



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 13-12
County & State	Garfield County, CO
SDI Job No.	OP.005827
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 122 feet to a measured depth of 9,870 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

28-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 13-12 - Slot SR 13-12 (A3)
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 13-12	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 13-12 - Slot SR 13-12 (A3)					
Well Position	+N/-S	0.00 usft	Northing:	1,597,699.40 usft	Latitude:	39.4511585
	+E/-W	0.00 usft	Easting:	2,340,235.20 usft	Longitude:	-107.8366986
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	11/12/2017	9.22	65.65	51,648

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	294.42	

Survey Program	Date	11/28/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
122.00	584.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
657.00	1,068.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,181.00	9,870.00	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	
122.00	0.18	274.83	122.00	0.02	-0.19	0.18	0.15	0.15	0.00	
First SDI Gyro MWD Survey										
168.00	1.32	286.52	168.00	0.17	-0.77	0.77	2.49	2.48	25.41	
214.00	2.55	297.16	213.97	0.79	-2.19	2.32	2.77	2.67	23.13	
307.00	4.93	295.66	306.76	3.47	-7.63	8.38	2.56	2.56	-1.61	
399.00	7.13	288.63	398.25	7.00	-16.61	18.02	2.52	2.39	-7.64	
492.00	10.12	281.69	490.19	10.50	-30.08	31.73	3.40	3.22	-7.46	
584.00	13.46	279.14	580.24	13.84	-48.57	49.95	3.67	3.63	-2.77	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 13-12 - Slot SR 13-12 (A3)
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 13-12	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)
Last SDI Gyro MWD Survey									
657.00	16.57	282.26	650.74	17.40	-67.14	68.33	4.40	4.26	4.27
First SDI Surface MWD Survey									
751.00	19.76	282.64	740.04	23.73	-95.75	96.99	3.40	3.39	0.40
846.00	22.77	283.44	828.56	31.52	-129.31	130.77	3.18	3.17	0.84
940.00	24.56	284.50	914.66	40.64	-165.92	167.87	1.96	1.90	1.13
1,035.00	25.41	284.69	1,000.76	50.75	-204.75	207.41	0.90	0.89	0.20
1,068.00	25.59	284.49	1,030.55	54.33	-218.49	221.41	0.60	0.55	-0.61
Last SDI Surface MWD Survey									
1,181.00	25.09	282.64	1,132.68	65.68	-265.50	268.90	0.83	-0.44	-1.64
First SDI Production MWD Survey									
1,276.00	25.00	283.16	1,218.75	74.65	-304.70	308.31	0.25	-0.09	0.55
1,370.00	24.71	283.53	1,304.04	83.77	-343.15	347.08	0.35	-0.31	0.39
1,464.00	23.89	283.37	1,389.71	92.77	-380.77	385.05	0.88	-0.87	-0.17
1,559.00	26.64	285.02	1,475.62	102.74	-420.06	424.95	2.99	2.89	1.74
1,654.00	26.85	285.31	1,560.45	113.93	-461.32	467.15	0.26	0.22	0.31
1,748.00	26.23	285.97	1,644.55	125.25	-501.77	508.66	0.73	-0.66	0.70
1,843.00	26.22	286.19	1,729.77	136.87	-542.11	550.19	0.10	-0.01	0.23
1,937.00	26.52	286.80	1,813.99	148.73	-582.14	591.55	0.43	0.32	0.65
2,031.00	25.88	287.69	1,898.33	161.03	-621.78	632.72	0.80	-0.68	0.95
2,126.00	25.00	287.94	1,984.12	173.51	-660.63	673.26	0.93	-0.93	0.26
2,220.00	23.96	288.51	2,069.67	185.69	-697.62	711.98	1.13	-1.11	0.61
2,315.00	23.07	289.61	2,156.78	198.06	-733.45	749.72	1.04	-0.94	1.16
2,409.00	23.72	288.57	2,243.05	210.26	-768.72	786.88	0.82	0.69	-1.11
2,503.00	22.83	289.29	2,329.40	222.31	-803.86	823.85	0.99	-0.95	0.77
2,598.00	24.70	287.30	2,416.34	234.30	-840.21	861.90	2.14	1.97	-2.09
2,692.00	24.46	287.30	2,501.82	245.93	-877.54	900.70	0.26	-0.26	0.00
2,787.00	23.78	286.79	2,588.53	257.31	-914.65	939.20	0.75	-0.72	-0.54
2,881.00	25.25	286.79	2,674.05	268.58	-951.99	977.86	1.56	1.56	0.00
2,976.00	24.90	286.82	2,760.10	280.22	-990.54	1,017.77	0.37	-0.37	0.03
3,070.00	24.31	287.66	2,845.56	291.81	-1,027.92	1,056.60	0.73	-0.63	0.89
3,165.00	23.40	287.96	2,932.45	303.56	-1,064.49	1,094.76	0.97	-0.96	0.32
3,259.00	24.80	288.34	3,018.25	315.52	-1,100.97	1,132.91	1.50	1.49	0.40
3,353.00	24.01	288.97	3,103.85	327.94	-1,137.76	1,171.55	0.88	-0.84	0.67
3,448.00	23.16	289.19	3,190.91	340.37	-1,173.69	1,209.40	0.90	-0.89	0.23
3,542.00	24.09	284.85	3,277.04	351.36	-1,209.69	1,246.73	2.10	0.99	-4.62
3,637.00	23.75	285.13	3,363.88	361.32	-1,246.90	1,284.73	0.38	-0.36	0.29
3,731.00	22.67	284.75	3,450.27	370.87	-1,282.69	1,321.26	1.16	-1.15	-0.40
3,826.00	24.53	283.86	3,537.32	380.26	-1,319.55	1,358.70	1.99	1.96	-0.94
3,920.00	24.54	284.39	3,622.84	389.79	-1,357.40	1,397.11	0.23	0.01	0.56
4,014.00	23.49	285.09	3,708.70	399.52	-1,394.40	1,434.82	1.16	-1.12	0.74
4,109.00	24.36	284.23	3,795.54	409.26	-1,431.67	1,472.78	0.99	0.92	-0.91
4,203.00	24.04	283.96	3,881.27	418.64	-1,469.04	1,510.69	0.36	-0.34	-0.29
4,298.00	23.50	284.29	3,968.22	427.99	-1,506.17	1,548.36	0.59	-0.57	0.35

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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 13-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

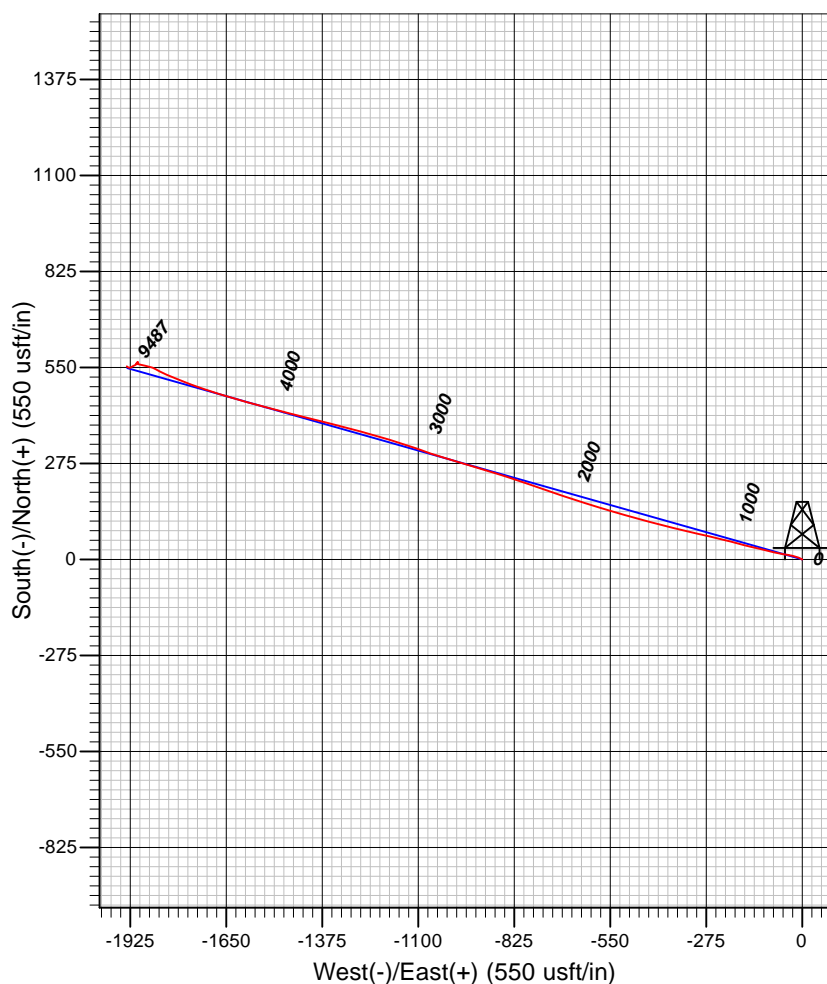
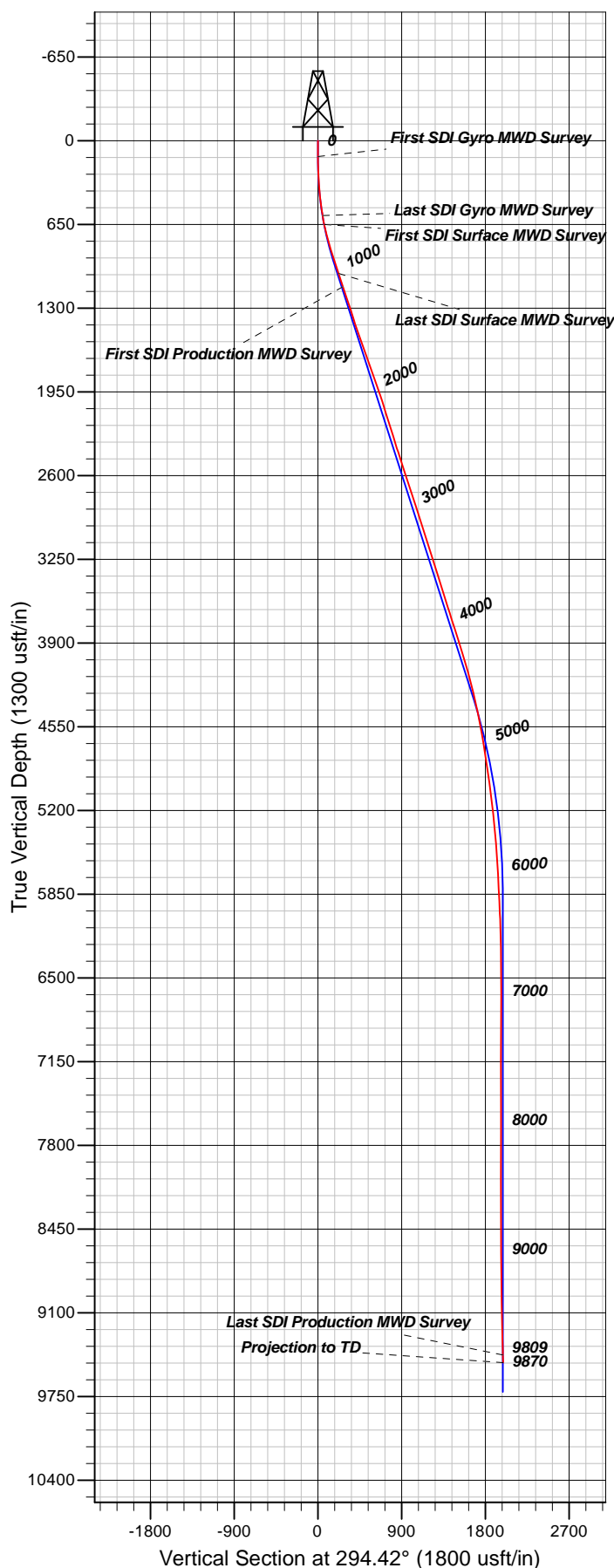
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,392.00	23.34	284.36	4,054.47	437.23	-1,542.37	1,585.15	0.17	-0.17	0.07
4,487.00	20.73	286.33	4,142.53	446.63	-1,576.75	1,620.33	2.86	-2.75	2.07
4,581.00	18.63	285.48	4,231.03	455.31	-1,607.18	1,651.64	2.25	-2.23	-0.90
4,676.00	17.52	285.76	4,321.34	463.25	-1,635.57	1,680.76	1.17	-1.17	0.29
4,770.00	16.84	286.99	4,411.15	471.07	-1,662.21	1,708.25	0.82	-0.72	1.31
4,864.00	16.13	288.33	4,501.28	479.16	-1,687.63	1,734.74	0.86	-0.76	1.43
4,959.00	13.65	288.19	4,593.08	486.81	-1,710.81	1,759.01	2.61	-2.61	-0.15
5,053.00	12.64	289.11	4,684.62	493.64	-1,731.06	1,780.27	1.10	-1.07	0.98
5,148.00	12.20	290.68	4,777.40	500.58	-1,750.28	1,800.64	0.58	-0.46	1.65
5,243.00	12.20	293.34	4,870.25	508.11	-1,768.88	1,820.69	0.59	0.00	2.80
5,338.00	10.59	290.77	4,963.38	515.18	-1,786.26	1,839.44	1.78	-1.69	-2.71
5,433.00	10.15	290.54	5,056.83	521.21	-1,802.26	1,856.51	0.47	-0.46	-0.24
5,528.00	9.03	292.94	5,150.50	527.05	-1,816.97	1,872.31	1.25	-1.18	2.53
5,623.00	7.41	297.97	5,244.52	532.83	-1,829.25	1,885.88	1.86	-1.71	5.29
5,718.00	7.44	297.99	5,338.72	538.59	-1,840.09	1,898.13	0.03	0.03	0.02
5,812.00	7.68	298.08	5,431.91	544.41	-1,851.00	1,910.47	0.26	0.26	0.10
5,907.00	6.16	288.89	5,526.21	549.04	-1,861.43	1,921.88	1.97	-1.60	-9.67
6,001.00	4.02	283.71	5,619.84	551.46	-1,869.40	1,930.14	2.33	-2.28	-5.51
6,095.00	3.86	286.42	5,713.62	553.13	-1,875.64	1,936.51	0.26	-0.17	2.88
6,190.00	4.13	281.51	5,808.38	554.72	-1,882.06	1,943.01	0.46	0.28	-5.17
6,241.88	3.94	281.32	5,860.14	555.44	-1,885.63	1,946.57	0.37	-0.37	-0.37
SR 13-12 BTV									
6,284.00	3.78	281.15	5,902.16	556.00	-1,888.41	1,949.33	0.37	-0.37	-0.40
6,378.00	3.89	285.56	5,995.95	557.45	-1,894.52	1,955.50	0.33	0.12	4.69
6,473.00	2.37	281.59	6,090.81	558.71	-1,899.55	1,960.59	1.62	-1.60	-4.18
6,567.00	2.07	293.21	6,184.74	559.77	-1,903.02	1,964.19	0.57	-0.32	12.36
6,662.00	1.98	298.78	6,279.68	561.23	-1,906.03	1,967.54	0.23	-0.09	5.86
6,756.00	0.12	209.28	6,373.66	561.93	-1,907.50	1,969.17	2.11	-1.98	-95.21
6,851.00	0.30	183.20	6,468.66	561.60	-1,907.57	1,969.09	0.21	0.19	-27.45
6,945.00	0.44	204.09	6,562.66	561.02	-1,907.73	1,968.99	0.20	0.15	22.22
7,040.00	0.22	117.38	6,657.65	560.60	-1,907.72	1,968.81	0.51	-0.23	-91.27
7,134.00	0.54	74.31	6,751.65	560.64	-1,907.13	1,968.29	0.43	0.34	-45.82
7,229.00	0.65	67.37	6,846.65	560.97	-1,906.20	1,967.58	0.14	0.12	-7.31
7,323.00	0.44	9.48	6,940.64	561.53	-1,905.65	1,967.31	0.59	-0.22	-61.59
7,417.00	0.39	345.77	7,034.64	562.20	-1,905.67	1,967.60	0.19	-0.05	-25.22
7,511.00	0.29	348.05	7,128.64	562.74	-1,905.80	1,967.94	0.11	-0.11	2.43
7,606.00	0.35	22.67	7,223.64	563.24	-1,905.73	1,968.10	0.21	0.06	36.44
7,700.00	0.34	55.66	7,317.64	563.66	-1,905.39	1,967.96	0.21	-0.01	35.10
7,795.00	0.58	73.58	7,412.63	563.96	-1,904.70	1,967.45	0.29	0.25	18.86
7,888.00	0.45	42.41	7,505.63	564.36	-1,904.00	1,966.98	0.33	-0.14	-33.52
7,983.00	0.26	341.89	7,600.63	564.84	-1,903.82	1,967.01	0.41	-0.20	-63.71
8,077.00	0.17	134.55	7,694.63	564.95	-1,903.78	1,967.03	0.45	-0.10	162.40
8,172.00	0.14	319.67	7,789.63	564.94	-1,903.76	1,967.00	0.33	-0.03	-184.08

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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 13-12	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)
8,266.00	0.13	208.93	7,883.63	564.93	-1,903.88	1,967.11	0.24	-0.01	-117.81
8,361.00	0.40	160.88	7,978.63	564.52	-1,903.83	1,966.89	0.34	0.28	-50.58
8,455.00	0.71	202.69	8,072.62	563.68	-1,903.94	1,966.65	0.52	0.33	44.48
8,549.00	1.09	215.04	8,166.61	562.41	-1,904.68	1,966.79	0.45	0.40	13.14
8,644.00	0.75	212.48	8,261.60	561.14	-1,905.54	1,967.05	0.36	-0.36	-2.69
8,738.00	0.60	211.22	8,355.59	560.20	-1,906.12	1,967.19	0.16	-0.16	-1.34
8,833.00	0.88	234.75	8,450.58	559.36	-1,906.97	1,967.62	0.43	0.29	24.77
8,927.00	0.91	234.69	8,544.57	558.51	-1,908.17	1,968.36	0.03	0.03	-0.06
9,022.00	1.32	231.14	8,639.55	557.39	-1,909.64	1,969.23	0.44	0.43	-3.74
9,116.00	1.54	246.12	8,733.53	556.19	-1,911.64	1,970.56	0.46	0.23	15.94
9,211.00	1.41	245.47	8,828.49	555.19	-1,913.87	1,972.18	0.14	-0.14	-0.68
9,305.00	1.93	239.58	8,922.45	553.91	-1,916.29	1,973.85	0.58	0.55	-6.27
9,399.00	2.47	229.33	9,016.38	551.79	-1,919.19	1,975.61	0.71	0.57	-10.90
9,494.00	2.07	250.00	9,111.31	549.87	-1,922.35	1,977.70	0.95	-0.42	21.76
9,588.00	1.87	259.52	9,205.26	549.01	-1,925.46	1,980.17	0.41	-0.21	10.13
9,683.00	2.02	289.86	9,300.20	549.30	-1,928.56	1,983.11	1.08	0.16	31.94
9,777.00	2.37	300.14	9,394.13	550.83	-1,931.79	1,986.70	0.56	0.37	10.94
9,809.00	2.46	307.78	9,426.11	551.59	-1,932.91	1,988.02	1.04	0.28	23.88
Last SDI Production MWD Survey									
9,870.00	2.46	307.78	9,487.05	553.19	-1,934.98	1,990.57	0.00	0.00	0.00
Projection to TD - SR 13-12 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
122.00	122.00	0.02	-0.19	First SDI Gyro MWD Survey
584.00	580.24	13.84	-48.57	Last SDI Gyro MWD Survey
657.00	650.74	17.40	-67.14	First SDI Surface MWD Survey
1,068.00	1,030.55	54.33	-218.49	Last SDI Surface MWD Survey
1,181.00	1,132.68	65.68	-265.50	First SDI Production MWD Survey
9,809.00	9,426.11	551.59	-1,932.91	Last SDI Production MWD Survey
9,870.00	9,487.05	553.19	-1,934.98	Projection to TD

Checked By: _____ Approved By: _____ Date: _____



Well Details: SR 13-12

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 1597699.40 2340235.20 39.4511584 -107.8366986 SR 13-12 (A3)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 13-12 - Slot SR 13-12 (A3), True North
 Vertical (TVD) Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
 Section (VS) Reference: Slot - SR 13-12 (A3)(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

21:28, November 28 2017
 Created By: Mel Mireles Jr.