



**Scientific  
Drilling**

## Survey Certification

7327 West Barton Road

Casper, WY 82604

(307)-472-6621 Fax (307) 472-5439

<b>Operator</b>	TEP Rocky Mountain LLC
<b>Well Name &amp; No.</b>	Glacierfill 1C
<b>API #</b>	05045242690000
<b>County &amp; State</b>	Garfield County, CO
<b>SDI Job #</b>	OP.023333
<b>Rig</b>	H&P 318
<b>Survey Date</b>	20-Jan-2020

I, Seth M. Burstad, having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 0 feet to a measured depth of 9140 feet is true and correct as determined from all available records.

*Seth M. Burstad*

Signature

21-Jan-2020

Date

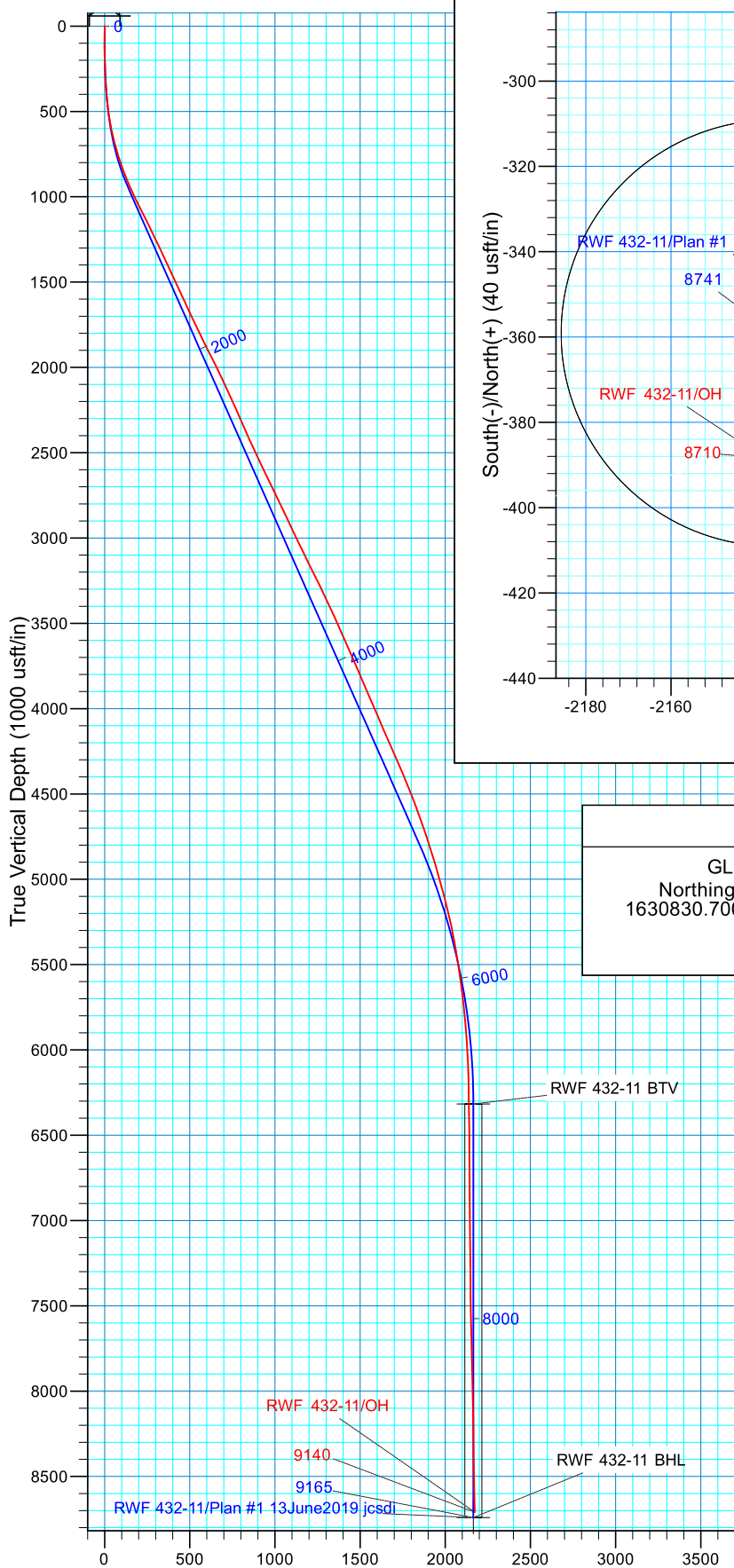
**Seth M. Burstad**

Rockies Region Well Planner

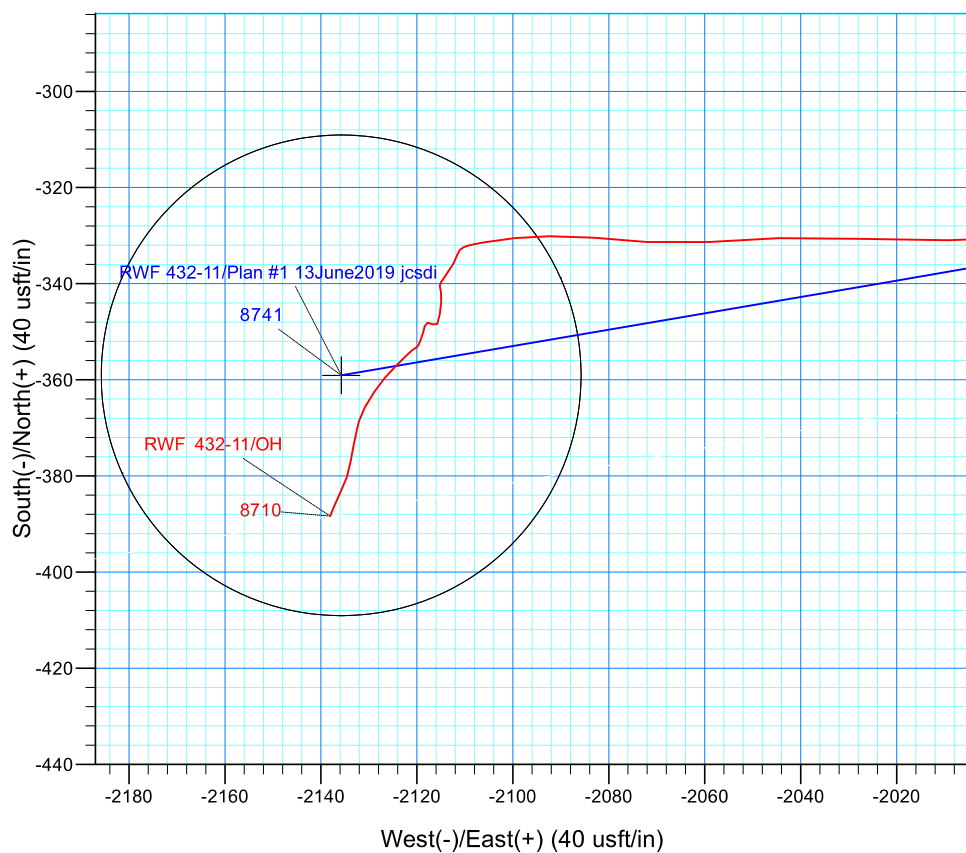
Scientific Drilling - Rocky Mountain District



Project: Garfield County, CO NAD83  
 Site: RWF 12-12 Pad  
 Well: RWF 432-11  
 Wellbore: OH  
 Design: OH



Vertical Section at 259.71° (1000 usft/in)



#### WELL DETAILS: RWF 432-11

GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)  
 Northing 1630830.7000 Easting 2339715.4000 Latitude 39.5420517 Longitude -107.8415626

#### PROJECT DETAILS: Garfield County, CO NAD83

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Central Zone

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well RWF 432-11 - Slot RWF 432-11, True North  
 Vertical (TVD) Reference: GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)  
 Section (VS) Reference: Slot - RWF 432-11(0.00N, 0.00E)  
 Measured Depth Reference: GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)  
 Calculation Method: Minimum Curvature  
 Local North: True  
 Location:

# **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**RWF 12-12 Pad**

**RWF 432-11 - Slot RWF 432-11**

**OH**

**Design: OH**

## **Standard Survey Report**

**21 January, 2020**



# Scientific Drilling, Intl

## Survey Report

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RWF 432-11 - Slot RWF 432-11
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
<b>Site:</b>	RWF 12-12 Pad	<b>MD Reference:</b>	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
<b>Well:</b>	RWF 432-11	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Grand Junction

<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		RWF 12-12 Pad			
Site Position:		Northing:	1,630,797.2000 usft	Latitude:	39.5419586
From:	Map	Easting:	2,339,698.6000 usft	Longitude:	-107.8416191
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.48 °

Well	RWF 432-11 - Slot RWF 432-11					
Well Position	+N/-S	0.00 usft	Northing:	1,630,830.7000 usft	Latitude:	39.5420517
	+E/-W	0.00 usft	Easting:	2,339,715.4000 usft	Longitude:	-107.8415626
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,466.80 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	1/16/2020	9.25	65.72	51,425.40000000

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<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	259.71	

<b>Survey Program</b>	<b>Date</b>	1/21/2020			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
122.00	395.00	Survey #1 - Surface Gyro Surface (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
466.00	986.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,078.00	9,140.00	Survey #3 - Production (OH)	MWD+HDGM	OWSG MWD + HDGM	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
122.00	0.44	358.77	122.00	0.47	-0.01	-0.07	0.36	0.36	0.00	
<b>First SDI Gyro Surface Survey</b>										
214.00	2.38	311.75	213.97	2.09	-1.44	1.05	2.29	2.11	-51.11	
304.00	3.70	285.73	303.84	4.13	-5.63	4.80	2.09	1.47	-28.91	
395.00	5.01	261.21	394.59	4.31	-12.39	11.42	2.47	1.44	-26.95	
<b>Last SDI Gyro Surface Survey</b>										
466.00	6.65	258.05	465.22	2.99	-19.47	18.63	2.35	2.31	-4.45	

# Scientific Drilling, Intl

## Survey Report

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RWF 432-11 - Slot RWF 432-11
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
<b>Site:</b>	RWF 12-12 Pad	<b>MD Reference:</b>	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
<b>Well:</b>	RWF 432-11	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Grand Junction

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)
<b>First SDI MWD Surface Survey</b>									
558.00	9.39	263.96	556.31	1.10	-32.15	31.44	3.11	2.98	6.42
649.00	13.10	270.54	645.55	0.41	-49.85	48.98	4.31	4.08	7.23
742.00	16.76	267.31	735.40	-0.12	-73.79	72.63	4.03	3.94	-3.47
837.00	19.70	261.31	825.63	-3.18	-103.31	102.22	3.67	3.09	-6.32
931.00	23.42	259.26	913.03	-9.06	-137.34	136.75	4.04	3.96	-2.18
986.00	24.71	258.42	963.25	-13.40	-159.34	159.17	2.43	2.35	-1.53
<b>Last SDI MWD Surface Survey</b>									
1,078.00	26.48	258.13	1,046.22	-21.48	-198.26	198.90	1.93	1.92	-0.32
<b>First SDI MWD Production Survey</b>									
1,173.00	26.40	259.89	1,131.29	-29.55	-239.78	241.20	0.83	-0.08	1.85
1,267.00	26.20	261.50	1,215.56	-36.28	-280.87	282.83	0.79	-0.21	1.71
1,362.00	25.45	261.41	1,301.07	-42.43	-321.80	324.20	0.79	-0.79	-0.09
1,456.00	25.05	261.38	1,386.09	-48.43	-361.44	364.28	0.43	-0.43	-0.03
1,550.00	24.89	261.76	1,471.30	-54.25	-400.70	403.94	0.24	-0.17	0.40
1,644.00	24.61	261.55	1,556.67	-59.96	-439.63	443.27	0.31	-0.30	-0.22
1,738.00	24.04	261.03	1,642.32	-65.82	-477.91	481.97	0.65	-0.61	-0.55
1,833.00	26.64	257.74	1,728.18	-73.36	-517.84	522.61	3.11	2.74	-3.46
1,927.00	26.47	257.47	1,812.26	-82.38	-558.88	564.61	0.22	-0.18	-0.29
2,021.00	26.39	257.03	1,896.44	-91.62	-599.69	606.41	0.23	-0.09	-0.47
2,116.00	26.00	256.76	1,981.68	-101.12	-640.54	648.30	0.43	-0.41	-0.28
2,210.00	25.42	256.62	2,066.38	-110.51	-680.22	689.02	0.62	-0.62	-0.15
2,305.00	25.06	256.43	2,152.31	-119.95	-719.61	729.46	0.39	-0.38	-0.20
2,399.00	24.36	256.22	2,237.70	-129.24	-757.79	768.69	0.75	-0.74	-0.22
2,493.00	23.22	254.51	2,323.71	-138.81	-794.48	806.50	1.42	-1.21	-1.82
2,588.00	25.06	258.77	2,410.41	-147.73	-832.27	845.27	2.67	1.94	4.48
2,682.00	24.01	257.45	2,495.92	-155.76	-870.46	884.29	1.26	-1.12	-1.40
2,777.00	25.40	260.97	2,582.22	-163.16	-909.45	923.97	2.13	1.46	3.71
2,871.00	26.97	261.48	2,666.58	-169.48	-950.45	965.44	1.69	1.67	0.54
2,966.00	26.29	262.02	2,751.50	-175.59	-992.59	1,007.99	0.76	-0.72	0.57
3,060.00	25.41	261.76	2,836.09	-181.37	-1,033.16	1,048.94	0.94	-0.94	-0.28
3,155.00	24.36	262.02	2,922.27	-187.01	-1,072.74	1,088.89	1.11	-1.11	0.27
3,249.00	25.60	263.39	3,007.48	-192.04	-1,112.11	1,128.53	1.46	1.32	1.46
3,343.00	26.92	263.29	3,091.77	-196.87	-1,153.42	1,170.03	1.41	1.40	-0.11
3,437.00	25.66	263.05	3,176.05	-201.82	-1,194.76	1,211.59	1.35	-1.34	-0.26
3,532.00	26.78	263.49	3,261.27	-206.73	-1,236.44	1,253.48	1.20	1.18	0.46
3,626.00	26.01	262.38	3,345.47	-211.87	-1,277.91	1,295.20	0.97	-0.82	-1.18
3,721.00	24.69	262.43	3,431.32	-217.24	-1,318.23	1,335.83	1.39	-1.39	0.05
3,815.00	24.12	262.10	3,516.92	-222.47	-1,356.71	1,374.63	0.62	-0.61	-0.35
3,909.00	23.11	262.77	3,603.05	-227.43	-1,394.04	1,412.24	1.11	-1.07	0.71
4,004.00	24.10	261.85	3,690.10	-232.53	-1,431.73	1,450.24	1.11	1.04	-0.97
4,098.00	23.52	260.80	3,776.10	-238.25	-1,469.25	1,488.17	0.76	-0.62	-1.12
4,193.00	22.76	259.74	3,863.46	-244.55	-1,506.04	1,525.50	0.91	-0.80	-1.12
4,287.00	24.13	259.49	3,949.69	-251.29	-1,542.83	1,562.90	1.46	1.46	-0.27

# Scientific Drilling, Intl

## Survey Report

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RWF 432-11 - Slot RWF 432-11
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
<b>Site:</b>	RWF 12-12 Pad	<b>MD Reference:</b>	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
<b>Well:</b>	RWF 432-11	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Grand Junction

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)
4,381.00	23.13	259.91	4,035.81	-258.03	-1,579.90	1,600.58	1.08	-1.06	0.45
4,476.00	22.66	259.99	4,123.33	-264.48	-1,616.29	1,637.54	0.50	-0.49	0.08
4,570.00	24.43	260.85	4,209.50	-270.72	-1,653.32	1,675.08	1.92	1.88	0.91
4,664.00	23.50	260.60	4,295.39	-276.87	-1,691.00	1,713.25	1.00	-0.99	-0.27
4,758.00	22.99	260.64	4,381.76	-282.92	-1,727.60	1,750.35	0.54	-0.54	0.04
4,852.00	22.49	259.54	4,468.46	-289.17	-1,763.39	1,786.68	0.70	-0.53	-1.17
4,947.00	21.16	260.22	4,556.65	-295.38	-1,798.16	1,822.00	1.43	-1.40	0.72
5,041.00	19.48	256.59	4,644.80	-301.90	-1,830.13	1,854.62	2.23	-1.79	-3.86
5,135.00	18.06	258.56	4,733.80	-308.43	-1,859.66	1,884.84	1.65	-1.51	2.10
5,229.00	17.52	261.40	4,823.30	-313.43	-1,887.93	1,913.55	1.09	-0.57	3.02
5,323.00	16.76	261.25	4,913.13	-317.61	-1,915.31	1,941.24	0.81	-0.81	-0.16
5,417.00	16.06	259.65	5,003.30	-322.01	-1,941.50	1,967.79	0.89	-0.74	-1.70
5,512.00	14.51	260.09	5,094.93	-326.42	-1,966.15	1,992.83	1.64	-1.63	0.46
5,606.00	13.30	263.45	5,186.18	-329.68	-1,988.49	2,015.40	1.55	-1.29	3.57
5,700.00	12.30	269.75	5,277.85	-330.95	-2,009.25	2,036.05	1.83	-1.06	6.70
5,795.00	10.83	272.16	5,370.92	-330.66	-2,028.29	2,054.73	1.63	-1.55	2.54
5,889.00	9.15	268.53	5,463.49	-330.52	-2,044.59	2,070.74	1.91	-1.79	-3.86
5,983.00	8.58	265.23	5,556.37	-331.29	-2,059.05	2,085.10	0.81	-0.61	-3.51
6,078.00	7.18	275.52	5,650.47	-331.31	-2,072.02	2,097.87	2.09	-1.47	10.83
6,172.00	6.55	273.39	5,743.80	-330.43	-2,083.22	2,108.73	0.72	-0.67	-2.27
6,267.00	4.57	270.32	5,838.35	-330.09	-2,092.41	2,117.72	2.11	-2.08	-3.23
6,361.00	4.31	263.22	5,932.06	-330.49	-2,099.66	2,124.92	0.65	-0.28	-7.55
6,455.00	3.67	260.32	6,025.84	-331.41	-2,106.14	2,131.46	0.71	-0.68	-3.09
6,549.00	1.42	245.84	6,119.74	-332.39	-2,110.17	2,135.60	2.47	-2.39	-15.40
6,643.00	1.04	195.06	6,213.72	-333.69	-2,111.45	2,137.09	1.18	-0.40	-54.02
6,737.00	1.74	207.15	6,307.69	-335.78	-2,112.32	2,138.33	0.80	0.74	12.86
6,831.00	2.21	218.79	6,401.63	-338.47	-2,114.11	2,140.56	0.65	0.50	12.38
6,926.00	0.62	174.59	6,496.60	-340.41	-2,115.21	2,141.99	1.91	-1.67	-46.53
7,020.00	1.14	166.57	6,590.59	-341.82	-2,114.94	2,141.98	0.57	0.55	-8.53
7,114.00	1.43	187.90	6,684.57	-343.89	-2,114.89	2,142.30	0.59	0.31	22.69
7,208.00	1.58	188.20	6,778.54	-346.34	-2,115.23	2,143.08	0.16	0.16	0.32
7,303.00	0.91	202.96	6,873.51	-348.33	-2,115.72	2,143.91	0.78	-0.71	15.54
7,397.00	1.06	310.71	6,967.51	-348.45	-2,116.67	2,144.86	1.70	0.16	114.63
7,491.00	0.57	243.14	7,061.50	-348.09	-2,117.74	2,145.86	1.06	-0.52	-71.88
7,586.00	0.69	196.47	7,156.49	-348.86	-2,118.33	2,146.57	0.54	0.13	-49.13
7,680.00	0.85	194.99	7,250.49	-350.07	-2,118.67	2,147.12	0.17	0.17	-1.57
7,774.00	1.41	200.32	7,344.47	-351.83	-2,119.25	2,148.01	0.61	0.60	5.67
7,869.00	0.49	234.06	7,439.45	-353.16	-2,119.98	2,148.97	1.09	-0.97	35.52
7,963.00	0.98	234.37	7,533.45	-353.87	-2,120.96	2,150.06	0.52	0.52	0.33
8,058.00	1.41	223.70	7,628.42	-355.19	-2,122.43	2,151.74	0.51	0.45	-11.23
8,152.00	2.02	226.43	7,722.38	-357.17	-2,124.43	2,154.06	0.65	0.65	2.90
8,247.00	2.02	219.84	7,817.32	-359.60	-2,126.72	2,156.74	0.24	0.00	-6.94
8,341.00	2.46	213.51	7,911.25	-362.56	-2,128.89	2,159.41	0.54	0.47	-6.73

# Scientific Drilling, Intl

## Survey Report

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RWF 432-11 - Slot RWF 432-11
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
<b>Site:</b>	RWF 12-12 Pad	<b>MD Reference:</b>	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
<b>Well:</b>	RWF 432-11	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Grand Junction

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)	
8,435.00	2.14	209.86	8,005.18	-365.76	-2,130.88	2,161.94	0.37	-0.34	-3.88	
8,530.00	1.58	193.64	8,100.13	-368.57	-2,132.07	2,163.62	0.80	-0.59	-17.07	
8,624.00	1.54	190.26	8,194.09	-371.08	-2,132.60	2,164.58	0.11	-0.04	-3.60	
8,719.00	1.94	194.47	8,289.05	-373.89	-2,133.23	2,165.71	0.44	0.42	4.43	
8,813.00	1.85	185.47	8,383.00	-376.94	-2,133.77	2,166.78	0.33	-0.10	-9.57	
8,908.00	2.29	200.06	8,477.93	-380.25	-2,134.57	2,168.16	0.72	0.46	15.36	
9,002.00	2.20	206.13	8,571.86	-383.63	-2,136.01	2,170.18	0.27	-0.10	6.46	
9,082.00	2.11	202.35	8,651.81	-386.37	-2,137.24	2,171.89	0.21	-0.11	-4.73	
Last SDI MWD Production Survey										
9,140.00	2.11	202.35	8,709.77	-388.35	-2,138.06	2,173.04	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
122.00	122.00	0.47	-0.01	First SDI Gyro Surface Survey	
395.00	394.59	4.31	-12.39	Last SDI Gyro Surface Survey	
466.00	465.22	2.99	-19.47	First SDI MWD Surface Survey	
986.00	963.25	-13.40	-159.34	Last SDI MWD Surface Survey	
1,078.00	1,046.22	-21.48	-198.26	First SDI MWD Production Survey	
9,082.00	8,651.81	-386.37	-2,137.24	Last SDI MWD Production Survey	
9,140.00	8,709.77	-388.35	-2,138.06	Projection to TD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_