



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 23-12
County & State	Garfield County, CO
SDI Job No.	OP.005556
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 97 feet to a measured depth of 9,591 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

27-Nov-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 23-12 - Slot SR 23-12 (B2)
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 23-12	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 23-12 - Slot SR 23-12 (B2)					
Well Position	+N/-S	0.00 usft	Northing:	1,597,710.00 usft	Latitude:	39.4511880
	+E/-W	0.00 usft	Easting:	2,340,241.80 usft	Longitude:	-107.8366762
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	11/2/2017	9.23	65.65	51,651

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	323.13	

Survey Program	Date	11/27/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
97.00	771.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
849.00	1,080.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,182.00	9,591.00	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	
97.00	0.26	264.11	97.00	-0.02	-0.22	0.11	0.27	0.27	0.00	
First SDI Gyro MWD Survey										
122.00	0.35	294.52	122.00	0.00	-0.34	0.21	0.73	0.36	121.64	
214.00	2.29	336.18	213.97	1.80	-1.34	2.25	2.22	2.11	45.28	
307.00	4.13	333.72	306.82	6.50	-3.58	7.35	1.98	1.98	-2.65	
399.00	6.77	326.43	398.40	13.99	-8.04	16.02	2.96	2.87	-7.92	
492.00	8.62	323.61	490.56	24.17	-15.21	28.46	2.03	1.99	-3.03	
584.00	9.50	323.17	581.41	35.80	-23.85	42.95	0.96	0.96	-0.48	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 23-12 - Slot SR 23-12 (B2)
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 23-12	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)
675.00	10.47	323.09	671.03	48.42	-33.32	58.73	1.07	1.07	-0.09
771.00	11.35	323.00	765.29	62.94	-44.24	76.90	0.92	0.92	-0.09
Last SDI Gyro MWD Survey									
849.00	10.52	321.22	841.88	74.62	-53.32	91.69	1.15	-1.06	-2.28
First SDI Surface MWD Survey									
943.00	10.55	319.13	934.29	87.82	-64.33	108.85	0.41	0.03	-2.22
1,038.00	11.31	318.97	1,027.57	101.42	-76.13	126.82	0.80	0.80	-0.17
1,080.00	11.70	319.66	1,068.72	107.78	-81.59	135.18	0.98	0.93	1.64
Last SDI Surface MWD Survey									
1,182.00	12.84	320.21	1,168.39	124.37	-95.54	156.82	1.12	1.12	0.54
First SDI Production MWD Survey									
1,276.00	12.42	320.26	1,260.12	140.17	-108.69	177.35	0.45	-0.45	0.05
1,371.00	12.44	321.01	1,352.89	155.98	-121.66	197.78	0.17	0.02	0.79
1,465.00	12.31	320.63	1,444.71	171.59	-134.38	217.90	0.16	-0.14	-0.40
1,559.00	12.18	319.79	1,536.57	186.91	-147.14	237.81	0.23	-0.14	-0.89
1,654.00	11.87	317.59	1,629.48	201.78	-160.20	257.54	0.58	-0.33	-2.32
1,749.00	11.22	315.17	1,722.56	215.55	-173.31	276.42	0.85	-0.68	-2.55
1,843.00	11.09	314.95	1,814.79	228.42	-186.15	294.43	0.15	-0.14	-0.23
1,938.00	10.50	315.37	1,908.11	241.04	-198.70	312.05	0.63	-0.62	0.44
2,032.00	10.42	315.91	2,000.54	253.24	-210.63	328.97	0.13	-0.09	0.57
2,126.00	9.91	316.34	2,093.07	265.19	-222.13	345.43	0.55	-0.54	0.46
2,221.00	9.67	318.34	2,186.68	277.07	-233.08	361.50	0.44	-0.25	2.11
2,315.00	9.41	319.48	2,279.38	288.81	-243.32	377.04	0.34	-0.28	1.21
2,409.00	9.06	320.01	2,372.17	300.32	-253.07	392.10	0.38	-0.37	0.56
2,504.00	8.63	321.14	2,466.04	311.60	-262.35	406.69	0.49	-0.45	1.19
2,598.00	8.18	321.24	2,559.03	322.31	-270.96	420.42	0.48	-0.48	0.11
2,693.00	7.93	322.13	2,653.09	332.75	-279.21	433.73	0.29	-0.26	0.94
2,787.00	7.83	321.12	2,746.20	342.85	-287.21	446.61	0.18	-0.11	-1.07
2,882.00	7.47	319.40	2,840.36	352.58	-295.29	459.24	0.45	-0.38	-1.81
2,976.00	7.30	320.89	2,933.58	361.85	-303.04	471.30	0.27	-0.18	1.59
3,071.00	8.88	325.92	3,027.63	372.61	-310.95	484.66	1.82	1.66	5.29
3,165.00	8.67	325.95	3,120.53	384.49	-318.99	498.98	0.22	-0.22	0.03
3,259.00	8.43	326.57	3,213.48	396.11	-326.75	512.94	0.27	-0.26	0.66
3,354.00	7.74	326.60	3,307.54	407.26	-334.11	526.27	0.73	-0.73	0.03
3,448.00	7.25	326.26	3,400.74	417.48	-340.88	538.51	0.52	-0.52	-0.36
3,543.00	8.71	325.05	3,494.81	428.36	-348.34	551.69	1.55	1.54	-1.27
3,637.00	8.20	323.51	3,587.79	439.58	-356.40	565.51	0.59	-0.54	-1.64
3,732.00	8.15	324.29	3,681.83	450.50	-364.36	579.01	0.13	-0.05	0.82
3,826.00	7.73	322.71	3,774.92	460.94	-372.08	592.00	0.50	-0.45	-1.68
3,921.00	7.55	322.31	3,869.08	470.96	-379.76	604.63	0.20	-0.19	-0.42
4,015.00	9.58	321.33	3,962.03	481.96	-388.43	618.62	2.17	2.16	-1.04
4,109.00	9.41	322.21	4,054.74	494.14	-398.02	634.12	0.24	-0.18	0.94
4,204.00	8.83	321.49	4,148.54	505.98	-407.32	649.18	0.62	-0.61	-0.76
4,298.00	8.67	321.72	4,241.44	517.19	-416.20	663.47	0.17	-0.17	0.24

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 23-12 - Slot SR 23-12 (B2)
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 23-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

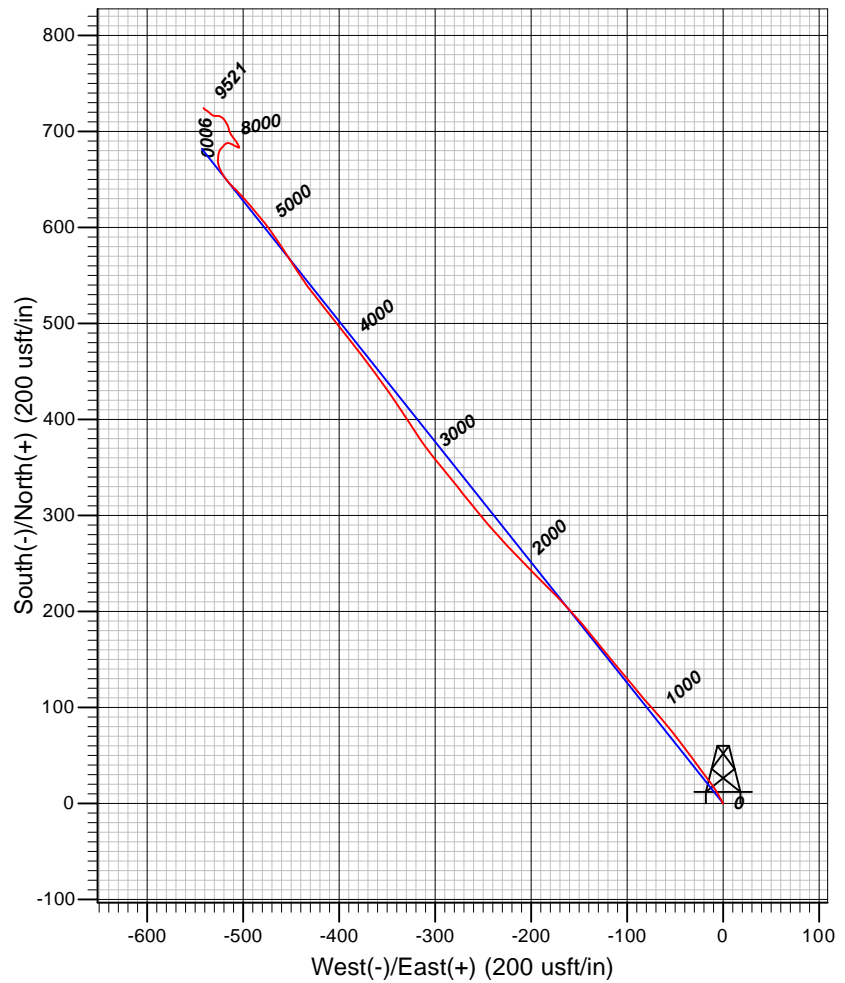
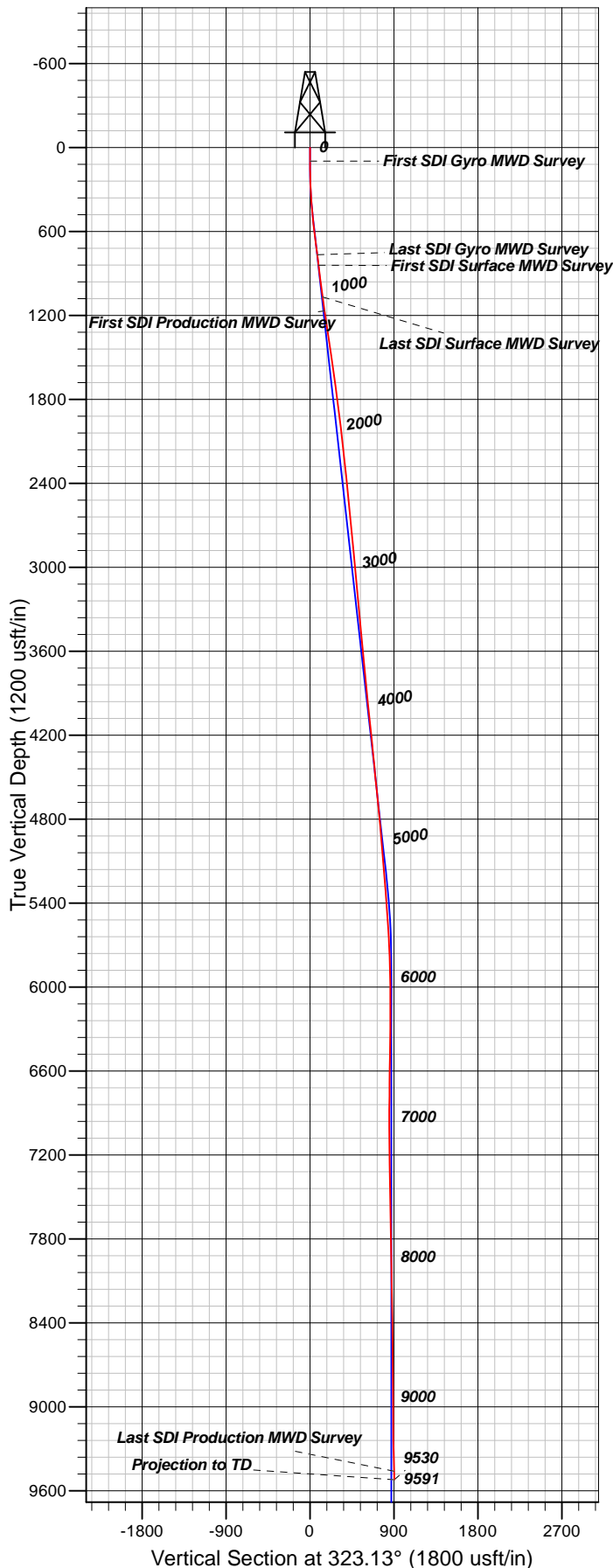
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,393.00	8.34	321.94	4,335.40	528.23	-424.89	677.52	0.35	-0.35	0.23
4,487.00	7.82	321.97	4,428.47	538.64	-433.03	690.73	0.55	-0.55	0.03
4,582.00	8.83	328.44	4,522.47	549.94	-440.83	704.45	1.45	1.06	6.81
4,676.00	8.36	327.42	4,615.41	561.85	-448.28	718.45	0.53	-0.50	-1.09
4,771.00	8.18	326.95	4,709.42	573.33	-455.69	732.08	0.20	-0.19	-0.49
4,865.00	8.06	324.81	4,802.48	584.32	-463.13	745.34	0.35	-0.13	-2.28
4,959.00	7.80	325.15	4,895.58	594.94	-470.58	758.30	0.28	-0.28	0.36
5,054.00	7.39	321.68	4,989.75	605.03	-478.05	770.85	0.65	-0.43	-3.65
5,149.00	7.10	320.47	5,083.99	614.35	-485.57	782.82	0.34	-0.31	-1.27
5,243.00	6.94	318.97	5,177.29	623.11	-493.00	794.29	0.26	-0.17	-1.60
5,338.00	6.24	317.99	5,271.66	631.28	-500.22	805.15	0.75	-0.74	-1.03
5,434.00	6.31	315.69	5,367.08	638.93	-507.40	815.58	0.27	0.07	-2.40
5,529.00	6.32	315.40	5,461.51	646.39	-514.72	825.94	0.04	0.01	-0.31
5,624.00	5.28	332.40	5,556.02	653.99	-520.41	835.44	2.10	-1.09	17.89
5,719.00	5.36	331.88	5,650.62	661.77	-524.53	844.14	0.10	0.08	-0.55
5,813.00	4.26	346	5,744.30	669.13	-526.39	851.14	3.00	-1.17	33.60
5,907.00	4.10	6.14	5,838.05	675.96	-525.82	856.26	0.27	-0.17	2.85
5,910.98	4.00	6.79	5,842.02	676.24	-525.79	856.46	2.70	-2.45	16.26
SR 23-12 BTV									
6,002.00	2.07	37.53	5,932.91	680.70	-524.41	859.20	2.70	-2.12	33.78
6,096.00	1.85	46.32	6,026.86	683.09	-522.28	859.84	0.40	-0.23	9.35
6,190.00	1.58	44.56	6,120.82	685.06	-520.27	860.21	0.29	-0.29	-1.87
6,285.00	1.91	47.96	6,215.77	687.05	-518.18	860.55	0.36	0.35	3.58
6,379.00	1.37	98.69	6,309.74	687.93	-515.90	859.89	1.58	-0.57	53.97
6,473.00	1.26	110.01	6,403.71	687.41	-513.82	858.22	0.30	-0.12	12.04
6,568.00	1.49	115.49	6,498.69	686.52	-511.73	856.25	0.28	0.24	5.77
6,662.00	1.31	117.49	6,592.66	685.50	-509.67	854.20	0.20	-0.19	2.13
6,757.00	0.96	114.66	6,687.64	684.67	-507.98	852.52	0.37	-0.37	-2.98
6,851.00	0.91	121.60	6,781.63	683.95	-506.63	851.14	0.13	-0.05	7.38
6,946.00	0.69	109.97	6,876.62	683.36	-505.45	849.96	0.29	-0.23	-12.24
7,040.00	0.70	113.12	6,970.61	682.94	-504.39	848.98	0.04	0.01	3.35
7,135.00	0.92	337.35	7,065.61	683.41	-504.15	849.22	1.58	0.23	-142.92
7,229.00	1.31	334.36	7,159.59	685.08	-504.91	851.01	0.42	0.41	-3.18
7,323.00	1.49	329.64	7,253.56	687.10	-505.99	853.27	0.23	0.19	-5.02
7,418.00	1.49	327.48	7,348.53	689.21	-507.28	855.73	0.06	0.00	-2.27
7,512.00	1.45	321.95	7,442.50	691.18	-508.67	858.14	0.16	-0.04	-5.88
7,606.00	1.25	325.19	7,536.47	692.95	-509.99	860.35	0.23	-0.21	3.45
7,701.00	1.49	321.89	7,631.44	694.78	-511.34	862.63	0.27	0.25	-3.47
7,795.00	1.35	326.08	7,725.41	696.66	-512.71	864.95	0.19	-0.15	4.46
7,889.00	1.45	339.26	7,819.39	698.69	-513.75	867.20	0.36	0.11	14.02
7,983.00	1.76	341.19	7,913.35	701.17	-514.64	869.72	0.33	0.33	2.05
8,078.00	1.75	348.79	8,008.30	703.97	-515.39	872.41	0.25	-0.01	8.00
8,172.00	1.49	333.28	8,102.27	706.47	-516.22	874.91	0.54	-0.28	-16.50

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 23-12 - Slot SR 23-12 (B2)
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 23-12	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)	
8,267.00	1.83	328.14	8,197.23	708.86	-517.57	877.63	0.39	0.36	-5.41	
8,361.00	1.49	326.25	8,291.19	711.15	-519.05	880.35	0.37	-0.36	-2.01	
8,456.00	1.14	317.37	8,386.16	712.87	-520.37	882.52	0.43	-0.37	-9.35	
8,550.00	1.14	312.01	8,480.14	714.19	-521.70	884.37	0.11	0.00	-5.70	
8,644.00	1.32	292.24	8,574.12	715.22	-523.40	886.22	0.49	0.19	-21.03	
8,739.00	0.88	294.24	8,669.11	715.94	-525.08	887.80	0.46	-0.46	2.11	
8,833.00	0.53	263.32	8,763.10	716.18	-526.17	888.65	0.54	-0.37	-32.89	
8,928.00	0.62	275.80	8,858.09	716.18	-527.11	889.22	0.16	0.09	13.14	
9,022.00	0.88	264.73	8,952.09	716.17	-528.34	889.94	0.32	0.28	-11.78	
9,117.00	0.53	264.99	9,047.08	716.06	-529.50	890.55	0.37	-0.37	0.27	
9,211.00	1.32	287.84	9,141.07	716.36	-530.97	891.67	0.91	0.84	24.31	
9,305.00	1.67	310.96	9,235.03	717.59	-533.03	893.89	0.73	0.37	24.60	
9,400.00	2.20	309.55	9,329.98	719.66	-535.48	897.01	0.56	0.56	-1.48	
9,494.00	2.37	305.07	9,423.91	721.92	-538.46	900.62	0.26	0.18	-4.77	
9,530.00	2.20	308.23	9,459.88	722.78	-539.62	901.99	0.59	-0.47	8.78	
Last SDI Production MWD Survey										
9,591.00	2.20	308.23	9,520.83	724.23	-541.46	904.25	0.00	0.00	0.00	
Projection to TD - SR 23-12 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
97.00	97.00	-0.02	-0.22	First SDI Gyro MWD Survey	
771.00	765.29	62.94	-44.24	Last SDI Gyro MWD Survey	
849.00	841.88	74.62	-53.32	First SDI Surface MWD Survey	
1,080.00	1,068.72	107.78	-81.59	Last SDI Surface MWD Survey	
1,182.00	1,168.39	124.37	-95.54	First SDI Production MWD Survey	
9,530.00	9,459.88	722.78	-539.62	Last SDI Production MWD Survey	
9,591.00	9,520.83	724.23	-541.46	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____



Well Details: SR 23-12

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 1597710.00 2340241.80 39.4511880 -107.8366762 SR 23-12 (B2)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 23-12 - Slot SR 23-12 (B2), True North
 Vertical (TVD) Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
 Section (VS) Reference: Slot - SR 23-12 (B2)(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

21:58, November 27 2017
 Created By: Mel Mireles Jr.