



## Directional Survey Certification

2948 I-70 Business Loop  
Grand Junction, CO 81504  
(970)-245-9447 Fax (970)-245-9454

Operator	TEP Rocky Mountain, LLC.
Well Name & No.	RU 423-17
County & State	Garfield County, CO
SDI Job No.	OP.009242
Rig	H&P 318

I,                     Mel Mireles Jr.                    , having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of           123           feet to a measured depth of   10,388   feet is true and correct as determined from all available records.

Signature

                    12-Apr-18                    

Date

### **Mel Mireles Jr.**

Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RU 423-17 - Slot RU 423-17 (B6)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 8368.6' & RKB 24' @ 8392.60usft (H&P 318)
<b>Site:</b>	RU 23-17 Pad	<b>MD Reference:</b>	GL 8368.6' & RKB 24' @ 8392.60usft (H&P 318)
<b>Well:</b>	RU 423-17	<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 District

<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		

<b>Site</b>	RU 23-17 Pad				
<b>Site Position:</b>		<b>Northing:</b>	1,594,634.40 usft	<b>Latitude:</b>	39.4435163
<b>From:</b>	Map	<b>Easting:</b>	2,351,232.80 usft	<b>Longitude:</b>	-107.7974906
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in	<b>Grid Convergence:</b>	-1.45 °

<b>Well</b>	RU 423-17 - Slot RU 423-17 (B6)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	1,594,628.80 usft	<b>Latitude:</b>	39.4435022
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	2,351,249.90 usft	<b>Longitude:</b>	-107.7974295
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b>	8,368.60 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	4/5/2018	9.18	65.57	51,575

<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	270.39	

<b>Survey Program</b>	<b>Date</b>	4/12/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
123.00	675.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
754.00	1,036.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,181.00	10,388.00	Survey #3 - Production MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

<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	0.00
123.00	0.35	318.43	123.00	0.28	-0.25	0.25	0.28	0.28	0.28	0.00
<b>First SDI Gyro MWD Survey</b>										
215.00	0.44	307.62	215.00	0.71	-0.72	0.72	0.13	0.10	-11.75	
307.00	0.35	272.72	306.99	0.94	-1.28	1.28	0.27	-0.10	-37.93	
399.00	0.70	288.37	398.99	1.13	-2.09	2.10	0.41	0.38	17.01	
491.00	0.97	289.42	490.98	1.56	-3.36	3.37	0.29	0.29	1.14	
584.00	3.87	263.58	583.89	1.47	-7.22	7.23	3.25	3.12	-27.78	
675.00	4.57	261.12	674.64	0.57	-13.85	13.86	0.79	0.77	-2.70	

<b>Company:</b>	TEP Rocky Mountain LLC	<b>Local Co-ordinate Reference:</b>	Well RU 423-17 - Slot RU 423-17 (B6)
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	GL 8368.6' & RKB 24' @ 8392.60usft (H&P 318)
<b>Site:</b>	RU 23-17 Pad	<b>MD Reference:</b>	GL 8368.6' & RKB 24' @ 8392.60usft (H&P 318)
<b>Well:</b>	RU 423-17	<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 District

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>									
754.00	4.79	255.57	753.38	-0.74	-20.16	20.15	0.64	0.28	-7.03
<b>First SDI Surface MWD Survey</b>									
848.00	4.48	281.56	847.08	-0.98	-27.56	27.55	2.24	-0.33	27.65
942.00	4.47	296.02	940.80	1.36	-34.44	34.45	1.20	-0.01	15.38
1,036.00	5.10	282.00	1,034.47	3.84	-41.82	41.85	1.41	0.67	-14.91
<b>Last SDI Surface MWD Survey</b>									
1,181.00	5.62	280.53	1,178.84	6.48	-55.11	55.15	0.37	0.36	-1.01
<b>First SDI Production MWD Survey</b>									
1,275.00	4.36	268.95	1,272.48	7.25	-63.21	63.25	1.71	-1.34	-12.32
1,368.00	3.87	267.88	1,365.24	7.07	-69.88	69.92	0.53	-0.53	-1.15
1,463.00	3.26	266.12	1,460.06	6.77	-75.78	75.82	0.65	-0.64	-1.85
1,557.00	3.26	258.69	1,553.91	6.06	-81.06	81.10	0.45	0.00	-7.90
1,652.00	4.13	274.44	1,648.71	5.80	-87.12	87.16	1.40	0.92	16.58
1,746.00	3.80	271.69	1,742.49	6.15	-93.61	93.65	0.41	-0.35	-2.93
1,841.00	3.61	269.52	1,837.29	6.22	-99.75	99.79	0.25	-0.20	-2.28
1,935.00	3.69	273.39	1,931.10	6.38	-105.73	105.77	0.28	0.09	4.12
2,030.00	3.47	278.69	2,025.91	6.99	-111.62	111.67	0.42	-0.23	5.58
2,124.00	2.76	279.98	2,119.77	7.81	-116.66	116.71	0.76	-0.76	1.37
2,219.00	4.22	274.61	2,214.59	8.49	-122.40	122.45	1.57	1.54	-5.65
2,313.00	3.69	275.76	2,308.37	9.07	-128.86	128.92	0.57	-0.56	1.22
2,408.00	4.84	267.85	2,403.11	9.23	-135.90	135.96	1.36	1.21	-8.33
2,502.00	5.10	269.87	2,496.75	9.07	-144.04	144.10	0.33	0.28	2.15
2,597.00	4.75	267.32	2,591.40	8.88	-152.20	152.25	0.43	-0.37	-2.68
2,691.00	4.50	270.24	2,685.10	8.71	-159.77	159.83	0.37	-0.27	3.11
2,786.00	4.06	269.03	2,779.83	8.67	-166.86	166.92	0.47	-0.46	-1.27
2,880.00	4.04	267.49	2,873.60	8.47	-173.50	173.55	0.12	-0.02	-1.64
2,975.00	3.78	268.37	2,968.38	8.23	-179.97	180.02	0.28	-0.27	0.93
3,069.00	5.29	256.90	3,062.08	7.16	-187.29	187.33	1.87	1.61	-12.20
3,164.00	5.24	256.70	3,156.68	5.17	-195.77	195.80	0.06	-0.05	-0.21
3,258.00	5.19	253.17	3,250.29	2.95	-204.02	204.04	0.35	-0.05	-3.76
3,353.00	4.73	253.34	3,344.93	0.58	-211.89	211.89	0.48	-0.48	0.18
3,447.00	4.33	250.26	3,438.64	-1.72	-218.94	218.92	0.50	-0.43	-3.28
3,541.00	3.96	245.17	3,532.40	-4.29	-225.22	225.19	0.55	-0.39	-5.41
3,636.00	4.96	262.42	3,627.11	-6.21	-232.27	232.23	1.75	1.05	18.16
3,730.00	4.33	264.30	3,720.80	-7.09	-239.83	239.78	0.69	-0.67	2.00
3,825.00	4.22	265.47	3,815.54	-7.73	-246.89	246.83	0.15	-0.12	1.23
3,920.00	4.27	267.78	3,910.28	-8.14	-253.90	253.84	0.19	0.05	2.43
4,014.00	4.13	269.99	4,004.02	-8.28	-260.79	260.72	0.23	-0.15	2.35
4,109.00	4.09	273.45	4,098.78	-8.07	-267.59	267.53	0.26	-0.04	3.64
4,203.00	3.99	272.53	4,192.55	-7.73	-274.20	274.14	0.13	-0.11	-0.98
4,298.00	4.18	274.13	4,287.31	-7.33	-280.96	280.90	0.23	0.20	1.68
4,392.00	3.75	278.04	4,381.08	-6.65	-287.42	287.37	0.54	-0.46	4.16
4,487.00	3.78	273.91	4,475.88	-6.01	-293.62	293.57	0.29	0.03	-4.35

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<b>Well:</b>	RU 423-17	<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 District

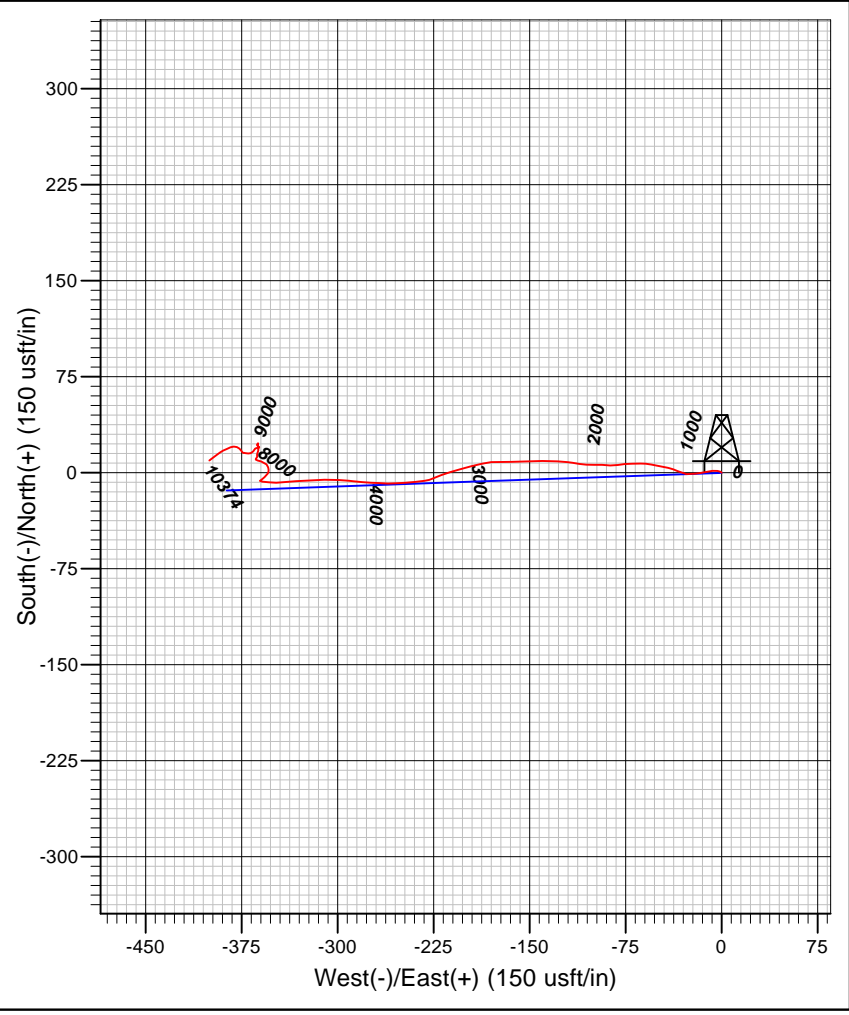
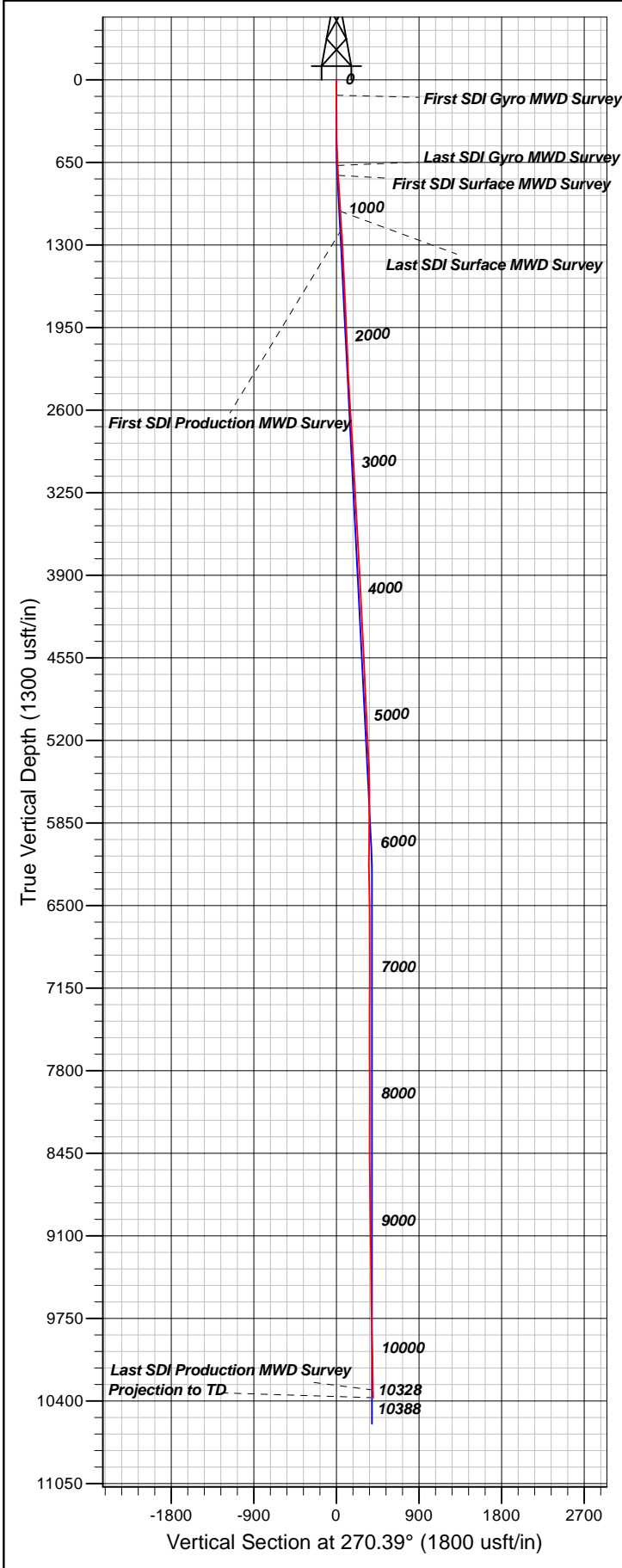
Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,581.00	3.62	269.79	4,569.68	-5.81	-299.68	299.63	0.33	-0.17	-4.38	
4,676.00	3.42	272.59	4,664.50	-5.69	-305.51	305.46	0.28	-0.21	2.95	
4,771.00	3.17	273.56	4,759.34	-5.40	-310.96	310.91	0.27	-0.26	1.02	
4,865.00	4.01	266.55	4,853.16	-5.43	-316.83	316.79	1.01	0.89	-7.46	
4,960.00	3.96	266.26	4,947.93	-5.85	-323.42	323.38	0.06	-0.05	-0.31	
5,054.00	3.87	264.55	5,041.71	-6.36	-329.82	329.77	0.16	-0.10	-1.82	
5,148.00	3.64	263.78	5,135.51	-6.99	-335.94	335.89	0.25	-0.24	-0.82	
5,243.00	3.72	266.49	5,230.31	-7.50	-342.02	341.96	0.20	0.08	2.85	
5,337.00	3.59	268.82	5,324.12	-7.75	-348.00	347.94	0.21	-0.14	2.48	
5,432.00	3.69	276.99	5,418.93	-7.44	-354.01	353.95	0.56	0.11	8.60	
5,526.00	2.55	277.08	5,512.79	-6.81	-359.09	359.03	1.21	-1.21	0.10	
5,621.00	0.62	62.36	5,607.76	-6.31	-360.73	360.68	3.24	-2.03	152.93	
5,715.00	1.11	47.21	5,701.75	-5.46	-359.61	359.57	0.57	0.52	-16.12	
5,809.00	1.06	49.35	5,795.73	-4.27	-358.29	358.25	0.07	-0.05	2.28	
5,904.00	1.67	48.30	5,890.71	-2.78	-356.58	356.56	0.64	0.64	-1.11	
5,998.00	1.23	30.81	5,984.68	-1.00	-355.05	355.03	0.66	-0.47	-18.61	
6,092.00	1.00	25.55	6,078.66	0.60	-354.18	354.17	0.27	-0.24	-5.60	
6,187.00	1.32	348.71	6,173.64	2.43	-354.03	354.04	0.84	0.34	-38.78	
6,281.00	1.41	346.16	6,267.61	4.61	-354.52	354.54	0.12	0.10	-2.71	
6,376.00	1.41	316.10	6,362.59	6.59	-355.61	355.65	0.77	0.00	-31.64	
6,566.00	1.58	283.84	6,552.52	8.90	-359.77	359.83	0.45	0.09	-16.98	
6,660.00	1.85	288.59	6,646.48	9.69	-362.47	362.53	0.32	0.29	5.05	
6,755.00	0.35	331.92	6,741.46	10.44	-364.06	364.12	1.70	-1.58	45.61	
6,849.00	0.62	44.08	6,835.46	11.06	-363.84	363.91	0.65	0.29	76.77	
6,943.00	0.70	29.14	6,929.45	11.92	-363.21	363.28	0.20	0.09	-15.89	
7,038.00	0.53	9.45	7,024.45	12.86	-362.85	362.93	0.28	-0.18	-20.73	
7,132.00	0.79	346.86	7,118.44	13.92	-362.93	363.02	0.39	0.28	-24.03	
7,227.00	0.79	21.84	7,213.43	15.17	-362.84	362.93	0.50	0.00	36.82	
7,321.00	0.62	21.58	7,307.43	16.24	-362.41	362.51	0.18	-0.18	-0.28	
7,416.00	1.14	5.05	7,402.42	17.66	-362.14	362.25	0.60	0.55	-17.40	
7,510.00	1.32	1.01	7,496.39	19.68	-362.03	362.16	0.21	0.19	-4.30	
7,605.00	1.31	353.38	7,591.37	21.85	-362.14	362.28	0.18	-0.01	-8.03	
7,699.00	0.34	1.31	7,685.36	23.19	-362.26	362.41	1.04	-1.03	8.44	
7,793.00	0.44	173.19	7,779.36	23.12	-362.21	362.36	0.83	0.11	182.85	
7,887.00	0.35	209.49	7,873.36	22.51	-362.31	362.45	0.28	-0.10	38.62	
7,982.00	0.62	271.27	7,968.35	22.27	-362.96	363.11	0.58	0.28	65.03	
8,076.00	1.06	142.08	8,062.35	21.59	-362.94	363.08	1.63	0.47	-137.44	
8,171.00	0.79	128.36	8,157.34	20.49	-361.88	362.02	0.37	-0.28	-14.44	
8,265.00	0.18	176.79	8,251.33	19.94	-361.37	361.50	0.73	-0.65	51.52	
8,360.00	0.46	227.40	8,346.33	19.53	-361.64	361.77	0.39	0.29	53.27	
8,455.00	0.53	264.51	8,441.33	19.23	-362.36	362.48	0.34	0.07	39.06	
8,549.00	0.79	289.64	8,535.32	19.41	-363.40	363.53	0.41	0.28	26.73	
8,644.00	1.14	208.34	8,630.31	18.80	-364.47	364.59	1.35	0.37	-85.58	

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<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Grand Junction District

Survey										
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8,739.00	1.93	220.65	8,725.28	16.75	-365.96	366.06	0.90	0.83	12.96	
8,833.00	1.14	258.71	8,819.24	15.37	-367.91	368.00	1.33	-0.84	40.49	
8,928.00	1.32	266.79	8,914.22	15.12	-369.92	370.02	0.26	0.19	8.51	
9,023.00	1.23	290.43	9,009.20	15.42	-371.97	372.07	0.56	-0.09	24.88	
9,117.00	0.44	263.26	9,103.19	15.73	-373.28	373.38	0.92	-0.84	-28.90	
9,212.00	0.26	237.35	9,198.19	15.57	-373.82	373.92	0.25	-0.19	-27.27	
9,307.00	0.97	317.94	9,293.18	16.05	-374.54	374.64	1.01	0.75	84.83	
9,402.00	1.14	326.47	9,388.17	17.43	-375.60	375.71	0.24	0.18	8.98	
9,496.00	1.32	316.27	9,482.14	19.00	-376.87	376.99	0.30	0.19	-10.85	
9,591.00	1.41	289.09	9,577.12	20.17	-378.73	378.86	0.68	0.09	-28.61	
9,686.00	1.49	268.73	9,672.09	20.52	-381.07	381.20	0.55	0.08	-21.43	
9,780.00	1.85	249.39	9,766.05	19.96	-383.71	383.84	0.71	0.38	-20.57	
9,875.00	2.02	245.17	9,860.99	18.72	-386.66	386.78	0.23	0.18	-4.44	
9,970.00	1.85	242.89	9,955.94	17.32	-389.55	389.66	0.20	-0.18	-2.40	
10,064.00	1.32	236.38	10,049.90	16.03	-391.80	391.90	0.59	-0.56	-6.93	
10,159.00	2.02	230.76	10,144.86	14.36	-394.01	394.10	0.76	0.74	-5.92	
10,254.00	1.74	236.38	10,239.81	12.50	-396.51	396.58	0.35	-0.29	5.92	
10,328.00	2.11	232.51	10,313.77	11.05	-398.52	398.59	0.53	0.50	-5.23	
<b>Last SDI Production MWD Survey</b>										
10,388.00	2.11	232.51	10,373.73	9.71	-400.28	400.33	0.00	0.00	0.00	
<b>Projection to TD - PBHL(RU_423-17)</b>										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
123.00	123.00	0.28	-0.25	First SDI Gyro MWD Survey	
675.00	674.64	0.57	-13.85	Last SDI Gyro MWD Survey	
754.00	753.38	-0.74	-20.16	First SDI Surface MWD Survey	
1,036.00	1,034.47	3.84	-41.82	Last SDI Surface MWD Survey	
1,181.00	1,178.84	6.48	-55.11	First SDI Production MWD Survey	
10,328.00	10,313.77	11.05	-398.52	Last SDI Production MWD Survey	
10,388.00	10,373.73	9.71	-400.28	Projection to TD	

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



<b>Well Details: RU 423-17</b>						
TVD Reference: GL 8368.6' & RKB 24' @ 8392.60usft (H&P 318) Level: 8368.60						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1594628.80	2351249.90	39.4435021	-107.7974295	RU 423-17 (B6)
<b>REFERENCE INFORMATION</b>						
Co-ordinate (N/E) Reference: Well RU 423-17 - Slot RU 423-17 (B6), True North						
Vertical (TVD) Reference: GL 8368.6' & RKB 24' @ 8392.60usft (H&P 318)						
Section (VS) Reference: Slot - RU 423-17 (B6)(0.00N, 0.00E)						
Measured Depth Reference: GL 8368.6' & RKB 24' @ 8392.60usft (H&P 318)						
Calculation Method: Minimum Curvature						
<b>PROJECT DETAILS: Garfield County, CO NAD83</b>						
Geodetic System: US State Plane 1983						
Datum: North American Datum 1983						
Ellipsoid: GRS 1980						
Zone: Colorado Central Zone						
System Datum: Mean Sea Level						
<b>Plan: OH</b>						
10:35, April 12 2018 Created By: Mel Mireles Jr.						