



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 14-12
County & State	Garfield County, CO
SDI Job No.	OP.007046
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 82 feet to a measured depth of 9,912 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 14-12 - Slot SR 14-12 (B8)
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 14-12	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 14-12 - Slot SR 14-12 (B8)				
Well Position	+N/-S	0.00 usft	Northing:	1,597,668.10 usft	Latitude:	39.4510742
	+E/-W	0.00 usft	Easting:	2,340,258.00 usft	Longitude:	-107.8366151
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	1/2/2018	9.23	65.62	51,630

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	258.12	

Survey Program	Date	1/8/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
82.00	862.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
941.00	1,080.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,178.00	9,912.00	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	
82.00	0.09	3.52	82.00	0.06	0.00	-0.02	0.11	0.11	0.00	
First SDI Gyro MWD Survey										
121.00	0.97	277.38	121.00	0.14	-0.32	0.29	2.48	2.26	-220.87	
214.00	2.55	263.23	213.95	-0.01	-3.16	3.09	1.75	1.70	-15.22	
305.00	3.17	257.26	304.84	-0.80	-7.62	7.62	0.75	0.68	-6.56	
398.00	3.78	259.63	397.67	-1.92	-13.14	13.26	0.67	0.66	2.55	
489.00	6.86	264.11	488.26	-3.02	-21.50	21.66	3.41	3.38	4.92	
581.00	9.85	265.08	579.28	-4.25	-34.81	34.94	3.25	3.25	1.05	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 14-12 - Slot SR 14-12 (B8)
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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 14-12	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)
673.00	13.64	264.11	669.33	-6.04	-53.45	53.55	4.13	4.12	-1.05
767.00	16.98	261.56	759.99	-9.20	-78.06	78.28	3.62	3.55	-2.71
862.00	19.62	255.67	850.18	-15.18	-107.24	108.07	3.39	2.78	-6.20
Last SDI Gyro MWD Survey									
941.00	20.59	253.89	924.37	-22.32	-133.44	135.18	1.45	1.23	-2.25
First SDI Surface MWD Survey									
1,036.00	21.81	250.84	1,012.94	-32.75	-166.16	169.34	1.73	1.28	-3.21
1,080.00	21.72	250.14	1,053.80	-38.20	-181.54	185.51	0.62	-0.20	-1.59
Last SDI Surface MWD Survey									
1,178.00	21.76	248.97	1,144.83	-50.88	-215.55	221.41	0.44	0.04	-1.19
First SDI Production MWD Survey									
1,273.00	22.36	251.50	1,232.88	-62.93	-249.12	256.74	1.18	0.63	2.66
1,367.00	23.64	251.91	1,319.41	-74.45	-283.99	293.24	1.37	1.36	0.44
1,462.00	25.28	249.98	1,405.88	-87.31	-321.16	332.26	1.92	1.73	-2.03
1,556.00	24.87	249.54	1,491.02	-101.09	-358.54	371.67	0.48	-0.44	-0.47
1,651.00	24.98	249.61	1,577.17	-115.07	-396.06	411.26	0.12	0.12	0.07
1,746.00	24.83	248.72	1,663.34	-129.29	-433.45	450.78	0.42	-0.16	-0.94
1,840.00	24.45	247.41	1,748.78	-143.93	-469.80	489.37	0.71	-0.40	-1.39
1,934.00	24.15	246.72	1,834.45	-159.00	-505.42	527.33	0.44	-0.32	-0.73
2,029.00	24.48	249.42	1,921.03	-173.60	-541.70	565.84	1.22	0.35	2.84
2,123.00	23.47	250.25	2,006.91	-186.77	-577.56	603.64	1.13	-1.07	0.88
2,218.00	24.99	250.93	2,093.54	-199.72	-614.33	642.29	1.63	1.60	0.72
2,312.00	24.31	251.97	2,178.98	-212.20	-651.49	681.23	0.86	-0.72	1.11
2,406.00	23.20	252.73	2,265.01	-223.69	-687.57	718.90	1.22	-1.18	0.81
2,501.00	25.09	252.99	2,351.70	-235.13	-724.71	757.59	1.99	1.99	0.27
2,595.00	24.20	252.32	2,437.13	-246.82	-762.12	796.61	0.99	-0.95	-0.71
2,690.00	25.75	252.42	2,523.25	-258.96	-800.35	836.52	1.63	1.63	0.11
2,784.00	25.42	253.13	2,608.03	-270.99	-839.12	876.94	0.48	-0.35	0.76
2,879.00	24.62	252.77	2,694.12	-282.76	-877.53	916.95	0.86	-0.84	-0.38
2,973.00	23.79	251.71	2,779.85	-294.51	-914.24	955.29	1.00	-0.88	-1.13
3,068.00	25.42	250.89	2,866.22	-307.20	-951.70	994.56	1.75	1.72	-0.86
3,162.00	24.62	252.34	2,951.40	-319.75	-989.42	1,034.05	1.07	-0.85	1.54
3,256.00	26.36	254.03	3,036.25	-331.43	-1,028.14	1,074.35	2.01	1.85	1.80
3,351.00	25.33	254.23	3,121.75	-342.76	-1,067.98	1,115.67	1.09	-1.08	0.21
3,445.00	23.97	254.08	3,207.18	-353.46	-1,105.69	1,154.78	1.45	-1.45	-0.16
3,540.00	25.86	252.82	3,293.33	-364.87	-1,144.05	1,194.66	2.07	1.99	-1.33
3,634.00	24.66	253.61	3,378.34	-376.46	-1,182.45	1,234.62	1.33	-1.28	0.84
3,729.00	22.47	253.01	3,465.42	-387.36	-1,218.83	1,272.47	2.32	-2.31	-0.63
3,823.00	23.80	250.83	3,551.86	-398.84	-1,253.92	1,309.18	1.68	1.41	-2.32
3,918.00	24.73	249.35	3,638.46	-412.14	-1,290.62	1,347.83	1.17	0.98	-1.56
4,012.00	23.43	248.63	3,724.28	-425.89	-1,326.43	1,385.70	1.42	-1.38	-0.77
4,106.00	24.27	248.29	3,810.25	-439.84	-1,361.78	1,423.17	0.91	0.89	-0.36
4,201.00	23.89	251.24	3,896.99	-453.25	-1,398.14	1,461.50	1.33	-0.40	3.11
4,295.00	25.74	251.32	3,982.31	-465.91	-1,435.50	1,500.67	1.97	1.97	0.09

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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 14-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

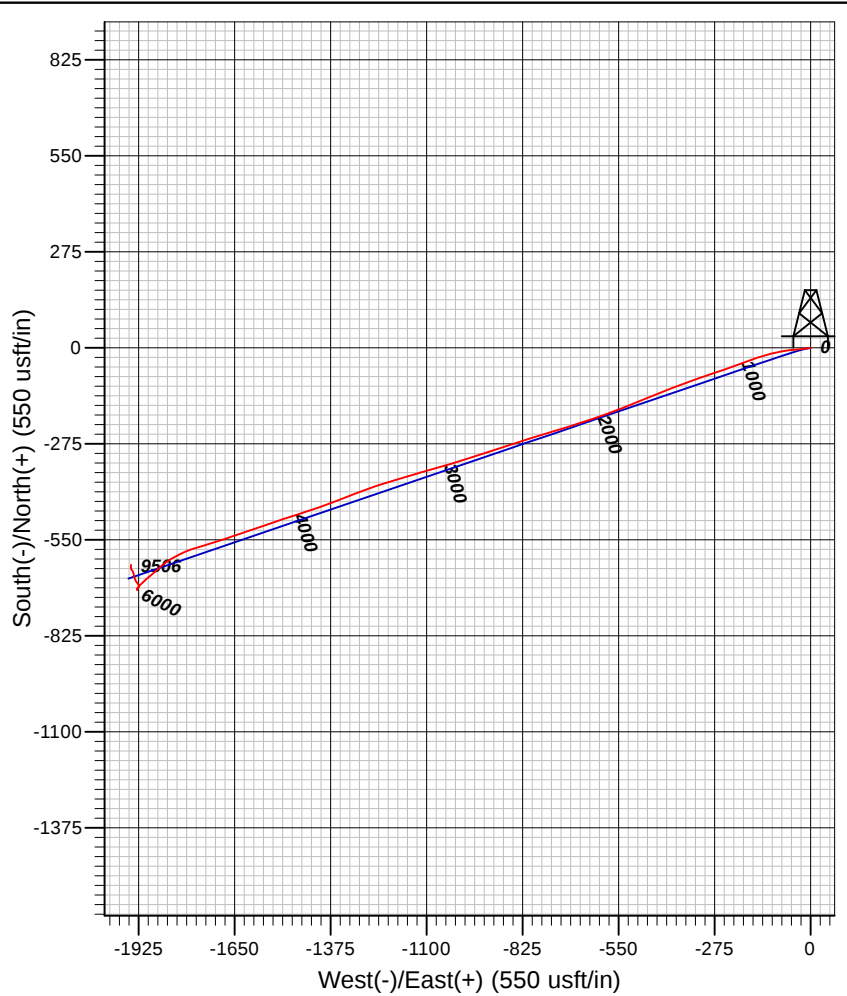
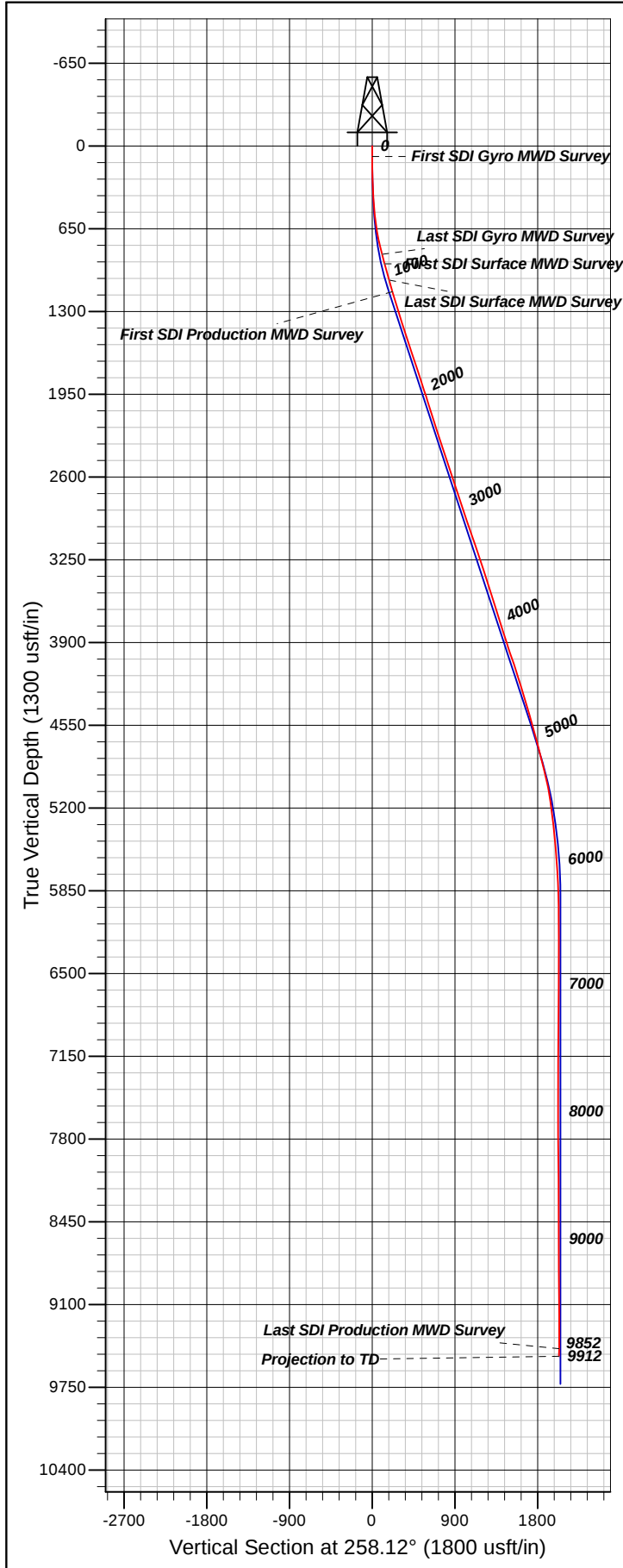
Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,389.00	25.16	252.05	4,067.19	-478.61	-1,473.85	1,540.81	0.70	-0.62	0.78	
4,484.00	23.71	252.54	4,153.67	-490.56	-1,511.28	1,579.90	1.54	-1.53	0.52	
4,579.00	24.26	250.63	4,240.47	-502.77	-1,547.91	1,618.26	1.00	0.58	-2.01	
4,673.00	22.95	250.30	4,326.61	-515.35	-1,583.39	1,655.57	1.40	-1.39	-0.35	
4,767.00	21.62	251.41	4,413.58	-527.05	-1,617.06	1,690.92	1.48	-1.41	1.18	
4,862.00	20.40	252.60	4,502.27	-537.58	-1,649.44	1,724.79	1.36	-1.28	1.25	
4,956.00	21.08	251.53	4,590.17	-547.84	-1,681.11	1,757.89	0.83	0.72	-1.14	
5,051.00	20.14	251.72	4,679.09	-558.38	-1,712.85	1,791.11	0.99	-0.99	0.20	
5,145.00	20.92	254.10	4,767.12	-568.05	-1,744.35	1,823.94	1.22	0.83	2.53	
5,240.00	19.26	250.05	4,856.34	-578.05	-1,775.40	1,856.37	2.28	-1.75	-4.26	
5,335.00	18.29	245.04	4,946.29	-589.68	-1,803.64	1,886.41	1.98	-1.02	-5.27	
5,430.00	16.00	240.47	5,037.07	-602.43	-1,828.55	1,913.41	2.79	-2.41	-4.81	
5,525.00	13.45	232.21	5,128.95	-615.66	-1,848.68	1,935.83	3.47	-2.68	-8.69	
5,620.00	10.75	227.88	5,221.84	-628.37	-1,863.99	1,953.43	3.00	-2.84	-4.56	
5,715.00	9.74	227.48	5,315.32	-639.74	-1,876.48	1,968.00	1.07	-1.06	-0.42	
5,810.00	9.27	229.73	5,409.02	-650.12	-1,888.24	1,981.64	0.63	-0.49	2.37	
5,904.00	8.88	229.40	5,501.84	-659.74	-1,899.53	1,994.67	0.42	-0.41	-0.35	
5,998.00	6.63	227.79	5,594.97	-668.10	-1,909.06	2,005.71	2.40	-2.39	-1.71	
6,093.00	6.25	226.36	5,689.37	-675.36	-1,916.86	2,014.84	0.43	-0.40	-1.51	
6,187.00	3.55	222.08	5,783.02	-681.05	-1,922.52	2,021.55	2.90	-2.87	-4.55	
6,282.00	2.90	214.10	5,877.87	-685.22	-1,925.84	2,025.66	0.83	-0.68	-8.40	
6,283.76	2.90	213.93	5,879.63	-685.30	-1,925.88	2,025.72	0.50	-0.08	-9.81	
SR 14-12 BTV										
6,376.00	2.86	204.71	5,971.75	-689.32	-1,928.15	2,028.76	0.50	-0.04	-9.99	
6,470.00	0.70	209.53	6,065.70	-691.95	-1,929.41	2,030.54	2.30	-2.30	5.13	
6,564.00	0.24	162.19	6,159.70	-692.64	-1,929.63	2,030.90	0.60	-0.49	-50.36	
6,659.00	0.09	1.44	6,254.70	-692.76	-1,929.57	2,030.86	0.34	-0.16	-169.21	
6,753.00	0.37	27.83	6,348.70	-692.41	-1,929.43	2,030.65	0.31	0.30	28.07	
6,848.00	0.68	0.04	6,443.69	-691.58	-1,929.29	2,030.34	0.41	0.33	-29.25	
6,943.00	0.60	18.33	6,538.69	-690.54	-1,929.13	2,029.97	0.23	-0.08	19.25	
7,037.00	0.97	15.47	6,632.68	-689.31	-1,928.76	2,029.36	0.40	0.39	-3.04	
7,132.00	0.53	27.25	6,727.67	-688.14	-1,928.35	2,028.71	0.49	-0.46	12.40	
7,226.00	0.44	70.41	6,821.67	-687.63	-1,927.81	2,028.08	0.39	-0.10	45.91	
7,320.00	0.97	51.86	6,915.66	-687.02	-1,926.84	2,027.01	0.61	0.56	-19.73	
7,415.00	0.37	50.38	7,010.65	-686.33	-1,925.97	2,026.02	0.63	-0.63	-1.56	
7,509.00	0.53	56.69	7,104.65	-685.90	-1,925.37	2,025.34	0.18	0.17	6.71	
7,603.00	0.44	54.32	7,198.65	-685.45	-1,924.72	2,024.61	0.10	-0.10	-2.52	
7,698.00	0.26	35.77	7,293.65	-685.06	-1,924.30	2,024.12	0.22	-0.19	-19.53	
7,792.00	0.35	19.34	7,387.64	-684.62	-1,924.08	2,023.81	0.13	0.10	-17.48	
7,886.00	0.53	1.94	7,481.64	-683.91	-1,923.97	2,023.56	0.24	0.19	-18.51	
7,980.00	0.95	346.39	7,575.63	-682.72	-1,924.14	2,023.48	0.49	0.45	-16.54	
8,075.00	1.17	338.41	7,670.62	-681.05	-1,924.68	2,023.66	0.28	0.23	-8.40	
8,169.00	1.06	347.26	7,764.60	-679.31	-1,925.22	2,023.84	0.22	-0.12	9.41	

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Well:	SR 14-12	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)	
8,263.00	1.23	322.65	7,858.58	-677.66	-1,926.03	2,024.29	0.55	0.18	-26.18	
8,358.00	1.67	326.60	7,953.55	-675.70	-1,927.41	2,025.23	0.47	0.46	4.16	
8,452.00	1.76	316.94	8,047.51	-673.50	-1,929.15	2,026.48	0.32	0.10	-10.28	
8,547.00	2.02	323.70	8,142.46	-671.08	-1,931.13	2,027.93	0.36	0.27	7.12	
8,641.00	2.20	329.42	8,236.39	-668.19	-1,933.03	2,029.19	0.29	0.19	6.09	
8,736.00	2.20	339.08	8,331.32	-664.92	-1,934.61	2,030.06	0.39	0.00	10.17	
8,830.00	1.76	340.93	8,425.27	-661.87	-1,935.73	2,030.53	0.47	-0.47	1.97	
8,924.00	1.93	336.01	8,519.22	-659.06	-1,936.84	2,031.04	0.25	0.18	-5.23	
9,019.00	2.14	349.19	8,614.16	-655.86	-1,937.82	2,031.34	0.54	0.22	13.87	
9,114.00	3.20	350.27	8,709.06	-651.50	-1,938.61	2,031.21	1.12	1.12	1.14	
9,208.00	2.32	345.23	8,802.95	-647.08	-1,939.53	2,031.21	0.97	-0.94	-5.36	
9,302.00	3.37	342.29	8,896.83	-642.60	-1,940.86	2,031.58	1.13	1.12	-3.13	
9,397.00	2.20	319.04	8,991.72	-638.57	-1,942.90	2,032.75	1.69	-1.23	-24.47	
9,491.00	2.20	321.94	9,085.65	-635.78	-1,945.20	2,034.43	0.12	0.00	3.09	
9,586.00	1.91	345.76	9,180.59	-632.81	-1,946.71	2,035.30	0.94	-0.31	25.07	
9,680.00	2.11	357.72	9,274.53	-629.57	-1,947.17	2,035.07	0.49	0.21	12.72	
9,775.00	1.85	356.93	9,369.47	-626.29	-1,947.32	2,034.55	0.28	-0.27	-0.83	
9,852.00	1.85	0.70	9,446.43	-623.80	-1,947.37	2,034.08	0.16	0.00	4.90	
Last SDI Production MWD Survey										
9,912.00	1.85	0.70	9,506.40	-621.87	-1,947.35	2,033.66	0.00	0.00	0.00	
Projection to TD - SR 14-12 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
82.00	82.00	0.06	0.00	First SDI Gyro MWD Survey	
862.00	850.18	-15.18	-107.24	Last SDI Gyro MWD Survey	
941.00	924.37	-22.32	-133.44	First SDI Surface MWD Survey	
1,080.00	1,053.80	-38.20	-181.54	Last SDI Surface MWD Survey	
1,178.00	1,144.83	-50.88	-215.55	First SDI Production MWD Survey	
9,852.00	9,446.43	-623.80	-1,947.37	Last SDI Production MWD Survey	
9,912.00	9,506.40	-621.87	-1,947.35	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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Well Details: SR 14-12

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 1597668.10 2340258.00 39.4510742 -107.8366150 SR 14-12 (B8)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 14-12 - Slot SR 14-12 (B8), True North
 Vertical (TVD) Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
 Section (VS) Reference: Slot - SR 14-12 (B8)(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

16:36, January 08 2018
 Created By: Mel Mireles Jr.