



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 523-12
County & State	Garfield County, CO
SDI Job No.	OP.006873
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 121 feet to a measured depth of 9,527 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 523-12 - Slot SR 523-12 (A8)
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 523-12	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 523-12 - Slot SR 523-12 (A8)				
Well Position	+N/-S	0.00 usft	Northing:	1,597,664.40 usft	Latitude:	39.4510634
	+E/-W	0.00 usft	Easting:	2,340,248.70 usft	Longitude:	-107.8366477
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	12/25/2017	9.23	65.62	51,633

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	248.97	

Survey Program	Date	1/8/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
121.00	399.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
476.00	1,076.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,182.00	9,527.00	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
121.00	0.09	240.38	121.00	-0.05	-0.08	0.09	0.07	0.07	0.00
First SDI Gyro MWD Survey									
214.00	2.46	250.05	213.97	-0.76	-2.02	2.16	2.55	2.55	10.40
306.00	3.96	242.23	305.82	-2.92	-6.69	7.29	1.69	1.63	-8.50
399.00	5.89	248.03	398.48	-6.20	-13.96	15.25	2.14	2.08	6.24
Last SDI Gyro MWD Survey									
476.00	6.70	251.56	475.01	-9.10	-21.88	23.69	1.17	1.05	4.58

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 523-12 - Slot SR 523-12 (A8)
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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 523-12	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)
First SDI Surface MWD Survey									
569.00	7.16	249.89	567.33	-12.81	-32.47	34.90	0.54	0.49	-1.80
660.00	7.76	246.57	657.56	-17.20	-43.43	46.71	0.81	0.66	-3.65
754.00	8.20	244.29	750.65	-22.63	-55.30	59.74	0.58	0.47	-2.43
849.00	7.72	247.62	844.74	-28.00	-67.30	72.87	0.70	-0.51	3.51
943.00	6.44	254.69	938.02	-31.80	-78.22	84.42	1.64	-1.36	7.52
1,037.00	6.49	254.85	1,031.42	-34.58	-88.44	94.95	0.06	0.05	0.17
1,076.00	6.42	256.99	1,070.17	-35.64	-92.69	99.31	0.64	-0.18	5.49
Last SDI Surface MWD Survey									
1,182.00	6.88	254.03	1,175.46	-38.72	-104.57	111.50	0.54	0.43	-2.79
First SDI Production MWD Survey									
1,276.00	6.13	251.82	1,268.86	-41.84	-114.75	122.12	0.84	-0.80	-2.35
1,371.00	5.70	252.22	1,363.35	-44.86	-124.06	131.90	0.45	-0.45	0.42
1,465.00	5.46	250.94	1,456.90	-47.75	-132.73	141.03	0.29	-0.26	-1.36
1,560.00	5.25	249.00	1,551.49	-50.78	-141.06	149.89	0.29	-0.22	-2.04
1,654.00	6.86	254.88	1,644.96	-53.79	-150.50	159.77	1.83	1.71	6.26
1,749.00	6.47	255.20	1,739.32	-56.64	-161.15	170.74	0.41	-0.41	0.34
1,843.00	6.24	257.15	1,832.74	-59.12	-171.25	181.06	0.34	-0.24	2.07
1,938.00	5.39	255.73	1,927.25	-61.37	-180.61	190.60	0.91	-0.89	-1.49
2,032.00	5.13	260.36	2,020.86	-63.16	-189.03	199.11	0.53	-0.28	4.93
2,126.00	6.68	251.54	2,114.36	-65.60	-198.36	208.69	1.91	1.65	-9.38
2,221.00	6.36	252.55	2,208.74	-68.93	-208.62	219.46	0.36	-0.34	1.06
2,315.00	5.71	254.75	2,302.22	-71.72	-218.10	229.31	0.73	-0.69	2.34
2,409.00	6.99	249.01	2,395.65	-75.00	-227.95	239.68	1.52	1.36	-6.11
2,504.00	6.42	250.92	2,490.00	-78.80	-238.37	250.77	0.64	-0.60	2.01
2,598.00	6.12	250.40	2,583.43	-82.20	-248.05	261.03	0.32	-0.32	-0.55
2,693.00	5.54	254.27	2,677.94	-85.14	-257.24	270.66	0.74	-0.61	4.07
2,788.00	6.50	239.50	2,772.42	-89.12	-266.29	280.53	1.91	1.01	-15.55
2,882.00	6.40	235.49	2,865.83	-94.79	-275.19	290.87	0.49	-0.11	-4.27
2,977.00	6.07	235.46	2,960.27	-100.63	-283.69	300.91	0.35	-0.35	-0.03
3,071.00	5.50	235.60	3,053.79	-106.00	-291.50	310.12	0.61	-0.61	0.15
3,165.00	5.01	235.99	3,147.39	-110.84	-298.62	318.50	0.52	-0.52	0.41
3,260.00	4.75	234.67	3,242.05	-115.43	-305.27	326.36	0.30	-0.27	-1.39
3,354.00	5.89	241.80	3,335.64	-119.96	-312.69	334.91	1.40	1.21	7.59
3,448.00	5.60	237.59	3,429.17	-124.70	-320.82	344.20	0.54	-0.31	-4.48
3,543.00	5.10	236.95	3,523.76	-129.49	-328.27	352.87	0.53	-0.53	-0.67
3,638.00	5.10	234.32	3,618.38	-134.25	-335.24	361.09	0.25	0.00	-2.77
3,732.00	4.40	236.16	3,712.06	-138.70	-341.63	368.64	0.76	-0.74	1.96
3,826.00	6.07	242.84	3,805.66	-142.97	-349.04	377.10	1.89	1.78	7.11
3,921.00	6.33	240.77	3,900.11	-147.82	-358.08	387.28	0.36	0.27	-2.18
4,015.00	6.27	239.74	3,993.54	-152.94	-367.04	397.48	0.14	-0.06	-1.10
4,110.00	5.99	238.41	4,087.99	-158.15	-375.74	407.47	0.33	-0.29	-1.40
4,204.00	5.30	239.03	4,181.54	-162.96	-383.64	416.57	0.74	-0.73	0.66
4,298.00	6.21	244.80	4,275.06	-167.35	-391.97	425.92	1.15	0.97	6.14

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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 523-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

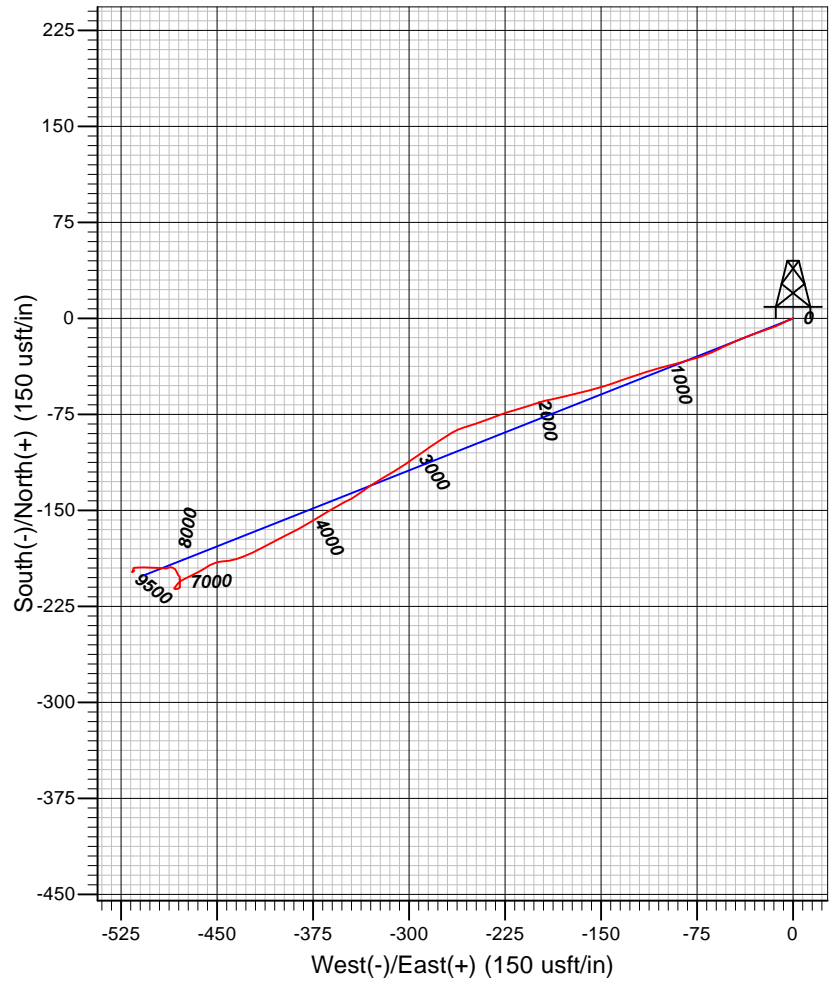
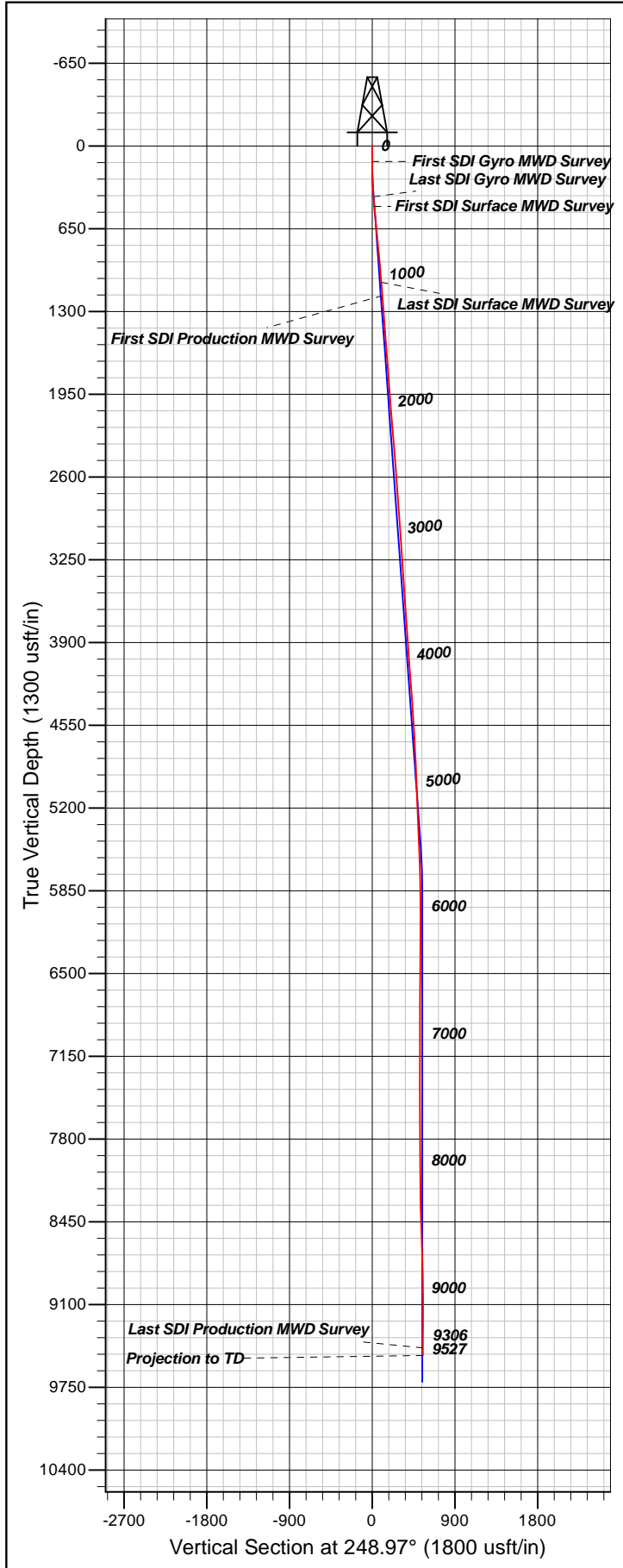
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,393.00	5.46	242.65	4,369.57	-171.62	-400.63	435.53	0.82	-0.79	-2.26
4,487.00	5.21	241.78	4,463.16	-175.69	-408.36	444.21	0.28	-0.27	-0.93
4,582.00	4.69	242.42	4,557.81	-179.53	-415.60	452.35	0.55	-0.55	0.67
4,676.00	4.29	243.89	4,651.52	-182.86	-422.17	459.67	0.44	-0.43	1.56
4,771.00	4.13	248.47	4,746.27	-185.68	-428.54	466.63	0.39	-0.17	4.82
4,865.00	3.92	252.05	4,840.03	-187.91	-434.75	473.22	0.35	-0.22	3.81
4,959.00	3.51	262.52	4,933.84	-189.27	-440.66	479.23	0.84	-0.44	11.14
5,054.00	2.88	266.68	5,028.69	-189.79	-445.92	484.33	0.71	-0.66	4.38
5,149.00	3.63	250.52	5,123.54	-190.93	-451.14	489.61	1.24	0.79	-17.01
5,244.00	2.43	242.00	5,218.40	-192.88	-455.75	494.61	1.35	-1.26	-8.97
5,339.00	3.88	238.37	5,313.26	-195.51	-460.27	499.77	1.54	1.53	-3.82
5,434.00	3.20	238.67	5,408.07	-198.57	-465.27	505.54	0.72	-0.72	0.32
5,529.00	3.25	245.92	5,502.92	-201.05	-469.99	510.84	0.43	0.05	7.63
5,624.00	3.17	248.82	5,597.78	-203.10	-474.90	516.16	0.19	-0.08	3.05
5,719.00	1.78	229.40	5,692.69	-205.01	-478.47	520.17	1.69	-1.46	-20.44
5,813.00	1.76	219.55	5,786.64	-207.07	-480.50	522.81	0.32	-0.02	-10.48
5,884.71	1.83	220.43	5,858.31	-208.79	-481.94	524.77	0.10	0.10	1.23
SR 523-12 BTV									
5,907.00	1.85	220.69	5,880.59	-209.34	-482.41	525.40	0.10	0.10	1.17
6,002.00	0.35	169.19	5,975.58	-210.78	-483.35	526.80	1.74	-1.58	-54.21
6,096.00	0.44	116.46	6,069.57	-211.23	-482.98	526.61	0.38	0.10	-56.10
6,191.00	0.44	84.73	6,164.57	-211.36	-482.29	526.01	0.25	0.00	-33.40
6,285.00	0.53	85.78	6,258.57	-211.29	-481.49	525.25	0.10	0.10	1.12
6,379.00	0.70	81.12	6,352.56	-211.17	-480.49	524.27	0.19	0.18	-4.96
6,473.00	0.65	50.16	6,446.56	-210.74	-479.52	523.20	0.39	-0.05	-32.94
6,568.00	0.62	20.48	6,541.55	-209.91	-478.92	522.35	0.34	-0.03	-31.24
6,662.00	0.88	350.42	6,635.54	-208.72	-478.86	521.87	0.49	0.28	-31.98
6,757.00	0.66	359.02	6,730.53	-207.46	-479.00	521.54	0.26	-0.23	9.05
6,851.00	0.70	10.72	6,824.53	-206.35	-478.90	521.05	0.15	0.04	12.45
6,946.00	0.88	349.98	6,919.52	-205.06	-478.92	520.61	0.35	0.19	-21.83
7,040.00	0.62	359.21	7,013.51	-203.84	-479.05	520.29	0.30	-0.28	9.82
7,135.00	0.35	346.14	7,108.51	-203.05	-479.13	520.08	0.31	-0.28	-13.76
7,229.00	0.53	16.44	7,202.50	-202.35	-479.07	519.78	0.31	0.19	32.23
7,323.00	0.32	326.27	7,296.50	-201.72	-479.09	519.57	0.43	-0.22	-53.37
7,418.00	0.44	303.58	7,391.50	-201.30	-479.55	519.84	0.20	0.13	-23.88
7,512.00	0.88	325.28	7,485.49	-200.50	-480.26	520.22	0.53	0.47	23.09
7,606.00	1.06	338.20	7,579.48	-199.10	-480.99	520.40	0.30	0.19	13.74
7,701.00	0.97	336.89	7,674.47	-197.55	-481.63	520.44	0.10	-0.09	-1.38
7,795.00	1.06	315.97	7,768.45	-196.19	-482.55	520.81	0.40	0.10	-22.26
7,889.00	0.97	302.70	7,862.44	-195.13	-483.82	521.62	0.27	-0.10	-14.12
7,984.00	0.73	283.22	7,957.43	-194.56	-485.09	522.60	0.39	-0.25	-20.51
8,078.00	0.77	276.16	8,051.42	-194.36	-486.30	523.66	0.11	0.04	-7.51
8,172.00	1.14	249.75	8,145.41	-194.61	-487.81	525.15	0.60	0.39	-28.10
8,267.00	0.97	252.77	8,240.39	-195.18	-489.46	526.90	0.19	-0.18	3.18

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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 523-12	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)
8,361.00	1.48	277.37	8,334.37	-195.26	-491.42	528.76	0.77	0.54	26.17
8,456.00	2.20	274.40	8,429.32	-194.96	-494.46	531.49	0.76	0.76	-3.13
8,550.00	2.81	273.25	8,523.23	-194.69	-498.56	535.22	0.65	0.65	-1.22
8,645.00	3.25	271.28	8,618.10	-194.50	-503.58	539.83	0.48	0.46	-2.07
8,739.00	3.23	270.44	8,711.94	-194.42	-508.89	544.76	0.05	-0.02	-0.89
8,834.00	2.26	263.15	8,806.83	-194.62	-513.42	549.07	1.08	-1.02	-7.67
8,928.00	0.44	183.25	8,900.81	-195.20	-515.28	551.01	2.37	-1.94	-85.00
9,022.00	0.88	199.51	8,994.80	-196.24	-515.55	551.63	0.50	0.47	17.30
9,117.00	0.88	211.73	9,089.79	-197.55	-516.17	552.69	0.20	0.00	12.86
9,211.00	0.26	59.33	9,183.79	-198.06	-516.37	553.05	1.19	-0.66	-162.13
9,306.00	0.53	81.83	9,278.79	-197.89	-515.75	552.41	0.32	0.28	23.68
9,400.00	0.35	25.58	9,372.78	-197.57	-515.20	551.78	0.47	-0.19	-59.84
9,467.00	0.44	37.00	9,439.78	-197.18	-514.95	551.41	0.18	0.13	17.04
Last SDI Production MWD Survey									
9,527.00	0.44	37.00	9,499.78	-196.81	-514.67	551.02	0.00	0.00	0.00
Projection to TD - SR 523-12 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
121.00	121.00	-0.05	-0.08	First SDI Gyro MWD Survey
399.00	398.48	-6.20	-13.96	Last SDI Gyro MWD Survey
476.00	475.01	-9.10	-21.88	First SDI Surface MWD Survey
1,076.00	1,070.17	-35.64	-92.69	Last SDI Surface MWD Survey
1,182.00	1,175.46	-38.72	-104.57	First SDI Production MWD Survey
9,467.00	9,439.78	-197.18	-514.95	Last SDI Production MWD Survey
9,527.00	9,499.78	-196.81	-514.67	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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Well Details: SR 523-12

TVD Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318) Level: 7478.00
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1597664.40 2340248.70 39.4510633 -107.8366476SR 523-12 (A8)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 523-12 - Slot SR 523-12 (A8), True North
 Vertical (TVD) Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
 Section (VS) Reference: Slot - SR 523-12 (A8)(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

12:52, January 08 2018
 Created By: Mel Mireles Jr.