00	946.10	9 5/8" Casing @ 1000' MD	9.62	13.50	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,273.55	2,010.00	G_SAND TVD		0.00	
2,393.26	2,110.00	G_SAND_BASE		0.00	
2,752.37	2,410.00	FRUN TVD		0.00	
4,361.76	3,780.00	OHIO CREEK TVD		0.00	
4,361.76	3,780.00	MVRD TVD		0.00	
5,485.35	4,875.00	KMVGAS TVD		0.00	
6,926.35	6,316.00	CMEO TVD		0.00	
7,406.35	6,796.00	RLNS TVD		0.00	
7,556.35	6,946.00	TD TVD		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
120.00	120.00	0.00	0.00	Start Build 4.00	
953.61	907.34	-193.57	-134.66	Start 2864.52 hold at 953.61 MD	
3,818.13	3,300.31	-1,486.11	-1,033.82	Start Drop -2.00	
5,485.35	4,875.00	-1,873.25	-1,303.13	Start 2071.00 hold at 5485.34 MD	
7,556.35	6,946.00	-1,873.25	-1,303.13	TD at 7556.34	