

Azimuths to True North  
Magnetic North: 9.42°

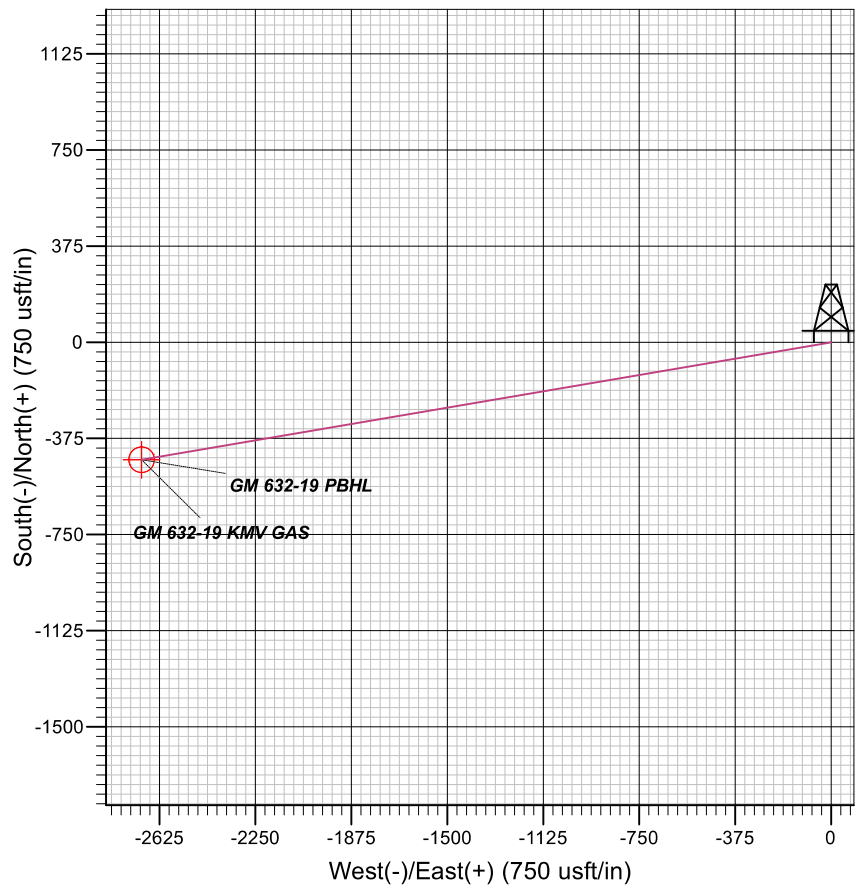
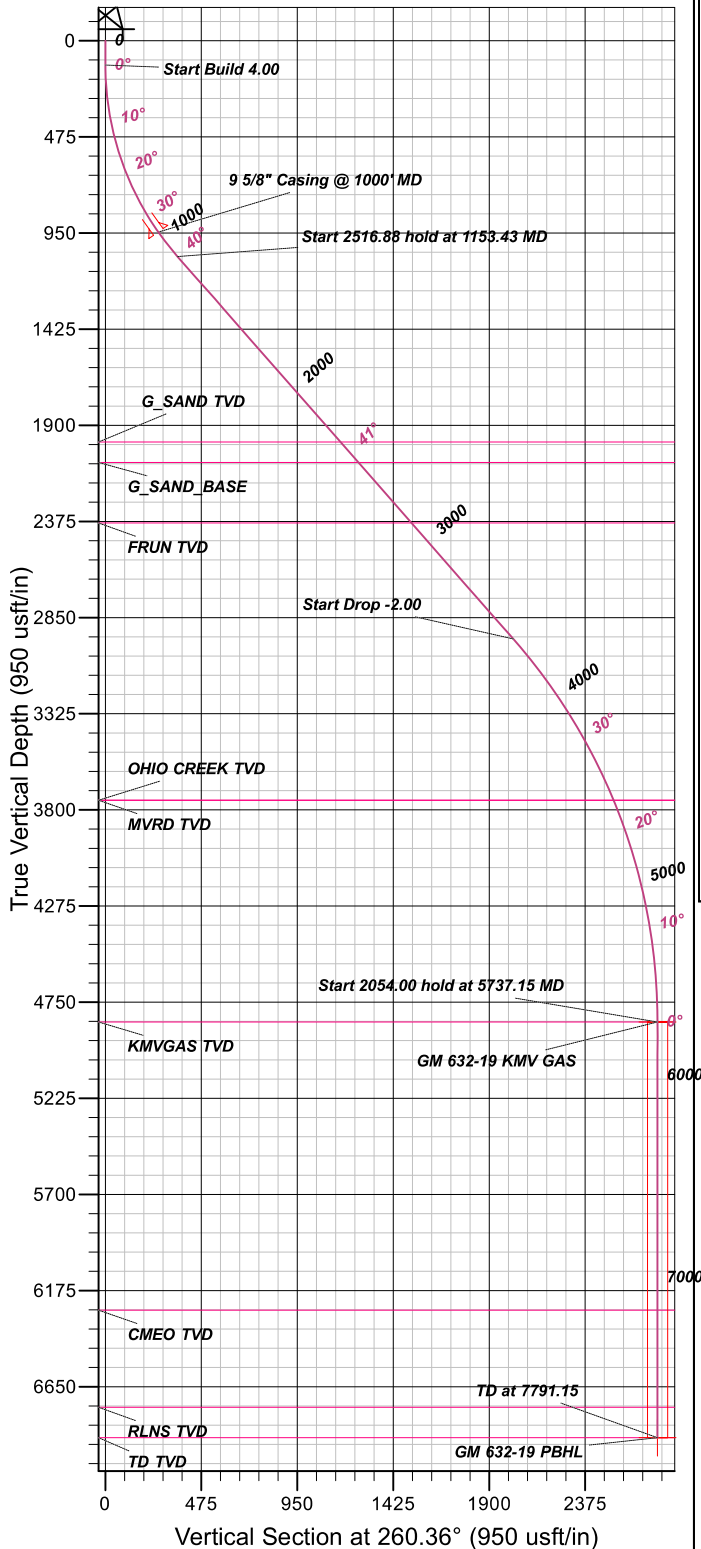
Magnetic Field  
Strength: 51454.4nT  
Dip Angle: 65.77°  
Date: 1/13/2020  
Model: HDGM\_FILE

## Well Details: GM 632-19

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1622117.3000	2255380.7000	39.5117919	-108.1395817	GM 632-19

### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Circle (Radius: 50.00)	Shape
GM 632-19 KMV GAS	4848.00	-457.87	-2694.44	1621737.9000	2252674.1000	39.5105345	-108.1491317	Circle (Radius: 50.00)	Point
GM 632-19 PBHL	6902.00	-457.87	-2694.44	1621737.9000	2252674.1000	39.5105345	-108.1491317	Point	Point



FORMATION TOP DETAILS				PROJECT DETAILS: Garfield County, CO NAD83	
TVDPath	MDPath	Formation		Geodetic System: US State Plane 1983	
1983.00	2374.62	G_SAND TVD		Datum: North American Datum 1983	
2083.00	2507.81	G_SAND_BASE		Ellipsoid: GRS 1980	
2383.00	2907.36	FRUN TVD		Zone: Colorado Central Zone	
3753.00	4613.57	MVRD TVD		System Datum: Mean Sea Level	
3753.00	4613.57	OHIO CREEK TVD			
4848.00	5737.15	KMGAS TVD			
6272.00	7161.15	CMEO TVD			
6752.00	7641.15	RLNS TVD			
6902.00	7791.15	TD TVD			

CASING DETAILS				
TVD	MD	Name	Size	
945.68	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	
1153.43	41.34	260.36	1066.08	-59.79	-351.85	4.00	260.36	356.90	
3670.30	41.34	260.36	2955.84	-338.29	-1990.73	0.00	0.00	2019.26	
5737.15	0.00	0.00	4848.00	-457.87	-2694.44	2.00	180.00	2733.06	
7791.15	0.00	0.00	6902.00	-457.87	-2694.44	0.00	0.00	2733.06	

# **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**GM 12-20 Pad**

**GM 632-19 - Slot GM 632-19**

**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 632-19 - Slot GM 632-19
<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 632-19	<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 632-19 - Slot GM 632-19					
Well Position	+N/-S	-13.73 usft	Northing:	1,622,117.3000 usft	Latitude:	39.5117920
	+E/-W	11.68 usft	Easting:	2,255,380.7000 usft	Longitude:	-108.1395818
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	51,454.40000000

<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	260.36	

<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	
1,153.43	41.34	260.36	1,066.08	-59.79	-351.85	4.00	4.00	0.00	260.36	
3,670.30	41.34	260.36	2,955.84	-338.29	-1,990.73	0.00	0.00	0.00	0.00	
5,737.15	0.00	0.00	4,848.00	-457.87	-2,694.44	2.00	-2.00	0.00	180.00	GM 632-19 KMV GAS
7,791.15	0.00	0.00	6,902.00	-457.87	-2,694.44	0.00	0.00	0.00	0.00	GM 632-19 PBHL

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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 632-19	<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	260.36	199.96	-0.37	-2.20	2.23	4.00	4.00	0.00	
300.00	7.20	260.36	299.53	-1.89	-11.14	11.29	4.00	4.00	0.00	
400.00	11.20	260.36	398.22	-4.57	-26.89	27.28	4.00	4.00	0.00	
500.00	15.20	260.36	495.56	-8.39	-49.40	50.11	4.00	4.00	0.00	
600.00	19.20	260.36	591.07	-13.35	-78.55	79.67	4.00	4.00	0.00	
700.00	23.20	260.36	684.28	-19.40	-114.19	115.83	4.00	4.00	0.00	
800.00	27.20	260.36	774.74	-26.54	-156.16	158.40	4.00	4.00	0.00	
900.00	31.20	260.36	862.02	-34.71	-204.25	207.17	4.00	4.00	0.00	
1,000.00	35.20	260.36	945.68	-43.88	-258.22	261.92	4.00	4.00	0.00	
9 5/8" Casing @ 1000' MD										
1,100.00	39.20	260.36	1,025.31	-54.01	-317.81	322.37	4.00	4.00	0.00	
1,153.43	41.34	260.36	1,066.08	-59.79	-351.85	356.90	4.00	4.00	0.00	
Start 2516.88 hold at 1153.43 MD										
1,200.00	41.34	260.36	1,101.05	-64.94	-382.18	387.66	0.00	0.00	0.00	
1,300.00	41.34	260.36	1,176.13	-76.01	-447.30	453.71	0.00	0.00	0.00	
1,400.00	41.34	260.36	1,251.21	-87.07	-512.41	519.76	0.00	0.00	0.00	
1,500.00	41.34	260.36	1,326.30	-98.14	-577.53	585.80	0.00	0.00	0.00	
1,600.00	41.34	260.36	1,401.38	-109.21	-642.64	651.85	0.00	0.00	0.00	
1,700.00	41.34	260.36	1,476.46	-120.27	-707.76	717.90	0.00	0.00	0.00	
1,800.00	41.34	260.36	1,551.55	-131.34	-772.87	783.95	0.00	0.00	0.00	
1,900.00	41.34	260.36	1,626.63	-142.40	-837.99	850.00	0.00	0.00	0.00	
2,000.00	41.34	260.36	1,701.71	-153.47	-903.10	916.05	0.00	0.00	0.00	
2,100.00	41.34	260.36	1,776.80	-164.53	-968.22	982.10	0.00	0.00	0.00	
2,200.00	41.34	260.36	1,851.88	-175.60	-1,033.33	1,048.14	0.00	0.00	0.00	
2,300.00	41.34	260.36	1,926.97	-186.66	-1,098.45	1,114.19	0.00	0.00	0.00	
2,374.62	41.34	260.36	1,983.00	-194.92	-1,147.04	1,163.49	0.00	0.00	0.00	
G_SAND TVD										
2,400.00	41.34	260.36	2,002.05	-197.73	-1,163.56	1,180.24	0.00	0.00	0.00	
2,500.00	41.34	260.36	2,077.13	-208.79	-1,228.68	1,246.29	0.00	0.00	0.00	
2,507.81	41.34	260.36	2,083.00	-209.66	-1,233.76	1,251.45	0.00	0.00	0.00	
G_SAND_BASE										
2,599.99	41.34	260.36	2,152.22	-219.86	-1,293.79	1,312.34	0.00	0.00	0.00	
2,699.99	41.34	260.36	2,227.30	-230.92	-1,358.91	1,378.39	0.00	0.00	0.00	
2,799.99	41.34	260.36	2,302.38	-241.99	-1,424.02	1,444.44	0.00	0.00	0.00	
2,899.99	41.34	260.36	2,377.47	-253.05	-1,489.14	1,510.48	0.00	0.00	0.00	
2,907.36	41.34	260.36	2,383.00	-253.87	-1,493.94	1,515.35	0.00	0.00	0.00	
FRUN TVD										
2,999.99	41.34	260.36	2,452.55	-264.12	-1,554.25	1,576.53	0.00	0.00	0.00	
3,099.99	41.34	260.36	2,527.63	-275.18	-1,619.37	1,642.58	0.00	0.00	0.00	
3,199.99	41.34	260.36	2,602.72	-286.25	-1,684.48	1,708.63	0.00	0.00	0.00	
3,299.99	41.34	260.36	2,677.80	-297.31	-1,749.60	1,774.68	0.00	0.00	0.00	
3,399.99	41.34	260.36	2,752.89	-308.38	-1,814.71	1,840.73	0.00	0.00	0.00	
3,499.99	41.34	260.36	2,827.97	-319.44	-1,879.83	1,906.78	0.00	0.00	0.00	
3,599.99	41.34	260.36	2,903.05	-330.51	-1,944.94	1,972.82	0.00	0.00	0.00	
3,670.30	41.34	260.36	2,955.84	-338.29	-1,990.73	2,019.26	0.00	0.00	0.00	
Start Drop -2.00										
3,699.99	40.74	260.36	2,978.24	-341.55	-2,009.94	2,038.76	2.00	-2.00	0.00	
3,799.99	38.74	260.36	3,055.12	-352.26	-2,072.97	2,102.69	2.00	-2.00	0.00	

# 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 632-19	<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	36.74	260.36	3,134.20	-362.52	-2,133.32	2,163.90	2.00	-2.00	0.00
3,999.99	34.74	260.36	3,215.36	-372.30	-2,190.90	2,222.31	2.00	-2.00	0.00
4,099.99	32.74	260.36	3,298.51	-381.61	-2,245.66	2,277.85	2.00	-2.00	0.00
4,199.99	30.74	260.36	3,383.54	-390.42	-2,297.53	2,330.46	2.00	-2.00	0.00
4,299.99	28.74	260.36	3,470.36	-398.73	-2,346.43	2,380.07	2.00	-2.00	0.00
4,399.99	26.74	260.36	3,558.86	-406.53	-2,392.33	2,426.62	2.00	-2.00	0.00
4,499.99	24.74	260.36	3,648.93	-413.81	-2,435.14	2,470.05	2.00	-2.00	0.00
4,599.99	22.74	260.36	3,740.46	-420.55	-2,474.84	2,510.31	2.00	-2.00	0.00
4,613.57	22.47	260.36	3,753.00	-421.43	-2,479.98	2,515.53	2.00	-2.00	0.00
OHIO CREEK TVD - MVRD TVD									
4,699.99	20.74	260.36	3,833.35	-426.76	-2,511.36	2,547.36	2.00	-2.00	0.00
4,799.99	18.74	260.36	3,927.46	-432.42	-2,544.66	2,581.14	2.00	-2.00	0.00
4,899.99	16.74	260.36	4,022.70	-437.52	-2,574.70	2,611.61	2.00	-2.00	0.00
4,999.99	14.74	260.36	4,118.94	-442.07	-2,601.45	2,638.74	2.00	-2.00	0.00
5,099.99	12.74	260.36	4,216.08	-446.05	-2,624.87	2,662.50	2.00	-2.00	0.00
5,199.99	10.74	260.36	4,313.98	-449.46	-2,644.93	2,682.85	2.00	-2.00	0.00
5,299.99	8.74	260.36	4,412.53	-452.29	-2,661.62	2,699.77	2.00	-2.00	0.00
5,399.99	6.74	260.36	4,511.61	-454.55	-2,674.90	2,713.24	2.00	-2.00	0.00
5,499.99	4.74	260.36	4,611.11	-456.23	-2,684.76	2,723.25	2.00	-2.00	0.00
5,599.99	2.74	260.36	4,710.89	-457.32	-2,691.20	2,729.78	2.00	-2.00	0.00
5,699.99	0.74	260.36	4,810.84	-457.83	-2,694.20	2,732.82	2.00	-2.00	0.00
5,737.15	0.00	0.00	4,848.00	-457.87	-2,694.44	2,733.06	2.00	-2.00	0.00
Start 2054.00 hold at 5737.15 MD - KMGAS TVD									
5,799.99	0.00	0.00	4,910.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
5,899.99	0.00	0.00	5,010.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
5,999.99	0.00	0.00	5,110.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
6,099.99	0.00	0.00	5,210.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
6,199.99	0.00	0.00	5,310.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
6,299.99	0.00	0.00	5,410.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
6,399.99	0.00	0.00	5,510.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
6,499.99	0.00	0.00	5,610.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
6,599.99	0.00	0.00	5,710.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
6,699.99	0.00	0.00	5,810.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
6,799.99	0.00	0.00	5,910.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
6,899.99	0.00	0.00	6,010.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
6,999.99	0.00	0.00	6,110.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
7,099.99	0.00	0.00	6,210.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
7,161.15	0.00	0.00	6,272.00	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
CMEQ TVD									
7,199.99	0.00	0.00	6,310.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
7,299.99	0.00	0.00	6,410.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
7,399.99	0.00	0.00	6,510.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
7,499.99	0.00	0.00	6,610.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
7,599.98	0.00	0.00	6,710.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
7,641.15	0.00	0.00	6,752.00	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
RLNS TVD									
7,699.98	0.00	0.00	6,810.83	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
7,791.15	0.00	0.00	6,902.00	-457.87	-2,694.44	2,733.06	0.00	0.00	0.00
TD at 7791.15 - TD TVD									

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<b>Site:</b>	GM 12-20 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 632-19	<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 632-19 KMV GAS - plan hits target center - Circle (radius 50.00)	0.00	0.00	4,848.00	-457.87	-2,694.44	1,621,737.9000	2,252,674.1000	39.5105345	-108.1491317
GM 632-19 PBHL - plan hits target center - Point	0.00	0.00	6,902.00	-457.87	-2,694.44	1,621,737.9000	2,252,674.1000	39.5105345	-108.1491317

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,000.00	945.68	9 5/8" Casing @ 1000' MD	9.62	13.50	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,374.62	1,983.00	G_SAND TVD		0.00		
2,507.81	2,083.00	G_SAND_BASE		0.00		
2,907.36	2,383.00	FRUN TVD		0.00		
4,613.57	3,753.00	OHIO CREEK TVD		0.00		
4,613.57	3,753.00	MVRD TVD		0.00		
5,737.15	4,848.00	KMVGAS TVD		0.00		
7,161.15	6,272.00	CME0 TVD		0.00		
7,641.15	6,752.00	RLNS TVD		0.00		
7,791.15	6,902.00	TD TVD		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
120.00	120.00	0.00	0.00	Start Build 4.00	
1,153.43	1,066.08	-59.79	-351.85	Start 2516.88 hold at 1153.43 MD	
3,670.30	2,955.84	-338.29	-1,990.73	Start Drop -2.00	
5,737.15	4,848.00	-457.87	-2,694.44	Start 2054.00 hold at 5737.15 MD	
7,791.15	6,902.00	-457.87	-2,694.44	TD at 7791.15	