



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.	SR 422-12
County & State	Garfield County, CO
SDI Job No.	OP.004410
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 124 feet to a measured depth of 9,470 feet is true and correct as determined from all available records.


Signature

25-Sep-17
Date

Mel Mireles Jr.
Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 422-12 - Slot A11
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 422-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

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		RU 32-12 Pad			
Site Position:		Northing:	1,599,253.30 usft	Latitude:	39.4554808
From:	Map	Easting:	2,341,050.00 usft	Longitude:	-107.8339555
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.47 °

Well	SR 422-12 - Slot A11					
Well Position	+N/-S	0.00 usft	Northing:	1,599,180.30 usft	Latitude:	39.4552816
	+E/-W	0.00 usft	Easting:	2,341,067.10 usft	Longitude:	-107.8338883
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	7,254.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/18/2017	9.25	65.67	51,668

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	262.48	

Survey Program	Date	9/25/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
124.00	1,033.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
379.00	1,033.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,177.00	9,470.00	Survey #3 - Production MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

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	0.18	180.09	124.00	-0.19	0.00	0.03	0.15	0.15	0.00	
First SDI Gyro MWD Survey										
216.00	3.34	239.33	215.95	-1.71	-2.31	2.51	3.53	3.43	64.39	
308.00	6.42	253.48	307.60	-4.54	-9.54	10.06	3.57	3.35	15.38	
Last SDI Gyro MWD Survey										
379.00	7.98	255.29	378.04	-6.92	-18.12	18.87	2.22	2.20	2.55	
First SDI Surface MWD Survey										

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 422-12 - Slot A11
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 422-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
471.00	9.23	264.29	469.01	-9.27	-31.64	32.58	1.99	1.36	9.78
564.00	10.94	264.67	560.57	-10.84	-47.85	48.85	1.84	1.84	0.41
656.00	13.01	264.26	650.56	-12.68	-66.84	67.93	2.25	2.25	-0.45
750.00	13.43	261.28	742.07	-15.40	-88.16	89.42	0.85	0.45	-3.17
844.00	13.69	262.49	833.45	-18.50	-109.98	111.46	0.41	0.28	1.29
939.00	14.25	262.61	925.64	-21.48	-132.72	134.39	0.59	0.59	0.13
1,033.00	14.65	262.74	1,016.67	-24.47	-155.99	157.85	0.43	0.43	0.14
Last SDI Surface MWD Survey									
1,177.00	15.74	262.99	1,155.63	-29.15	-193.44	195.59	0.76	0.76	0.17
First SDI Production MWD Survey									
1,271.00	15.51	263.71	1,246.16	-32.09	-218.58	220.90	0.32	-0.24	0.77
1,365.00	14.56	264.70	1,336.94	-34.55	-242.84	245.27	1.05	-1.01	1.05
1,460.00	13.65	265.25	1,429.07	-36.59	-265.90	268.40	0.97	-0.96	0.58
1,554.00	15.80	263.14	1,519.98	-39.03	-289.67	292.28	2.36	2.29	-2.24
1,649.00	15.83	263.19	1,611.39	-42.11	-315.37	318.17	0.03	0.03	0.05
1,743.00	15.56	262.79	1,701.88	-45.22	-340.61	343.60	0.31	-0.29	-0.43
1,837.00	15.21	262.88	1,792.51	-48.33	-365.35	368.54	0.37	-0.37	0.10
1,932.00	14.89	262.66	1,884.25	-51.43	-389.83	393.20	0.34	-0.34	-0.23
2,027.00	14.31	262.15	1,976.19	-54.59	-413.56	417.15	0.63	-0.61	-0.54
2,121.00	14.16	263.36	2,067.30	-57.51	-436.49	440.26	0.35	-0.16	1.29
2,216.00	13.84	263.24	2,159.48	-60.19	-459.32	463.24	0.34	-0.34	-0.13
2,310.00	15.10	263.58	2,250.49	-62.88	-482.65	486.73	1.34	1.34	0.36
2,404.00	15.05	263.41	2,341.26	-65.65	-506.94	511.17	0.07	-0.05	-0.18
2,499.00	14.51	263.93	2,433.12	-68.33	-531.03	535.40	0.59	-0.57	0.55
2,594.00	14.06	265.09	2,525.18	-70.57	-554.36	558.83	0.56	-0.47	1.22
2,688.00	15.72	262.09	2,616.02	-73.30	-578.35	582.97	1.95	1.77	-3.19
2,782.00	15.00	260.64	2,706.66	-77.03	-602.96	607.86	0.87	-0.77	-1.54
2,877.00	14.69	260.92	2,798.49	-80.93	-626.99	632.19	0.33	-0.33	0.29
2,971.00	16.61	260.95	2,889.00	-84.93	-652.03	657.54	2.04	2.04	0.03
3,066.00	16.12	261.21	2,980.15	-89.08	-678.47	684.29	0.52	-0.52	0.27
3,160.00	15.56	263.05	3,070.58	-92.60	-703.88	709.95	0.80	-0.60	1.96
3,255.00	15.03	261.95	3,162.22	-95.87	-728.73	735.01	0.64	-0.56	-1.16
3,349.00	13.92	261.84	3,253.23	-99.18	-751.99	758.50	1.18	-1.18	-0.12
3,444.00	15.68	262.97	3,345.08	-102.37	-776.04	782.77	1.88	1.85	1.19
3,539.00	15.25	262.72	3,436.64	-105.53	-801.18	808.10	0.46	-0.45	-0.26
3,633.00	14.61	262.31	3,527.46	-108.68	-825.19	832.32	0.69	-0.68	-0.44
3,728.00	15.86	264.61	3,619.13	-111.50	-849.99	857.27	1.46	1.32	2.42
3,822.00	15.27	265.81	3,709.68	-113.61	-875.12	882.46	0.72	-0.63	1.28
3,917.00	14.51	265.45	3,801.49	-115.47	-899.46	906.84	0.81	-0.80	-0.38
4,011.00	16.07	267.07	3,892.16	-117.07	-924.20	931.57	1.72	1.66	1.72
4,106.00	15.70	266.79	3,983.53	-118.46	-950.16	957.49	0.40	-0.39	-0.29
4,200.00	15.37	266.84	4,074.10	-119.86	-975.30	982.60	0.35	-0.35	0.05
4,294.00	14.95	268.09	4,164.82	-120.95	-999.85	1,007.08	0.57	-0.45	1.33
4,389.00	14.47	269.24	4,256.71	-121.52	-1,023.97	1,031.07	0.59	-0.51	1.21

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 422-12 - Slot A11
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 422-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

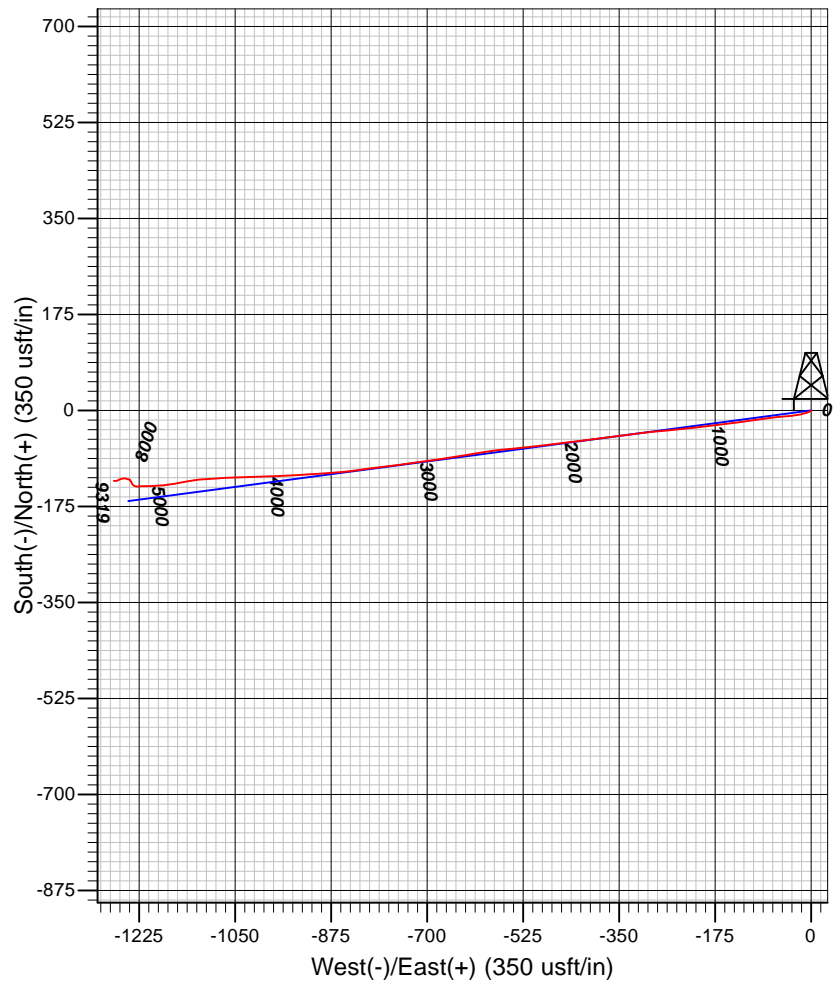
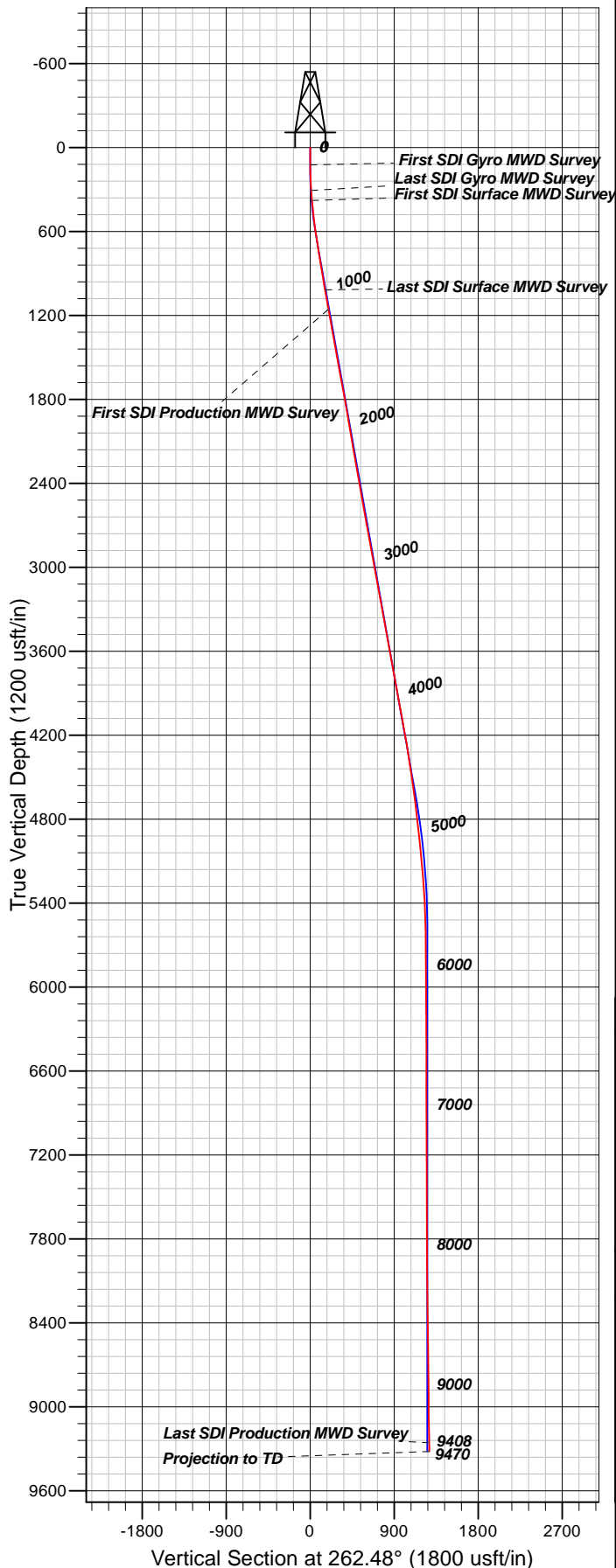
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,483.00	13.78	269.90	4,347.87	-121.69	-1,046.91	1,053.83	0.75	-0.73	0.70
4,578.00	12.36	264.39	4,440.41	-122.71	-1,068.34	1,075.21	1.99	-1.49	-5.80
4,672.00	11.85	266.72	4,532.32	-124.24	-1,087.99	1,094.89	0.75	-0.54	2.48
4,767.00	11.69	267.42	4,625.32	-125.23	-1,107.34	1,114.21	0.23	-0.17	0.74
4,861.00	10.13	259.34	4,717.62	-127.19	-1,124.98	1,131.95	2.32	-1.66	-8.60
4,956.00	9.62	259.56	4,811.22	-130.18	-1,141.00	1,148.22	0.54	-0.54	0.23
5,050.00	9.21	260.28	4,903.95	-132.87	-1,156.14	1,163.59	0.45	-0.44	0.77
5,145.00	8.62	263.52	4,997.80	-134.96	-1,170.71	1,178.30	0.82	-0.62	3.41
5,239.00	8.44	263.34	5,090.76	-136.55	-1,184.56	1,192.24	0.19	-0.19	-0.19
5,333.00	6.42	268.00	5,183.97	-137.54	-1,196.66	1,204.37	2.24	-2.15	4.96
5,428.00	6.51	269.05	5,278.37	-137.81	-1,207.36	1,215.01	0.16	0.09	1.11
5,522.00	5.10	269.93	5,371.88	-137.90	-1,216.86	1,224.45	1.50	-1.50	0.94
5,616.00	3.62	262.93	5,465.61	-138.27	-1,223.99	1,231.56	1.67	-1.57	-7.45
5,711.00	0.88	261.58	5,560.52	-138.75	-1,227.68	1,235.29	2.88	-2.88	-1.42
5,754.72	0.79	267.54	5,604.24	-138.81	-1,228.32	1,235.92	0.28	-0.20	13.64
SR 422-12 MVRD									
5,806.00	0.70	276.35	5,655.52	-138.79	-1,228.98	1,236.58	0.28	-0.18	17.18
5,900.00	0.88	279.07	5,749.51	-138.62	-1,230.27	1,237.83	0.20	0.19	2.89
5,995.00	1.06	290.50	5,844.49	-138.19	-1,231.81	1,239.30	0.28	0.19	12.03
6,089.00	0.79	294.19	5,938.48	-137.62	-1,233.21	1,240.62	0.29	-0.29	3.93
6,183.00	0.70	294.89	6,032.47	-137.12	-1,234.33	1,241.66	0.10	-0.10	0.74
6,278.00	0.87	312.90	6,127.46	-136.38	-1,235.38	1,242.61	0.31	0.18	18.96
6,372.00	1.11	319.07	6,221.45	-135.21	-1,236.50	1,243.56	0.28	0.26	6.56
6,466.00	1.17	327.11	6,315.43	-133.71	-1,237.62	1,244.48	0.18	0.06	8.55
6,561.00	1.38	335.11	6,410.41	-131.86	-1,238.63	1,245.23	0.29	0.22	8.42
6,655.00	0.34	170.07	6,504.40	-131.11	-1,239.05	1,245.56	1.82	-1.11	-175.57
6,749.00	0.17	1.24	6,598.40	-131.24	-1,239.00	1,245.53	0.54	-0.18	-179.61
6,844.00	0.35	321.79	6,693.40	-130.87	-1,239.18	1,245.65	0.26	0.19	-41.53
6,939.00	0.44	335.94	6,788.40	-130.31	-1,239.51	1,245.90	0.14	0.09	14.89
7,033.00	0.35	330.40	6,882.39	-129.73	-1,239.80	1,246.12	0.10	-0.10	-5.89
7,127.00	0.57	331.35	6,976.39	-129.07	-1,240.16	1,246.39	0.23	0.23	1.01
7,222.00	0.70	331.98	7,071.39	-128.15	-1,240.66	1,246.77	0.14	0.14	0.66
7,316.00	0.44	330.67	7,165.38	-127.33	-1,241.11	1,247.10	0.28	-0.28	-1.39
7,411.00	0.35	307.90	7,260.38	-126.83	-1,241.52	1,247.44	0.19	-0.09	-23.97
7,505.00	0.43	296.83	7,354.38	-126.49	-1,242.06	1,247.93	0.12	0.09	-11.78
7,600.00	0.62	296.04	7,449.37	-126.11	-1,242.84	1,248.66	0.20	0.20	-0.83
7,694.00	0.34	302.56	7,543.37	-125.73	-1,243.53	1,249.29	0.30	-0.30	6.94
7,789.00	0.18	352.11	7,638.37	-125.43	-1,243.79	1,249.51	0.28	-0.17	52.16
7,883.00	0.26	273.45	7,732.37	-125.28	-1,244.02	1,249.72	0.30	0.09	-83.68
7,977.00	0.59	269.61	7,826.37	-125.27	-1,244.72	1,250.41	0.35	0.35	-4.09
8,072.00	0.79	275.16	7,921.36	-125.21	-1,245.86	1,251.53	0.22	0.21	5.84
8,167.00	0.79	288.39	8,016.35	-124.95	-1,247.13	1,252.76	0.19	0.00	13.93
8,261.00	0.99	300.24	8,110.34	-124.33	-1,248.45	1,253.99	0.29	0.21	12.61
8,355.00	0.85	281.46	8,204.33	-123.78	-1,249.83	1,255.29	0.35	-0.15	-19.98

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Well:	SR 422-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
8,450.00	1.23	268.62	8,299.31	-123.67	-1,251.54	1,256.97	0.47	0.40	-13.52
8,544.00	1.47	256.73	8,393.28	-123.97	-1,253.73	1,259.17	0.39	0.26	-12.65
8,639.00	1.47	255.79	8,488.25	-124.55	-1,256.09	1,261.59	0.03	0.00	-0.99
8,733.00	1.06	262.02	8,582.23	-124.97	-1,258.12	1,263.66	0.46	-0.44	6.63
8,827.00	0.79	257.89	8,676.22	-125.22	-1,259.62	1,265.18	0.30	-0.29	-4.39
8,922.00	0.40	236.66	8,771.21	-125.54	-1,260.54	1,266.13	0.46	-0.41	-22.35
9,016.00	0.53	225.68	8,865.21	-126.03	-1,261.12	1,266.77	0.17	0.14	-11.68
9,111.00	1.19	244.77	8,960.20	-126.75	-1,262.33	1,268.06	0.75	0.69	20.09
9,205.00	1.38	243.73	9,054.17	-127.67	-1,264.23	1,270.06	0.20	0.20	-1.11
9,299.00	1.63	262.84	9,148.14	-128.34	-1,266.57	1,272.47	0.59	0.27	20.33
9,394.00	1.49	266.95	9,243.11	-128.57	-1,269.14	1,275.05	0.19	-0.15	4.33
9,408.00	1.41	268.44	9,257.10	-128.59	-1,269.49	1,275.41	0.63	-0.57	10.64
Last SDI Production MWD Survey									
9,470.00	1.41	268.44	9,319.08	-128.63	-1,271.02	1,276.93	0.00	0.00	0.00
Projection to TD - SR 422-12 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
124.00	124.00	-0.19	0.00	First SDI Gyro MWD Survey
308.00	307.60	-4.54	-9.54	Last SDI Gyro MWD Survey
379.00	378.04	-6.92	-18.12	First SDI Surface MWD Survey
1,033.00	1,016.67	-24.47	-155.99	Last SDI Surface MWD Survey
1,177.00	1,155.63	-29.15	-193.44	First SDI Production MWD Survey
9,408.00	9,257.10	-128.59	-1,269.49	Last SDI Production MWD Survey
9,470.00	9,319.08	-128.63	-1,271.02	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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Well Details: SR 422-12

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1599180.30	2341067.10	39.4552816	-107.8338883	A11

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 422-12 - Slot A11, True North
 Vertical (TVD) Reference: GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
 Section (VS) Reference: Slot - A11(0.00N, 0.00E)
 Measured Depth Reference: GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
 Calculation Method: Minimum Curvature

PROJECT DETAILS: Garfield County, CO NAD83

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone

System Datum: Mean Sea Level

Plan: OH

12:17, September 25 2017
 Created By: Mel Mireles Jr.