



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

Survey Certification

Operator	TEP Rocky Mountain LLC
Well Name & No.	RWF 324-1
API #	05045242830000
County & State	Garfield County, CO
SDI Job #	OP.023401
Rig	H&P 318
Survey Date	27-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 9759 feet is true and correct as determined from all available records.

Seth M. Burstad

Signature

28-Jan-2020

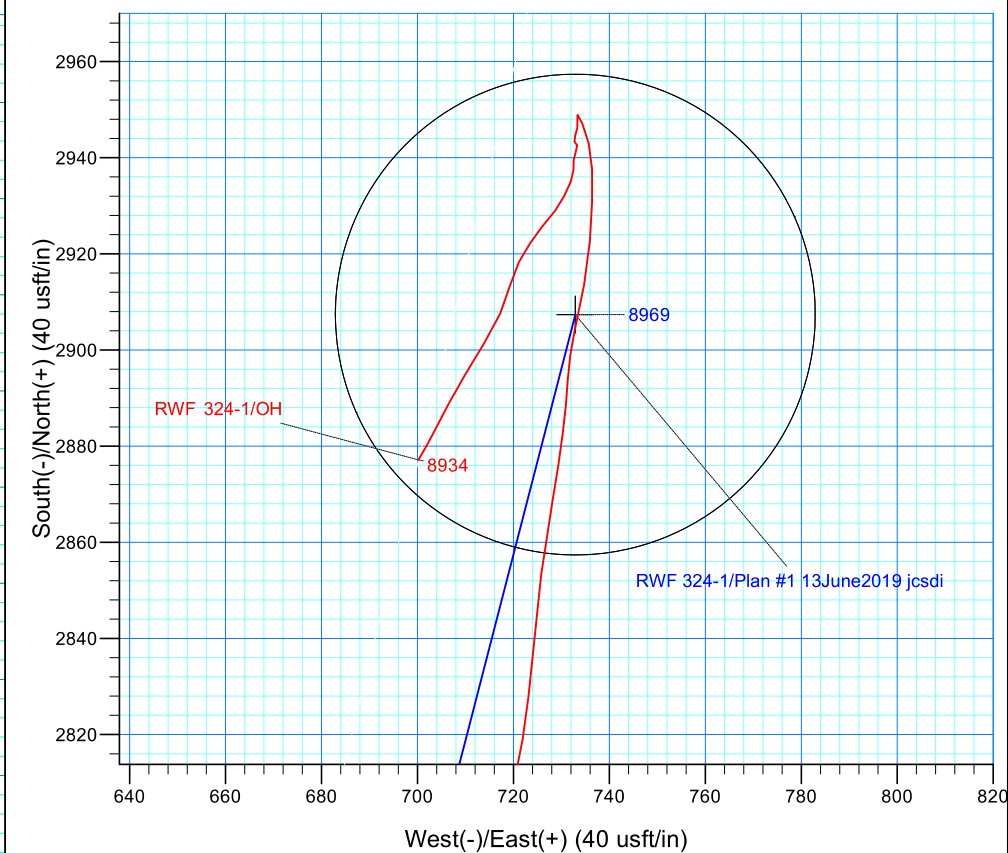
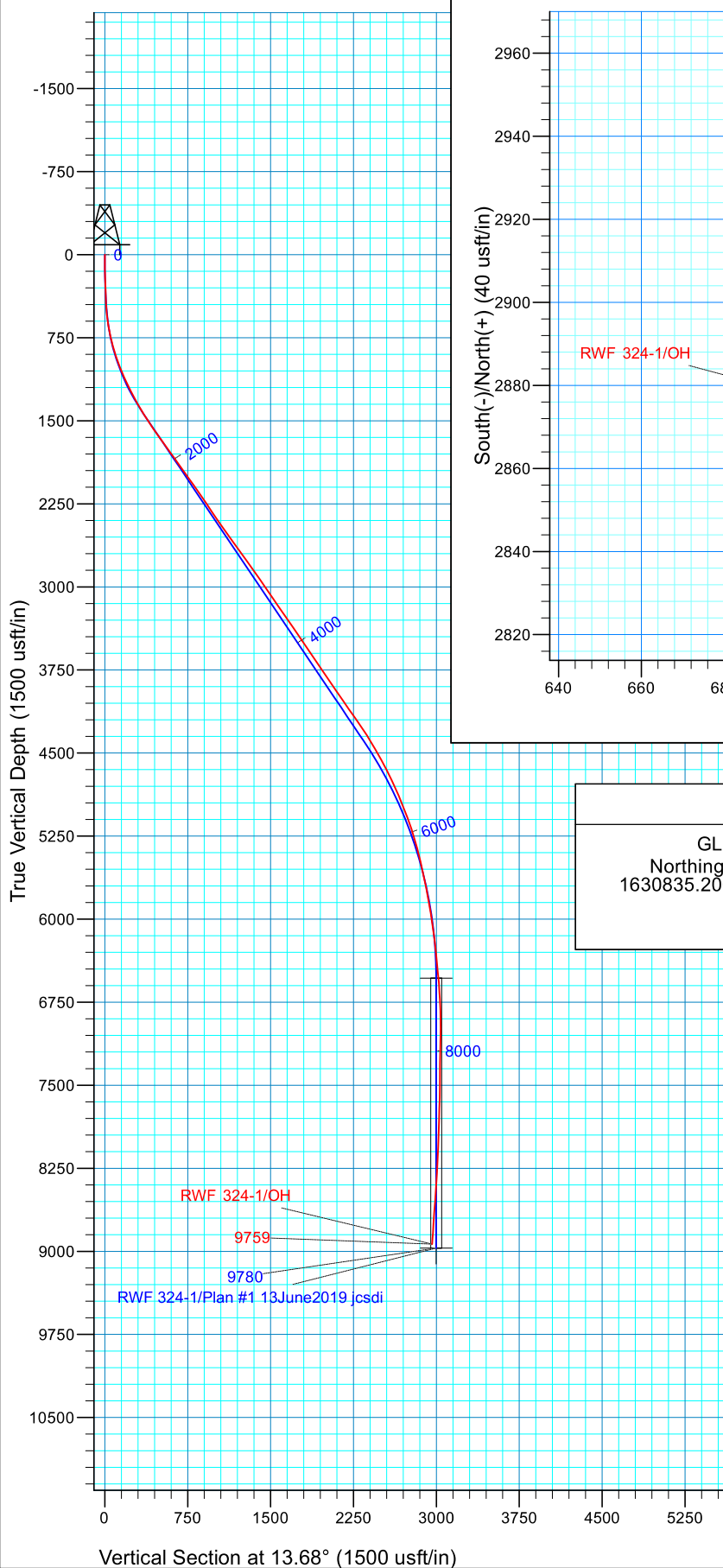
Date

Seth M. Burstad

Rockies Region Well Planner
Scientific Drilling - Rocky Mountain District



Project: Garfield County, CO NAD83
 Site: RWF 12-12 Pad
 Well: RWF 324-1
 Wellbore: OH
 Design: OH



WELL DETAILS: RWF 324-1			
GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)			
Northing	Easting	Latitude	Longitude
1630835.2000	2339706.4000	39.5420634	-107.8415949

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 324-1 - Slot RWF 324-1, True North
Vertical (TVD) Reference: GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
Section (VS) Reference: Slot - RWF 324-1(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 324-1 - Slot RWF 324-1

OH

Design: OH

Standard Survey Report

28 January, 2020



Scientific Drilling, Intl

Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RWF 324-1 - Slot RWF 324-1
Project:	Garfield County, CO NAD83	TVD Reference:	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
Site:	RWF 12-12 Pad	MD Reference:	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
Well:	RWF 324-1	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction

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	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 324-1 - Slot RWF 324-1					
Well Position	+N/-S	0.00 usft	Northing:	1,630,835.2000 usft	Latitude:	39.5420634
	+E/-W	0.00 usft	Easting:	2,339,706.4000 usft	Longitude:	-107.8415949
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,466.80 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	1/20/2020	9.25	65.72	51,424.20000000

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	13.68	

Survey Program	Date	1/28/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
122.00	762.00	Survey #1 - Surface Gyro Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
837.00	984.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,077.00	9,759.00	Survey #3 - Production (OH)	MWD+HDGM	OWSG MWD + HDGM	

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	
122.00	0.53	319.13	122.00	0.43	-0.37	0.33	0.43	0.43	0.00	
First SDI Gyro Surface Survey										
214.00	2.20	352.53	213.97	2.50	-0.88	2.22	1.94	1.82	36.30	
304.00	2.90	347.43	303.88	6.43	-1.60	5.87	0.82	0.78	-5.67	
395.00	1.94	343.04	394.80	10.15	-2.55	9.26	1.07	-1.05	-4.82	
486.00	3.96	3.34	485.68	14.77	-2.81	13.68	2.47	2.22	22.31	
578.00	7.21	2.55	577.23	23.71	-2.37	22.47	3.53	3.53	-0.86	
669.00	10.73	1.41	667.10	37.88	-1.91	36.36	3.87	3.87	-1.25	

Scientific Drilling, Intl

Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RWF 324-1 - Slot RWF 324-1
Project:	Garfield County, CO NAD83	TVD Reference:	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
Site:	RWF 12-12 Pad	MD Reference:	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
Well:	RWF 324-1	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)	
762.00	13.64	5.45	758.00	57.46	-0.65	55.68	3.26	3.13	4.34	
Last SDI Gyro Surface Survey										
837.00	15.83	5.91	830.52	76.44	1.24	74.57	2.92	2.92	0.61	
First SDI MWD Surface Survey										
931.00	18.17	9.55	920.41	103.65	4.99	101.89	2.73	2.49	3.87	
984.00	20.40	11.62	970.44	120.85	8.22	119.37	4.40	4.21	3.91	
Last SDI MWD Surface Survey										
1,077.00	22.50	13.52	1,056.99	154.03	15.65	153.36	2.38	2.26	2.04	
First SDI MWD Production Survey										
1,171.00	25.04	11.89	1,143.01	190.99	23.95	191.24	2.79	2.70	-1.73	
1,266.00	26.98	12.62	1,228.39	231.70	32.81	232.89	2.07	2.04	0.77	
1,360.00	29.07	12.56	1,311.36	274.80	42.43	277.04	2.22	2.22	-0.06	
1,455.00	30.36	12.98	1,393.87	320.73	52.84	324.12	1.38	1.36	0.44	
1,549.00	32.27	13.77	1,474.17	368.25	64.15	372.98	2.08	2.03	0.84	
1,643.00	35.09	16.10	1,552.39	418.59	77.62	425.08	3.30	3.00	2.48	
1,738.00	35.30	15.60	1,630.02	471.27	92.58	479.79	0.38	0.22	-0.53	
1,832.00	35.66	14.29	1,706.57	523.98	106.64	534.34	0.89	0.38	-1.39	
1,927.00	35.88	13.80	1,783.65	577.85	120.12	589.86	0.38	0.23	-0.52	
2,021.00	35.96	12.99	1,859.77	631.49	132.89	645.01	0.51	0.09	-0.86	
2,116.00	35.66	15.20	1,936.82	685.40	146.42	700.58	1.40	-0.32	2.33	
2,210.00	35.53	14.79	2,013.25	738.25	160.58	755.28	0.29	-0.14	-0.44	
2,305.00	35.37	14.33	2,090.64	791.58	174.43	810.37	0.33	-0.17	-0.48	
2,399.00	34.86	13.72	2,167.53	844.03	187.54	864.44	0.66	-0.54	-0.65	
2,493.00	34.31	13.76	2,244.92	895.86	200.21	917.80	0.59	-0.59	0.04	
2,588.00	33.34	12.66	2,323.84	947.34	212.30	970.68	1.21	-1.02	-1.16	
2,682.00	34.91	15.58	2,401.66	998.46	225.19	1,023.39	2.41	1.67	3.11	
2,776.00	35.93	17.81	2,478.27	1,050.63	240.85	1,077.79	1.75	1.09	2.37	
2,871.00	34.92	17.30	2,555.68	1,103.13	257.46	1,132.73	1.11	-1.06	-0.54	
2,965.00	36.56	17.29	2,631.97	1,155.55	273.78	1,187.52	1.74	1.74	-0.01	
3,060.00	36.36	17.02	2,708.38	1,209.50	290.43	1,243.87	0.27	-0.21	-0.28	
3,154.00	35.61	16.72	2,784.44	1,262.35	306.46	1,299.02	0.82	-0.80	-0.32	
3,248.00	35.17	16.90	2,861.07	1,314.46	322.21	1,353.38	0.48	-0.47	0.19	
3,343.00	34.37	16.63	2,939.11	1,366.34	337.84	1,407.47	0.86	-0.84	-0.28	
3,437.00	34.96	15.86	3,016.42	1,417.67	352.79	1,460.88	0.78	0.63	-0.82	
3,532.00	34.06	15.96	3,094.70	1,469.43	367.54	1,514.67	0.95	-0.95	0.11	
3,625.00	35.59	16.01	3,171.05	1,520.48	382.17	1,567.73	1.65	1.65	0.05	
3,719.00	34.92	15.42	3,247.81	1,572.71	396.87	1,621.95	0.80	-0.71	-0.63	
3,814.00	33.99	15.97	3,326.14	1,624.45	411.40	1,675.67	1.03	-0.98	0.58	
3,908.00	34.72	16.66	3,403.74	1,675.36	426.31	1,728.65	0.88	0.78	0.73	
4,002.00	33.60	16.43	3,481.52	1,725.96	441.34	1,781.37	1.20	-1.19	-0.24	
4,096.00	35.01	16.29	3,559.17	1,776.79	456.26	1,834.29	1.50	1.50	-0.15	
4,191.00	33.62	16.54	3,637.63	1,828.16	471.39	1,887.78	1.47	-1.46	0.26	
4,285.00	35.00	15.49	3,715.27	1,879.09	486.00	1,940.72	1.60	1.47	-1.12	
4,379.00	34.51	15.05	3,792.50	1,930.78	500.11	1,994.28	0.59	-0.52	-0.47	

Scientific Drilling, Intl

Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RWF 324-1 - Slot RWF 324-1
Project:	Garfield County, CO NAD83	TVD Reference:	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
Site:	RWF 12-12 Pad	MD Reference:	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
Well:	RWF 324-1	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)	
4,473.00	33.70	15.21	3,870.34	1,981.66	513.87	2,046.97	0.87	-0.86	0.17	
4,567.00	35.14	14.23	3,947.88	2,033.05	527.36	2,100.10	1.64	1.53	-1.04	
4,662.00	35.21	13.54	4,025.53	2,086.18	540.50	2,154.82	0.42	0.07	-0.73	
4,756.00	34.20	13.55	4,102.81	2,138.21	553.03	2,208.34	1.07	-1.07	0.01	
4,850.00	35.18	13.47	4,180.10	2,190.23	565.53	2,261.84	1.04	1.04	-0.09	
4,945.00	34.47	13.63	4,258.08	2,242.97	578.24	2,316.09	0.75	-0.75	0.17	
5,039.00	32.80	13.20	4,336.34	2,293.61	590.32	2,368.15	1.79	-1.78	-0.46	
5,134.00	30.46	12.60	4,417.22	2,342.17	601.45	2,417.97	2.49	-2.46	-0.63	
5,228.00	29.43	13.66	4,498.68	2,387.86	612.10	2,464.88	1.23	-1.10	1.13	
5,323.00	29.30	13.44	4,581.47	2,433.15	623.02	2,511.47	0.18	-0.14	-0.23	
5,417.00	27.61	15.08	4,664.11	2,476.56	634.03	2,556.25	1.98	-1.80	1.74	
5,511.00	25.05	14.42	4,748.35	2,516.87	644.66	2,597.93	2.74	-2.72	-0.70	
5,605.00	24.45	15.06	4,833.72	2,554.93	654.67	2,637.28	0.70	-0.64	0.68	
5,699.00	21.94	14.00	4,920.11	2,590.76	663.97	2,674.29	2.71	-2.67	-1.13	
5,793.00	20.65	13.94	5,007.69	2,623.89	672.21	2,708.43	1.37	-1.37	-0.06	
5,887.00	20.12	15.25	5,095.81	2,655.57	680.46	2,741.16	0.74	-0.56	1.39	
5,981.00	19.53	15.53	5,184.24	2,686.31	688.92	2,773.03	0.64	-0.63	0.30	
6,076.00	16.38	14.38	5,274.60	2,714.59	696.50	2,802.30	3.34	-3.32	-1.21	
6,170.00	14.42	13.57	5,365.22	2,738.81	702.54	2,827.26	2.10	-2.09	-0.86	
6,264.00	13.89	13.91	5,456.36	2,761.14	707.99	2,850.25	0.57	-0.56	0.36	
6,358.00	12.29	15.56	5,547.92	2,781.73	713.39	2,871.53	1.75	-1.70	1.76	
6,453.00	11.51	13.61	5,640.88	2,800.68	718.33	2,891.12	0.92	-0.82	-2.05	
6,547.00	11.42	8.65	5,733.00	2,819.00	721.94	2,909.77	1.05	-0.10	-5.28	
6,641.00	10.41	4.73	5,825.30	2,836.66	724.04	2,927.43	1.33	-1.07	-4.17	
6,735.00	10.03	7.53	5,917.81	2,853.24	725.81	2,943.95	0.67	-0.40	2.98	
6,830.00	9.14	9.96	6,011.49	2,868.88	728.20	2,959.71	1.03	-0.94	2.56	
6,925.00	7.51	7.13	6,105.48	2,882.47	730.28	2,973.41	1.77	-1.72	-2.98	
7,019.00	6.35	3.23	6,198.79	2,893.75	731.33	2,984.62	1.33	-1.23	-4.15	
7,114.00	6.19	12.86	6,293.23	2,903.99	732.77	2,994.91	1.12	-0.17	10.14	
7,208.00	5.72	10.39	6,386.72	2,913.54	734.74	3,004.65	0.57	-0.50	-2.63	
7,302.00	5.38	4.42	6,480.28	2,922.54	735.93	3,013.68	0.71	-0.36	-6.35	
7,396.00	4.68	2.43	6,573.92	2,930.77	736.43	3,021.79	0.77	-0.74	-2.12	
7,491.00	3.58	356.37	6,668.67	2,937.60	736.41	3,028.42	1.24	-1.16	-6.38	
7,586.00	2.91	348.07	6,763.52	2,942.92	735.72	3,033.43	0.86	-0.71	-8.74	
7,680.00	2.58	334.81	6,857.41	2,947.17	734.33	3,037.23	0.76	-0.35	-14.11	
7,774.00	0.30	191.15	6,951.38	2,948.84	733.38	3,038.63	3.01	-2.43	-152.83	
7,869.00	0.92	177.86	7,046.38	2,947.84	733.36	3,037.65	0.67	0.65	-13.99	
7,963.00	1.00	182.31	7,140.36	2,946.26	733.35	3,036.12	0.12	0.09	4.73	
8,058.00	1.27	206.86	7,235.34	2,944.49	732.84	3,034.28	0.58	0.28	25.84	
8,152.00	0.53	125.62	7,329.33	2,943.31	732.73	3,033.10	1.38	-0.79	-86.43	
8,247.00	0.67	158.82	7,424.33	2,942.54	733.28	3,032.48	0.39	0.15	34.95	
8,341.00	1.15	208.34	7,518.32	2,941.20	733.04	3,031.12	0.93	0.51	52.68	
8,435.00	1.01	181.67	7,612.30	2,939.54	732.56	3,029.40	0.55	-0.15	-28.37	

Scientific Drilling, Intl

Survey Report

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Project:	Garfield County, CO NAD83	TVD Reference:	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
Site:	RWF 12-12 Pad	MD Reference:	GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
Well:	RWF 324-1	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)	
8,530.00	1.43	179.49	7,707.28	2,937.51	732.55	3,027.43	0.44	0.44	-2.29	
8,624.00	1.82	203.63	7,801.24	2,934.97	731.96	3,024.82	0.83	0.41	25.68	
8,718.00	2.20	205.03	7,895.19	2,931.97	730.60	3,021.58	0.41	0.40	1.49	
8,812.00	2.19	218.71	7,989.12	2,928.94	728.71	3,018.19	0.56	-0.01	14.55	
8,907.00	2.84	220.42	8,084.03	2,925.73	726.05	3,014.44	0.69	0.68	1.80	
9,001.00	2.37	210.40	8,177.93	2,922.28	723.56	3,010.50	0.69	-0.50	-10.66	
9,095.00	3.29	210.78	8,271.81	2,918.28	721.19	3,006.06	0.98	0.98	0.40	
9,190.00	3.26	191.56	8,366.66	2,913.30	719.26	3,000.75	1.15	-0.03	-20.23	
9,284.00	4.18	205.36	8,460.46	2,907.58	717.26	2,994.73	1.36	0.98	14.68	
9,378.00	4.57	211.31	8,554.19	2,901.29	713.84	2,987.80	0.64	0.41	6.33	
9,473.00	4.63	210.76	8,648.88	2,894.76	709.91	2,980.53	0.08	0.06	-0.58	
9,568.00	3.79	208.29	8,743.63	2,888.70	706.47	2,973.83	0.90	-0.88	-2.60	
9,662.00	3.96	206.35	8,837.41	2,883.05	703.55	2,967.66	0.23	0.18	-2.06	
9,701.00	4.04	209.82	8,876.32	2,880.66	702.27	2,965.02	0.65	0.21	8.90	
Last SDI MWD Production Survey										
9,759.00	4.04	209.82	8,934.17	2,877.11	700.24	2,961.10	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	0.43	-0.37	First SDI Gyro Surface Survey	
762.00	758.00	57.46	-0.65	Last SDI Gyro Surface Survey	
837.00	830.52	76.44	1.24	First SDI MWD Surface Survey	
984.00	970.44	120.85	8.22	Last SDI MWD Surface Survey	
1,077.00	1,056.99	154.03	15.65	First SDI MWD Production Survey	
9,701.00	8,876.32	2,880.66	702.27	Last SDI MWD Production Survey	
9,759.00	8,934.17	2,877.11	700.24	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____