



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.	NR 611-3
County & State	Garfield County, CO
SDI Job No.	OP.012408
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 10,535 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

04-Sep-18

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well NR 611-3 - Slot NR 611-3 (A5)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Site:	NR 23-3 Pad	MD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Well:	NR 611-3	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		NR 23-3 Pad			
Site Position:		Northing:	1,634,904.55 usft	Latitude:	39.5525224
From:	Map	Easting:	2,329,757.66 usft	Longitude:	-107.8772377
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.50 °

Well	NR 611-3 - Slot NR 611-3 (A5)					
Well Position	+N/-S	0.00 usft	Northing:	1,634,934.63 usft	Latitude:	39.5526033
	+E/-W	0.00 usft	Easting:	2,329,735.25 usft	Longitude:	-107.8773199
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,720.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/17/2018	9.43	65.80	51,546

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	315.19	

Survey Program	Date	9/4/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
121.00	673.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
745.00	1,070.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,157.00	10,535.00	Survey #3 - Production MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	

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	0.26	238.80	121.00	-0.14	-0.23	0.06	0.21	0.21	0.00	
First SDI Gyro MWD Survey										
213.00	2.46	293.20	212.97	0.53	-2.23	1.94	2.52	2.39	59.13	
304.00	3.26	293.91	303.86	2.35	-6.39	6.17	0.88	0.88	0.78	
396.00	3.78	283.97	395.68	4.14	-11.72	11.20	0.87	0.57	-10.80	
489.00	4.40	291.80	488.45	6.20	-18.01	17.09	0.90	0.67	8.42	
581.00	6.60	316.93	580.03	11.38	-24.90	25.62	3.49	2.39	27.32	
673.00	10.21	324.40	671.03	21.87	-33.26	38.96	4.09	3.92	8.12	

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Site:	NR 23-3 Pad	MD Reference:	GL 6720' & RKB 24' @ 6744.00usft
Well:	NR 611-3	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									
745.00	12.51	319.56	741.61	33.00	-42.03	53.03	3.46	3.19	-6.72
First SDI Surface MWD Survey									
840.00	15.27	316.66	833.83	49.93	-57.30	75.80	3.00	2.91	-3.05
934.00	17.66	317.79	923.97	69.50	-75.37	102.43	2.57	2.54	1.20
1,029.00	20.49	322.14	1,013.75	93.30	-95.27	133.33	3.33	2.98	4.58
1,070.00	21.10	322.58	1,052.08	104.83	-104.15	147.78	1.54	1.49	1.07
Last SDI Surface MWD Survey									
1,157.00	22.77	325.19	1,132.78	131.09	-123.28	179.89	2.22	1.92	3.00
First SDI Production MWD Survey									
1,273.00	23.58	329.36	1,239.42	169.49	-147.92	224.49	1.58	0.70	3.59
1,368.00	24.30	333.80	1,326.26	203.38	-166.24	261.44	2.04	0.76	4.67
1,463.00	24.26	334.14	1,412.85	238.48	-183.38	298.43	0.15	-0.04	0.36
1,557.00	26.14	329.12	1,497.91	273.64	-202.44	336.80	3.03	2.00	-5.34
1,652.00	26.35	325.78	1,583.13	309.03	-225.04	377.83	1.57	0.22	-3.52
1,746.00	27.00	326.46	1,667.12	344.07	-248.56	419.27	0.76	0.69	0.72
1,841.00	26.59	325.34	1,751.92	379.53	-272.56	461.34	0.68	-0.43	-1.18
1,935.00	27.62	327.64	1,835.60	415.24	-296.19	503.33	1.56	1.10	2.45
2,029.00	28.61	326.06	1,918.51	452.32	-320.42	546.71	1.32	1.05	-1.68
2,124.00	29.02	324.15	2,001.74	489.87	-346.62	591.81	1.06	0.43	-2.01
2,218.00	29.99	323.16	2,083.55	527.15	-374.06	637.60	1.15	1.03	-1.05
2,313.00	29.63	324.17	2,165.98	565.19	-402.04	684.31	0.65	-0.38	1.06
2,407.00	30.07	324.34	2,247.51	603.17	-429.37	730.51	0.48	0.47	0.18
2,502.00	28.93	325.40	2,330.20	641.42	-456.29	776.62	1.32	-1.20	1.12
2,596.00	28.75	324.96	2,412.54	678.64	-482.18	821.28	0.30	-0.19	-0.47
2,691.00	27.44	325.40	2,496.34	715.37	-507.73	865.33	1.40	-1.38	0.46
2,786.00	26.38	327.07	2,581.05	751.10	-531.64	907.53	1.37	-1.12	1.76
2,880.00	24.71	328.91	2,665.86	785.46	-553.13	947.06	1.97	-1.78	1.96
2,974.00	24.50	327.90	2,751.33	818.80	-573.64	985.16	0.50	-0.22	-1.07
3,069.00	24.54	327.59	2,837.76	852.14	-594.68	1,023.64	0.14	0.04	-0.33
3,164.00	24.30	326.77	2,924.26	885.14	-615.96	1,062.05	0.44	-0.25	-0.86
3,258.00	24.36	326.01	3,009.91	917.40	-637.40	1,100.04	0.34	0.06	-0.81
3,353.00	24.62	324.34	3,096.37	949.72	-659.89	1,138.82	0.78	0.27	-1.76
3,448.00	24.80	327.95	3,182.68	982.69	-682.00	1,177.79	1.60	0.19	3.80
3,542.00	24.80	328.21	3,268.01	1,016.15	-702.85	1,216.23	0.12	0.00	0.28
3,637.00	24.89	328.12	3,354.21	1,050.06	-723.90	1,255.12	0.10	0.09	-0.09
3,731.00	25.12	327.58	3,439.40	1,083.70	-745.05	1,293.89	0.34	0.24	-0.57
3,826.00	23.12	326.89	3,526.11	1,116.35	-766.05	1,331.85	2.13	-2.11	-0.73
3,920.00	22.07	326.72	3,612.89	1,146.57	-785.82	1,367.23	1.12	-1.12	-0.18
4,015.00	23.65	327.42	3,700.42	1,177.55	-805.88	1,403.34	1.69	1.66	0.74
4,110.00	22.98	326.78	3,787.67	1,209.12	-826.30	1,440.13	0.75	-0.71	-0.67
4,204.00	24.27	327.15	3,873.79	1,240.70	-846.83	1,477.00	1.38	1.37	0.39
4,299.00	23.74	326.10	3,960.57	1,272.98	-868.09	1,514.88	0.72	-0.56	-1.11
4,393.00	25.63	325.92	4,045.98	1,305.53	-890.03	1,553.44	2.01	2.01	-0.19

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

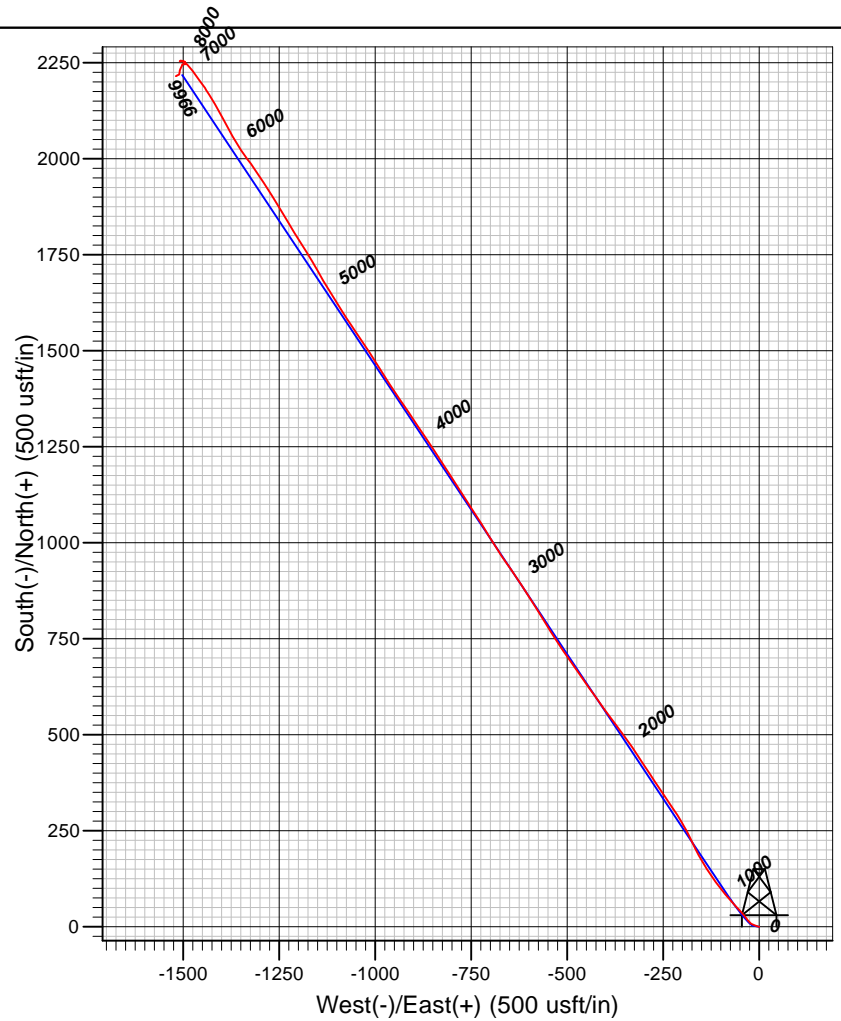
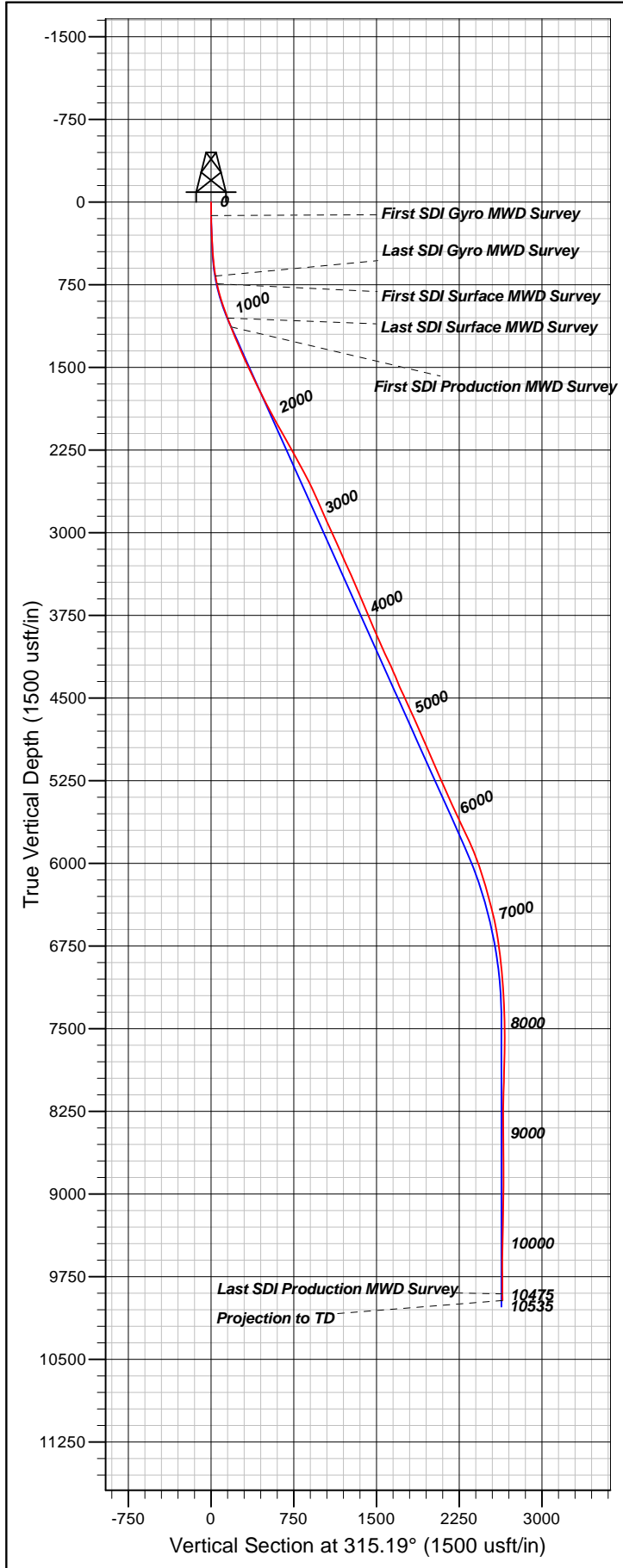
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,488.00	25.50	325.84	4,131.68	1,339.46	-913.03	1,593.72	0.14	-0.14	-0.08
4,582.00	24.38	325.92	4,216.91	1,372.28	-935.26	1,632.67	1.19	-1.19	0.09
4,676.00	23.21	326.40	4,302.92	1,403.78	-956.38	1,669.90	1.26	-1.24	0.51
4,771.00	23.57	328.10	4,390.11	1,435.49	-976.78	1,706.78	0.81	0.38	1.79
4,866.00	25.24	327.59	4,476.62	1,468.72	-997.68	1,745.07	1.77	1.76	-0.54
4,960.00	25.09	326.46	4,561.70	1,502.25	-1,019.43	1,784.19	0.54	-0.16	-1.20
5,055.00	25.06	326.72	4,647.74	1,535.86	-1,041.60	1,823.66	0.12	-0.03	0.27
5,149.00	24.09	325.13	4,733.23	1,568.24	-1,063.49	1,862.06	1.25	-1.03	-1.69
5,243.00	25.15	328.47	4,818.69	1,601.01	-1,084.91	1,900.40	1.86	1.13	3.55
5,338.00	24.17	328.34	4,905.02	1,634.77	-1,105.67	1,938.99	1.03	-1.03	-0.14
5,432.00	23.23	328.09	4,991.09	1,666.89	-1,125.57	1,975.80	1.01	-1.00	-0.27
5,526.00	23.48	331.20	5,077.40	1,699.04	-1,144.39	2,011.87	1.34	0.27	3.31
5,621.00	25.59	329.09	5,163.81	1,733.23	-1,164.05	2,049.98	2.40	2.22	-2.22
5,715.00	23.92	327.72	5,249.17	1,766.76	-1,184.66	2,088.29	1.88	-1.78	-1.46
5,810.00	23.95	328.09	5,336.00	1,799.41	-1,205.14	2,125.89	0.16	0.03	0.39
5,905.00	25.15	329.18	5,422.42	1,833.12	-1,225.67	2,164.27	1.35	1.26	1.15
5,999.00	25.94	328.65	5,507.23	1,867.83	-1,246.60	2,203.65	0.87	0.84	-0.56
6,094.00	25.76	327.95	5,592.72	1,903.07	-1,268.37	2,243.99	0.37	-0.19	-0.74
6,189.00	25.32	326.89	5,678.44	1,937.59	-1,290.42	2,284.01	0.67	-0.46	-1.12
6,283.00	25.07	326.00	5,763.50	1,970.93	-1,312.54	2,323.26	0.48	-0.27	-0.95
6,377.00	23.95	323.75	5,849.03	2,002.83	-1,334.95	2,361.69	1.55	-1.19	-2.39
6,472.00	22.43	326.35	5,936.35	2,033.47	-1,356.40	2,398.54	1.93	-1.60	2.74
6,567.00	19.47	332.20	6,025.07	2,062.57	-1,373.83	2,431.47	3.81	-3.12	6.16
6,662.00	17.01	332.55	6,115.29	2,088.91	-1,387.63	2,459.88	2.59	-2.59	0.37
6,756.00	17.76	330.67	6,204.99	2,113.61	-1,400.99	2,486.82	1.00	0.80	-2.00
6,851.00	15.92	329.88	6,295.92	2,137.52	-1,414.62	2,513.38	1.95	-1.94	-0.83
6,946.00	15.12	329.44	6,387.45	2,159.46	-1,427.46	2,538.00	0.85	-0.84	-0.46
7,040.00	13.01	326.36	6,478.63	2,178.82	-1,439.56	2,560.26	2.38	-2.24	-3.28
7,135.00	10.99	324.61	6,571.55	2,195.11	-1,450.73	2,579.69	2.16	-2.13	-1.84
7,229.00	9.64	322.58	6,664.03	2,208.67	-1,460.70	2,596.33	1.49	-1.44	-2.16
7,324.00	7.47	324.69	6,757.97	2,220.02	-1,469.10	2,610.31	2.31	-2.28	2.22
7,419.00	6.39	323.54	6,852.27	2,229.31	-1,475.81	2,621.63	1.15	-1.14	-1.21
7,513.00	5.56	319.59	6,945.76	2,236.99	-1,481.87	2,631.35	0.98	-0.88	-4.20
7,608.00	4.57	316.43	7,040.39	2,243.24	-1,487.47	2,639.72	1.08	-1.04	-3.33
7,702.00	3.25	313.18	7,134.17	2,247.77	-1,491.99	2,646.13	1.42	-1.40	-3.46
7,797.00	3.08	309.31	7,229.02	2,251.23	-1,495.93	2,651.36	0.29	-0.18	-4.07
7,891.00	2.64	292.88	7,322.91	2,253.67	-1,499.88	2,655.87	0.98	-0.47	-17.48
7,986.00	2.62	288.85	7,417.81	2,255.23	-1,503.95	2,659.84	0.20	-0.02	-4.24
7,992.02	2.56	287.29	7,423.82	2,255.31	-1,504.21	2,660.09	1.59	-1.07	-25.89
NR 611-3 BTV									
8,080.00	1.93	254.64	7,511.74	2,255.50	-1,507.51	2,662.55	1.59	-0.71	-37.11
8,175.00	1.23	180.11	7,606.71	2,254.06	-1,509.05	2,662.61	2.10	-0.74	-78.45
8,269.00	2.39	73.22	7,700.68	2,253.61	-1,507.18	2,660.98	3.18	1.23	-113.71

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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)	
8,363.00	2.29	85.81	7,794.60	2,254.32	-1,503.43	2,658.83	0.56	-0.11	13.39	
8,458.00	1.67	97.23	7,889.54	2,254.28	-1,500.16	2,656.51	0.77	-0.65	12.02	
8,552.00	1.49	110.42	7,983.51	2,253.68	-1,497.66	2,654.32	0.43	-0.19	14.03	
8,647.00	1.38	133.61	8,078.48	2,252.46	-1,495.67	2,652.05	0.62	-0.12	24.41	
8,741.00	1.23	164.47	8,172.46	2,250.71	-1,494.58	2,650.04	0.75	-0.16	32.83	
8,836.00	1.32	166.84	8,267.43	2,248.66	-1,494.06	2,648.22	0.11	0.09	2.49	
8,930.00	1.14	217.73	8,361.41	2,246.87	-1,494.39	2,647.18	1.14	-0.19	54.14	
9,025.00	1.40	281.66	8,456.39	2,246.36	-1,496.10	2,648.02	1.43	0.27	67.29	
9,119.00	1.92	267.32	8,550.35	2,246.51	-1,498.80	2,650.03	0.70	0.55	-15.26	
9,213.00	1.10	254.13	8,644.32	2,246.19	-1,501.24	2,651.53	0.94	-0.87	-14.03	
9,307.00	0.18	213.95	8,738.31	2,245.82	-1,502.19	2,651.93	1.03	-0.98	-42.74	
9,402.00	0.78	194.82	8,833.31	2,245.08	-1,502.44	2,651.58	0.65	0.63	-20.14	
9,496.00	1.14	195.76	8,927.30	2,243.56	-1,502.86	2,650.80	0.38	0.38	1.00	
9,591.00	1.67	204.55	9,022.27	2,241.39	-1,503.69	2,649.84	0.60	0.56	9.25	
9,685.00	2.52	206.96	9,116.21	2,238.30	-1,505.19	2,648.71	0.91	0.90	2.56	
9,779.00	3.69	207.27	9,210.07	2,233.77	-1,507.52	2,647.14	1.24	1.24	0.33	
9,873.00	2.33	186.50	9,303.94	2,229.18	-1,509.12	2,645.01	1.83	-1.45	-22.10	
9,968.00	1.76	187.50	9,398.88	2,225.82	-1,509.53	2,642.91	0.60	-0.60	1.05	
10,062.00	1.61	177.24	9,492.83	2,223.07	-1,509.65	2,641.05	0.36	-0.16	-10.91	
10,157.00	1.32	201.47	9,587.80	2,220.72	-1,509.99	2,639.62	0.71	-0.31	25.51	
10,251.00	1.27	233.33	9,681.78	2,219.09	-1,511.22	2,639.33	0.76	-0.05	33.89	
10,345.00	1.31	259.21	9,775.76	2,218.26	-1,513.11	2,640.08	0.62	0.04	27.53	
10,440.00	2.29	233.99	9,870.71	2,216.94	-1,515.71	2,640.98	1.30	1.03	-26.55	
10,475.00	2.37	240.14	9,905.68	2,216.17	-1,516.91	2,641.27	0.75	0.23	17.57	
Last SDI Production MWD Survey										
10,535.00	2.37	240.14	9,965.63	2,214.94	-1,519.06	2,641.91	0.00	0.00	0.00	
Projection to TD - NR 611-3 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
121.00	121.00	-0.14	-0.23	First SDI Gyro MWD Survey	
673.00	671.03	21.87	-33.26	Last SDI Gyro MWD Survey	
745.00	741.61	33.00	-42.03	First SDI Surface MWD Survey	
1,070.00	1,052.08	104.83	-104.15	Last SDI Surface MWD Survey	
1,157.00	1,132.78	131.09	-123.28	First SDI Production MWD Survey	
10,475.00	9,905.68	2,216.17	-1,516.91	Last SDI Production MWD Survey	
10,535.00	9,965.63	2,214.94	-1,519.06	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____



Well Details: NR 611-3

TVD Reference: GL 6720' & RKB 24' @ 6744.00usft
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1634934.63 2329735.25 39.5526033 -107.8773199 NR 611-3 (A5)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well NR 611-3 - Slot NR 611-3 (A5), True North
 Vertical (TVD) Reference: GL 6720' & RKB 24' @ 6744.00usft
 Section (VS) Reference: Slot - NR 611-3 (A5)(0.00N, 0.00E)
 Measured Depth Reference: GL 6720' & RKB 24' @ 6744.00usft
 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

10:50, September 04 2018
 Created By: Mel Mireles Jr.