



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 431-12
API #	05-045-24274
County & State	Garfield County, CO
SDI Job #	OP.024039
Rig	H&P 318
Survey Date	3-Mar-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 9172 feet is true and correct as determined from all available records.

Seth M. Burstad

Signature

8-May-2020

Date

Seth M. Burstad

Rockies Region Well Planner
Scientific Drilling - Rocky Mountain District



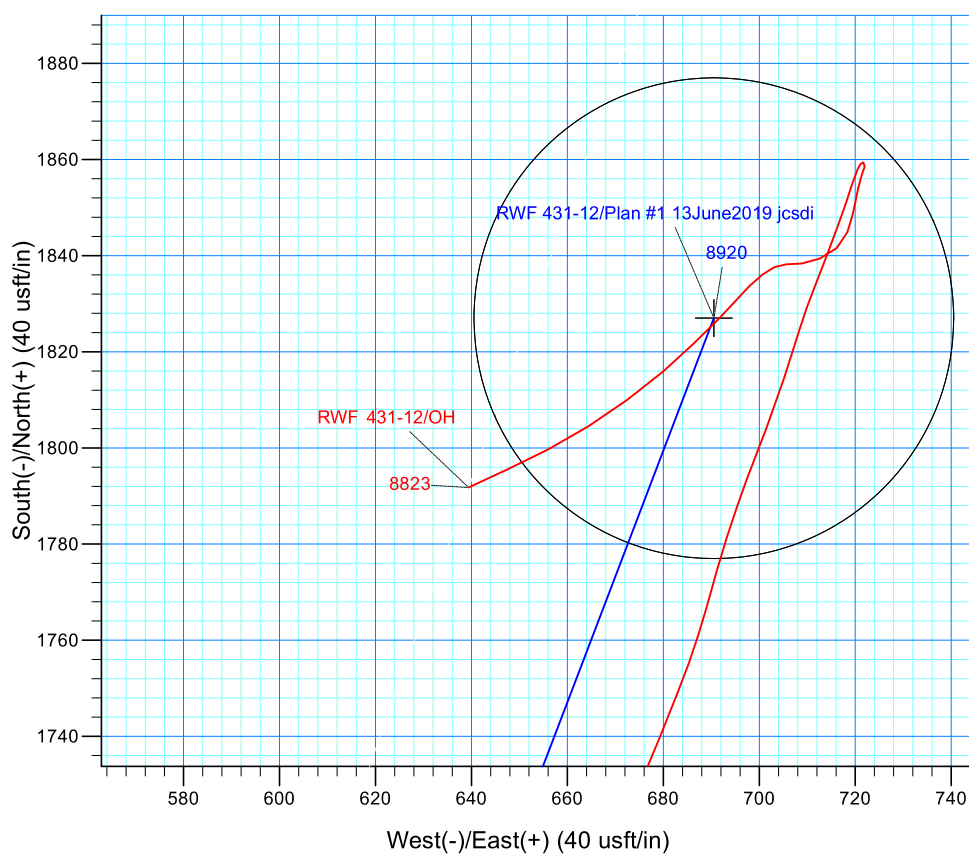
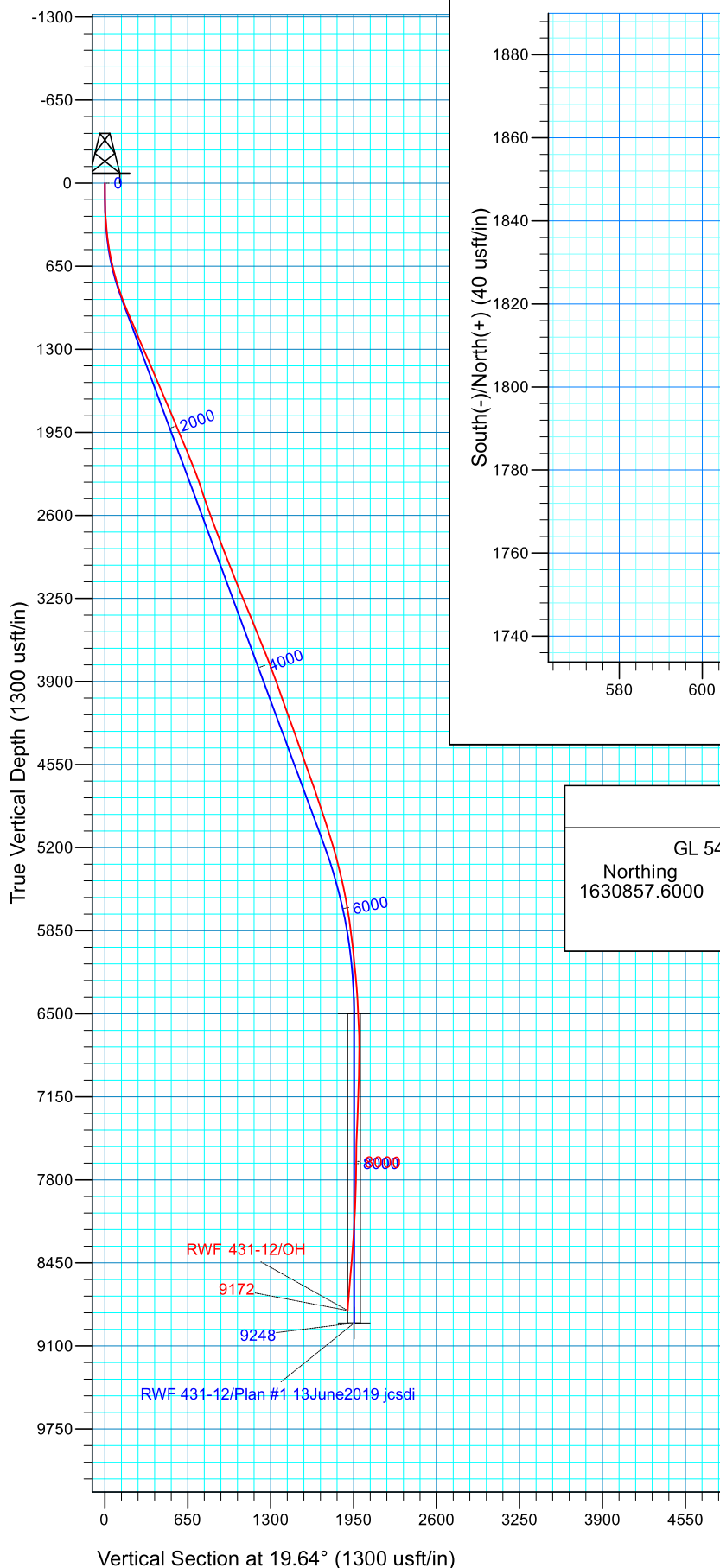
Project: Garfield County, CO NAD83

Site: RWF 12-12 Pad

Well: RWF 431-12

Wellbore: OH

Design: OH



WELL DETAILS: RWF 431-12

GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)	5466.80		
Northing	Eastings	Latitude	Longitude
1630857.6000	2339728.7000	39.5421265	-107.8415179

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 431-12 - Slot RWF 431-12, True North
Vertical (TVD) Reference: GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
Section (VS) Reference: Slot - RWF 431-12(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 431-12 - Slot RWF 431-12

OH

Design: OH

Standard Survey Report

02 March, 2020



Scientific Drilling, Intl

Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RWF 431-12 - Slot RWF 431-12
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 431-12	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 431-12 - Slot RWF 431-12					
Well Position	+N/-S	0.00 usft	Northing:	1,630,857.6000 usft	Latitude:	39.5421265
	+E/-W	0.00 usft	Easting:	2,339,728.7000 usft	Longitude:	-107.8415179
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	2/25/2020	9.23	65.72	51,413.90000000

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	19.64	

Survey Program	Date	3/2/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
124.00	668.00	Survey #1 - Surface Gyro Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
742.00	986.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,074.00	9,172.00	Survey #3 - Production MWD Survey (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	
124.00	0.26	336.53	124.00	0.26	-0.11	0.21	0.21	0.21	0.00	
First SDI Surface Gyro Survey										
214.00	2.82	4.04	213.96	2.65	-0.04	2.49	2.88	2.84	30.57	
305.00	4.57	4.22	304.77	8.50	0.39	8.14	1.92	1.92	0.20	
396.00	6.33	11.34	395.35	17.04	1.64	16.60	2.07	1.93	7.82	
487.00	8.71	19.60	485.57	28.45	4.94	28.45	2.87	2.62	9.08	
578.00	11.00	22.06	575.22	42.99	10.51	44.02	2.56	2.52	2.70	
668.00	13.37	20.13	663.18	60.72	17.32	63.01	2.67	2.63	-2.14	

Scientific Drilling, Intl

Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RWF 431-12 - Slot RWF 431-12
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 431-12	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)
Last SDI Surface Gyro Survey									
742.00	15.63	18.55	734.82	78.21	23.44	81.53	3.10	3.05	-2.14
First SDI Surface MWD Survey									
836.00	17.91	16.74	824.82	104.06	31.63	108.63	2.49	2.43	-1.93
930.00	20.65	19.82	913.54	133.50	41.41	139.65	3.11	2.91	3.28
986.00	22.34	20.39	965.65	152.76	48.47	160.17	3.04	3.02	1.02
Last SDI Surface MWD Survey									
1,074.00	23.46	17.73	1,046.71	185.13	59.63	194.40	1.73	1.27	-3.02
First SDI MWD Production Survey									
1,168.00	23.15	16.51	1,133.04	220.66	70.58	231.55	0.61	-0.33	-1.30
1,263.00	23.39	18.03	1,220.31	256.50	81.72	269.05	0.68	0.25	1.60
1,357.00	23.65	19.53	1,306.51	292.01	93.80	306.55	0.69	0.28	1.60
1,451.00	23.13	17.12	1,392.78	327.43	105.54	343.85	1.16	-0.55	-2.56
1,546.00	22.89	19.91	1,480.23	362.63	117.33	380.97	1.18	-0.25	2.94
1,640.00	23.24	20.90	1,566.71	397.15	130.17	417.79	0.56	0.37	1.05
1,734.00	23.79	23.43	1,652.91	431.87	144.32	455.25	1.22	0.59	2.69
1,828.00	23.25	22.00	1,739.10	466.47	158.81	492.71	0.84	-0.57	-1.52
1,923.00	22.81	21.81	1,826.53	500.95	172.68	529.84	0.47	-0.46	-0.20
2,017.00	22.51	20.45	1,913.27	534.72	185.73	566.04	0.64	-0.32	-1.45
2,111.00	22.84	23.59	2,000.01	568.30	199.32	602.24	1.33	0.35	3.34
2,205.00	22.77	21.95	2,086.66	601.90	213.42	638.61	0.68	-0.07	-1.74
2,299.00	22.11	20.61	2,173.55	635.33	226.45	674.48	0.89	-0.70	-1.43
2,394.00	20.83	20.53	2,261.95	667.88	238.67	709.24	1.35	-1.35	-0.08
2,488.00	19.48	20.69	2,350.19	698.19	250.07	741.63	1.44	-1.44	0.17
2,582.00	18.11	20.47	2,439.18	726.55	260.71	771.91	1.46	-1.46	-0.23
2,677.00	18.90	22.81	2,529.27	754.56	271.84	802.03	1.14	0.83	2.46
2,771.00	20.34	23.56	2,617.81	783.57	284.27	833.53	1.56	1.53	0.80
2,865.00	21.65	25.23	2,705.57	814.23	298.20	867.09	1.53	1.39	1.78
2,960.00	20.59	25.29	2,794.18	845.19	312.80	901.16	1.12	-1.12	0.06
3,055.00	21.90	22.59	2,882.73	876.66	326.75	935.48	1.72	1.38	-2.84
3,149.00	20.92	20.95	2,970.24	908.51	339.48	969.76	1.22	-1.04	-1.74
3,243.00	21.83	21.18	3,057.77	940.48	351.80	1,004.01	0.97	0.97	0.24
3,337.00	22.61	20.98	3,144.79	973.65	364.58	1,039.55	0.83	0.83	-0.21
3,431.00	21.06	20.78	3,232.05	1,006.32	377.04	1,074.50	1.65	-1.65	-0.21
3,525.00	23.12	18.62	3,319.14	1,039.60	388.93	1,109.84	2.36	2.19	-2.30
3,619.00	23.41	20.09	3,405.50	1,074.63	401.24	1,146.97	0.69	0.31	1.56
3,713.00	22.87	19.11	3,491.94	1,109.42	413.63	1,183.91	0.71	-0.57	-1.04
3,808.00	21.45	18.20	3,579.92	1,143.37	425.10	1,219.73	1.54	-1.49	-0.96
3,902.00	20.48	18.13	3,667.69	1,175.33	435.58	1,253.35	1.03	-1.03	-0.07
3,996.00	21.65	20.68	3,755.41	1,207.18	446.83	1,287.13	1.58	1.24	2.71
4,090.00	21.00	20.07	3,842.98	1,239.22	458.73	1,321.31	0.73	-0.69	-0.65
4,185.00	19.88	25.46	3,932.00	1,269.80	471.52	1,354.41	2.30	-1.18	5.67
4,279.00	19.43	25.58	4,020.52	1,298.33	485.14	1,385.86	0.48	-0.48	0.13
4,373.00	19.26	26.72	4,109.22	1,326.28	498.86	1,416.79	0.44	-0.18	1.21

Scientific Drilling, Intl

Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RWF 431-12 - Slot RWF 431-12
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 431-12	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)	
4,467.00	20.15	23.80	4,197.71	1,354.94	512.36	1,448.33	1.41	0.95	-3.11	
4,562.00	20.05	24.34	4,286.93	1,384.75	525.68	1,480.88	0.22	-0.11	0.57	
4,657.00	19.34	23.95	4,376.37	1,413.97	538.78	1,512.80	0.76	-0.75	-0.41	
4,751.00	19.79	23.56	4,464.94	1,442.78	551.46	1,544.19	0.50	0.48	-0.41	
4,846.00	18.83	23.42	4,554.60	1,471.59	563.98	1,575.54	1.01	-1.01	-0.15	
4,940.00	20.01	23.47	4,643.25	1,500.26	576.41	1,606.72	1.26	1.26	0.05	
5,034.00	19.90	23.16	4,731.60	1,529.72	589.11	1,638.73	0.16	-0.12	-0.33	
5,128.00	19.40	23.17	4,820.13	1,558.78	601.55	1,670.28	0.53	-0.53	0.01	
5,223.00	18.00	24.14	4,910.11	1,586.69	613.76	1,700.67	1.51	-1.47	1.02	
5,318.00	17.27	24.03	5,000.65	1,612.96	625.50	1,729.36	0.77	-0.77	-0.12	
5,412.00	17.68	24.77	5,090.31	1,638.67	637.16	1,757.49	0.50	0.44	0.79	
5,506.00	16.95	22.27	5,180.05	1,664.31	648.34	1,785.39	1.11	-0.78	-2.66	
5,601.00	14.91	21.28	5,271.40	1,688.51	658.02	1,811.45	2.17	-2.15	-1.04	
5,695.00	13.64	22.89	5,362.49	1,709.99	666.72	1,834.60	1.42	-1.35	1.71	
5,790.00	13.29	22.93	5,454.88	1,730.37	675.33	1,856.69	0.37	-0.37	0.04	
5,884.00	11.89	21.53	5,546.62	1,749.33	683.10	1,877.15	1.52	-1.49	-1.49	
5,979.00	10.25	15.37	5,639.85	1,766.58	688.93	1,895.37	2.13	-1.73	-6.48	
6,073.00	8.69	17.47	5,732.57	1,781.42	693.28	1,910.80	1.70	-1.66	2.23	
6,167.00	6.95	20.54	5,825.69	1,793.52	697.41	1,923.59	1.90	-1.85	3.27	
6,262.00	6.64	21.76	5,920.02	1,804.01	701.46	1,934.82	0.36	-0.33	1.28	
6,356.00	6.96	17.63	6,013.36	1,814.48	705.20	1,945.94	0.62	0.34	-4.39	
6,450.00	6.19	17.26	6,106.74	1,824.75	708.43	1,956.70	0.82	-0.82	-0.39	
6,544.00	4.72	22.33	6,200.32	1,833.17	711.40	1,965.63	1.64	-1.56	5.39	
6,639.00	4.01	20.08	6,295.04	1,839.90	714.03	1,972.85	0.77	-0.75	-2.37	
6,733.00	3.45	21.09	6,388.84	1,845.63	716.17	1,978.97	0.60	-0.60	1.07	
6,827.00	2.92	18.38	6,482.70	1,850.54	717.95	1,984.19	0.59	-0.56	-2.88	
6,921.00	2.46	17.64	6,576.59	1,854.73	719.31	1,988.60	0.49	-0.49	-0.79	
7,016.00	1.82	23.61	6,671.53	1,858.06	720.53	1,992.14	0.71	-0.67	6.28	
7,110.00	0.67	90.95	6,765.51	1,859.42	721.68	1,993.81	1.79	-1.22	71.64	
7,205.00	1.08	197.87	6,860.50	1,858.56	721.96	1,993.09	1.50	0.43	112.55	
7,299.00	1.48	198.30	6,954.47	1,856.56	721.31	1,990.99	0.43	0.43	0.46	
7,394.00	1.81	192.30	7,049.44	1,853.93	720.60	1,988.28	0.39	0.35	-6.32	
7,488.00	1.80	190.03	7,143.39	1,851.03	720.03	1,985.35	0.08	-0.01	-2.41	
7,583.00	1.61	195.08	7,238.35	1,848.27	719.42	1,982.55	0.25	-0.20	5.32	
7,677.00	2.67	198.29	7,332.28	1,844.91	718.39	1,979.04	1.13	1.13	3.41	
7,771.00	2.45	231.86	7,426.19	1,841.59	716.13	1,975.15	1.59	-0.23	35.71	
7,866.00	2.57	244.70	7,521.10	1,839.43	712.60	1,971.93	0.60	0.13	13.52	
7,960.00	2.22	265.40	7,615.02	1,838.38	708.88	1,969.69	0.99	-0.37	22.02	
8,055.00	1.67	268.60	7,709.97	1,838.20	705.66	1,968.44	0.59	-0.58	3.37	
8,149.00	1.57	243.91	7,803.93	1,837.60	703.14	1,967.03	0.74	-0.11	-26.27	
8,243.00	1.92	233.60	7,897.89	1,836.10	700.71	1,964.80	0.50	0.37	-10.97	
8,337.00	2.48	225.45	7,991.82	1,833.74	698.00	1,961.66	0.68	0.60	-8.67	
8,432.00	2.64	220.69	8,086.72	1,830.64	695.11	1,957.77	0.28	0.17	-5.01	

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 431-12	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)	
8,526.00	3.66	225.33	8,180.58	1,826.89	691.56	1,953.05	1.12	1.09	4.94	
8,620.00	5.05	225.13	8,274.30	1,821.86	686.50	1,946.61	1.48	1.48	-0.21	
8,715.00	5.56	229.95	8,368.90	1,815.95	680.01	1,938.86	0.71	0.54	5.07	
8,809.00	5.98	233.61	8,462.42	1,810.11	672.58	1,930.87	0.59	0.45	3.89	
8,904.00	5.99	237.82	8,556.90	1,804.54	664.40	1,922.87	0.46	0.01	4.43	
8,998.00	5.76	242.48	8,650.41	1,799.75	656.07	1,915.55	0.56	-0.24	4.96	
9,093.00	6.18	245.20	8,744.90	1,795.40	647.20	1,908.48	0.53	0.44	2.86	
9,112.00	6.24	244.86	8,763.78	1,794.53	645.34	1,907.03	0.37	0.32	-1.79	
Last SDI MWD Production Survey										
9,172.00	6.24	244.86	8,823.43	1,791.76	639.43	1,902.44	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	
124.00	124.00	0.26	-0.11	First SDI Surface Gyro Survey	
668.00	663.18	60.72	17.32	Last SDI Surface Gyro Survey	
742.00	734.82	78.21	23.44	First SDI Surface MWD Survey	
986.00	965.65	152.76	48.47	Last SDI Surface MWD Survey	
1,074.00	1,046.71	185.13	59.63	First SDI MWD Production Survey	
9,112.00	8,763.78	1,794.53	645.34	Last SDI MWD Production Survey	
9,172.00	8,823.43	1,791.76	639.43	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____