

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
GM 443-8 BTV	4789.00	-450.79	2354.10	51599339.01	2259041.29	39.4495725	-108.1242814	Circle (Radius: 50.00)
- plan misses target center by 42.88usft at 5401.53usft MD (4795.63 TVD, -442.82 N, 2312.49 E)								
GM 443-8 PBHL	6684.00	-450.79	2354.10	51599339.01	2259041.29	39.4495725	-108.1242814	Point
- plan misses target center by 0.01usft at 7292.33usft MD (6684.00 TVD, -450.79 N, 2354.10 E)								



TEP Rocky Mountain LLC

Garfield County, CO NAD83

GV 1-8 Pad

GM 443-8 - Slot GM 443-8 (A9)

OH

Plan: Plan #3 12Nov2018 mmsdi

Standard Planning Report

13 November, 2018



Database:	Grand Junction District	Local Co-ordinate Reference:	Well GM 443-8 - Slot GM 443-8 (A9)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6280' & RKB 24' @ 6304.00usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 6280' & RKB 24' @ 6304.00usft
Site:	GV 1-8 Pad	North Reference:	True
Well:	GM 443-8	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3 12Nov2018 mmsdi		

Project	Garfield County, CO NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	GV 1-8 Pad					
Site Position:		Northing:	1,599,836.41 usft	Latitude:	39.4507498	
From:	Map	Easting:	2,256,677.81 usft	Longitude:	-108.1326980	
Position Uncertainty:		0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.66 °

Well	GM 443-8 - Slot GM 443-8 (A9)					
Well Position	+N/-S	22.07 usft	Northing:	1,599,857.82 usft	Latitude:	39.4508104
	+E/-W	22.63 usft	Easting:	2,256,701.07 usft	Longitude:	-108.1326179
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,280.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	6/21/2018	9.52	65.68	51,679

Design	Plan #3 12Nov2018 mmsdi			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	100.84

Plan Sections										
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	
898.06	31.12	100.84	860.36	-38.78	202.49	4.00	4.00	0.00	100.84	
4,338.67	31.12	100.84	3,805.74	-373.23	1,949.11	0.00	0.00	0.00	0.00	
5,394.80	10.00	100.84	4,789.00	-442.60	2,311.35	2.00	-2.00	0.00	180.00	
5,894.80	0.00	0.00	5,286.47	-450.79	2,354.10	2.00	-2.00	-20.17	-180.00	
7,292.33	0.00	0.00	6,684.00	-450.79	2,354.10	0.00	0.00	0.00	0.00	GM 443-8 PBHL

Database:	Grand Junction District	Local Co-ordinate Reference:	Well GM 443-8 - Slot GM 443-8 (A9)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6280' & RKB 24' @ 6304.00usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 6280' & RKB 24' @ 6304.00usft
Site:	GV 1-8 Pad	North Reference:	True
Well:	GM 443-8	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3 12Nov2018 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
Start Build 4.00									
200.00	3.20	100.84	199.96	-0.42	2.19	2.23	4.00	4.00	0.00
300.00	7.20	100.84	299.53	-2.12	11.09	11.29	4.00	4.00	0.00
400.00	11.20	100.84	398.22	-5.13	26.79	27.28	4.00	4.00	0.00
500.00	15.20	100.84	495.56	-9.42	49.22	50.11	4.00	4.00	0.00
600.00	19.20	100.84	591.07	-14.98	78.25	79.67	4.00	4.00	0.00
700.00	23.20	100.84	684.28	-21.78	113.76	115.83	4.00	4.00	0.00
800.00	27.20	100.84	774.74	-29.79	155.57	158.40	4.00	4.00	0.00
898.06	31.12	100.84	860.36	-38.78	202.49	206.17	4.00	4.00	0.00
Start 3440.61 hold at 898.06 MD									
900.00	31.12	100.84	862.02	-38.96	203.48	207.17	0.00	0.00	0.00
1,000.00	31.12	100.84	947.63	-48.68	254.24	258.86	0.00	0.00	0.00
9 5/8" Casing @ 1000' MD									
1,100.00	31.12	100.84	1,033.23	-58.41	305.01	310.55	0.00	0.00	0.00
1,200.00	31.12	100.84	1,118.84	-68.13	355.77	362.24	0.00	0.00	0.00
1,300.00	31.12	100.84	1,204.45	-77.85	406.54	413.92	0.00	0.00	0.00
1,400.00	31.12	100.84	1,290.05	-87.57	457.30	465.61	0.00	0.00	0.00
1,500.00	31.12	100.84	1,375.66	-97.29	508.07	517.30	0.00	0.00	0.00
1,600.00	31.12	100.84	1,461.26	-107.01	558.83	568.98	0.00	0.00	0.00
1,700.00	31.12	100.84	1,546.87	-116.73	609.59	620.67	0.00	0.00	0.00
1,800.00	31.12	100.84	1,632.48	-126.45	660.36	672.36	0.00	0.00	0.00
1,900.00	31.12	100.84	1,718.08	-136.17	711.12	724.04	0.00	0.00	0.00
2,000.00	31.12	100.84	1,803.69	-145.89	761.89	775.73	0.00	0.00	0.00
2,100.00	31.12	100.84	1,889.30	-155.61	812.65	827.42	0.00	0.00	0.00
2,200.00	31.12	100.84	1,974.90	-165.34	863.42	879.11	0.00	0.00	0.00
2,300.00	31.12	100.84	2,060.51	-175.06	914.18	930.79	0.00	0.00	0.00
2,351.97	31.12	100.84	2,105.00	-180.11	940.57	957.66	0.00	0.00	0.00
GSAND									
2,400.00	31.12	100.84	2,146.12	-184.78	964.95	982.48	0.00	0.00	0.00
2,474.63	31.12	100.84	2,210.00	-192.03	1,002.83	1,021.05	0.00	0.00	0.00
GSAND BASE									
2,500.00	31.12	100.84	2,231.72	-194.50	1,015.71	1,034.17	0.00	0.00	0.00
2,600.00	31.12	100.84	2,317.33	-204.22	1,066.48	1,085.85	0.00	0.00	0.00
2,700.00	31.12	100.84	2,402.93	-213.94	1,117.24	1,137.54	0.00	0.00	0.00
2,800.00	31.12	100.84	2,488.54	-223.66	1,168.01	1,189.23	0.00	0.00	0.00
2,877.63	31.12	100.84	2,555.00	-231.21	1,207.42	1,229.35	0.00	0.00	0.00
FRUN									
2,900.00	31.12	100.84	2,574.15	-233.38	1,218.77	1,240.91	0.00	0.00	0.00
3,000.00	31.12	100.84	2,659.75	-243.10	1,269.54	1,292.60	0.00	0.00	0.00
3,100.00	31.12	100.84	2,745.36	-252.82	1,320.30	1,344.29	0.00	0.00	0.00
3,200.00	31.12	100.84	2,830.97	-262.54	1,371.06	1,395.98	0.00	0.00	0.00
3,300.00	31.12	100.84	2,916.57	-272.27	1,421.83	1,447.66	0.00	0.00	0.00
3,400.00	31.12	100.84	3,002.18	-281.99	1,472.59	1,499.35	0.00	0.00	0.00
3,500.00	31.12	100.84	3,087.79	-291.71	1,523.36	1,551.04	0.00	0.00	0.00
3,600.00	31.12	100.84	3,173.39	-301.43	1,574.12	1,602.72	0.00	0.00	0.00
3,700.00	31.12	100.84	3,259.00	-311.15	1,624.89	1,654.41	0.00	0.00	0.00
3,800.00	31.12	100.84	3,344.60	-320.87	1,675.65	1,706.10	0.00	0.00	0.00
3,900.00	31.12	100.84	3,430.21	-330.59	1,726.42	1,757.78	0.00	0.00	0.00
4,000.00	31.12	100.84	3,515.82	-340.31	1,777.18	1,809.47	0.00	0.00	0.00
4,100.00	31.12	100.84	3,601.42	-350.03	1,827.95	1,861.16	0.00	0.00	0.00

Database:	Grand Junction District	Local Co-ordinate Reference:	Well GM 443-8 - Slot GM 443-8 (A9)
Company:	TEP Rocky Mountain LLC	TVD Reference:	GL 6280' & RKB 24' @ 6304.00usft
Project:	Garfield County, CO NAD83	MD Reference:	GL 6280' & RKB 24' @ 6304.00usft
Site:	GV 1-8 Pad	North Reference:	True
Well:	GM 443-8	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3 12Nov2018 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)
4,132.21	31.12	100.84	3,629.00	-353.16	1,844.30	1,877.81	0.00	0.00	0.00
OCRK - MVRD									
4,200.00	31.12	100.84	3,687.03	-359.75	1,878.71	1,912.85	0.00	0.00	0.00
4,300.00	31.12	100.84	3,772.64	-369.48	1,929.48	1,964.53	0.00	0.00	0.00
4,338.67	31.12	100.84	3,805.74	-373.23	1,949.11	1,984.52	0.00	0.00	0.00
Start Drop -2.00									
4,400.00	29.90	100.84	3,858.58	-379.09	1,979.69	2,015.66	2.00	-2.00	0.00
4,500.00	27.90	100.84	3,946.12	-388.18	2,027.14	2,063.98	2.00	-2.00	0.00
4,600.00	25.90	100.84	4,035.30	-396.68	2,071.57	2,109.21	2.00	-2.00	0.00
4,700.00	23.90	100.84	4,126.00	-404.60	2,112.92	2,151.31	2.00	-2.00	0.00
4,800.00	21.90	100.84	4,218.12	-411.92	2,151.13	2,190.21	2.00	-2.00	0.00
4,900.00	19.90	100.84	4,311.54	-418.63	2,186.15	2,225.87	2.00	-2.00	0.00
5,000.00	17.90	100.84	4,406.15	-424.72	2,217.96	2,258.26	2.00	-2.00	0.00
5,100.00	15.90	100.84	4,501.82	-430.18	2,246.50	2,287.32	2.00	-2.00	0.00
5,200.00	13.90	100.84	4,598.46	-435.02	2,271.75	2,313.03	2.00	-2.00	0.00
5,300.00	11.90	100.84	4,695.93	-439.21	2,293.67	2,335.34	2.00	-2.00	0.00
5,394.80	10.00	100.84	4,789.00	-442.60	2,311.35	2,353.35	2.00	-2.00	0.00
Start DLS 2.00 TFO -180.00 - KMGAS									
5,400.00	9.90	100.84	4,794.12	-442.77	2,312.23	2,354.24	2.00	-2.00	0.00
5,401.53	9.87	100.84	4,795.63	-442.82	2,312.49	2,354.51	2.00	-2.00	0.00
GM 443-8 BTV									
5,500.00	7.90	100.84	4,892.92	-445.68	2,327.42	2,369.71	2.00	-2.00	0.00
5,600.00	5.90	100.84	4,992.19	-447.94	2,339.21	2,381.71	2.00	-2.00	0.00
5,700.00	3.90	100.84	5,091.82	-449.54	2,347.59	2,390.25	2.00	-2.00	0.00
5,800.00	1.90	100.84	5,191.68	-450.49	2,352.56	2,395.30	2.00	-2.00	0.00
5,894.80	0.00	0.00	5,286.47	-450.79	2,354.10	2,396.87	2.00	-2.00	-106.37
Start 1397.53 hold at 5894.80 MD									
5,900.00	0.00	0.00	5,291.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
6,000.00	0.00	0.00	5,391.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
6,100.00	0.00	0.00	5,491.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
6,200.00	0.00	0.00	5,591.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
6,300.00	0.00	0.00	5,691.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
6,400.00	0.00	0.00	5,791.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
6,500.00	0.00	0.00	5,891.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
6,600.00	0.00	0.00	5,991.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
6,700.00	0.00	0.00	6,091.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
6,702.33	0.00	0.00	6,094.00	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
CME0									
6,800.00	0.00	0.00	6,191.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
6,900.00	0.00	0.00	6,291.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
7,000.00	0.00	0.00	6,391.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
7,100.00	0.00	0.00	6,491.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
7,142.33	0.00	0.00	6,534.00	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
RLNS									
7,200.00	0.00	0.00	6,591.67	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
7,292.33	0.00	0.00	6,684.00	-450.79	2,354.10	2,396.87	0.00	0.00	0.00
TD at 7292.33 - TD - GM 443-8 PBHL									

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Project:	Garfield County, CO NAD83	MD Reference:	GL 6280' & RKB 24' @ 6304.00usft
Site:	GV 1-8 Pad	North Reference:	True
Well:	GM 443-8	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3 12Nov2018 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)		
GM 443-8 BTV	0.00	0.00	4,789.00	-450.79	2,354.10	1,599,339.01	2,259,041.12	39.4495725	-108.1242814
- plan misses target center by 42.88usft at 5401.53usft MD (4795.63 TVD, -442.82 N, 2312.49 E)									
- Circle (radius 50.00)									
GM 443-8 PBHL	0.00	0.00	6,684.00	-450.79	2,354.10	1,599,339.01	2,259,041.12	39.4495725	-108.1242814
- plan misses target center by 0.01usft at 7292.33usft MD (6684.00 TVD, -450.79 N, 2354.10 E)									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(usft)	(usft)		(in)	(in)
1,000.00	947.63	9 5/8" Casing @ 1000' MD	9.62	13.50

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)			(°)	(°)
2,351.97	2,105.00	GSAND		0.00	0.00
2,474.63	2,210.00	GSAND BASE		0.00	0.00
2,877.63	2,555.00	FRUN		0.00	0.00
4,132.21	3,629.00	OCRK		0.00	0.00
4,132.21	3,629.00	MVRD		0.00	0.00
5,394.80	4,789.00	KMVGAS		0.00	0.00
6,702.33	6,094.00	CME0		0.00	0.00
7,142.33	6,534.00	RLNS		0.00	0.00
7,292.33	6,684.00	TD		0.00	0.00

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S	+E/-W	
(usft)	(usft)	(usft)	(usft)	
120.00	120.00	0.00	0.00	Start Build 4.00
898.06	860.36	-38.78	202.49	Start 3440.61 hold at 898.06 MD
4,338.67	3,805.74	-373.23	1,949.11	Start Drop -2.00
5,394.80	4,789.00	-442.60	2,311.35	Start DLS 2.00 TFO -180.00
5,894.80	5,286.47	-450.79	2,354.10	Start 1397.53 hold at 5894.80 MD
7,292.33	6,684.00	-450.79	2,354.10	TD at 7292.33