



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 513-12
County & State	Garfield County, CO
SDI Job No.	OP.006780
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 70 feet to a measured depth of 9,866 feet is true and correct as determined from all available records.

A handwritten signature in black ink, appearing to read 'Mel Mireles Jr.', written over a horizontal line.

Signature

8-Jan-18

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 513-12 - Slot SR 513-12 (A7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 513-12	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		SR 23-12 Pad			
Site Position:		Northing:	1,597,713.40 usft	Latitude:	39.4511965
From:	Map	Easting:	2,340,229.70 usft	Longitude:	-107.8367194
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.47 °

Well		SR 513-12 - Slot SR 513-12 (A7)				
Well Position	+N/-S	0.00 usft	Northing:	1,597,671.40 usft	Latitude:	39.4510824
	+E/-W	0.00 usft	Easting:	2,340,246.00 usft	Longitude:	-107.8366579
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	7,478.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/20/2017	9.23	65.62	51,635

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	258.39	

Survey Program	Date	1/8/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
70.00	307.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4
384.00	1,076.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1
1,182.00	9,866.00	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
70.00	0.44	126.56	70.00	-0.16	0.22	-0.18	0.63	0.63	0.00
First SDI Gyro MWD Survey									
214.00	4.13	257.70	213.88	-1.59	-4.41	4.64	3.08	2.56	91.07
307.00	7.48	262.88	306.39	-3.06	-13.69	14.03	3.64	3.60	5.57
Last SDI Gyro MWD Survey									
384.00	10.61	261.26	382.43	-4.76	-25.67	26.11	4.08	4.06	-2.10
First SDI Surface MWD Survey									

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 513-12 - Slot SR 513-12 (A7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 513-12	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)
477.00	14.21	258.18	473.24	-8.40	-45.31	46.08	3.93	3.87	-3.31
569.00	16.16	258.97	562.02	-13.16	-68.94	70.17	2.13	2.12	0.86
660.00	17.57	260.04	649.11	-17.96	-94.89	96.57	1.59	1.55	1.18
755.00	17.96	255.42	739.58	-24.13	-123.19	125.53	1.54	0.41	-4.86
849.00	18.95	256.39	828.75	-31.37	-152.06	155.26	1.10	1.05	1.03
943.00	21.20	258.90	917.03	-38.23	-183.57	187.51	2.56	2.39	2.67
1,076.00	23.74	259.01	1,039.92	-47.97	-233.46	238.34	1.91	1.91	0.08
Last SDI Surface MWD Survey									
1,182.00	24.15	258.67	1,136.80	-56.29	-275.67	281.36	0.41	0.39	-0.32
First SDI Production MWD Survey									
1,276.00	23.39	258.04	1,222.83	-63.94	-312.78	319.24	0.85	-0.81	-0.67
1,370.00	22.86	257.69	1,309.27	-71.70	-348.87	356.16	0.58	-0.56	-0.37
1,465.00	22.47	256.53	1,396.94	-79.86	-384.55	392.76	0.62	-0.41	-1.22
1,559.00	22.16	255.84	1,483.90	-88.38	-419.21	428.42	0.43	-0.33	-0.73
1,654.00	22.72	259.66	1,571.71	-96.06	-454.63	464.66	1.64	0.59	4.02
1,749.00	22.25	259.00	1,659.49	-102.78	-490.34	500.99	0.56	-0.49	-0.69
1,843.00	22.04	259.54	1,746.55	-109.38	-525.15	536.42	0.31	-0.22	0.57
1,937.00	23.67	261.89	1,833.17	-115.25	-561.18	572.89	1.99	1.73	2.50
2,032.00	22.85	263.04	1,920.45	-120.17	-598.37	610.31	0.99	-0.86	1.21
2,126.00	24.88	262.12	2,006.41	-125.09	-636.07	648.24	2.20	2.16	-0.98
2,221.00	24.80	262.83	2,092.62	-130.32	-675.64	688.04	0.33	-0.08	0.75
2,315.00	24.33	263.37	2,178.11	-135.02	-714.43	726.99	0.55	-0.50	0.57
2,409.00	23.65	263.27	2,263.99	-139.46	-752.39	765.06	0.72	-0.72	-0.11
2,504.00	23.89	264.35	2,350.93	-143.59	-790.46	803.18	0.52	0.25	1.14
2,598.00	23.32	265.00	2,437.07	-147.09	-827.93	840.60	0.67	-0.61	0.69
2,693.00	24.53	262.70	2,523.90	-151.23	-866.23	878.94	1.61	1.27	-2.42
2,787.00	23.97	262.76	2,609.61	-156.12	-904.53	917.44	0.60	-0.60	0.06
2,882.00	23.59	263.02	2,696.54	-160.86	-942.54	955.63	0.41	-0.40	0.27
2,976.00	23.30	263.49	2,782.78	-165.25	-979.68	992.89	0.37	-0.31	0.50
3,071.00	22.55	263.53	2,870.28	-169.43	-1,016.45	1,029.75	0.79	-0.79	0.04
3,165.00	24.18	261.47	2,956.57	-174.32	-1,053.40	1,066.93	1.94	1.73	-2.19
3,259.00	23.80	261.78	3,042.45	-179.89	-1,091.21	1,105.08	0.43	-0.40	0.33
3,354.00	22.88	261.88	3,129.68	-185.24	-1,128.46	1,142.65	0.97	-0.97	0.11
3,448.00	24.18	257.07	3,215.87	-192.13	-1,165.32	1,180.14	2.47	1.38	-5.12
3,543.00	23.26	257.39	3,302.84	-200.58	-1,202.59	1,218.35	0.98	-0.97	0.34
3,637.00	22.67	257.30	3,389.39	-208.61	-1,238.38	1,255.02	0.63	-0.63	-0.10
3,732.00	23.92	257.16	3,476.64	-216.92	-1,275.01	1,292.58	1.32	1.32	-0.15
3,826.00	23.15	258.46	3,562.82	-224.85	-1,311.70	1,330.11	0.99	-0.82	1.38
3,921.00	24.45	256.74	3,649.74	-233.09	-1,349.13	1,368.44	1.55	1.37	-1.81
4,015.00	23.49	257.48	3,735.64	-241.62	-1,386.36	1,406.62	1.07	-1.02	0.79
4,109.00	22.18	257.46	3,822.27	-249.53	-1,421.97	1,443.09	1.39	-1.39	-0.02
4,204.00	21.43	257.90	3,910.47	-257.06	-1,456.44	1,478.38	0.81	-0.79	0.46
4,298.00	20.79	258.75	3,998.16	-263.92	-1,489.59	1,512.23	0.75	-0.68	0.90
4,393.00	20.18	259.72	4,087.15	-270.13	-1,522.25	1,545.47	0.73	-0.64	1.02

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 513-12 - Slot SR 513-12 (A7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 513-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

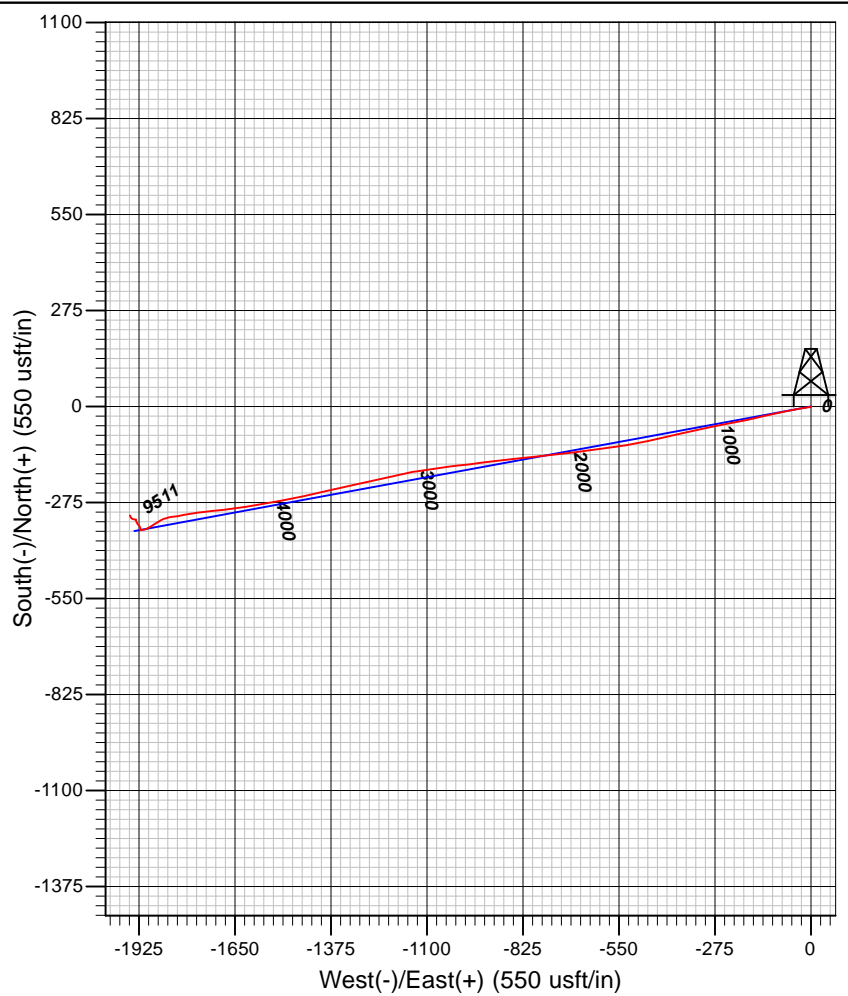
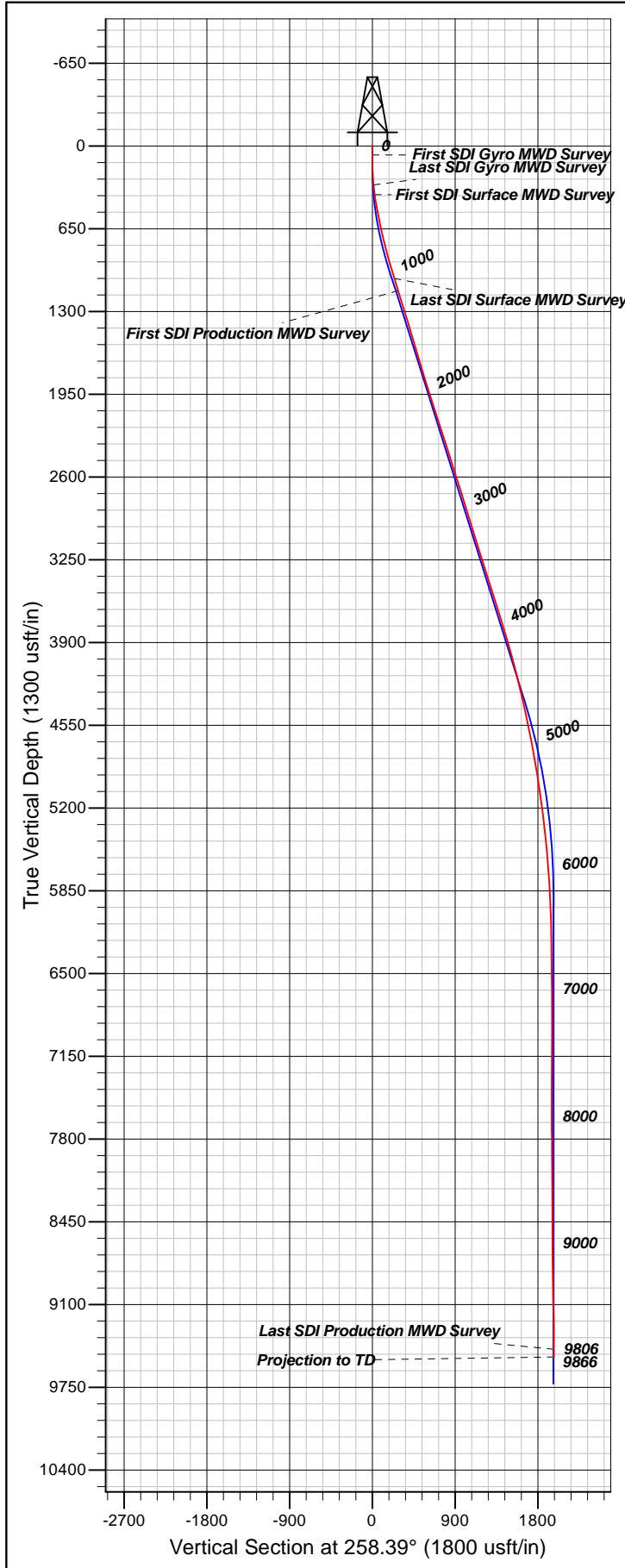
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,487.00	19.35	259.71	4,175.61	-275.81	-1,553.53	1,577.25	0.88	-0.88	-0.01
4,582.00	18.61	260.30	4,265.45	-281.17	-1,583.96	1,608.14	0.80	-0.78	0.62
4,676.00	17.50	260.50	4,354.82	-286.03	-1,612.68	1,637.25	1.18	-1.18	0.21
4,771.00	17.04	261.98	4,445.54	-290.33	-1,640.55	1,665.42	0.67	-0.48	1.56
4,865.00	16.09	263.22	4,535.63	-293.79	-1,667.13	1,692.14	1.08	-1.01	1.32
4,959.00	15.20	263.57	4,626.15	-296.71	-1,692.31	1,717.40	0.95	-0.95	0.37
5,054.00	14.60	264.98	4,717.96	-299.15	-1,716.61	1,741.69	0.74	-0.63	1.48
5,148.00	13.01	262.26	4,809.24	-301.61	-1,738.90	1,764.02	1.83	-1.69	-2.89
5,243.00	12.75	263.05	4,901.85	-304.32	-1,759.90	1,785.14	0.33	-0.27	0.83
5,338.00	11.69	258.84	4,994.70	-307.45	-1,779.75	1,805.21	1.46	-1.12	-4.43
5,433.00	10.99	259.88	5,087.84	-310.91	-1,798.11	1,823.89	0.77	-0.74	1.09
5,528.00	10.33	261.27	5,181.20	-313.79	-1,815.44	1,841.45	0.75	-0.69	1.46
5,623.00	10.06	262.65	5,274.70	-316.14	-1,832.09	1,858.23	0.38	-0.28	1.45
5,718.00	8.81	253.86	5,368.42	-319.23	-1,847.31	1,873.76	2.00	-1.32	-9.25
5,813.00	8.23	241.42	5,462.38	-324.50	-1,860.27	1,887.51	2.03	-0.61	-13.09
5,907.00	8.09	239.32	5,555.43	-331.10	-1,871.86	1,900.20	0.35	-0.15	-2.23
6,002.00	6.95	238.00	5,649.61	-337.55	-1,882.49	1,911.90	1.21	-1.20	-1.39
6,106.00	6.33	236.68	5,752.91	-344.04	-1,892.62	1,923.13	0.61	-0.60	-1.27
6,190.00	5.19	240.11	5,836.49	-348.47	-1,899.78	1,931.04	1.42	-1.36	4.08
6,231.94	3.92	243.78	5,878.29	-350.05	-1,902.71	1,934.23	3.10	-3.02	8.76
SR 513-12 BTV									
6,285.00	2.37	254.00	5,931.27	-351.16	-1,905.39	1,937.08	3.10	-2.93	19.25
6,379.00	2.00	261.82	6,025.20	-351.93	-1,908.89	1,940.65	0.50	-0.39	8.32
6,473.00	1.67	261.47	6,119.16	-352.36	-1,911.86	1,943.66	0.35	-0.35	-0.37
6,568.00	1.49	258.83	6,214.12	-352.81	-1,914.44	1,946.28	0.20	-0.19	-2.78
6,662.00	1.20	264.33	6,308.09	-353.14	-1,916.62	1,948.48	0.34	-0.31	5.85
6,756.00	1.19	267.70	6,402.07	-353.28	-1,918.58	1,950.42	0.08	-0.01	3.59
6,851.00	1.49	269.11	6,497.05	-353.34	-1,920.80	1,952.61	0.32	0.32	1.48
6,946.00	0.17	242.37	6,592.03	-353.42	-1,922.16	1,953.96	1.41	-1.39	-28.15
7,040.00	0.09	322.20	6,686.03	-353.43	-1,922.33	1,954.12	0.19	-0.09	84.93
7,135.00	0.09	83.49	6,781.03	-353.36	-1,922.30	1,954.08	0.17	0.00	127.67
7,229.00	0.24	332.27	6,875.03	-353.18	-1,922.32	1,954.06	0.30	0.16	-118.32
7,323.00	0.17	1.56	6,969.03	-352.86	-1,922.40	1,954.09	0.13	-0.07	31.16
7,418.00	0.24	12.71	7,064.03	-352.53	-1,922.36	1,953.97	0.08	0.07	11.74
7,512.00	0.41	21.86	7,158.03	-352.03	-1,922.19	1,953.70	0.19	0.18	9.73
7,606.00	0.35	37.61	7,252.03	-351.49	-1,921.89	1,953.30	0.13	-0.06	16.76
7,701.00	0.67	19.37	7,347.03	-350.73	-1,921.53	1,952.80	0.37	0.34	-19.20
7,795.00	0.53	359.38	7,441.02	-349.78	-1,921.35	1,952.43	0.27	-0.15	-21.27
7,889.00	0.97	346.19	7,535.01	-348.57	-1,921.54	1,952.38	0.50	0.47	-14.03
7,983.00	0.70	356.04	7,629.00	-347.23	-1,921.77	1,952.33	0.32	-0.29	10.48
8,078.00	0.92	334.62	7,723.99	-345.96	-1,922.14	1,952.44	0.39	0.23	-22.55
8,172.00	1.22	332.63	7,817.98	-344.39	-1,922.92	1,952.89	0.32	0.32	-2.12
8,266.00	1.67	324.57	7,911.95	-342.38	-1,924.18	1,953.71	0.52	0.48	-8.57
8,361.00	1.32	317.36	8,006.91	-340.45	-1,925.72	1,954.84	0.42	-0.37	-7.59

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 513-12 - Slot SR 513-12 (A7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 513-12	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)
8,456.00	1.67	326.86	8,101.88	-338.49	-1,927.22	1,955.91	0.45	0.37	10.00
8,550.00	1.58	315.08	8,195.84	-336.42	-1,928.88	1,957.12	0.37	-0.10	-12.53
8,644.00	1.76	326.04	8,289.80	-334.31	-1,930.60	1,958.38	0.39	0.19	11.66
8,739.00	1.78	332.65	8,384.76	-331.79	-1,932.10	1,959.34	0.22	0.02	6.96
8,833.00	1.85	352.96	8,478.71	-328.98	-1,932.95	1,959.61	0.68	0.07	21.61
8,928.00	1.67	357.00	8,573.67	-326.08	-1,933.21	1,959.28	0.23	-0.19	4.25
9,022.00	1.20	331.49	8,667.64	-323.85	-1,933.76	1,959.36	0.83	-0.50	-27.14
9,117.00	0.62	254.43	8,762.63	-323.11	-1,934.73	1,960.17	1.29	-0.61	-81.12
9,211.00	1.10	265.95	8,856.62	-323.31	-1,936.12	1,961.57	0.54	0.51	12.26
9,305.00	1.99	275.32	8,950.58	-323.22	-1,938.64	1,964.02	0.98	0.95	9.97
9,400.00	2.70	287.05	9,045.50	-322.41	-1,942.42	1,967.57	0.90	0.75	12.35
9,494.00	2.46	302.60	9,139.41	-320.68	-1,946.24	1,970.95	0.78	-0.26	16.54
9,589.00	1.32	333.27	9,234.36	-318.60	-1,948.45	1,972.70	1.56	-1.20	32.28
9,683.00	1.58	346.54	9,328.33	-316.37	-1,949.24	1,973.03	0.45	0.28	14.12
9,778.00	1.38	326.03	9,423.30	-314.15	-1,950.18	1,973.50	0.59	-0.21	-21.59
9,806.00	1.67	327.30	9,451.29	-313.53	-1,950.59	1,973.78	1.04	1.04	4.54
Last SDI Production MWD Survey									
9,866.00	1.67	327.30	9,511.26	-312.06	-1,951.54	1,974.41	0.00	0.00	0.00
Projection to TD - SR 513-12 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
70.00	70.00	-0.16	0.22	First SDI Gyro MWD Survey
307.00	306.39	-3.06	-13.69	Last SDI Gyro MWD Survey
384.00	382.43	-4.76	-25.67	First SDI Surface MWD Survey
1,076.00	1,039.92	-47.97	-233.46	Last SDI Surface MWD Survey
1,182.00	1,136.80	-56.29	-275.67	First SDI Production MWD Survey
9,806.00	9,451.29	-313.53	-1,950.59	Last SDI Production MWD Survey
9,866.00	9,511.26	-312.06	-1,951.54	Projection to TD

Checked By: _____ Approved By: _____ Date: _____



Well Details: SR 513-12

TVD Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1597671.40 2340246.00 39.4510824 -107.8366578 SR 513-12 (A7)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 513-12 - Slot SR 513-12 (A7), True North
 Vertical (TVD) Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
 Section (VS) Reference: Slot - SR 513-12 (A7) (0.00N, 0.00E)
 Measured Depth Reference: GL 7478' & RKB 24' @ 7502.00usft (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

12:14, January 08 2018
 Created By: Mel Mireles Jr.