



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 424-1
API #	05045242760000
County & State	Garfield County, CO
SDI Job #	OP.023820
Rig	H&P 318
Survey Date	14-Feb-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 9530 feet is true and correct as determined from all available records.

Seth M. Burstad

Signature

24-Feb-2020

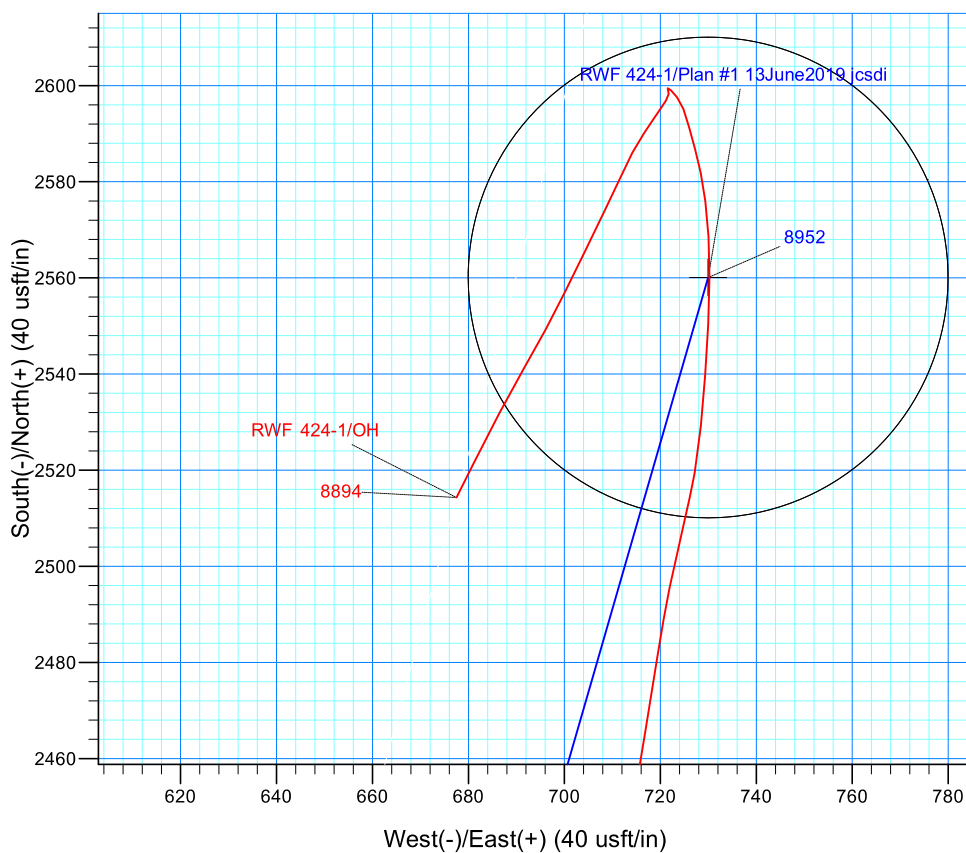
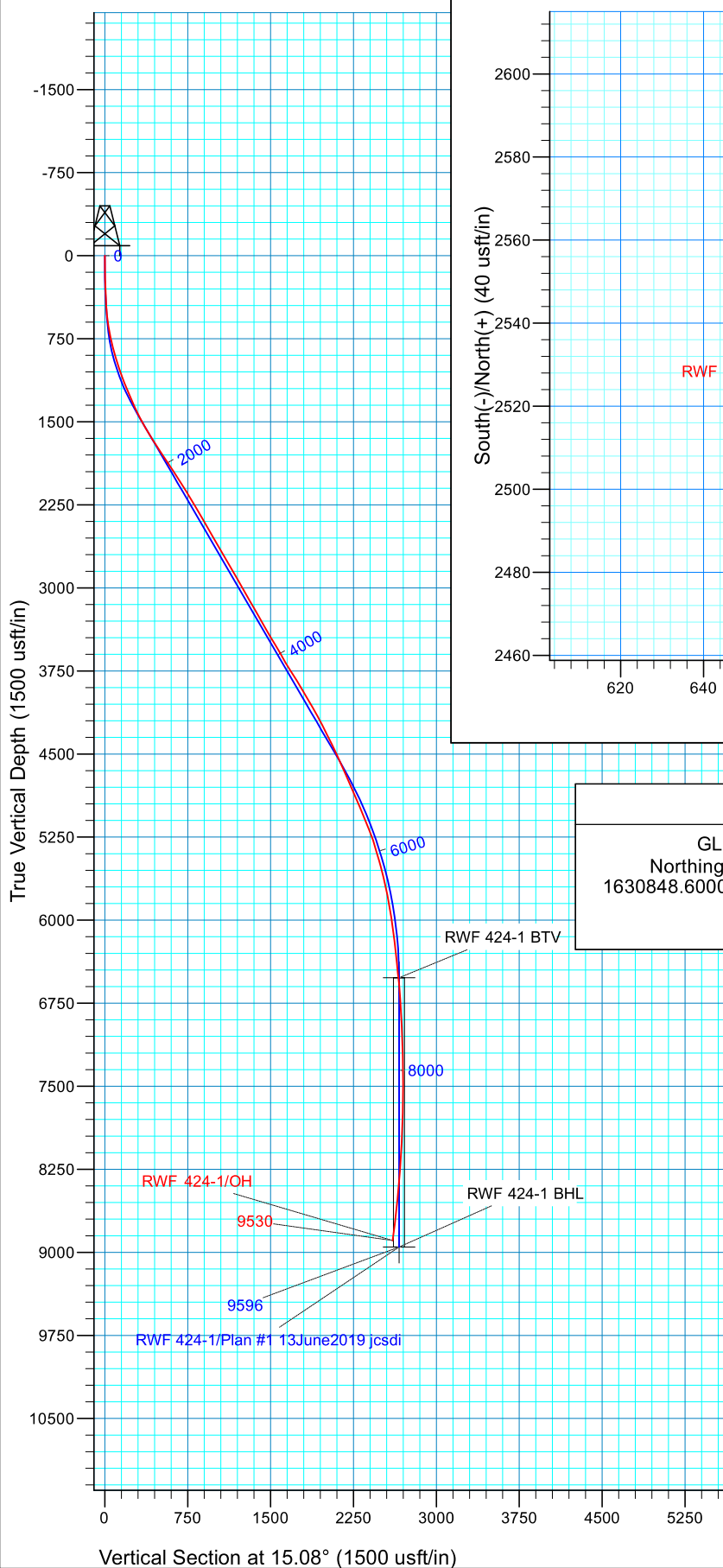
Date

Seth M. Burstad

Rockies Region Well Planner
Scientific Drilling - Rocky Mountain District



Project: Garfield County, CO NAD83
 Site: RWF 12-12 Pad
 Well: RWF 424-1
 Wellbore: OH
 Design: OH



WELL DETAILS: RWF 424-1

GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)

Northing	Easting	Latitude	Longitude
1630848.6000	2339713.1000	39.5421007	-107.8415724

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 424-1 - Slot RWF 424-1, True North
 Vertical (TVD) Reference: GL 5466.8' & RKB 24' @ 5490.80usft (H&P 318)
 Section (VS) Reference: Slot - RWF 424-1(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 424-1 - Slot RWF 424-1

OH

Design: OH

Standard Survey Report

19 February, 2020



Scientific Drilling, Intl

Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RWF 424-1 - Slot RWF 424-1
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 424-1	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 424-1 - Slot RWF 424-1					
Well Position	+N/-S	0.00 usft	Northing:	1,630,848.6000 usft	Latitude:	39.5421007
	+E/-W	0.00 usft	Easting:	2,339,713.1000 usft	Longitude:	-107.8415724
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	2/12/2020	9.25	65.72	51,417.70000000

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	15.08	

Survey Program	Date	2/19/2020			
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	
1,076.00	9,530.00	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	0.53	4.83	124.00	0.57	0.05	0.56	0.43	0.43	0.00	
First SDI Surface Gyro Survey										
214.00	1.85	9.84	213.98	2.42	0.33	2.42	1.47	1.47	5.57	
305.00	2.46	350.07	304.91	5.79	0.25	5.65	1.05	0.67	-21.73	
396.00	2.99	42.63	395.82	9.46	1.52	9.53	2.70	0.58	57.76	
487.00	4.84	37.35	486.61	14.26	5.45	15.19	2.07	2.03	-5.80	
578.00	7.39	28.39	577.08	22.46	10.57	24.44	2.98	2.80	-9.85	
668.00	9.59	21.88	666.09	34.51	16.11	37.51	2.66	2.44	-7.23	

Scientific Drilling, Intl

Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RWF 424-1 - Slot RWF 424-1
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 424-1	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)
Last SDI Surface Gyro Survey									
742.00	12.10	16.36	738.77	47.67	20.60	51.39	3.67	3.39	-7.46
First SDI MWD Surface Survey									
836.00	14.27	12.18	830.29	68.45	25.82	72.81	2.52	2.31	-4.45
930.00	16.85	6.86	920.84	93.31	29.89	97.87	3.13	2.74	-5.66
986.00	18.47	7.49	974.20	110.16	32.01	114.70	2.91	2.89	1.13
Last SDI MWD Surface Survey									
1,076.00	20.53	5.04	1,059.03	140.02	35.26	144.37	2.46	2.29	-2.72
First SDI MWD Production Survey									
1,170.00	21.13	9.65	1,146.90	173.15	39.55	177.47	1.86	0.64	4.90
1,265.00	22.76	15.48	1,235.02	207.75	47.32	212.90	2.86	1.72	6.14
1,359.00	23.94	16.48	1,321.32	243.56	57.59	250.15	1.32	1.26	1.06
1,453.00	25.69	16.75	1,406.64	281.36	68.87	289.59	1.87	1.86	0.29
1,548.00	28.14	16.28	1,491.34	322.59	81.09	332.57	2.59	2.58	-0.49
1,642.00	30.13	14.81	1,573.44	366.68	93.33	378.33	2.25	2.12	-1.56
1,736.00	31.91	16.40	1,654.00	413.32	106.38	426.77	2.08	1.89	1.69
1,830.00	34.18	15.54	1,732.79	462.60	120.47	478.02	2.47	2.41	-0.91
1,925.00	33.91	14.45	1,811.51	513.98	134.23	531.20	0.70	-0.28	-1.15
2,019.00	33.49	13.42	1,889.71	564.59	146.79	583.34	0.75	-0.45	-1.10
2,113.00	32.68	12.91	1,968.47	614.56	158.48	634.62	0.91	-0.86	-0.54
2,207.00	32.18	12.33	2,047.81	663.75	169.50	684.99	0.63	-0.53	-0.62
2,301.00	31.92	14.42	2,127.48	712.27	181.03	734.84	1.21	-0.28	2.22
2,396.00	31.31	13.27	2,208.39	760.62	192.95	784.63	0.90	-0.64	-1.21
2,490.00	30.49	17.74	2,289.05	807.11	205.83	832.87	2.59	-0.87	4.76
2,584.00	30.60	20.19	2,370.01	852.28	221.35	880.52	1.33	0.12	2.61
2,679.00	29.72	21.12	2,452.15	896.94	238.18	928.02	1.05	-0.93	0.98
2,773.00	29.68	23.76	2,533.81	939.98	255.95	974.20	1.39	-0.04	2.81
2,867.00	31.01	21.56	2,614.93	983.80	274.23	1,021.27	1.84	1.41	-2.34
2,962.00	30.05	21.32	2,696.76	1,028.72	291.87	1,069.23	1.02	-1.01	-0.25
3,057.00	30.89	18.53	2,778.64	1,074.01	308.27	1,117.22	1.73	0.88	-2.94
3,151.00	29.36	18.79	2,859.94	1,118.70	323.36	1,164.31	1.63	-1.63	0.28
3,244.00	30.45	16.33	2,940.56	1,162.90	337.33	1,210.62	1.76	1.17	-2.65
3,339.00	28.93	16.02	3,023.09	1,208.09	350.44	1,257.67	1.61	-1.60	-0.33
3,433.00	30.43	15.93	3,104.75	1,252.84	363.25	1,304.20	1.60	1.60	-0.10
3,527.00	30.51	17.07	3,185.77	1,298.54	376.79	1,351.85	0.62	0.09	1.21
3,621.00	28.74	17.07	3,267.48	1,342.96	390.43	1,398.29	1.88	-1.88	0.00
3,715.00	29.55	18.57	3,349.58	1,386.54	404.45	1,444.01	1.16	0.86	1.60
3,810.00	30.78	18.57	3,431.71	1,431.79	419.65	1,491.66	1.29	1.29	0.00
3,904.00	31.83	16.72	3,512.03	1,478.33	434.44	1,540.45	1.51	1.12	-1.97
3,998.00	29.26	16.63	3,592.98	1,524.09	448.15	1,588.20	2.73	-2.73	-0.10
4,092.00	30.26	18.81	3,674.58	1,568.52	462.36	1,634.80	1.57	1.06	2.32
4,187.00	33.06	18.74	3,755.44	1,615.73	478.40	1,684.55	2.95	2.95	-0.07
4,281.00	31.71	18.47	3,834.81	1,663.44	494.47	1,734.80	1.44	-1.44	-0.29
4,375.00	31.17	18.18	3,915.01	1,709.98	509.89	1,783.76	0.60	-0.57	-0.31

Scientific Drilling, Intl

Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well RWF 424-1 - Slot RWF 424-1
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 424-1	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)
4,469.00	30.69	19.01	3,995.65	1,755.78	525.29	1,831.98	0.68	-0.51	0.88
4,564.00	29.71	19.88	4,077.75	1,800.84	541.19	1,879.63	1.13	-1.03	0.92
4,659.00	28.45	16.69	4,160.78	1,844.66	555.70	1,925.71	2.10	-1.33	-3.36
4,753.00	27.21	15.92	4,243.91	1,886.77	568.02	1,969.58	1.37	-1.32	-0.82
4,848.00	26.56	16.19	4,328.64	1,928.06	579.90	2,012.53	0.70	-0.68	0.28
4,942.00	26.04	16.17	4,412.91	1,968.05	591.51	2,054.17	0.55	-0.55	-0.02
5,036.00	25.40	16.59	4,497.59	2,007.19	603.01	2,094.96	0.71	-0.68	0.45
5,130.00	24.16	17.74	4,582.94	2,044.84	614.63	2,134.33	1.42	-1.32	1.22
5,225.00	23.26	18.35	4,669.92	2,081.16	626.46	2,172.48	0.98	-0.95	0.64
5,320.00	23.57	17.07	4,757.10	2,117.12	637.94	2,210.19	0.63	0.33	-1.35
5,414.00	23.04	14.35	4,843.43	2,152.91	648.02	2,247.36	1.28	-0.56	-2.89
5,508.00	23.80	12.92	4,929.68	2,189.22	656.82	2,284.71	1.01	0.81	-1.52
5,603.00	23.09	13.02	5,016.84	2,226.05	665.30	2,322.48	0.75	-0.75	0.11
5,697.00	22.41	13.35	5,103.53	2,261.44	673.59	2,358.81	0.74	-0.72	0.35
5,792.00	21.75	13.94	5,191.56	2,296.14	682.01	2,394.51	0.73	-0.69	0.62
5,886.00	18.26	12.51	5,279.87	2,327.43	689.40	2,426.65	3.75	-3.71	-1.52
5,981.00	15.81	13.30	5,370.70	2,354.56	695.60	2,454.45	2.59	-2.58	0.83
6,075.00	16.13	11.31	5,461.07	2,379.83	701.11	2,480.28	0.67	0.34	-2.12
6,169.00	14.81	11.61	5,551.67	2,404.40	706.09	2,505.30	1.41	-1.40	0.32
6,264.00	12.83	8.68	5,643.91	2,426.72	710.12	2,527.91	2.21	-2.08	-3.08
6,358.00	12.46	10.82	5,735.63	2,447.00	713.60	2,548.39	0.64	-0.39	2.28
6,452.00	10.52	9.20	5,827.74	2,465.43	716.88	2,567.04	2.09	-2.06	-1.72
6,546.00	9.41	9.16	5,920.32	2,481.49	719.47	2,583.22	1.18	-1.18	-0.04
6,641.00	7.91	11.00	6,014.24	2,495.58	721.95	2,597.47	1.61	-1.58	1.94
6,735.00	7.83	13.87	6,107.35	2,508.14	724.72	2,610.32	0.43	-0.09	3.05
6,829.00	6.15	9.88	6,200.65	2,519.32	727.12	2,621.74	1.86	-1.79	-4.24
6,923.00	6.02	5.52	6,294.12	2,529.19	728.46	2,631.61	0.51	-0.14	-4.64
7,018.00	6.77	4.22	6,388.53	2,539.73	729.35	2,642.03	0.80	0.79	-1.37
7,112.00	6.10	2.58	6,481.94	2,550.24	729.98	2,652.34	0.74	-0.71	-1.74
7,207.00	5.70	0.48	6,576.44	2,560.00	730.25	2,661.84	0.48	-0.42	-2.21
7,301.00	4.75	356.33	6,670.04	2,568.56	730.04	2,670.04	1.09	-1.01	-4.41
7,396.00	4.22	353.34	6,764.75	2,575.95	729.38	2,677.01	0.61	-0.56	-3.15
7,490.00	3.08	347.37	6,858.56	2,581.85	728.43	2,682.46	1.28	-1.21	-6.35
7,585.00	2.99	345.21	6,953.43	2,586.74	727.24	2,686.87	0.15	-0.09	-2.27
7,679.00	2.88	344.09	7,047.30	2,591.38	725.97	2,691.02	0.13	-0.12	-1.19
7,773.00	1.88	340.49	7,141.22	2,595.11	724.80	2,694.31	1.08	-1.06	-3.83
7,868.00	1.53	321.87	7,236.18	2,597.57	723.50	2,696.35	0.69	-0.37	-19.60
7,962.00	0.87	310.24	7,330.16	2,599.02	722.18	2,697.41	0.74	-0.70	-12.37
8,057.00	0.14	226.08	7,425.16	2,599.41	721.55	2,697.61	0.91	-0.77	-88.59
8,151.00	0.38	149.07	7,519.16	2,599.06	721.63	2,697.30	0.40	0.26	-81.93
8,245.00	0.72	184.78	7,613.15	2,598.20	721.74	2,696.50	0.50	0.36	37.99
8,339.00	1.11	213.83	7,707.14	2,596.86	721.18	2,695.06	0.63	0.41	30.90
8,434.00	1.14	214.74	7,802.12	2,595.32	720.13	2,693.30	0.04	0.03	0.96

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 424-1	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)	
8,528.00	1.81	212.80	7,896.09	2,593.30	718.79	2,691.00	0.71	0.71	-2.06	
8,622.00	2.76	214.82	7,990.01	2,590.19	716.70	2,687.46	1.01	1.01	2.15	
8,717.00	3.13	207.46	8,084.89	2,586.02	714.19	2,682.77	0.56	0.39	-7.75	
8,811.00	3.81	204.65	8,178.72	2,580.90	711.71	2,677.19	0.75	0.72	-2.99	
8,906.00	5.36	205.90	8,273.41	2,574.04	708.45	2,669.71	1.63	1.63	1.32	
9,000.00	6.13	206.17	8,366.94	2,565.59	704.32	2,660.48	0.82	0.82	0.29	
9,095.00	5.47	206.08	8,461.45	2,556.97	700.09	2,651.05	0.69	-0.69	-0.09	
9,189.00	5.22	208.65	8,555.04	2,549.19	696.07	2,642.50	0.37	-0.27	2.73	
9,283.00	6.10	209.87	8,648.58	2,541.11	691.54	2,633.51	0.94	0.94	1.30	
9,378.00	6.91	207.44	8,742.97	2,531.66	686.39	2,623.05	0.90	0.85	-2.56	
9,472.00	7.56	206.83	8,836.22	2,521.12	680.99	2,611.47	0.70	0.69	-0.65	
Last SDI MWD Production Survey										
9,530.00	7.56	206.83	8,893.72	2,514.31	677.55	2,604.00	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	0.57	0.05	First SDI Surface Gyro Survey	
668.00	666.09	34.51	16.11	Last SDI Surface Gyro Survey	
742.00	738.77	47.67	20.60	First SDI MWD Surface Survey	
986.00	974.20	110.16	32.01	Last SDI MWD Surface Survey	
1,076.00	1,059.03	140.02	35.26	First SDI MWD Production Survey	
9,472.00	8,836.22	2,521.12	680.99	Last SDI MWD Production Survey	
9,530.00	8,893.72	2,514.31	677.55	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____