



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 433-12
County & State	Garfield County, CO
SDI Job No.	OP.006149
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 9,596 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-Dec-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 433-12 - Slot SR 433-12 (B5)
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 433-12	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 433-12 - Slot SR 433-12 (B5)					
Well Position	+N/-S	0.00 usft	Northing:	1,597,689.00 usft	Latitude:	39.4511310
	+E/-W	0.00 usft	Easting:	2,340,249.90 usft	Longitude:	-107.8366457
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	11/26/2017	9.23	65.62	51,642

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	113.69	

Survey Program	Date	12/27/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
122.00	399.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
474.00	1,058.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,181.00	9,596.00	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	138.25	122.00	-0.14	0.13	0.17	0.15	0.15	0.00	
First SDI Gyro MWD Survey										
214.00	2.82	124.01	213.96	-1.52	2.10	2.53	2.88	2.87	-15.48	
307.00	5.63	117.51	306.70	-4.90	8.04	9.34	3.06	3.02	-6.99	
399.00	8.18	114.70	398.02	-9.72	17.99	20.39	2.80	2.77	-3.05	
Last SDI Gyro MWD Survey										
474.00	10.43	110.41	472.03	-14.32	29.21	32.50	3.14	3.00	-5.72	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 433-12 - Slot SR 433-12 (B5)
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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 433-12	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									
567.00	11.15	114.70	563.39	-21.02	45.27	49.89	1.16	0.77	4.61
659.00	11.30	111.32	653.63	-28.01	61.74	67.79	0.73	0.16	-3.67
752.00	11.94	112.20	744.72	-34.96	79.14	86.52	0.71	0.69	0.95
847.00	12.81	114.70	837.52	-43.07	97.81	106.87	1.08	0.92	2.63
941.00	13.03	111.45	929.14	-51.30	117.14	127.88	0.81	0.23	-3.46
1,036.00	13.14	115.45	1,021.67	-59.86	136.86	149.37	0.96	0.12	4.21
1,058.00	13.10	115.83	1,043.10	-62.02	141.36	154.36	0.43	-0.18	1.73
Last SDI Surface MWD Survey									
1,181.00	13.61	115.51	1,162.77	-74.32	166.96	182.76	0.42	0.41	-0.26
First SDI Production MWD Survey									
1,275.00	13.54	115.04	1,254.15	-83.75	186.92	204.81	0.14	-0.07	-0.50
1,370.00	13.45	115.20	1,346.52	-93.16	206.99	226.97	0.10	-0.09	0.17
1,464.00	12.98	124.31	1,438.04	-103.76	225.60	248.28	2.27	-0.50	9.69
1,559.00	12.40	123.47	1,530.72	-115.40	242.92	268.82	0.64	-0.61	-0.88
1,653.00	12.05	122.86	1,622.59	-126.29	259.58	288.45	0.40	-0.37	-0.65
1,748.00	11.87	121.19	1,715.53	-136.73	276.27	307.93	0.41	-0.19	-1.76
1,842.00	11.88	120.57	1,807.52	-146.66	292.87	327.12	0.14	0.01	-0.66
1,937.00	11.87	119.08	1,900.49	-156.38	309.83	346.55	0.32	-0.01	-1.57
2,031.00	11.67	115.82	1,992.51	-165.22	326.84	365.68	0.74	-0.21	-3.47
2,125.00	12.22	120.35	2,084.48	-174.39	343.98	385.06	1.16	0.59	4.82
2,220.00	12.27	120.05	2,177.32	-184.52	361.40	405.08	0.09	0.05	-0.32
2,314.00	12.05	118.91	2,269.21	-194.27	378.63	424.78	0.35	-0.23	-1.21
2,408.00	12.07	118.13	2,361.13	-203.65	395.89	444.35	0.17	0.02	-0.83
2,503.00	12.05	116.53	2,454.04	-212.76	413.52	464.16	0.35	-0.02	-1.68
2,597.00	11.78	124.80	2,546.02	-222.62	430.18	483.37	1.84	-0.29	8.80
2,692.00	11.64	123.43	2,639.04	-233.43	446.14	502.33	0.33	-0.15	-1.44
2,787.00	11.70	123.74	2,732.08	-244.06	462.15	521.26	0.09	0.06	0.33
2,881.00	11.42	121.81	2,824.17	-254.26	477.98	539.86	0.51	-0.30	-2.05
2,976.00	11.10	121.55	2,917.34	-264.00	493.77	558.23	0.34	-0.34	-0.27
3,070.00	10.87	118.80	3,009.62	-273.01	509.24	576.02	0.61	-0.24	-2.93
3,164.00	10.32	117.33	3,102.02	-281.14	524.49	593.25	0.65	-0.59	-1.56
3,259.00	10.00	116.02	3,195.53	-288.67	539.46	609.99	0.42	-0.34	-1.38
3,353.00	9.55	114.73	3,288.16	-295.51	553.88	625.94	0.53	-0.48	-1.37
3,447.00	9.17	113.67	3,380.91	-301.78	567.82	641.22	0.44	-0.40	-1.13
3,542.00	10.92	117.13	3,474.45	-308.92	582.77	657.78	1.95	1.84	3.64
3,637.00	11.06	117.73	3,567.71	-317.27	598.84	675.85	0.19	0.15	0.63
3,731.00	11.03	118.87	3,659.97	-325.80	614.69	693.80	0.23	-0.03	1.21
3,825.00	11.04	117.16	3,752.23	-334.25	630.58	711.74	0.35	0.01	-1.82
3,920.00	10.90	117.50	3,845.49	-342.55	646.64	729.78	0.16	-0.15	0.36
4,014.00	10.92	117.13	3,937.79	-350.72	662.44	747.54	0.08	0.02	-0.39
4,109.00	10.71	116.33	4,031.11	-358.74	678.36	765.34	0.27	-0.22	-0.84
4,203.00	10.42	116.29	4,123.51	-366.38	693.81	782.55	0.31	-0.31	-0.04
4,297.00	10.00	115.76	4,216.03	-373.69	708.79	799.20	0.46	-0.45	-0.56

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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 433-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

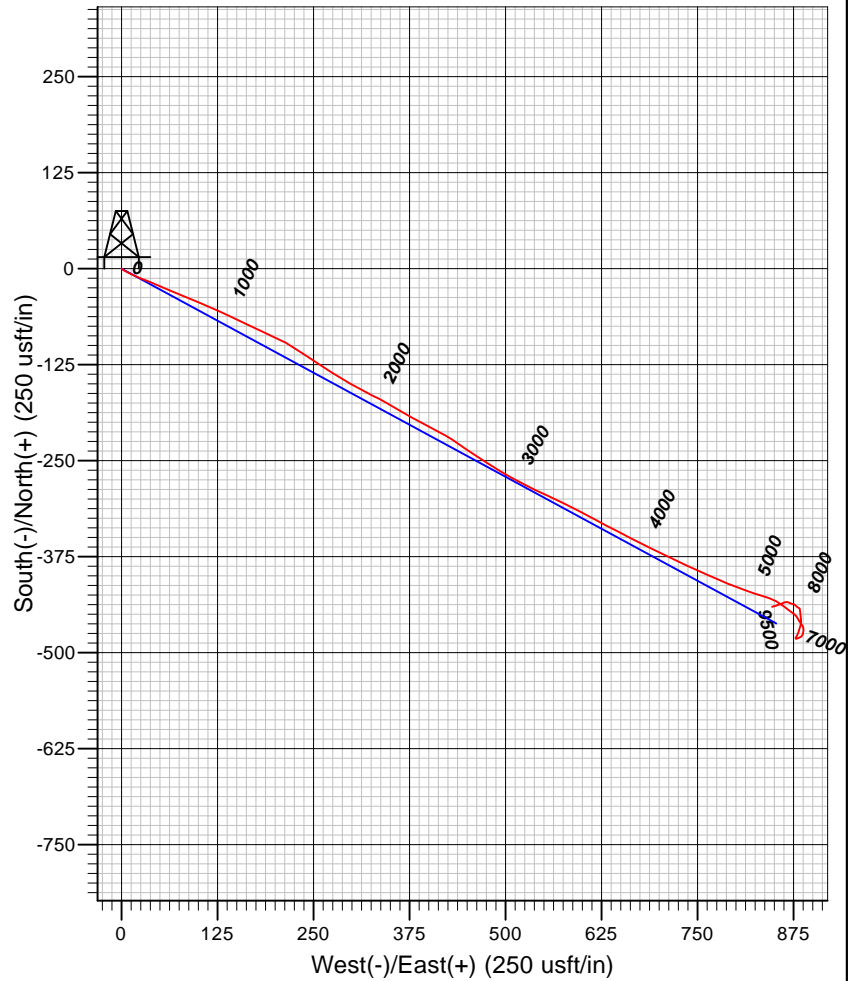
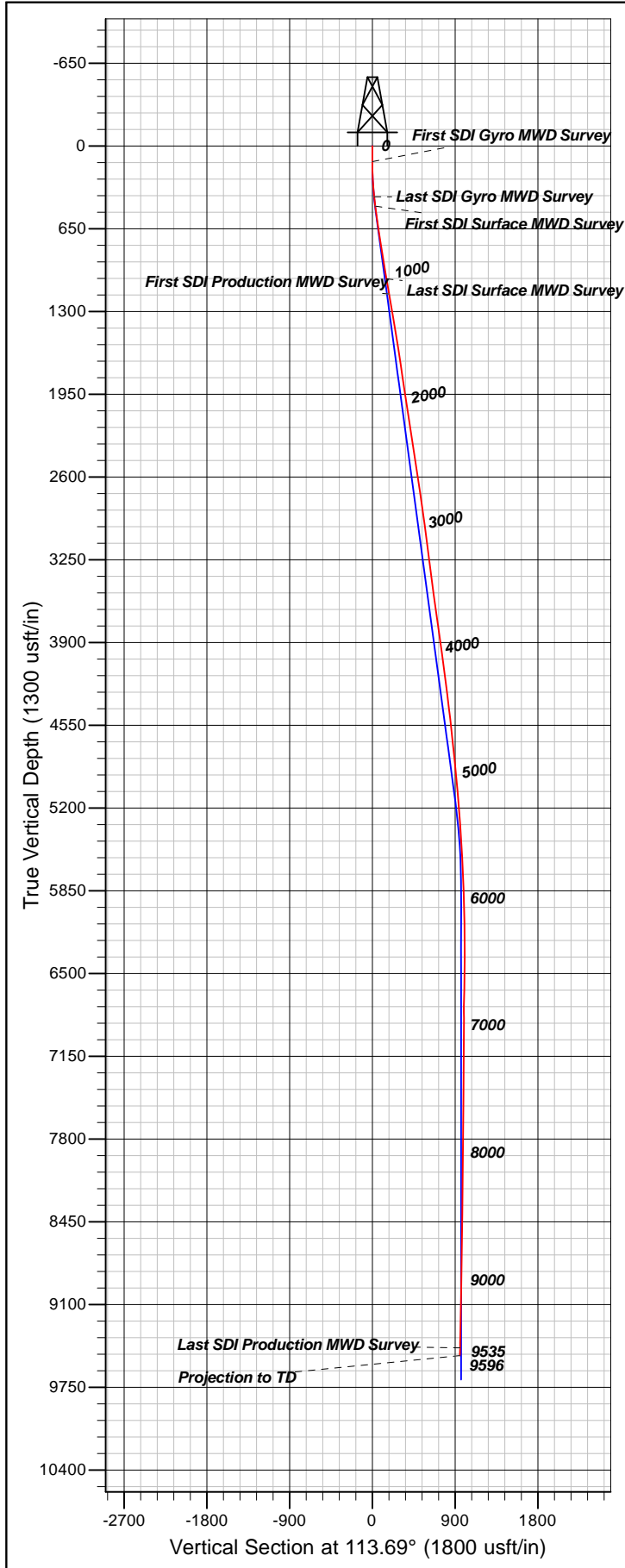
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,392.00	9.66	115.72	4,309.63	-380.73	723.40	815.41	0.36	-0.36	-0.04
4,486.00	9.34	114.39	4,402.34	-387.30	737.45	830.92	0.41	-0.34	-1.41
4,581.00	8.92	114.38	4,496.14	-393.53	751.18	845.99	0.44	-0.44	-0.01
4,675.00	8.70	113.01	4,589.03	-399.31	764.36	860.39	0.32	-0.23	-1.46
4,770.00	8.48	113.84	4,682.96	-404.95	777.38	874.58	0.27	-0.23	0.87
4,864.00	8.00	111.88	4,775.99	-410.19	789.79	888.04	0.59	-0.51	-2.09
4,958.00	7.52	110.54	4,869.13	-414.79	801.62	900.72	0.55	-0.51	-1.43
5,053.00	7.11	109.38	4,963.36	-418.92	812.99	912.79	0.46	-0.43	-1.22
5,148.00	6.79	109.70	5,057.66	-422.77	823.82	924.26	0.34	-0.34	0.34
5,243.00	6.50	108.39	5,152.02	-426.35	834.21	935.22	0.34	-0.31	-1.38
5,338.00	7.15	107.95	5,246.35	-429.87	844.94	946.45	0.69	0.68	-0.46
5,433.00	5.78	124.04	5,340.75	-434.37	854.53	957.04	2.38	-1.44	16.94
5,528.00	4.89	126.54	5,435.34	-439.46	861.74	965.70	0.97	-0.94	2.63
5,623.00	4.92	126.29	5,529.99	-444.28	868.28	973.62	0.04	0.03	-0.26
5,718.00	4.64	125.71	5,624.66	-448.94	874.68	981.35	0.30	-0.29	-0.61
5,812.00	3.68	148.27	5,718.42	-453.72	879.36	987.56	2.00	-1.02	24.00
5,906.00	3.43	152.92	5,812.24	-458.79	882.22	992.22	0.41	-0.27	4.95
5,932.92	3.36	149.07	5,839.11	-460.19	883.00	993.49	0.88	-0.24	-14.31
SR 433-12 BTV									
6,001.00	3.27	138.80	5,907.07	-463.36	885.30	996.87	0.88	-0.14	-15.08
6,095.00	1.76	164.88	6,000.98	-466.77	887.44	1,000.20	1.98	-1.61	27.74
6,190.00	1.32	184.47	6,095.95	-469.27	887.74	1,001.48	0.72	-0.46	20.62
6,284.00	1.14	180.08	6,189.93	-471.29	887.65	1,002.21	0.22	-0.19	-4.67
6,378.00	1.29	190.70	6,283.91	-473.26	887.46	1,002.82	0.29	0.16	11.30
6,472.00	2.11	187.55	6,377.87	-476.02	887.03	1,003.54	0.88	0.87	-3.35
6,567.00	2.55	234.42	6,472.79	-478.98	885.08	1,002.95	2.00	0.46	49.34
6,661.00	2.81	247.44	6,566.69	-481.08	881.26	1,000.29	0.70	0.28	13.85
6,756.00	1.21	265.22	6,661.63	-482.06	878.11	997.79	1.79	-1.68	18.72
6,850.00	1.41	21.68	6,755.62	-481.07	877.54	996.88	2.37	0.21	123.89
6,945.00	2.85	29.32	6,850.55	-477.92	879.13	997.07	1.54	1.52	8.04
7,039.00	2.86	21.20	6,944.43	-473.70	881.12	997.20	0.43	0.01	-8.64
7,134.00	2.46	17.75	7,039.33	-469.55	882.60	996.88	0.45	-0.42	-3.63
7,228.00	2.43	13.77	7,133.25	-465.69	883.69	996.33	0.18	-0.03	-4.23
7,322.00	1.99	9.87	7,227.18	-462.14	884.45	995.60	0.49	-0.47	-4.15
7,417.00	2.09	359.19	7,322.12	-458.79	884.70	994.49	0.41	0.11	-11.24
7,511.00	2.06	351.19	7,416.06	-455.40	884.42	992.87	0.31	-0.03	-8.51
7,605.00	2.09	355.47	7,509.99	-452.03	884.03	991.15	0.17	0.03	4.55
7,700.00	2.19	355.67	7,604.93	-448.49	883.75	989.48	0.11	0.11	0.21
7,794.00	2.31	348.10	7,698.86	-444.84	883.23	987.53	0.34	0.13	-8.05
7,888.00	0.45	347.24	7,792.82	-442.63	882.76	986.21	1.98	-1.98	-0.91
7,983.00	0.44	294.69	7,887.82	-442.11	882.34	985.62	0.41	-0.01	-55.32
8,077.00	0.47	283.67	7,981.82	-441.87	881.64	984.88	0.10	0.03	-11.72
8,171.00	0.70	312.18	8,075.81	-441.40	880.84	983.96	0.39	0.24	30.33
8,266.00	1.14	305.50	8,170.80	-440.46	879.64	982.48	0.48	0.46	-7.03

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Well:	SR 433-12	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)
8,360.00	1.14	315.87	8,264.78	-439.24	878.23	980.70	0.22	0.00	11.03
8,455.00	1.13	314.50	8,359.76	-437.91	876.90	978.95	0.03	-0.01	-1.44
8,549.00	0.70	298.12	8,453.75	-436.99	875.73	977.51	0.53	-0.46	-17.43
8,644.00	0.62	260.68	8,548.75	-436.80	874.71	976.50	0.45	-0.08	-39.41
8,738.00	0.70	279.57	8,642.74	-436.78	873.65	975.52	0.25	0.09	20.10
8,833.00	1.23	296.18	8,737.73	-436.24	872.16	973.94	0.63	0.56	17.48
8,927.00	1.76	293.90	8,831.69	-435.21	869.93	971.49	0.57	0.56	-2.43
9,021.00	2.20	285.11	8,925.64	-434.15	866.87	968.26	0.57	0.47	-9.35
9,116.00	1.85	243.54	9,020.58	-434.36	863.74	965.47	1.55	-0.37	-43.76
9,210.00	2.01	248.55	9,114.53	-435.64	860.85	963.34	0.25	0.17	5.33
9,305.00	2.11	251.18	9,209.47	-436.81	857.64	960.87	0.14	0.11	2.77
9,409.00	2.29	250.04	9,313.39	-438.14	853.87	957.96	0.18	0.17	-1.10
9,494.00	2.11	251.01	9,398.33	-439.23	850.80	955.58	0.22	-0.21	1.14
9,535.00	2.20	257.25	9,439.30	-439.65	849.32	954.39	0.61	0.22	15.22
Last SDI Production MWD Survey									
9,596.00	2.20	257.25	9,500.26	-440.17	847.03	952.51	0.00	0.00	0.00
Projection to TD - SR 433-12 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
122.00	122.00	-0.14	0.13	First SDI Gyro MWD Survey
399.00	398.02	-9.72	17.99	Last SDI Gyro MWD Survey
474.00	472.03	-14.32	29.21	First SDI Surface MWD Survey
1,058.00	1,043.10	-62.02	141.36	Last SDI Surface MWD Survey
1,181.00	1,162.77	-74.32	166.96	First SDI Production MWD Survey
9,535.00	9,439.30	-439.65	849.32	Last SDI Production MWD Survey
9,596.00	9,500.26	-440.17	847.03	Projection to TD

Checked By: _____ Approved By: _____ Date: _____



Well Details: SR 433-12

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 1597689.00 2340249.90 39.4511309 -107.8366456SR 433-12 (B5)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 433-12 - Slot SR 433-12 (B5), True North
 Vertical (TVD) Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
 Section (VS) Reference: Slot - SR 433-12 (B5)(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

10:24, December 27 2017
 Created By: Mel Mireles Jr.