



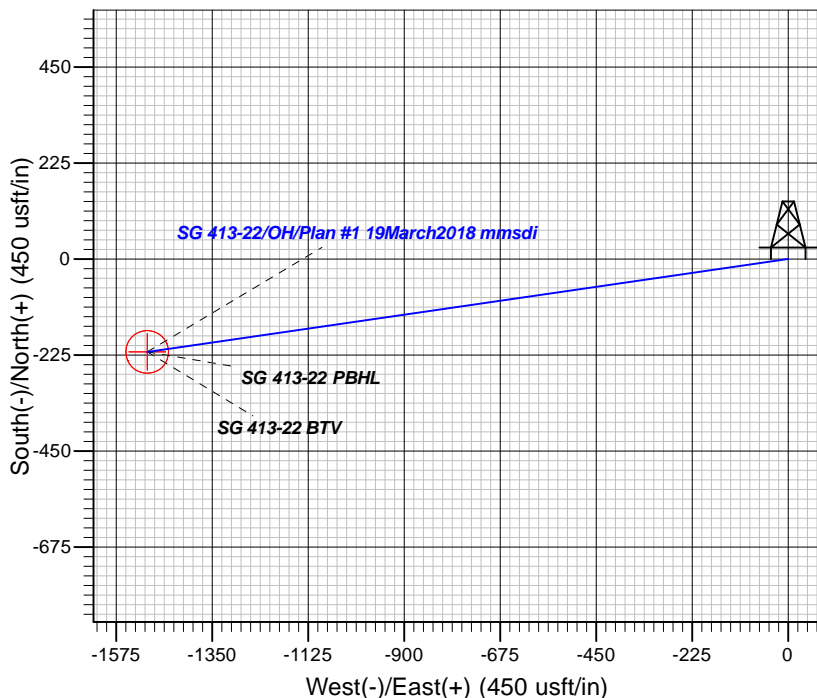
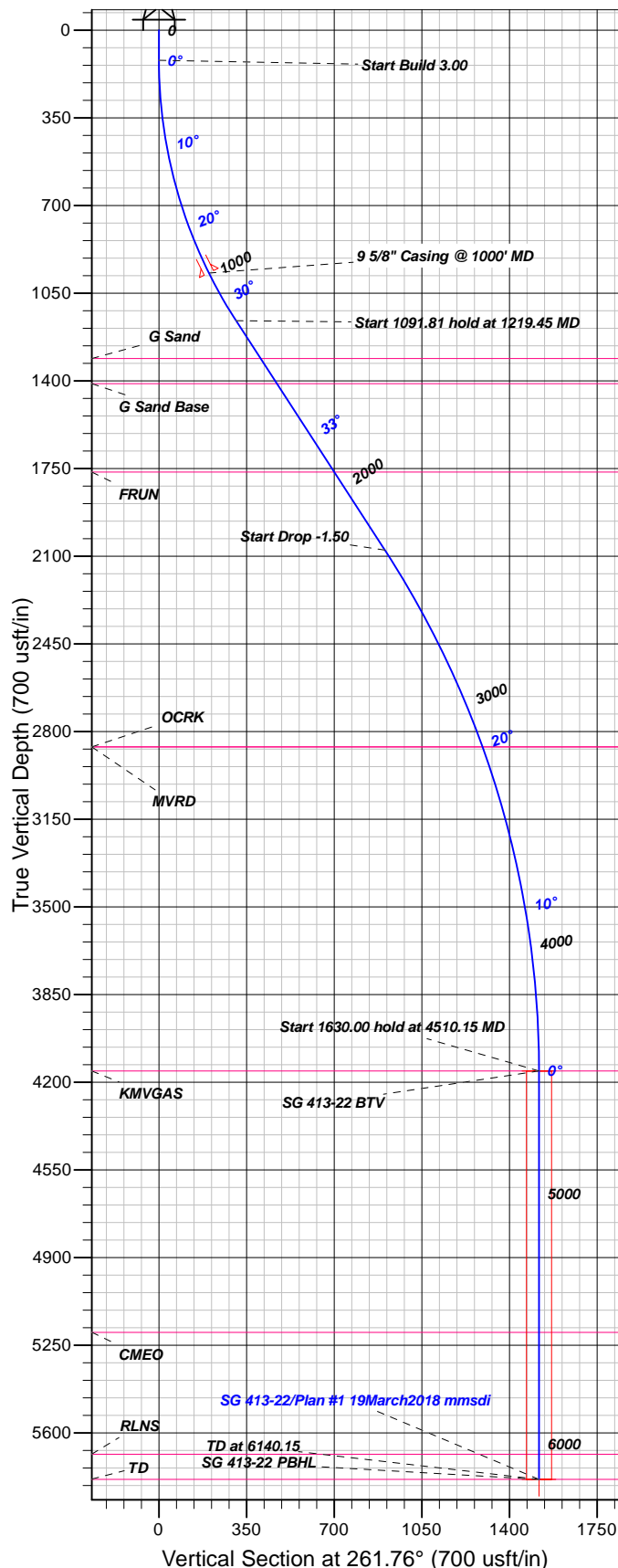
Azimuths to True North  
Magnetic North: 9.47°

Magnetic Field  
Strength: 51729.5nT  
Dip Angle: 65.62°  
Date: 3/19/2018  
Model: HDGM

## Well Details: SG 413-22

GL 5665' & RKB 24' @ 5689.00usft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1588889.90	2265662.60	39.4214190	-108.0997839	SG 413-22 (A10)



## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1311.00	1399.79	G Sand
1411.00	1519.01	G Sand Base
1764.00	1939.83	FRUN
2861.00	3190.02	MVRD
2861.00	3190.02	OCRK
4155.00	4510.15	KMVGAS
5199.00	5554.15	CMEO
5685.00	6040.15	RLNS
5785.00	6140.15	TD

Plan: Plan #1 19March2018 mmsdi

16:39, March 20 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
969.19	1000.00	5/8" Casing @ 1000' 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	120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	
3	1219.45	32.98	261.76	1159.72	-44.14	-304.63	3.00	261.76	307.81	
4	2311.26	32.98	261.76	2075.56	-129.36	-892.87	0.00	0.00	902.19	
5	4510.15	0.00	0.00	4155.00	-217.63	-1502.14	1.50	180.00	1517.82	SG 413-22 BTV
6	6140.15	0.00	0.00	5785.00	-217.63	-1502.14	0.00	0.00	1517.82	SG 413-22 PBHL

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SG 413-22 BTV	4155.00	-217.63	-1502.14	1588715.34	2264154.85	39.4208214	-108.1051012	Circle (Radius: 50.00)
- plan hits target center								
SG 413-22 PBHL	5785.00	-217.63	-1502.14	1588715.34	2264154.85	39.4208214	-108.1051012	Point
- plan hits target center								



# **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**SG 23-22 Pad**

**SG 413-22 - Slot SG 413-22 (A10)**

**OH**

**Plan: Plan #1 19March2018 mmsdi**

## **Standard Planning Report**

**20 March, 2018**



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well SG 413-22 - Slot SG 413-22 (A10)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5665' & RKB 24' @ 5689.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5665' & RKB 24' @ 5689.00usft
<b>Site:</b>	SG 23-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 413-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 19March2018 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		

<b>Site</b>	SG 23-22 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,588,957.40 usft	<b>Latitude:</b> 39.4216042
<b>From:</b> Map		<b>Easting:</b>	2,265,662.20 usft	<b>Longitude:</b> -108.0997922
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in	<b>Grid Convergence:</b> -1.64 °

<b>Well</b>	SG 413-22 - Slot SG 413-22 (A10)			
<b>Well Position</b>	<b>+N/-S</b>	-67.46 usft	<b>Northing:</b>	1,588,889.90 usft
	<b>+E/-W</b>	2.33 usft	<b>Easting:</b>	2,265,662.60 usft
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft
			<b>Ground Level:</b>	5,665.00 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	3/19/2018	9.47	65.62	51,730

<b>Design</b>	Plan #1 19March2018 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	261.76

<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	
1,219.45	32.98	261.76	1,159.72	-44.14	-304.63	3.00	3.00	0.00	261.76	
2,311.26	32.98	261.76	2,075.56	-129.36	-892.87	0.00	0.00	0.00	0.00	
4,510.15	0.00	0.00	4,155.00	-217.63	-1,502.14	1.50	-1.50	0.00	180.00	SG 413-22 BTV
6,140.15	0.00	0.00	5,785.00	-217.63	-1,502.14	0.00	0.00	0.00	0.00	SG 413-22 PBHL

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well SG 413-22 - Slot SG 413-22 (A10)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5665' & RKB 24' @ 5689.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5665' & RKB 24' @ 5689.00usft
<b>Site:</b>	SG 23-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 413-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 19March2018 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 3.00</b>									
200.00	2.40	261.76	199.98	-0.24	-1.66	1.68	3.00	3.00	0.00
300.00	5.40	261.76	299.73	-1.22	-8.39	8.48	3.00	3.00	0.00
400.00	8.40	261.76	399.00	-2.94	-20.28	20.49	3.00	3.00	0.00
500.00	11.40	261.76	497.50	-5.40	-37.29	37.68	3.00	3.00	0.00
600.00	14.40	261.76	594.96	-8.60	-59.38	60.00	3.00	3.00	0.00
700.00	17.40	261.76	691.13	-12.53	-86.49	87.39	3.00	3.00	0.00
800.00	20.40	261.76	785.72	-17.17	-118.54	119.78	3.00	3.00	0.00
900.00	23.40	261.76	878.50	-22.52	-155.45	157.08	3.00	3.00	0.00
1,000.00	26.40	261.76	969.19	-28.56	-197.12	199.18	3.00	3.00	0.00
<b>9 5/8" Casing @ 1000' MD</b>									
1,100.00	29.40	261.76	1,057.56	-35.27	-243.42	245.96	3.00	3.00	0.00
1,200.00	32.40	261.76	1,143.35	-42.63	-294.24	297.31	3.00	3.00	0.00
1,219.45	32.98	261.76	1,159.72	-44.14	-304.63	307.81	3.00	3.00	0.00
<b>Start 1091.81 hold at 1219.45 MD</b>									
1,300.00	32.98	261.76	1,227.29	-50.42	-348.03	351.67	0.00	0.00	0.00
1,399.79	32.98	261.76	1,311.00	-58.21	-401.80	406.00	0.00	0.00	0.00
<b>G Sand</b>									
1,400.00	32.98	261.76	1,311.17	-58.23	-401.91	406.11	0.00	0.00	0.00
1,500.00	32.98	261.76	1,395.06	-66.03	-455.79	460.55	0.00	0.00	0.00
1,519.01	32.98	261.76	1,411.00	-67.52	-466.03	470.89	0.00	0.00	0.00
<b>G Sand Base</b>									
1,600.00	32.98	261.76	1,478.94	-73.84	-509.67	514.99	0.00	0.00	0.00
1,700.00	32.98	261.76	1,562.82	-81.65	-563.54	569.43	0.00	0.00	0.00
1,800.00	32.98	261.76	1,646.70	-89.45	-617.42	623.87	0.00	0.00	0.00
1,900.00	32.98	261.76	1,730.59	-97.26	-671.30	678.31	0.00	0.00	0.00
1,939.83	32.98	261.76	1,764.00	-100.37	-692.76	699.99	0.00	0.00	0.00
<b>FRUN</b>									
2,000.00	32.98	261.76	1,814.47	-105.06	-725.17	732.74	0.00	0.00	0.00
2,100.00	32.98	261.76	1,898.35	-112.87	-779.05	787.18	0.00	0.00	0.00
2,200.00	32.98	261.76	1,982.24	-120.67	-832.93	841.62	0.00	0.00	0.00
2,300.00	32.98	261.76	2,066.12	-128.48	-886.80	896.06	0.00	0.00	0.00
2,311.26	32.98	261.76	2,075.56	-129.36	-892.87	902.19	0.00	0.00	0.00
<b>Start Drop -1.50</b>									
2,400.00	31.65	261.76	2,150.56	-136.16	-939.82	949.63	1.50	-1.50	0.00
2,500.00	30.15	261.76	2,236.36	-143.53	-990.65	1,000.99	1.50	-1.50	0.00
2,600.00	28.65	261.76	2,323.48	-150.56	-1,039.23	1,050.08	1.50	-1.50	0.00
2,700.00	27.15	261.76	2,411.85	-157.27	-1,085.54	1,096.88	1.50	-1.50	0.00
2,800.00	25.65	261.76	2,501.41	-163.65	-1,129.55	1,141.34	1.50	-1.50	0.00
2,900.00	24.15	261.76	2,592.11	-169.69	-1,171.22	1,183.45	1.50	-1.50	0.00
3,000.00	22.65	261.76	2,683.89	-175.38	-1,210.53	1,223.17	1.50	-1.50	0.00
3,100.00	21.15	261.76	2,776.67	-180.73	-1,247.44	1,260.47	1.50	-1.50	0.00
3,190.02	19.80	261.76	2,861.00	-185.25	-1,278.61	1,291.96	1.50	-1.50	0.00
<b>OCRK - MVRD</b>									
3,200.00	19.65	261.76	2,870.39	-185.73	-1,281.94	1,295.33	1.50	-1.50	0.00
3,300.00	18.15	261.76	2,964.99	-190.37	-1,314.00	1,327.72	1.50	-1.50	0.00
3,400.00	16.65	261.76	3,060.41	-194.66	-1,343.60	1,357.63	1.50	-1.50	0.00
3,500.00	15.15	261.76	3,156.58	-198.59	-1,370.72	1,385.03	1.50	-1.50	0.00
3,600.00	13.65	261.76	3,253.44	-202.16	-1,395.33	1,409.90	1.50	-1.50	0.00
3,700.00	12.15	261.76	3,350.91	-205.36	-1,417.43	1,432.23	1.50	-1.50	0.00

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<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5665' & RKB 24' @ 5689.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5665' & RKB 24' @ 5689.00usft
<b>Site:</b>	SG 23-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 413-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 19March2018 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	10.65	261.76	3,448.94	-208.19	-1,436.99	1,452.00	1.50	-1.50	0.00
3,900.00	9.15	261.76	3,547.44	-210.66	-1,454.01	1,469.19	1.50	-1.50	0.00
4,000.00	7.65	261.76	3,646.37	-212.75	-1,468.47	1,483.80	1.50	-1.50	0.00
4,100.00	6.15	261.76	3,745.64	-214.48	-1,480.37	1,495.82	1.50	-1.50	0.00
4,200.00	4.65	261.76	3,845.19	-215.83	-1,489.68	1,505.24	1.50	-1.50	0.00
4,300.00	3.15	261.76	3,944.96	-216.80	-1,496.42	1,512.04	1.50	-1.50	0.00
4,400.00	1.65	261.76	4,044.87	-217.40	-1,500.57	1,516.23	1.50	-1.50	0.00
4,500.00	0.15	261.76	4,144.85	-217.63	-1,502.12	1,517.81	1.50	-1.50	0.00
4,510.15	0.00	0.00	4,155.00	-217.63	-1,502.14	1,517.82	1.50	-1.50	0.00
Start 1630.00 hold at 4510.15 MD - KMGAS - SG 413-22 BTV									
4,600.00	0.00	0.00	4,244.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
4,700.00	0.00	0.00	4,344.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
4,800.00	0.00	0.00	4,444.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
4,900.00	0.00	0.00	4,544.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
5,000.00	0.00	0.00	4,644.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
5,100.00	0.00	0.00	4,744.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
5,200.00	0.00	0.00	4,844.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
5,300.00	0.00	0.00	4,944.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
5,400.00	0.00	0.00	5,044.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
5,500.00	0.00	0.00	5,144.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
5,554.15	0.00	0.00	5,199.00	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
CME0									
5,600.00	0.00	0.00	5,244.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
5,700.00	0.00	0.00	5,344.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
5,800.00	0.00	0.00	5,444.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
5,900.00	0.00	0.00	5,544.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
6,000.00	0.00	0.00	5,644.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
6,040.15	0.00	0.00	5,685.00	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
RLNS									
6,100.00	0.00	0.00	5,744.85	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
6,140.15	0.00	0.00	5,785.00	-217.63	-1,502.14	1,517.82	0.00	0.00	0.00
TD at 6140.15 - TD - SG 413-22 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									
SG 413-22 BTV	0.00	0.00	4,155.00	-217.63	-1,502.14	1,588,715.34	2,264,154.85	39.4208214	-108.1051012
- plan hits target center									
- Circle (radius 50.00)									
SG 413-22 PBHL	0.00	0.00	5,785.00	-217.63	-1,502.14	1,588,715.34	2,264,154.85	39.4208214	-108.1051012
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,000.00	969.19	9 5/8" Casing @ 1000' MD	9.62	13.50	

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well SG 413-22 - Slot SG 413-22 (A10)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 5665' & RKB 24' @ 5689.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 5665' & RKB 24' @ 5689.00usft
<b>Site:</b>	SG 23-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 413-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 19March2018 mmsdi		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,399.79	1,311.00	G Sand		0.00	0.00	
1,519.01	1,411.00	G Sand Base		0.00	0.00	
1,939.83	1,764.00	FRUN		0.00	0.00	
3,190.02	2,861.00	OCRK		0.00	0.00	
3,190.02	2,861.00	MVRD		0.00	0.00	
4,510.15	4,155.00	KMVGAS		0.00	0.00	
5,554.15	5,199.00	CMEO		0.00	0.00	
6,040.15	5,685.00	RLNS		0.00	0.00	
6,140.15	5,785.00	TD		0.00	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 3.00	
1,219.45	1,159.72	-44.14	-304.63	Start 1091.81 hold at 1219.45 MD	
2,311.26	2,075.56	-129.36	-892.87	Start Drop -1.50	
4,510.15	4,155.00	-217.63	-1,502.14	Start 1630.00 hold at 4510.15 MD	
6,140.15	5,785.00	-217.63	-1,502.14	TD at 6140.15	