

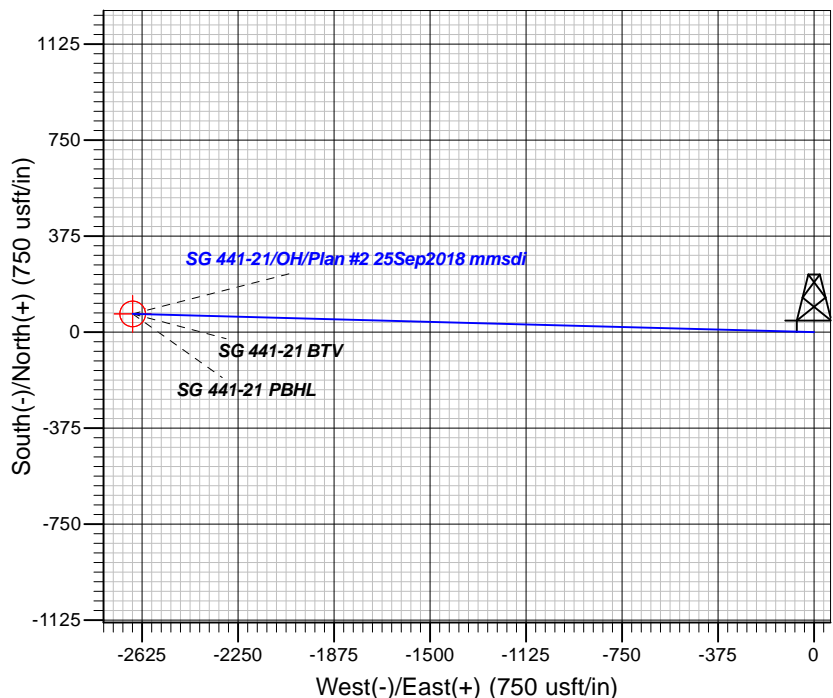
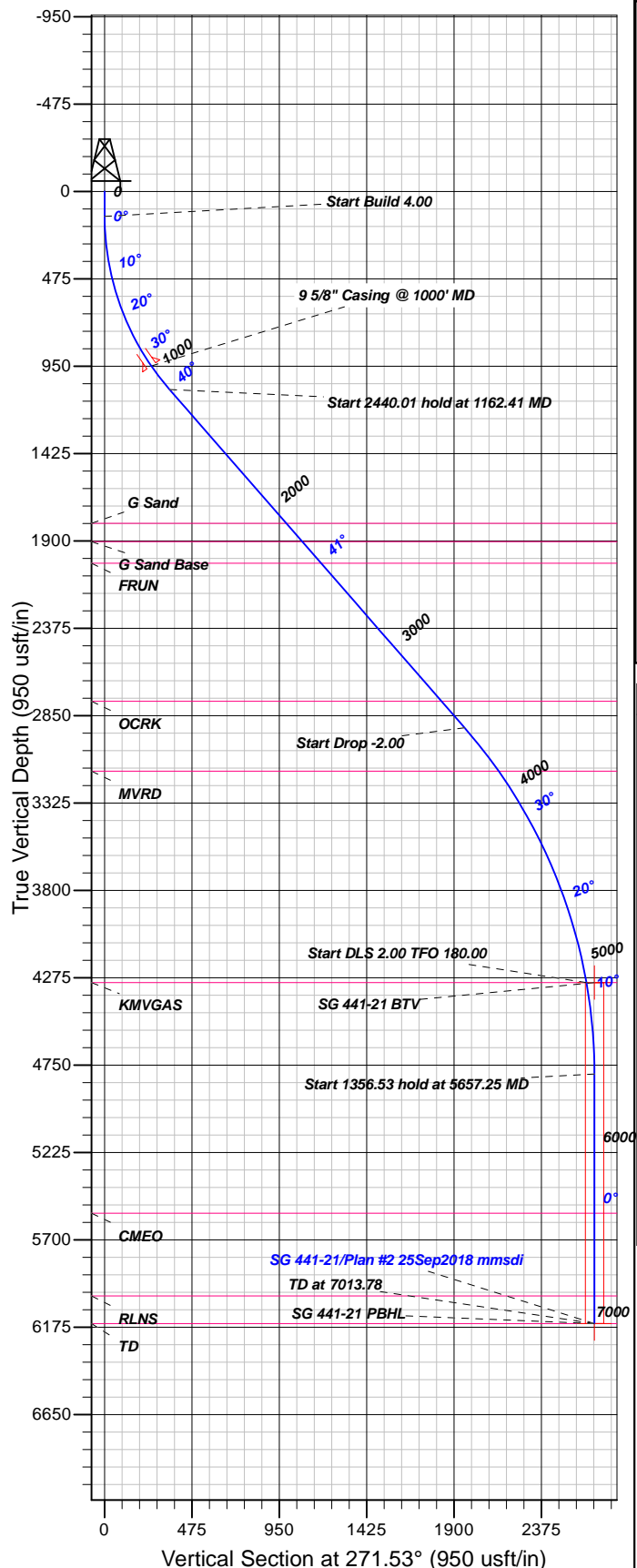


Azimuths to True North  
Magnetic North: 9.48°

Magnetic Field  
Strength: 51724.5snT  
Dip Angle: 65.63°  
Date: 3/9/2018  
Model: HDGM

## Well Details: SG 441-21

GL 6092.4' & RKB 24' @ 6116.40usft  
+N/-S 0.00 +E/-W 0.00 Northing 1591214.90 Easting 2264510.70 Latitude 39.4277091 Longitude -108.1040957 Slot SG 441-21 (A10)



## FORMATION TOP DETAILS

TVDPth	MDPath	Formation
1804.00	2127.70	G Sand
1904.00	2260.40	G Sand Base
2020.61	2415.13	FRUN
2771.00	3410.87	OCRK
3151.17	3902.22	MVRD
4301.00	5157.25	KMGAS
5555.00	6413.78	CMEQ
6005.00	6863.78	RLNS
6155.00	7013.78	TD

Plan: Plan #2 25Sep2018 mmsdi

10:48, September 27 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
948.38	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	135.00	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	
3	1162.41	41.10	271.53	1076.55	9.44	-352.81	4.00	271.53	352.94	
4	3602.42	41.10	271.53	2915.36	52.35	-1956.13	0.00	0.00	1956.83	
5	5157.25	10.00	271.53	4301.00	70.07	-2618.24	2.00	180.00	2619.18	
6	5657.25	0.00	0.00	4798.47	71.23	-2661.75	2.00	180.00	2662.70	
7	7013.78	0.00	0.00	6155.00	71.23	-2661.75	0.00	0.00	2662.70	SG 441-21 PBHL

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SG 441-21 BTM	4301.00	71.23	-2661.75	1591362.39	2261852.09	39.4279043	-108.1135186	Circle (Radius: 50.00)
- plan misses target center by 42.87usft at 5164.49usft MD (4308.13 TVD, 70.10 N, -2619.49 E)								
SG 441-21 PBHL	6155.00	71.23	-2661.75	1591362.39	2261852.09	39.4279043	-108.1135186	Point
- plan hits target center								



# **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**SG 11-22 Pad**

**SG 441-21 - Slot SG 441-21 (A10)**

**OH**

**Plan: Plan #2 25Sep2018 mmsdi**

## **Standard Planning Report**

**27 September, 2018**



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well SG 441-21 - Slot SG 441-21 (A10)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6092.4' & RKB 24' @ 6116.40usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6092.4' & RKB 24' @ 6116.40usft
<b>Site:</b>	SG 11-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 441-21	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 25Sep2018 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	SG 11-22 Pad				
Site Position:		Northing:	1,591,239.00 usft	Latitude:	39.4277783
From:	Map	Easting:	2,264,548.70 usft	Longitude:	-108.1039637
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.64

Well	SG 441-21 - Slot SG 441-21 (A10)					
Well Position	+N/-S	-25.18 usft	Northing:	1,591,214.90 usft	Latitude:	39.4277091
	+E/-W	-37.29 usft	Easting:	2,264,510.70 usft	Longitude:	-108.1040957
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,092.40 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	3/9/2018	9.48	65.63	51,725

<b>Design</b>	Plan #2 25Sep2018 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	271.53

<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	
135.00	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,162.41	41.10	271.53	1,076.55	9.44	-352.81	4.00	4.00	0.00	271.53	
3,602.42	41.10	271.53	2,915.36	52.35	-1,956.13	0.00	0.00	0.00	0.00	
5,157.25	10.00	271.53	4,301.00	70.07	-2,618.24	2.00	-2.00	0.00	180.00	
5,657.25	0.00	0.00	4,798.47	71.23	-2,661.75	2.00	-2.00	17.69	180.00	
7,013.78	0.00	0.00	6,155.00	71.23	-2,661.75	0.00	0.00	0.00	0.00	SG 441-21 PBHL

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well SG 441-21 - Slot SG 441-21 (A10)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6092.4' & RKB 24' @ 6116.40usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6092.4' & RKB 24' @ 6116.40usft
<b>Site:</b>	SG 11-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 441-21	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 25Sep2018 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
135.00	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 4.00</b>									
200.00	2.60	271.53	199.98	0.04	-1.47	1.47	4.00	4.00	0.00
300.00	6.60	271.53	299.64	0.25	-9.49	9.49	4.00	4.00	0.00
400.00	10.60	271.53	398.49	0.65	-24.43	24.44	4.00	4.00	0.00
500.00	14.60	271.53	496.06	1.24	-46.24	46.25	4.00	4.00	0.00
600.00	18.60	271.53	591.88	2.00	-74.79	74.82	4.00	4.00	0.00
700.00	22.60	271.53	685.46	2.94	-109.95	109.99	4.00	4.00	0.00
800.00	26.60	271.53	776.37	4.06	-151.56	151.61	4.00	4.00	0.00
900.00	30.60	271.53	864.15	5.34	-199.40	199.47	4.00	4.00	0.00
1,000.00	34.60	271.53	948.38	6.78	-253.25	253.34	4.00	4.00	0.00
<b>9 5/8" Casing @ 1000' MD</b>									
1,100.00	38.60	271.53	1,028.64	8.37	-312.84	312.95	4.00	4.00	0.00
1,162.41	41.10	271.53	1,076.55	9.44	-352.81	352.94	4.00	4.00	0.00
<b>Start 2440.01 hold at 1162.41 MD</b>									
1,200.00	41.10	271.53	1,104.88	10.10	-377.51	377.64	0.00	0.00	0.00
1,300.00	41.10	271.53	1,180.24	11.86	-443.22	443.38	0.00	0.00	0.00
1,400.00	41.10	271.53	1,255.60	13.62	-508.93	509.11	0.00	0.00	0.00
1,500.00	41.10	271.53	1,330.96	15.38	-574.64	574.84	0.00	0.00	0.00
1,600.00	41.10	271.53	1,406.32	17.14	-640.35	640.58	0.00	0.00	0.00
1,700.00	41.10	271.53	1,481.68	18.90	-706.06	706.31	0.00	0.00	0.00
1,800.00	41.10	271.53	1,557.04	20.65	-771.77	772.04	0.00	0.00	0.00
1,900.00	41.10	271.53	1,632.40	22.41	-837.47	837.77	0.00	0.00	0.00
2,000.00	41.10	271.53	1,707.76	24.17	-903.18	903.51	0.00	0.00	0.00
2,100.00	41.10	271.53	1,783.12	25.93	-968.89	969.24	0.00	0.00	0.00
2,127.70	41.10	271.53	1,804.00	26.42	-987.10	987.45	0.00	0.00	0.00
<b>G Sand</b>									
2,200.00	41.10	271.53	1,858.48	27.69	-1,034.60	1,034.97	0.00	0.00	0.00
2,260.40	41.10	271.53	1,904.00	28.75	-1,074.29	1,074.67	0.00	0.00	0.00
<b>G Sand Base</b>									
2,300.00	41.10	271.53	1,933.85	29.45	-1,100.31	1,100.71	0.00	0.00	0.00
2,400.00	41.10	271.53	2,009.21	31.21	-1,166.02	1,166.44	0.00	0.00	0.00
2,415.13	41.10	271.53	2,020.61	31.47	-1,175.97	1,176.39	0.00	0.00	0.00
<b>FRUN</b>									
2,500.00	41.10	271.53	2,084.57	32.96	-1,231.73	1,232.17	0.00	0.00	0.00
2,600.00	41.10	271.53	2,159.93	34.72	-1,297.44	1,297.90	0.00	0.00	0.00
2,700.00	41.10	271.53	2,235.29	36.48	-1,363.15	1,363.64	0.00	0.00	0.00
2,800.00	41.10	271.53	2,310.65	38.24	-1,428.86	1,429.37	0.00	0.00	0.00
2,900.00	41.10	271.53	2,386.01	40.00	-1,494.57	1,495.10	0.00	0.00	0.00
3,000.00	41.10	271.53	2,461.37	41.76	-1,560.28	1,560.84	0.00	0.00	0.00
3,100.00	41.10	271.53	2,536.73	43.52	-1,625.99	1,626.57	0.00	0.00	0.00
3,200.00	41.10	271.53	2,612.09	45.27	-1,691.70	1,692.30	0.00	0.00	0.00
3,300.00	41.10	271.53	2,687.45	47.03	-1,757.41	1,758.03	0.00	0.00	0.00
3,400.00	41.10	271.53	2,762.81	48.79	-1,823.12	1,823.77	0.00	0.00	0.00
3,410.87	41.10	271.53	2,771.00	48.98	-1,830.26	1,830.91	0.00	0.00	0.00
<b>OCRK</b>									
3,500.00	41.10	271.53	2,838.17	50.55	-1,888.82	1,889.50	0.00	0.00	0.00
3,600.00	41.10	271.53	2,913.53	52.31	-1,954.53	1,955.23	0.00	0.00	0.00
3,602.42	41.10	271.53	2,915.36	52.35	-1,956.13	1,956.83	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
3,700.00	39.14	271.53	2,989.97	54.03	-2,018.98	2,019.70	2.00	-2.00	0.00

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well SG 441-21 - Slot SG 441-21 (A10)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6092.4' & RKB 24' @ 6116.40usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6092.4' & RKB 24' @ 6116.40usft
<b>Site:</b>	SG 11-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 441-21	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 25Sep2018 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	37.14	271.53	3,068.61	55.68	-2,080.72	2,081.46	2.00	-2.00	0.00
3,900.00	35.14	271.53	3,149.36	57.26	-2,139.68	2,140.44	2.00	-2.00	0.00
3,902.22	35.10	271.53	3,151.17	57.30	-2,140.95	2,141.72	2.00	-2.00	0.00
<b>MVRD</b>									
4,000.00	33.14	271.53	3,232.12	58.76	-2,195.78	2,196.57	2.00	-2.00	0.00
4,100.00	31.14	271.53	3,316.78	60.19	-2,248.97	2,249.77	2.00	-2.00	0.00
4,200.00	29.14	271.53	3,403.25	61.53	-2,299.17	2,299.99	2.00	-2.00	0.00
4,300.00	27.14	271.53	3,491.42	62.79	-2,346.32	2,347.16	2.00	-2.00	0.00
4,400.00	25.14	271.53	3,581.19	63.97	-2,390.36	2,391.22	2.00	-2.00	0.00
4,500.00	23.14	271.53	3,672.44	65.07	-2,431.25	2,432.12	2.00	-2.00	0.00
4,600.00	21.14	271.53	3,765.05	66.07	-2,468.93	2,469.82	2.00	-2.00	0.00
4,700.00	19.14	271.53	3,858.93	67.00	-2,503.36	2,504.25	2.00	-2.00	0.00
4,800.00	17.14	271.53	3,953.95	67.83	-2,534.49	2,535.39	2.00	-2.00	0.00
4,900.00	15.14	271.53	4,050.01	68.57	-2,562.28	2,563.20	2.00	-2.00	0.00
5,000.00	13.14	271.53	4,146.97	69.23	-2,586.71	2,587.64	2.00	-2.00	0.00
5,100.00	11.14	271.53	4,244.73	69.79	-2,607.74	2,608.67	2.00	-2.00	0.00
5,157.25	10.00	271.53	4,301.00	70.07	-2,618.24	2,619.18	2.00	-2.00	0.00
<b>Start DLS 2.00 TFO 180.00 - KMGAS</b>									
5,164.49	9.86	271.53	4,308.13	70.10	-2,619.49	2,620.43	2.00	-2.00	0.00
<b>SG 441-21 BTV</b>									
5,200.00	9.14	271.53	4,343.16	70.26	-2,625.35	2,626.29	2.00	-2.00	0.00
5,300.00	7.14	271.53	4,442.14	70.64	-2,639.51	2,640.45	2.00	-2.00	0.00
5,400.00	5.14	271.53	4,541.56	70.93	-2,650.21	2,651.16	2.00	-2.00	0.00
5,500.00	3.14	271.53	4,641.30	71.12	-2,657.43	2,658.39	2.00	-2.00	0.00
5,600.00	1.14	271.53	4,741.22	71.22	-2,661.18	2,662.13	2.00	-2.00	0.00
5,657.25	0.00	0.00	4,798.47	71.23	-2,661.75	2,662.70	2.00	-2.00	154.53
<b>Start 1356.53 hold at 5657.25 MD</b>									
5,700.00	0.00	0.00	4,841.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
5,800.00	0.00	0.00	4,941.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
5,900.00	0.00	0.00	5,041.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
6,000.00	0.00	0.00	5,141.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
6,100.00	0.00	0.00	5,241.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
6,200.00	0.00	0.00	5,341.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
6,300.00	0.00	0.00	5,441.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
6,400.00	0.00	0.00	5,541.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
6,413.78	0.00	0.00	5,555.00	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
<b>CMEO</b>									
6,500.00	0.00	0.00	5,641.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
6,600.00	0.00	0.00	5,741.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
6,700.00	0.00	0.00	5,841.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
6,800.00	0.00	0.00	5,941.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
6,863.78	0.00	0.00	6,005.00	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
<b>RLNS</b>									
6,900.00	0.00	0.00	6,041.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
7,000.00	0.00	0.00	6,141.22	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
7,013.78	0.00	0.00	6,155.00	71.23	-2,661.75	2,662.70	0.00	0.00	0.00
<b>TD at 7013.78 - TD - SG 441-21 PBHL</b>									

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well SG 441-21 - Slot SG 441-21 (A10)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6092.4' & RKB 24' @ 6116.40usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6092.4' & RKB 24' @ 6116.40usft
<b>Site:</b>	SG 11-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 441-21	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 25Sep2018 mmsdi		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
SG 441-21 BTV	0.00	0.00	4,301.00	71.23	-2,661.75	1,591,362.39	2,261,852.09	39.4279043	-108.1135187
- plan misses target center by 42.87usft at 5164.49usft MD (4308.13 TVD, 70.10 N, -2619.49 E)									
- Circle (radius 50.00)									
SG 441-21 PBHL	0.00	0.00	6,155.00	71.23	-2,661.75	1,591,362.39	2,261,852.09	39.4279043	-108.1135187
- plan hits target center									
- Point									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,000.00	948.38	9 5/8" Casing @ 1000' MD	9.62	13.50

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,127.70	1,804.00	G Sand		0.00	0.00
2,260.40	1,904.00	G Sand Base		0.00	0.00
2,415.13	2,020.61	FRUN		0.00	0.00
3,410.87	2,771.00	OCRK		0.00	0.00
3,902.22	3,151.17	MVRD		0.00	0.00
5,157.25	4,301.00	KMVGAS		0.00	0.00
6,413.78	5,555.00	CME0		0.00	0.00
6,863.78	6,005.00	RLNS		0.00	0.00
7,013.78	6,155.00	TD		0.00	0.00

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
135.00	135.00	0.00	0.00	Start Build 4.00
1,162.41	1,076.55	9.44	-352.81	Start 2440.01 hold at 1162.41 MD
3,602.42	2,915.36	52.35	-1,956.13	Start Drop -2.00
5,157.25	4,301.00	70.07	-2,618.24	Start DLS 2.00 TFO 180.00
5,657.25	4,798.47	71.23	-2,661.75	Start 1356.53 hold at 5657.25 MD
7,013.78	6,155.00	71.23	-2,661.75	TD at 7013.78