



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 542-12
County & State	Garfield County, CO
SDI Job No.	OP.004225
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 91 feet to a measured depth of 9,527 feet is true and correct as determined from all available records.


Signature

20-Sep-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 542-12 - Slot B12
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 542-12	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		RU 32-12 Pad			
Site Position:		Northing:	1,599,253.30 usft	Latitude:	39.4554808
From:	Map	Easting:	2,341,050.00 usft	Longitude:	-107.8339555
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.47 °

Well	SR 542-12 - Slot B12					
Well Position	+N/-S	0.00 usft	Northing:	1,599,175.30 usft	Latitude:	39.4552687
	+E/-W	0.00 usft	Easting:	2,341,078.50 usft	Longitude:	-107.8338475
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	7,254.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/10/2017	9.25	65.67	51,671

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	108.43	

Survey Program	Date	9/20/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
91.00	403.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4
475.00	1,037.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1
1,178.00	9,527.00	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	
91.00	0.18	51.24	91.00	0.09	0.11	0.08	0.20	0.20	0.00	
First SDI Gyro MWD Survey										
128.00	0.44	70.14	128.00	0.17	0.29	0.22	0.75	0.70	51.08	
173.00	1.76	92.99	172.99	0.20	1.14	1.02	3.03	2.93	50.78	
220.00	2.99	101.16	219.95	-0.08	3.07	2.93	2.71	2.62	17.38	
269.00	4.40	108.72	268.85	-0.93	6.10	6.08	3.04	2.88	15.43	
311.00	5.72	108.11	310.68	-2.10	9.62	9.79	3.15	3.14	-1.45	
403.00	8.71	104.77	401.94	-5.30	20.71	21.32	3.28	3.25	-3.63	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 542-12 - Slot B12
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 542-12	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									
475.00	10.81	105.14	472.90	-8.45	32.50	33.51	2.92	2.92	0.51
First SDI Surface MWD Survey									
568.00	13.40	107.71	563.82	-14.01	51.19	52.99	2.84	2.78	2.76
659.00	16.51	107.69	651.73	-21.15	73.56	76.47	3.42	3.42	-0.02
754.00	18.21	105.85	742.40	-29.30	100.70	104.80	1.88	1.79	-1.94
848.00	19.01	105.61	831.48	-37.44	129.58	134.76	0.85	0.85	-0.26
943.00	19.10	104.64	921.28	-45.53	159.52	165.73	0.35	0.09	-1.02
1,037.00	19.58	102.55	1,009.97	-52.84	189.77	196.74	0.90	0.51	-2.22
Last SDI Surface MWD Survey									
1,178.00	20.73	100.84	1,142.34	-62.66	237.34	244.98	0.92	0.82	-1.21
First SDI Production MWD Survey									
1,273.00	21.16	103.10	1,231.06	-69.71	270.56	278.72	0.96	0.45	2.38
1,367.00	21.14	105.86	1,318.73	-78.19	303.39	312.54	1.06	-0.02	2.94
1,461.00	19.42	109.00	1,406.91	-87.91	334.47	345.11	2.16	-1.83	3.34
1,556.00	19.79	109.84	1,496.40	-98.51	364.53	376.98	0.49	0.39	0.88
1,650.00	19.75	109.56	1,584.86	-109.23	394.47	408.77	0.11	-0.04	-0.30
1,745.00	19.39	109.10	1,674.37	-119.76	424.49	440.58	0.41	-0.38	-0.48
1,839.00	17.99	112.71	1,763.41	-130.47	452.63	470.66	1.93	-1.49	3.84
1,934.00	17.47	112.62	1,853.90	-141.62	479.33	499.51	0.55	-0.55	-0.09
2,028.00	17.15	111.73	1,943.64	-152.18	505.23	527.42	0.44	-0.34	-0.95
2,123.00	17.04	111.51	2,034.45	-162.47	531.19	555.31	0.13	-0.12	-0.23
2,217.00	16.86	110.45	2,124.36	-172.28	556.77	582.68	0.38	-0.19	-1.13
2,312.00	16.71	109.79	2,215.32	-181.72	582.53	610.10	0.26	-0.16	-0.69
2,406.00	18.03	110.94	2,305.03	-191.50	608.84	638.15	1.45	1.40	1.22
2,500.00	17.92	110.79	2,394.44	-201.83	635.94	667.13	0.13	-0.12	-0.16
2,595.00	17.14	110.66	2,485.03	-211.95	662.70	695.72	0.82	-0.82	-0.14
2,690.00	17.17	110.53	2,575.80	-221.81	688.93	723.72	0.05	0.03	-0.14
2,784.00	16.16	110.33	2,665.85	-231.22	714.19	750.66	1.08	-1.07	-0.21
2,879.00	17.72	114.07	2,756.73	-241.71	739.79	778.27	2.00	1.64	3.94
2,973.00	17.55	113.57	2,846.31	-253.21	765.84	806.62	0.24	-0.18	-0.53
3,068.00	17.00	113.97	2,937.03	-264.58	791.66	834.71	0.59	-0.58	0.42
3,162.00	16.70	115.08	3,026.99	-275.89	816.45	861.80	0.47	-0.32	1.18
3,257.00	18.58	111.16	3,117.52	-287.14	842.93	890.48	2.34	1.98	-4.13
3,351.00	17.72	109.47	3,206.85	-297.31	870.39	919.74	1.07	-0.91	-1.80
3,446.00	16.96	111.42	3,297.53	-307.19	896.92	948.03	1.01	-0.80	2.05
3,540.00	16.18	112.17	3,387.62	-317.14	921.81	974.79	0.86	-0.83	0.80
3,635.00	17.67	111.12	3,478.51	-327.33	947.52	1,002.41	1.60	1.57	-1.11
3,729.00	17.38	110.50	3,568.14	-337.39	973.98	1,030.69	0.37	-0.31	-0.66
3,824.00	16.62	111.03	3,658.99	-347.24	999.95	1,058.44	0.82	-0.80	0.56
3,918.00	17.82	108.08	3,748.78	-356.52	1,026.17	1,086.25	1.58	1.28	-3.14
4,013.00	17.94	108.47	3,839.19	-365.67	1,053.87	1,115.42	0.18	0.13	0.41
4,107.00	17.67	108.96	3,928.69	-374.89	1,081.09	1,144.16	0.33	-0.29	0.52
4,202.00	17.12	109.56	4,019.34	-384.26	1,107.90	1,172.56	0.61	-0.58	0.63

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Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 542-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

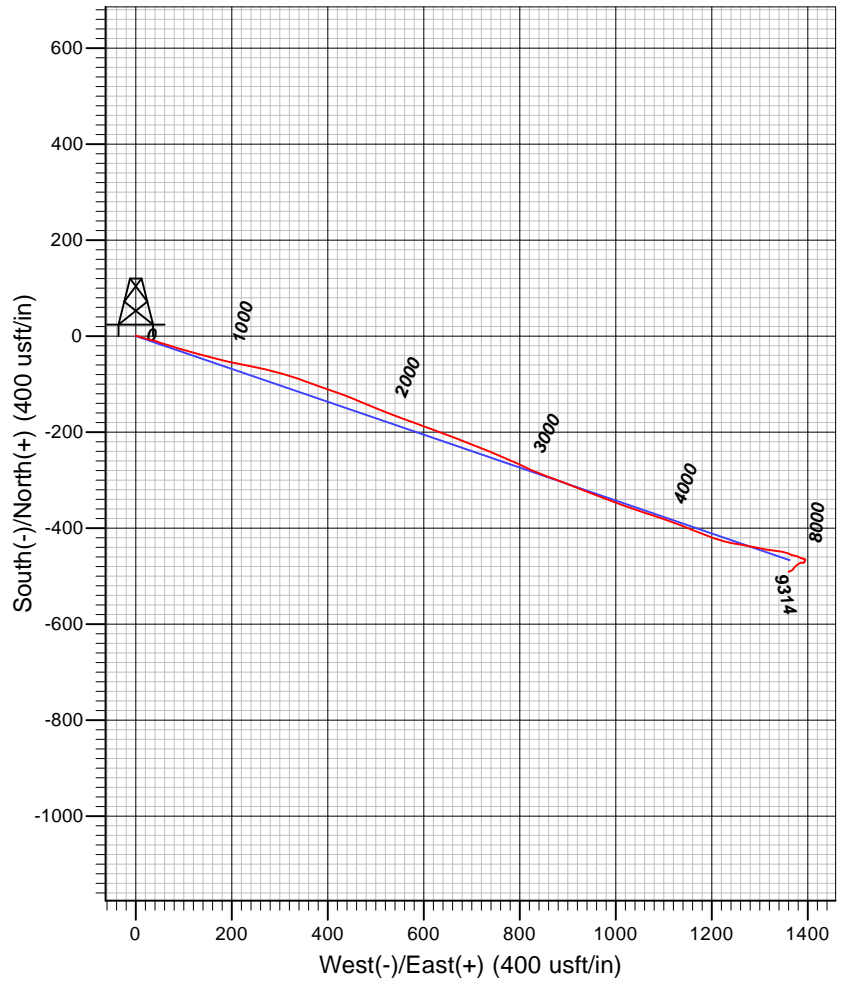
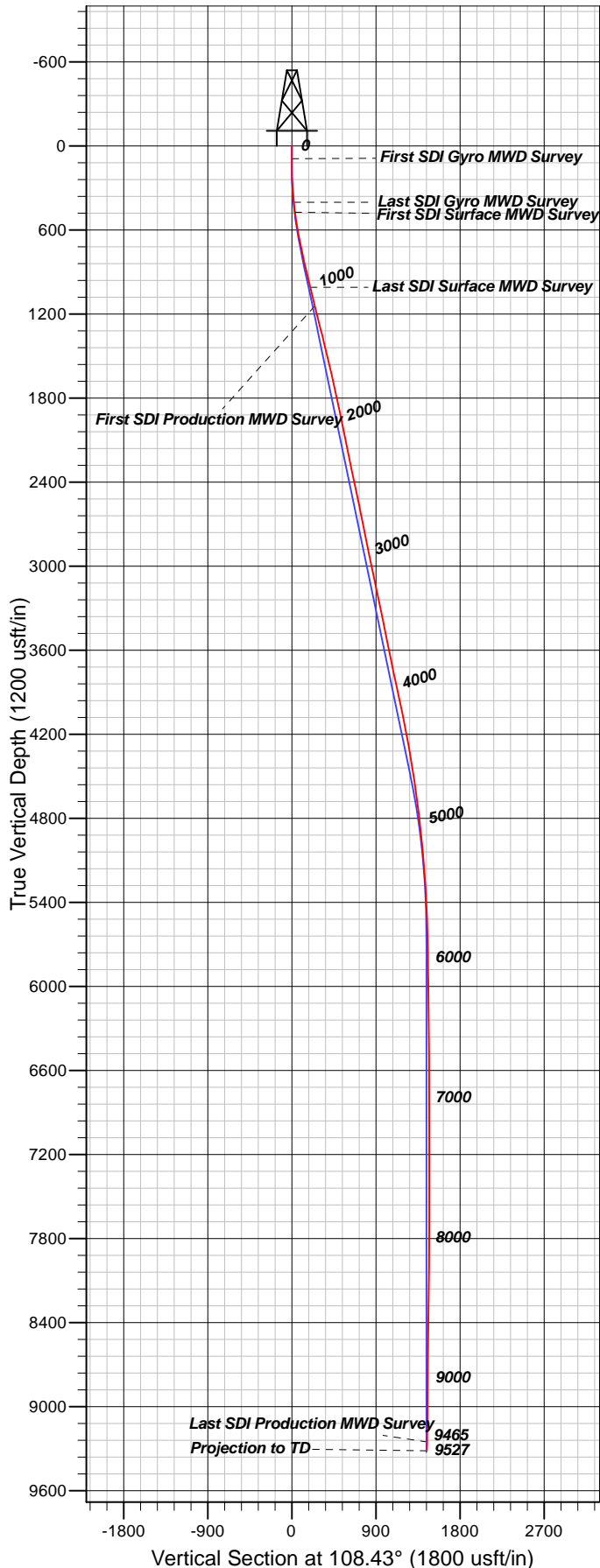
Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,296.00	16.61	110.59	4,109.30	-393.62	1,133.51	1,199.82	0.63	-0.54	1.10	
4,391.00	15.77	111.92	4,200.53	-403.21	1,158.20	1,226.27	0.97	-0.88	1.40	
4,485.00	15.92	112.61	4,290.96	-412.93	1,181.95	1,251.88	0.26	0.16	0.73	
4,580.00	13.96	106.67	4,382.75	-421.23	1,204.96	1,276.33	2.62	-2.06	-6.25	
4,674.00	13.44	107.09	4,474.08	-427.69	1,226.27	1,298.59	0.56	-0.55	0.45	
4,768.00	11.41	98.75	4,565.88	-432.32	1,245.90	1,318.68	2.88	-2.16	-8.87	
4,863.00	10.97	99.40	4,659.07	-435.23	1,264.11	1,336.87	0.48	-0.46	0.68	
4,957.00	10.36	101.57	4,751.45	-438.38	1,281.21	1,354.09	0.78	-0.65	2.31	
5,052.00	9.90	102.42	4,844.97	-441.85	1,297.55	1,370.69	0.51	-0.48	0.89	
5,146.00	9.91	99.82	4,937.56	-444.97	1,313.42	1,386.73	0.48	0.01	-2.77	
5,241.00	7.66	96.84	5,031.44	-447.12	1,327.76	1,401.01	2.42	-2.37	-3.14	
5,335.00	7.31	93.17	5,124.64	-448.19	1,339.95	1,412.92	0.63	-0.37	-3.90	
5,429.00	5.27	111.56	5,218.08	-450.11	1,349.94	1,423.00	3.02	-2.17	19.56	
5,524.00	5.27	112.69	5,312.68	-453.40	1,358.02	1,431.71	0.11	0.00	1.19	
5,618.00	5.06	105.75	5,406.30	-456.19	1,365.99	1,440.16	0.70	-0.22	-7.38	
5,712.00	2.01	100.26	5,500.11	-457.61	1,371.61	1,445.93	3.26	-3.24	-5.84	
5,807.00	1.99	101.85	5,595.05	-458.24	1,374.86	1,449.22	0.06	-0.02	1.67	
5,834.62	1.91	104.58	5,622.65	-458.46	1,375.78	1,450.15	0.45	-0.30	9.88	
SR 542-12 MVRD										
5,902.00	1.73	112.26	5,690.00	-459.13	1,377.80	1,452.29	0.45	-0.26	11.40	
5,996.00	1.57	118.88	5,783.96	-460.29	1,380.24	1,454.97	0.26	-0.17	7.04	
6,091.00	1.49	111.47	5,878.93	-461.37	1,382.53	1,457.48	0.22	-0.08	-7.80	
6,185.00	1.32	117.00	5,972.90	-462.30	1,384.63	1,459.77	0.23	-0.18	5.88	
6,279.00	0.88	124.12	6,066.88	-463.20	1,386.20	1,461.54	0.49	-0.47	7.57	
6,374.00	1.37	79.37	6,161.87	-463.40	1,387.92	1,463.23	1.02	0.52	-47.11	
6,468.00	0.89	103.33	6,255.85	-463.36	1,389.73	1,464.94	0.71	-0.51	25.49	
6,562.00	0.97	129.32	6,349.84	-464.03	1,391.06	1,466.41	0.45	0.09	27.65	
6,656.00	1.04	114.23	6,443.82	-464.89	1,392.45	1,468.01	0.29	0.07	-16.05	
6,751.00	0.79	82.99	6,538.81	-465.16	1,393.89	1,469.45	0.58	-0.26	-32.88	
6,846.00	0.07	225.71	6,633.81	-465.12	1,394.50	1,470.02	0.89	-0.76	150.23	
6,940.00	0.42	165.67	6,727.81	-465.50	1,394.54	1,470.18	0.41	0.37	-63.87	
7,035.00	0.20	352.00	6,822.81	-465.67	1,394.60	1,470.29	0.65	-0.23	-182.81	
7,129.00	0.32	162.28	6,916.81	-465.76	1,394.66	1,470.38	0.55	0.13	181.15	
7,223.00	0.61	189.46	7,010.80	-466.50	1,394.66	1,470.61	0.38	0.31	28.91	
7,318.00	0.84	215.09	7,105.80	-467.57	1,394.17	1,470.49	0.41	0.24	26.98	
7,412.00	0.51	188.11	7,199.79	-468.55	1,393.72	1,470.37	0.48	-0.35	-28.70	
7,507.00	0.38	224.05	7,294.79	-469.19	1,393.44	1,470.31	0.32	-0.14	37.83	
7,601.00	0.57	176.68	7,388.78	-469.88	1,393.25	1,470.34	0.45	0.20	-50.39	
7,696.00	0.45	185.65	7,483.78	-470.73	1,393.24	1,470.60	0.15	-0.13	9.44	
7,790.00	0.27	244.66	7,577.78	-471.19	1,393.00	1,470.52	0.41	-0.19	62.78	
7,885.00	0.27	223.93	7,672.78	-471.45	1,392.65	1,470.27	0.10	0.00	-21.82	
7,979.00	0.53	243.13	7,766.78	-471.80	1,392.11	1,469.86	0.31	0.28	20.43	
8,074.00	0.45	246.70	7,861.77	-472.15	1,391.37	1,469.28	0.09	-0.08	3.76	

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Well:	SR 542-12	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)	
8,168.00	0.70	257.10	7,955.77	-472.42	1,390.47	1,468.51	0.29	0.27	11.06	
8,263.00	0.85	290.60	8,050.76	-472.30	1,389.25	1,467.31	0.49	0.16	35.26	
8,357.00	1.14	275.21	8,144.74	-471.97	1,387.66	1,465.70	0.42	0.31	-16.37	
8,451.00	1.17	252.67	8,238.73	-472.17	1,385.82	1,464.01	0.48	0.03	-23.98	
8,546.00	1.41	240.40	8,333.70	-473.04	1,383.87	1,462.45	0.38	0.25	-12.92	
8,640.00	1.83	240.71	8,427.66	-474.35	1,381.56	1,460.66	0.45	0.45	0.33	
8,734.00	2.20	232.83	8,521.61	-476.17	1,378.81	1,458.63	0.49	0.39	-8.38	
8,829.00	1.80	233.18	8,616.55	-478.17	1,376.17	1,456.75	0.42	-0.42	0.37	
8,923.00	2.11	231.54	8,710.49	-480.13	1,373.63	1,454.97	0.34	0.33	-1.74	
9,018.00	2.11	208.98	8,805.43	-482.75	1,371.41	1,453.69	0.87	0.00	-23.75	
9,112.00	1.56	218.07	8,899.38	-485.27	1,369.78	1,452.95	0.66	-0.59	9.67	
9,207.00	1.42	222.57	8,994.35	-487.15	1,368.19	1,452.03	0.19	-0.15	4.74	
9,301.00	1.76	244.71	9,088.31	-488.63	1,366.10	1,450.51	0.74	0.36	23.55	
9,396.00	1.53	245.12	9,183.28	-489.78	1,363.63	1,448.53	0.24	-0.24	0.43	
9,465.00	1.76	255.52	9,252.25	-490.44	1,361.77	1,446.97	0.54	0.33	15.07	
Last SDI Production MWD Survey										
9,527.00	1.76	255.52	9,314.22	-490.91	1,359.92	1,445.37	0.00	0.00	0.00	
Projection to TD - SR 542-12 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
91.00	91.00	0.09	0.11	First SDI Gyro MWD Survey	
403.00	401.94	-5.30	20.71	Last SDI Gyro MWD Survey	
475.00	472.90	-8.45	32.50	First SDI Surface MWD Survey	
1,037.00	1,009.97	-52.84	189.77	Last SDI Surface MWD Survey	
1,178.00	1,142.34	-62.66	237.34	First SDI Production MWD Survey	
9,465.00	9,252.25	-490.44	1,361.77	Last SDI Production MWD Survey	
9,527.00	9,314.22	-490.91	1,359.92	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____



Well Details: SR 542-12

TVD Reference: GL 7254' & RKB 24' @ 7278.00usft (H&P 318) Level: 7254.00
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1599175.30 2341078.50 39.4552687 -107.8338475 B12

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 542-12 - Slot B12, True North
 Vertical (TVD) Reference: GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
 Section (VS) Reference: Slot - B12(0.00N, 0.00E)
 Measured Depth Reference: GL 7254' & RKB 24' @ 7278.00usft (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

18:08, September 20 2017
 Created By: Mel Mireles Jr.