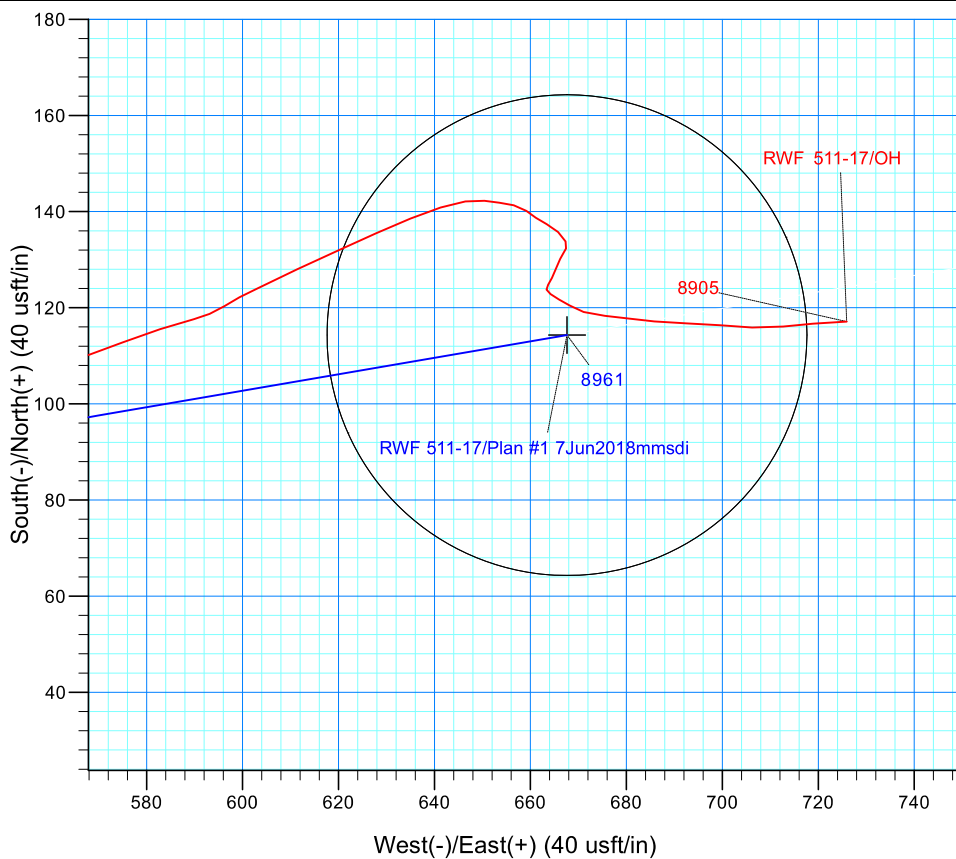
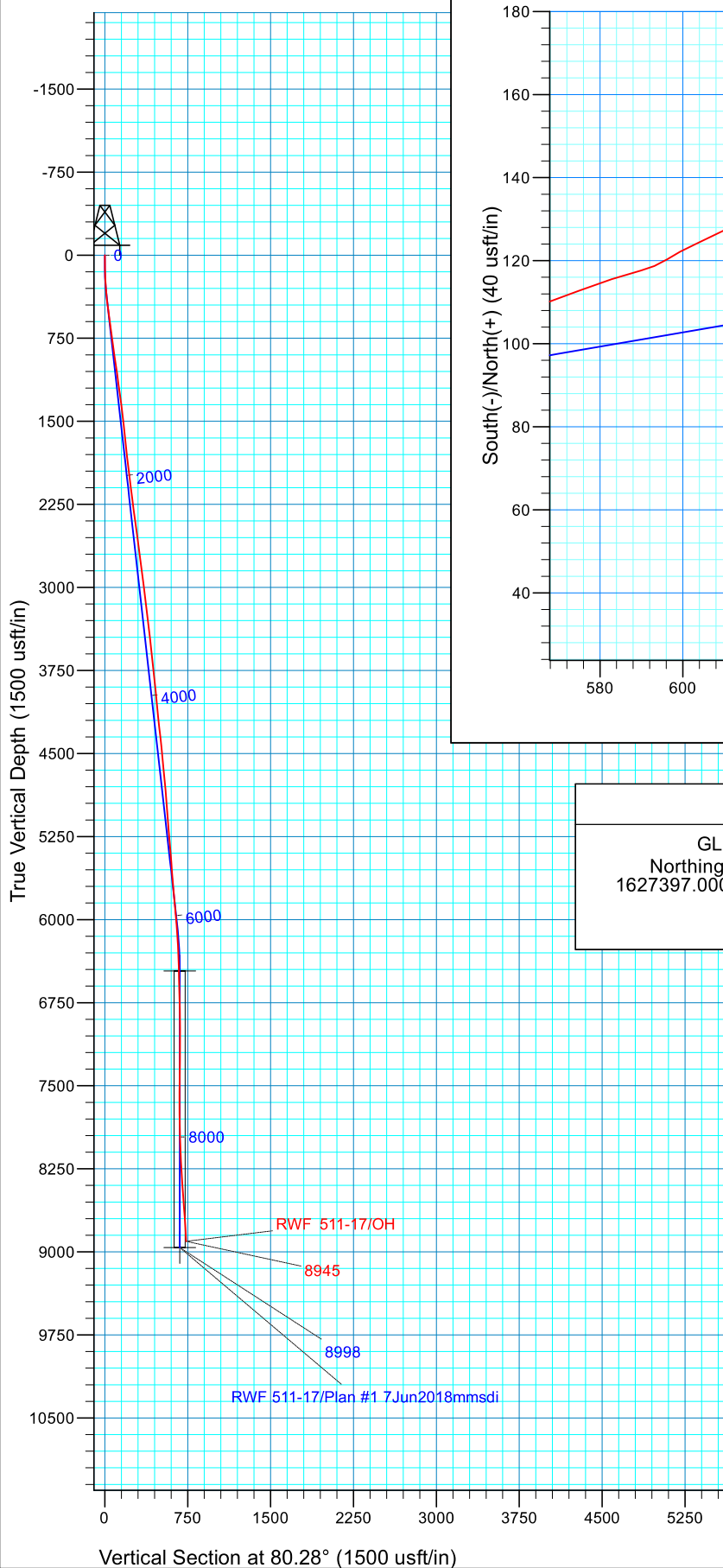




Project: Garfield County, CO NAD83  
Site: DOE 1-M-18 Pad  
Well: RWF 511-17  
Wellbore: OH  
Design: OH



#### WELL DETAILS: RWF 511-17

GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)  
Northing Easting Latitude Longitude  
1627397.0000 2317146.8000 39.5310040 -107.9212357

#### 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 511-17 - Slot RWF 511-17 (B8), True North  
Vertical (TVD) Reference: GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)  
Section (VS) Reference: Slot - RWF 511-17 (B8)(0.00N, 0.00E)  
Measured Depth Reference: GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)  
Calculation Method: Minimum Curvature  
Local North: True  
Location:



## Survey Certification

7327 West Barton Road  
Casper, WY 82604  
(307)-472-6621 Fax (307) 472-5439

Operator	TEP Rocky Mountain, LLC.
Well Name & No.	RWF 511-17
County & State	Garfield County, CO
SDI Job #	OP.019205
Rig	H&P 318

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 8945 feet is true and correct as determined from all available records.

*Seth Burstad*

Signature

19-Feb-2020

Date

### Seth M. Burstad

Rockies Region Well Planner  
Scientific Drilling - Rocky Mountain District

# **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**DOE 1-M-18 Pad**

**RWF 511-17 - Slot RWF 511-17 (B8)**

**OH**

**Design: OH**

## **Standard Survey Report**

**19 February, 2020**



# Scientific Drilling, Intl

## Survey Report

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RWF 511-17 - Slot RWF 511-17 (B8)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)
<b>Site:</b>	DOE 1-M-18 Pad	<b>MD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)
<b>Well:</b>	RWF 511-17	<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		DOE 1-M-18 Pad			
Site Position:		Northing:	1,627,441.6000 usft	Latitude:	39.5311260
From:	Map	Easting:	2,317,141.3000 usft	Longitude:	-107.9212595
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.53 °

Well	RWF 511-17 - Slot RWF 511-17 (B8)					
Well Position	+N/-S	0.00 usft	Northing:	1,627,397.0000 usft	Latitude:	39.5310040
	+E/-W	0.00 usft	Easting:	2,317,146.8000 usft	Longitude:	-107.9212358
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,174.50 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	6/9/2019	9.32	65.75	51,477.30000000

<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	80.28	

<b>Survey Program</b>	<b>Date</b>	2/19/2020			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
122.00	1,079.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
746.00	1,079.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,172.00	8,945.00	Survey #3 - Production MWD Survey (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	0.88	105.12	122.00	-0.24	0.90	0.85	0.72	0.72	0.00	
<b>First SDI Gyro MWD Survey</b>										
213.00	2.99	103.27	212.94	-0.97	3.89	3.67	2.32	2.32	-2.03	
305.00	4.66	89.30	304.73	-1.48	9.96	9.57	2.07	1.82	-15.18	
396.00	6.51	80.95	395.30	-0.62	18.75	18.38	2.22	2.03	-9.18	
488.00	7.39	73.04	486.62	1.93	29.56	29.46	1.41	0.96	-8.60	
580.00	8.09	69.70	577.78	5.90	41.29	41.70	0.90	0.76	-3.63	
671.00	7.92	73.48	667.90	9.90	53.31	54.22	0.61	-0.19	4.15	

# Scientific Drilling, Intl

## Survey Report

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RWF 511-17 - Slot RWF 511-17 (B8)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)
<b>Site:</b>	DOE 1-M-18 Pad	<b>MD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)
<b>Well:</b>	RWF 511-17	<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>Last SDI Gyro MWD Survey</b>									
746.00	7.32	82.59	742.24	11.99	63.00	64.12	1.80	-0.80	12.15
<b>First SDI Surface MWD Survey</b>									
840.00	7.93	86.42	835.41	13.17	75.41	76.55	0.84	0.65	4.07
934.00	7.85	84.08	928.52	14.23	88.27	89.41	0.35	-0.09	-2.49
1,029.00	8.41	76.00	1,022.57	16.58	101.46	102.81	1.34	0.59	-8.51
1,079.00	8.44	75.42	1,072.03	18.39	108.56	110.11	0.18	0.06	-1.16
<b>Last SDI Surface MWD Survey</b>									
1,172.00	7.54	76.09	1,164.12	21.58	121.09	123.00	0.97	-0.97	0.72
<b>First SDI Production MWD Survey</b>									
1,267.00	7.80	77.05	1,258.27	24.52	133.42	135.65	0.31	0.27	1.01
1,361.00	7.06	77.54	1,351.48	27.19	145.28	147.79	0.79	-0.79	0.52
1,456.00	7.18	81.83	1,445.75	29.30	156.86	159.55	0.57	0.13	4.52
1,550.00	6.51	84.29	1,539.08	30.66	167.98	170.74	0.78	-0.71	2.62
1,645.00	6.50	82.27	1,633.47	31.92	178.66	181.49	0.24	-0.01	-2.13
1,739.00	5.90	86.04	1,726.92	32.97	188.76	191.61	0.77	-0.64	4.01
1,833.00	5.98	88.16	1,820.41	33.46	198.47	201.27	0.25	0.09	2.26
1,928.00	6.56	85.26	1,914.85	34.07	208.82	211.58	0.70	0.61	-3.05
2,022.00	7.39	82.19	2,008.15	35.33	220.16	222.97	0.97	0.88	-3.27
2,116.00	7.30	85.44	2,101.38	36.63	232.11	234.96	0.45	-0.10	3.46
2,211.00	7.56	84.82	2,195.58	37.67	244.35	247.20	0.29	0.27	-0.65
2,305.00	8.09	76.91	2,288.71	39.73	256.95	259.97	1.28	0.56	-8.41
2,400.00	7.74	78.32	2,382.80	42.54	269.72	273.03	0.42	-0.37	1.48
2,494.00	7.74	78.58	2,475.95	45.07	282.13	285.69	0.04	0.00	0.28
2,589.00	7.47	80.96	2,570.11	47.31	294.50	298.26	0.44	-0.28	2.51
2,683.00	7.21	84.21	2,663.34	48.87	306.40	310.25	0.52	-0.28	3.46
2,778.00	7.12	78.32	2,757.60	50.66	318.10	322.08	0.78	-0.09	-6.20
2,873.00	7.47	70.23	2,851.83	53.94	329.67	334.05	1.14	0.37	-8.52
2,967.00	7.21	68.74	2,945.06	58.15	340.92	345.84	0.34	-0.28	-1.59
3,062.00	7.12	70.67	3,039.32	62.26	352.03	357.49	0.27	-0.09	2.03
3,156.00	7.12	74.80	3,132.60	65.71	363.15	369.03	0.54	0.00	4.39
3,251.00	6.86	75.77	3,226.89	68.65	374.33	380.55	0.30	-0.27	1.02
3,345.00	6.95	74.80	3,320.21	71.52	385.26	391.81	0.16	0.10	-1.03
3,440.00	6.68	77.18	3,414.54	74.26	396.20	403.05	0.41	-0.28	2.51
3,534.00	6.68	78.32	3,507.90	76.58	406.88	413.97	0.14	0.00	1.21
3,629.00	6.51	77.18	3,602.27	78.89	417.54	424.87	0.23	-0.18	-1.20
3,723.00	6.16	78.32	3,695.70	81.09	427.68	435.23	0.40	-0.37	1.21
3,817.00	6.07	79.11	3,789.16	83.05	437.50	445.24	0.13	-0.10	0.84
3,912.00	5.63	78.93	3,883.67	84.90	447.00	454.92	0.46	-0.46	-0.19
4,006.00	5.63	81.57	3,977.22	86.46	456.09	464.14	0.28	0.00	2.81
4,101.00	5.36	76.12	4,071.78	88.20	465.01	473.22	0.62	-0.28	-5.74
4,195.00	5.36	79.55	4,165.37	90.05	473.59	481.99	0.34	0.00	3.65
4,290.00	6.60	76.74	4,259.85	92.11	483.26	491.88	1.34	1.31	-2.96
4,384.00	6.07	81.83	4,353.28	94.06	493.44	502.24	0.82	-0.56	5.41

# Scientific Drilling, Intl

## Survey Report

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RWF 511-17 - Slot RWF 511-17 (B8)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)
<b>Site:</b>	DOE 1-M-18 Pad	<b>MD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)
<b>Well:</b>	RWF 511-17	<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)	
4,479.00	6.07	84.38	4,447.74	95.26	503.41	512.27	0.28	0.00	2.68	
4,573.00	5.67	87.58	4,541.25	95.95	513.00	521.83	0.55	-0.43	3.40	
4,668.00	5.45	91.41	4,635.80	96.03	522.20	530.91	0.45	-0.23	4.03	
4,762.00	5.01	73.40	4,729.42	97.10	530.59	539.37	1.80	-0.47	-19.16	
4,857.00	5.12	74.55	4,824.05	99.41	538.65	547.71	0.16	0.12	1.21	
4,951.00	4.57	73.66	4,917.71	101.58	546.29	555.60	0.59	-0.59	-0.95	
5,045.00	3.81	67.31	5,011.46	103.84	552.77	562.36	0.95	-0.81	-6.76	
5,140.00	5.01	65.66	5,106.18	106.77	559.46	569.45	1.27	1.26	-1.74	
5,234.00	4.92	69.71	5,199.82	109.86	566.98	577.39	0.38	-0.10	4.31	
5,329.00	5.45	69.71	5,294.44	112.83	575.03	585.83	0.56	0.56	0.00	
5,423.00	4.66	71.73	5,388.07	115.58	582.84	593.99	0.86	-0.84	2.15	
5,518.00	4.19	75.91	5,482.79	117.63	589.87	601.27	0.60	-0.49	4.40	
5,613.00	4.22	57.93	5,577.53	120.33	596.20	607.96	1.38	0.03	-18.93	
5,707.00	5.36	65.13	5,671.21	124.02	603.12	615.40	1.37	1.21	7.66	
5,801.00	5.98	63.55	5,764.75	128.04	611.48	624.32	0.68	0.66	-1.68	
5,895.00	5.45	67.24	5,858.28	131.95	619.98	633.36	0.69	-0.56	3.93	
5,990.00	5.01	64.17	5,952.88	135.50	627.88	641.74	0.55	-0.46	-3.23	
6,084.00	4.47	69.38	6,046.56	138.58	635.00	649.28	0.73	-0.57	5.54	
6,179.00	3.61	71.02	6,141.32	140.86	641.29	655.87	0.91	-0.91	1.73	
6,273.00	2.93	82.84	6,235.17	142.12	646.48	661.19	1.02	-0.72	12.57	
6,367.00	1.93	95.63	6,329.09	142.27	650.44	665.12	1.20	-1.06	13.61	
6,462.00	1.85	98.62	6,424.04	141.88	653.54	668.12	0.13	-0.08	3.15	
6,556.00	1.88	102.08	6,517.99	141.33	656.55	670.99	0.12	0.03	3.68	
6,651.00	1.65	126.84	6,612.94	140.18	659.17	673.38	0.83	-0.24	26.06	
6,745.00	1.34	124.99	6,706.91	138.74	661.15	675.09	0.33	-0.33	-1.97	
6,840.00	1.84	116.57	6,801.87	137.42	663.43	677.11	0.58	0.53	-8.86	
6,934.00	1.71	133.45	6,895.83	135.78	665.80	679.16	0.57	-0.14	17.96	
7,029.00	1.35	153.64	6,990.80	133.80	667.32	680.33	0.68	-0.38	21.25	
7,123.00	0.71	215.54	7,084.78	132.34	667.48	680.24	1.27	-0.68	65.85	
7,218.00	0.70	208.57	7,179.77	131.35	666.86	679.46	0.09	-0.01	-7.34	
7,312.00	0.97	207.17	7,273.76	130.14	666.22	678.63	0.29	0.29	-1.49	
7,407.00	1.67	201.45	7,368.74	128.13	665.34	677.43	0.75	0.74	-6.02	
7,501.00	0.88	206.99	7,462.71	126.22	664.52	676.29	0.85	-0.84	5.89	
7,596.00	1.14	212.26	7,557.70	124.77	663.68	675.22	0.29	0.27	5.55	
7,690.00	0.35	135.27	7,651.69	123.77	663.38	674.76	1.19	-0.84	-81.90	
7,785.00	1.14	138.79	7,746.68	122.85	664.21	675.42	0.83	0.83	3.71	
7,879.00	1.51	110.25	7,840.66	121.72	665.99	676.98	0.79	0.39	-30.36	
7,974.00	1.55	127.99	7,935.63	120.50	668.17	678.93	0.50	0.04	18.67	
8,068.00	2.46	106.00	8,029.57	119.16	671.12	681.60	1.25	0.97	-23.39	
8,162.00	3.05	95.73	8,123.46	118.35	675.54	685.83	0.82	0.63	-10.93	
8,257.00	2.97	97.61	8,218.33	117.78	680.50	690.61	0.13	-0.08	1.98	
8,350.00	3.69	95.11	8,311.17	117.19	685.87	695.81	0.79	0.77	-2.69	
8,445.00	4.35	92.47	8,405.94	116.76	692.51	702.28	0.72	0.69	-2.78	

# Scientific Drilling, Intl

## Survey Report

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RWF 511-17 - Slot RWF 511-17 (B8)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)
<b>Site:</b>	DOE 1-M-18 Pad	<b>MD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft (H&P 318)
<b>Well:</b>	RWF 511-17	<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)	
8,540.00	4.31	93.79	8,500.67	116.37	699.67	709.28	0.11	-0.04	1.39	
8,634.00	3.69	94.32	8,594.44	115.91	706.21	715.64	0.66	-0.66	0.56	
8,728.00	4.27	83.08	8,688.21	116.10	712.70	722.07	1.03	0.62	-11.96	
8,823.00	3.30	86.49	8,783.00	116.70	718.94	728.33	1.05	-1.02	3.59	
Last SDI Production MWD Survey										
8,945.00	3.30	86.49	8,904.80	117.13	725.95	735.31	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	-0.24	0.90	First SDI Gyro MWD Survey	
671.00	667.90	9.90	53.31	Last SDI Gyro MWD Survey	
746.00	742.24	11.99	63.00	First SDI Surface MWD Survey	
1,079.00	1,072.03	18.39	108.56	Last SDI Surface MWD Survey	
1,172.00	1,164.12	21.58	121.09	First SDI Production MWD Survey	
8,823.00	8,783.00	116.70	718.94	Last SDI Production MWD Survey	
8,945.00	8,904.80	117.13	725.95	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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