



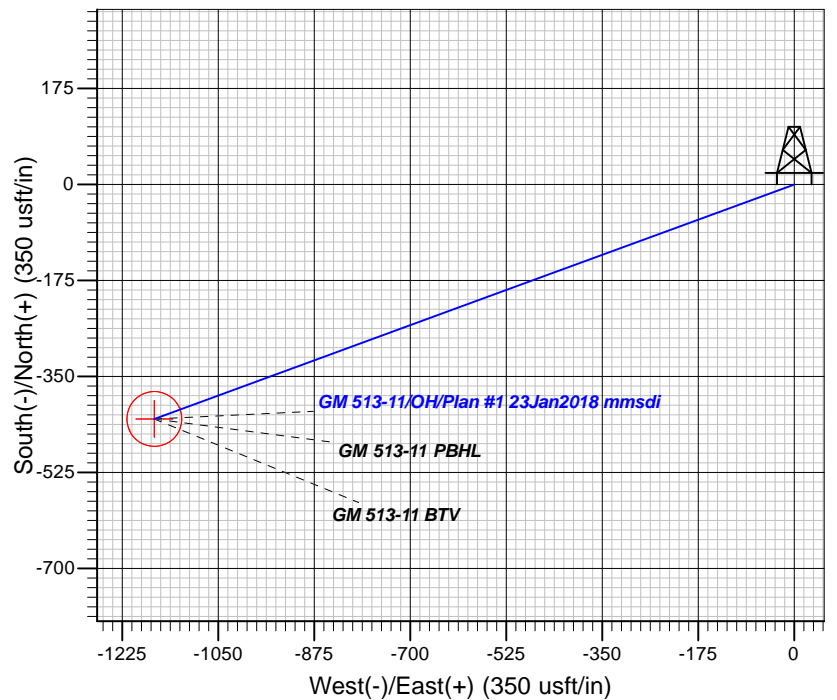
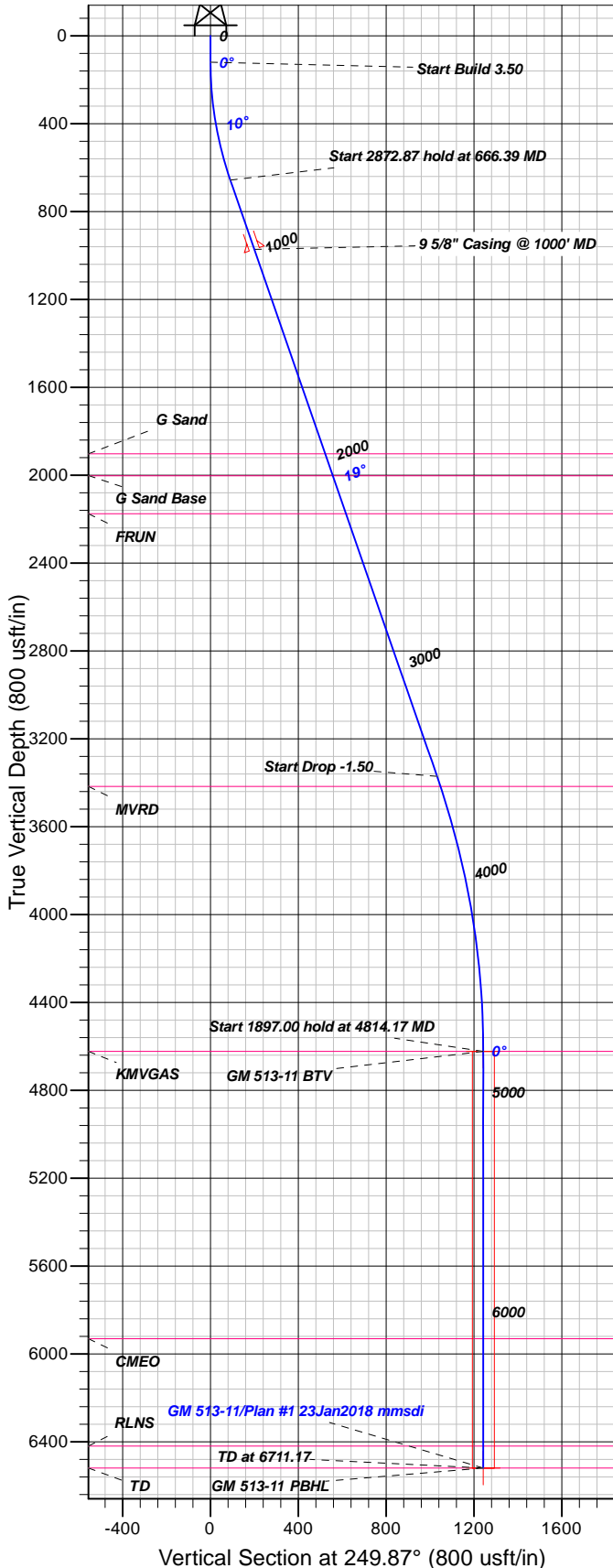
Azimuths to True North  
Magnetic North: 9.47°

Magnetic Field  
Strength: 51724.2snT  
Dip Angle: 65.70°  
Date: 1/23/2018  
Model: HDGM

## Well Details: GM 513-11

GL 5793' & RKB 24' @ 5817.00usft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1599228.90	2271910.50	39.4502819	-108.0787151	GM 513-11



## FORMATION TOP DETAILS

TVDPth	MDPath	Formation
1902.00	1984.85	G Sand
2002.00	2090.69	G Sand Base
2175.00	2273.80	FRUN
3417.00	3588.23	MVRD
4622.00	4814.17	KMGAS
5930.00	6122.17	CMEO
6419.00	6611.17	RLNS
6519.00	6711.17	TD

Plan: Plan #1 23Jan2018 mmsdi

10:33, January 30 2018  
Created By: Mel Mireles

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
971.50	1000.00	5/8" Casing @ 1000' MD	9.62

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	
3	666.39	19.12	249.87	656.30	-31.09	-84.82	3.50	249.87	90.34	
4	3539.26	19.12	249.87	3370.63	-354.95	-968.52	0.00	0.00	0.00	
5	4814.17	0.00	0.00	4622.00	-427.49	-1166.45	1.50	180.00	242.31	GM 513-11 BTM
6	6711.17	0.00	0.00	6519.00	-427.49	-1166.45	0.00	0.00	242.31	GM 513-11 PBHL

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
GM 513-11 BTM	4622.00	-427.49	-1166.45	1598834.69	2270732.39	39.4491082	-108.0828457	Circle (Radius: 50.00)
- plan hits target center								
GM 513-11 PBHL	6519.00	-427.49	-1166.45	1598834.69	2270732.39	39.4491082	-108.0828457	Point
- plan hits target center								



## **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**GR 23-11V Pad**

**GM 513-11 - Slot GM 513-11**

**OH**

**Plan: Plan #1 23Jan2018 mmsdi**

## **Standard Planning Report**

**30 January, 2018**



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well GM 513-11 - Slot GM 513-11
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5793' & RKB 24' @ 5817.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5793' & RKB 24' @ 5817.00usft
<b>Site:</b>	GR 23-11V Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 513-11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 23Jan2018 mmsdi		

<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		GR 23-11V Pad			
Site Position:		Northing:	1,599,230.76 usft	Latitude:	39.4502880
From:	Map	Easting:	2,271,922.71 usft	Longitude:	-108.0786721
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.63 °

Well	GM 513-11 - Slot GM 513-11					
Well Position	+N/-S	-2.21 usft	Northing:	1,599,228.90 usft	Latitude:	39.4502820
	+E/-W	-12.15 usft	Easting:	2,271,910.50 usft	Longitude:	-108.0787151
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,793.00 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	1/23/2018	9.47	65.70	51,724

<b>Design</b>	Plan #1 23Jan2018 mmsdi			
<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	249.87

<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	
666.39	19.12	249.87	656.30	-31.09	-84.82	3.50	3.50	0.00	249.87	
3,539.26	19.12	249.87	3,370.63	-354.95	-968.52	0.00	0.00	0.00	0.00	
4,814.17	0.00	0.00	4,622.00	-427.49	-1,166.45	1.50	-1.50	0.00	180.00	GM 513-11 BTV
6,711.17	0.00	0.00	6,519.00	-427.49	-1,166.45	0.00	0.00	0.00	0.00	GM 513-11 PBHL

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well GM 513-11 - Slot GM 513-11
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5793' & RKB 24' @ 5817.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5793' & RKB 24' @ 5817.00usft
<b>Site:</b>	GR 23-11V Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 513-11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 23Jan2018 mmsdi		

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
<b>Start Build 3.50</b>									
200.00	2.80	249.87	199.97	-0.67	-1.84	1.95	3.50	3.50	0.00
300.00	6.30	249.87	299.64	-3.40	-9.28	9.89	3.50	3.50	0.00
400.00	9.80	249.87	398.64	-8.22	-22.43	23.89	3.50	3.50	0.00
500.00	13.30	249.87	496.60	-15.11	-41.23	43.91	3.50	3.50	0.00
600.00	16.80	249.87	593.15	-24.04	-65.60	69.87	3.50	3.50	0.00
666.39	19.12	249.87	656.30	-31.09	-84.82	90.34	3.50	3.50	0.00
<b>Start 2872.87 hold at 666.39 MD</b>									
700.00	19.12	249.87	688.06	-34.88	-95.16	101.35	0.00	0.00	0.00
800.00	19.12	249.87	782.54	-46.15	-125.92	134.11	0.00	0.00	0.00
900.00	19.12	249.87	877.02	-57.42	-156.68	166.87	0.00	0.00	0.00
1,000.00	19.12	249.87	971.50	-68.70	-187.44	199.63	0.00	0.00	0.00
<b>9 5/8" Casing @ 1000' MD</b>									
1,100.00	19.12	249.87	1,065.98	-79.97	-218.20	232.40	0.00	0.00	0.00
1,200.00	19.12	249.87	1,160.46	-91.24	-248.96	265.16	0.00	0.00	0.00
1,300.00	19.12	249.87	1,254.94	-102.52	-279.72	297.92	0.00	0.00	0.00
1,400.00	19.12	249.87	1,349.43	-113.79	-310.48	330.68	0.00	0.00	0.00
1,500.00	19.12	249.87	1,443.91	-125.06	-341.24	363.44	0.00	0.00	0.00
1,600.00	19.12	249.87	1,538.39	-136.33	-372.00	396.20	0.00	0.00	0.00
1,700.00	19.12	249.87	1,632.87	-147.61	-402.76	428.96	0.00	0.00	0.00
1,800.00	19.12	249.87	1,727.35	-158.88	-433.52	461.72	0.00	0.00	0.00
1,900.00	19.12	249.87	1,821.83	-170.15	-464.28	494.48	0.00	0.00	0.00
1,984.85	19.12	249.87	1,902.00	-179.72	-490.38	522.28	0.00	0.00	0.00
<b>G Sand</b>									
2,000.00	19.12	249.87	1,916.31	-181.43	-495.04	527.24	0.00	0.00	0.00
2,090.69	19.12	249.87	2,002.00	-191.65	-522.94	556.95	0.00	0.00	0.00
<b>G Sand Base</b>									
2,100.00	19.12	249.87	2,010.80	-192.70	-525.80	560.00	0.00	0.00	0.00
2,200.00	19.12	249.87	2,105.28	-203.97	-556.57	592.76	0.00	0.00	0.00
2,273.80	19.12	249.87	2,175.00	-212.29	-579.26	616.94	0.00	0.00	0.00
<b>FRUN</b>									
2,300.00	19.12	249.87	2,199.76	-215.25	-587.33	625.53	0.00	0.00	0.00
2,400.00	19.12	249.87	2,294.24	-226.52	-618.09	658.29	0.00	0.00	0.00
2,500.00	19.12	249.87	2,388.72	-237.79	-648.85	691.05	0.00	0.00	0.00
2,600.00	19.12	249.87	2,483.20	-249.07	-679.61	723.81	0.00	0.00	0.00
2,700.00	19.12	249.87	2,577.68	-260.34	-710.37	756.57	0.00	0.00	0.00
2,800.00	19.12	249.87	2,672.17	-271.61	-741.13	789.33	0.00	0.00	0.00
2,900.00	19.12	249.87	2,766.65	-282.89	-771.89	822.09	0.00	0.00	0.00
3,000.00	19.12	249.87	2,861.13	-294.16	-802.65	854.85	0.00	0.00	0.00
3,100.00	19.12	249.87	2,955.61	-305.43	-833.41	887.61	0.00	0.00	0.00
3,200.00	19.12	249.87	3,050.09	-316.71	-864.17	920.37	0.00	0.00	0.00
3,300.00	19.12	249.87	3,144.57	-327.98	-894.93	953.13	0.00	0.00	0.00
3,400.00	19.12	249.87	3,239.05	-339.25	-925.69	985.89	0.00	0.00	0.00
3,500.00	19.12	249.87	3,333.53	-350.53	-956.45	1,018.66	0.00	0.00	0.00
3,539.26	19.12	249.87	3,370.63	-354.95	-968.52	1,031.52	0.00	0.00	0.00
<b>Start Drop -1.50</b>									
3,588.23	18.39	249.87	3,417.00	-360.37	-983.31	1,047.26	1.50	-1.50	0.00
<b>MVRD</b>									
3,600.00	18.21	249.87	3,428.17	-361.64	-986.78	1,050.96	1.50	-1.50	0.00
3,700.00	16.71	249.87	3,523.56	-371.97	-1,014.95	1,080.97	1.50	-1.50	0.00

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<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5793' & RKB 24' @ 5817.00usft
<b>Site:</b>	GR 23-11V Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 513-11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 23Jan2018 mmsdi		

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)
3,800.00	15.21	249.87	3,619.70	-381.43	-1,040.77	1,108.47	1.50	-1.50	0.00
3,900.00	13.71	249.87	3,716.53	-390.02	-1,064.22	1,133.44	1.50	-1.50	0.00
4,000.00	12.21	249.87	3,813.98	-397.74	-1,085.28	1,155.87	1.50	-1.50	0.00
4,100.00	10.71	249.87	3,911.98	-404.58	-1,103.94	1,175.74	1.50	-1.50	0.00
4,200.00	9.21	249.87	4,010.47	-410.53	-1,120.19	1,193.04	1.50	-1.50	0.00
4,300.00	7.71	249.87	4,109.38	-415.60	-1,134.00	1,207.76	1.50	-1.50	0.00
4,400.00	6.21	249.87	4,208.64	-419.77	-1,145.38	1,219.88	1.50	-1.50	0.00
4,500.00	4.71	249.87	4,308.18	-423.04	-1,154.32	1,229.40	1.50	-1.50	0.00
4,600.00	3.21	249.87	4,407.94	-425.42	-1,160.81	1,236.31	1.50	-1.50	0.00
4,700.00	1.71	249.87	4,507.85	-426.90	-1,164.85	1,240.61	1.50	-1.50	0.00
4,800.00	0.21	249.87	4,607.83	-427.48	-1,166.42	1,242.29	1.50	-1.50	0.00
4,814.17	0.00	0.00	4,622.00	-427.49	-1,166.45	1,242.31	1.50	-1.50	777.07
Start 1897.00 hold at 4814.17 MD - KMWGAS - GM 513-11 BTV									
4,900.00	0.00	0.00	4,707.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
5,000.00	0.00	0.00	4,807.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
5,100.00	0.00	0.00	4,907.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
5,200.00	0.00	0.00	5,007.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
5,300.00	0.00	0.00	5,107.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
5,400.00	0.00	0.00	5,207.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
5,500.00	0.00	0.00	5,307.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
5,600.00	0.00	0.00	5,407.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
5,700.00	0.00	0.00	5,507.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
5,800.00	0.00	0.00	5,607.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
5,900.00	0.00	0.00	5,707.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
6,000.00	0.00	0.00	5,807.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
6,100.00	0.00	0.00	5,907.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
6,122.17	0.00	0.00	5,930.00	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
CMEO									
6,200.00	0.00	0.00	6,007.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
6,300.00	0.00	0.00	6,107.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
6,400.00	0.00	0.00	6,207.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
6,500.00	0.00	0.00	6,307.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
6,600.00	0.00	0.00	6,407.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
6,611.17	0.00	0.00	6,419.00	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
RLNS									
6,700.00	0.00	0.00	6,507.83	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
6,711.17	0.00	0.00	6,519.00	-427.49	-1,166.45	1,242.31	0.00	0.00	0.00
TD at 6711.17 - TD - GM 513-11 PBHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
GM 513-11 BTV	0.00	0.00	4,622.00	-427.49	-1,166.45	1,598,834.69	2,270,732.39	39.4491082	-108.0828457
- plan hits target center									
- Circle (radius 50.00)									
GM 513-11 PBHL	0.00	0.00	6,519.00	-427.49	-1,166.45	1,598,834.69	2,270,732.39	39.4491082	-108.0828457
- plan hits target center									
- Point									

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well GM 513-11 - Slot GM 513-11
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5793' & RKB 24' @ 5817.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5793' & RKB 24' @ 5817.00usft
<b>Site:</b>	GR 23-11V Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 513-11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 23Jan2018 mmsdi		

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,000.00	971.50	9 5/8" Casing @ 1000' MD	9.62	13.50

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,984.85	1,902.00	G Sand		0.00	0.00
2,090.69	2,002.00	G Sand Base		0.00	0.00
2,273.80	2,175.00	FRUN		0.00	0.00
3,588.23	3,417.00	MVRD		0.00	0.00
4,814.17	4,622.00	KMVGAS		0.00	0.00
6,122.17	5,930.00	CMEO		0.00	0.00
6,611.17	6,419.00	RLNS		0.00	0.00
6,711.17	6,519.00	TD		0.00	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 3.50
666.39	656.30	-31.09	-84.82	Start 2872.87 hold at 666.39 MD
3,539.26	3,370.63	-354.95	-968.52	Start Drop -1.50
4,814.17	4,622.00	-427.49	-1,166.45	Start 1897.00 hold at 4814.17 MD
6,711.17	6,519.00	-427.49	-1,166.45	TD at 6711.17