



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 524-12
County & State	Garfield County, CO
SDI Job No.	OP.007499
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 9,761 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

23-Feb-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 524-12 - Slot SR 524-12 (B12)
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 524-12	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 524-12 - Slot SR 524-12 (B12)				
Well Position	+N/-S	0.00 usft	Northing:	1,597,640.10 usft	Latitude:	39.4509981
	+E/-W	0.00 usft	Easting:	2,340,268.90 usft	Longitude:	-107.8365739
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	1/21/2018	9.23	65.62	51,624

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	192.51	

Survey Program	Date	2/20/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
121.00	1,084.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
658.00	1,084.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,181.00	9,761.00	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	
121.00	0.18	177.54	121.00	-0.19	0.01	0.18	0.15	0.15	0.00	
First SDI Gyro MWD Survey										
214.00	3.08	197.84	213.95	-2.71	-0.75	2.81	3.13	3.12	21.83	
305.00	5.89	189.93	304.67	-9.64	-2.31	9.91	3.15	3.09	-8.69	
398.00	8.27	188.44	396.95	-20.96	-4.11	21.35	2.57	2.56	-1.60	
489.00	11.09	185.89	486.65	-36.14	-5.97	36.58	3.13	3.10	-2.80	
581.00	13.64	184.04	576.50	-55.77	-7.64	56.10	2.80	2.77	-2.01	

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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 524-12	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									
658.00	15.90	188.40	650.96	-75.26	-9.82	75.60	3.27	2.94	5.66
First SDI Surface MWD Survey									
753.00	17.58	192.79	741.93	-102.13	-14.90	102.93	2.21	1.77	4.62
847.00	17.78	199.54	831.50	-129.50	-22.84	131.38	2.19	0.21	7.18
941.00	18.45	197.36	920.84	-157.22	-32.08	160.44	1.01	0.71	-2.32
1,036.00	19.25	195.38	1,010.75	-186.67	-40.72	191.06	1.08	0.84	-2.08
1,084.00	19.79	194.50	1,055.99	-202.17	-44.85	207.09	1.28	1.13	-1.83
Last SDI Surface MWD Survey									
1,181.00	20.22	193.57	1,147.14	-234.36	-52.90	240.26	0.55	0.44	-0.96
First SDI Production MWD Survey									
1,276.00	19.92	191.54	1,236.37	-266.18	-59.99	272.85	0.80	-0.32	-2.14
1,370.00	20.28	195.52	1,324.65	-297.57	-67.55	305.13	1.50	0.38	4.23
1,465.00	19.82	194.32	1,413.89	-329.03	-75.94	337.67	0.65	-0.48	-1.26
1,560.00	20.49	197.93	1,503.08	-360.46	-85.04	370.32	1.49	0.71	3.80
1,654.00	19.62	193.44	1,591.38	-391.47	-93.78	402.49	1.88	-0.93	-4.78
1,749.00	20.40	198.90	1,680.65	-422.65	-102.85	434.89	2.13	0.82	5.75
1,843.00	20.61	197.87	1,768.70	-453.89	-113.23	467.64	0.44	0.22	-1.10
1,937.00	21.38	196.48	1,856.46	-486.07	-123.17	501.21	0.98	0.82	-1.48
2,032.00	19.67	200.62	1,945.43	-517.64	-133.71	534.32	2.36	-1.80	4.36
2,126.00	19.69	200.25	2,033.94	-547.31	-144.77	565.67	0.13	0.02	-0.39
2,220.00	19.96	198.16	2,122.37	-577.41	-155.25	597.33	0.81	0.29	-2.22
2,315.00	19.76	197.92	2,211.72	-608.10	-165.24	629.45	0.23	-0.21	-0.25
2,410.00	19.49	195.43	2,301.20	-638.65	-174.40	661.27	0.92	-0.28	-2.62
2,504.00	18.49	199.32	2,390.09	-667.84	-183.50	691.73	1.72	-1.06	4.14
2,598.00	18.31	197.64	2,479.28	-695.97	-192.91	721.24	0.60	-0.19	-1.79
2,693.00	17.59	197.32	2,569.66	-723.90	-201.71	750.40	0.76	-0.76	-0.34
2,787.00	18.69	199.78	2,658.98	-751.63	-211.03	779.50	1.43	1.17	2.62
2,882.00	18.29	199.69	2,749.08	-779.99	-221.21	809.39	0.42	-0.42	-0.09
2,976.00	18.03	197.40	2,838.40	-807.76	-230.53	838.52	0.81	-0.28	-2.44
3,070.00	17.41	195.58	2,927.94	-835.19	-238.65	867.05	0.88	-0.66	-1.94
3,165.00	18.38	201.09	3,018.35	-862.86	-247.86	896.06	2.05	1.02	5.80
3,259.00	17.76	199.60	3,107.71	-890.19	-258.00	924.94	0.82	-0.66	-1.59
3,354.00	17.32	199.43	3,198.30	-917.17	-267.57	953.36	0.47	-0.46	-0.18
3,448.00	16.53	198.85	3,288.22	-943.03	-276.54	980.54	0.86	-0.84	-0.62
3,543.00	19.09	198.31	3,378.66	-970.57	-285.79	1,009.43	2.70	2.69	-0.57
3,637.00	18.29	196.70	3,467.71	-999.29	-294.86	1,039.43	1.01	-0.85	-1.71
3,731.00	17.37	195.44	3,557.19	-1,026.94	-302.83	1,068.16	1.06	-0.98	-1.34
3,826.00	19.26	195.29	3,647.37	-1,055.73	-310.74	1,097.97	1.99	1.99	-0.16
3,921.00	18.83	194.56	3,737.17	-1,085.68	-318.73	1,128.94	0.52	-0.45	-0.77
4,016.00	17.48	194.64	3,827.44	-1,114.33	-326.19	1,158.52	1.42	-1.42	0.08
4,111.00	19.04	195.22	3,917.66	-1,143.08	-333.86	1,188.26	1.65	1.64	0.61
4,205.00	18.14	194.67	4,006.75	-1,172.04	-341.59	1,218.20	0.98	-0.96	-0.59
4,300.00	17.59	195.29	4,097.17	-1,200.19	-349.12	1,247.32	0.61	-0.58	0.65

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Well:	SR 524-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

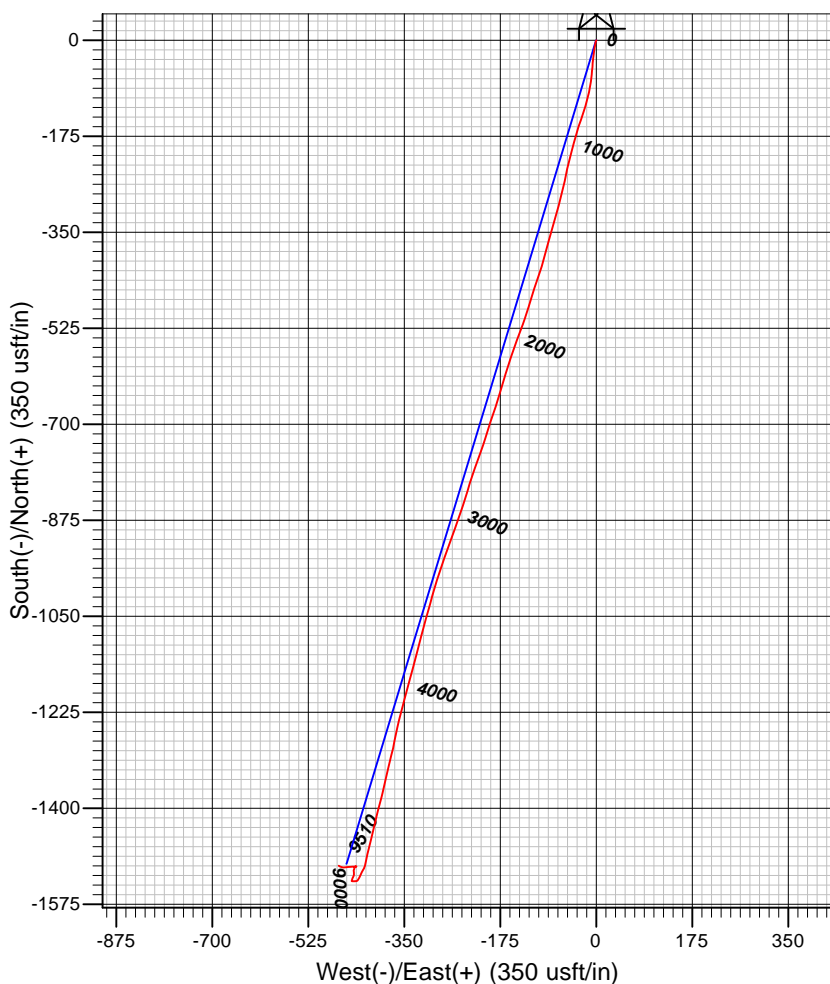
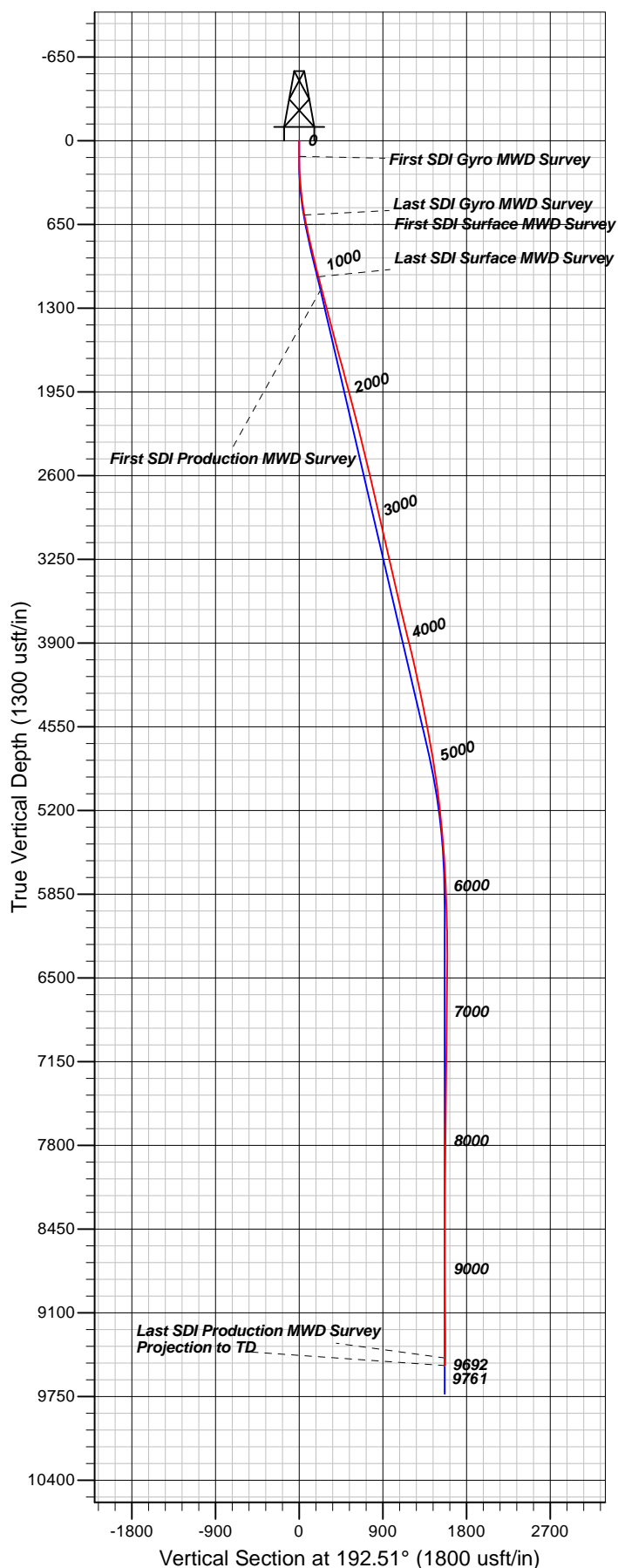
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,395.00	16.80	194.85	4,187.92	-1,227.31	-356.43	1,275.37	0.84	-0.83	-0.46
4,490.00	15.95	192.33	4,279.07	-1,253.33	-362.73	1,302.14	1.17	-0.89	-2.65
4,584.00	15.30	190.72	4,369.60	-1,278.13	-367.80	1,327.46	0.83	-0.69	-1.71
4,679.00	15.72	194.38	4,461.14	-1,302.92	-373.33	1,352.85	1.12	0.44	3.85
4,774.00	14.86	193.36	4,552.78	-1,327.23	-379.34	1,377.89	0.95	-0.91	-1.07
4,868.00	13.89	193.62	4,643.83	-1,349.93	-384.78	1,401.22	1.03	-1.03	0.28
4,963.00	13.87	191.11	4,736.06	-1,372.18	-389.66	1,424.01	0.63	-0.02	-2.64
5,057.00	12.13	196.70	4,827.65	-1,392.70	-394.67	1,445.12	2.28	-1.85	5.95
5,151.00	11.43	194.68	4,919.67	-1,411.17	-399.87	1,464.28	0.86	-0.74	-2.15
5,245.00	10.99	191.60	5,011.88	-1,428.96	-404.03	1,482.55	0.79	-0.47	-3.28
5,340.00	9.06	194.94	5,105.42	-1,445.06	-407.78	1,499.08	2.12	-2.03	3.52
5,434.00	8.71	193.62	5,198.29	-1,459.13	-411.36	1,513.59	0.43	-0.37	-1.40
5,528.00	7.69	193.70	5,291.33	-1,472.15	-414.53	1,526.99	1.09	-1.09	0.09
5,623.00	7.20	192.29	5,385.53	-1,484.15	-417.30	1,539.30	0.55	-0.52	-1.48
5,718.00	6.75	189.51	5,479.83	-1,495.47	-419.49	1,550.83	0.59	-0.47	-2.93
5,812.00	5.28	198.63	5,573.31	-1,505.02	-421.79	1,560.65	1.86	-1.56	9.70
5,906.00	3.34	207.07	5,667.04	-1,511.55	-424.41	1,567.60	2.17	-2.06	8.98
6,001.00	3.87	207.69	5,761.85	-1,516.86	-427.16	1,573.37	0.56	0.56	0.65
6,095.00	3.08	206.36	5,855.68	-1,521.93	-429.76	1,578.88	0.84	-0.84	-1.41
6,127.92	3.00	206.53	5,888.55	-1,523.49	-430.54	1,580.58	0.24	-0.24	0.53
SR 524-12 BTV									
6,190.00	2.85	206.89	5,950.55	-1,526.32	-431.96	1,583.65	0.24	-0.24	0.57
6,284.00	2.99	209.71	6,044.43	-1,530.53	-434.23	1,588.26	0.21	0.15	3.00
6,379.00	1.93	260.51	6,139.35	-1,532.95	-437.04	1,591.22	2.44	-1.12	53.47
6,473.00	2.20	267.80	6,233.29	-1,533.28	-440.40	1,592.27	0.40	0.29	7.76
6,568.00	2.46	274.40	6,328.21	-1,533.19	-444.26	1,593.02	0.39	0.27	6.95
6,663.00	0.53	40.52	6,423.18	-1,532.70	-446.00	1,592.92	2.95	-2.03	132.76
6,758.00	0.62	25.49	6,518.18	-1,531.91	-445.50	1,592.03	0.18	0.09	-15.82
6,852.00	0.79	14.86	6,612.17	-1,530.82	-445.11	1,590.89	0.23	0.18	-11.31
6,947.00	0.79	14.86	6,707.16	-1,529.55	-444.78	1,589.58	0.00	0.00	0.00
7,042.00	0.97	14.24	6,802.15	-1,528.14	-444.41	1,588.12	0.19	0.19	-0.65
7,137.00	1.23	28.30	6,897.14	-1,526.47	-443.73	1,586.34	0.39	0.27	14.80
7,231.00	1.41	19.25	6,991.11	-1,524.49	-442.87	1,584.22	0.29	0.19	-9.63
7,326.00	0.94	23.96	7,086.09	-1,522.67	-442.17	1,582.30	0.50	-0.49	4.96
7,421.00	0.95	7.49	7,181.08	-1,521.18	-441.75	1,580.75	0.29	0.01	-17.34
7,515.00	0.62	5.27	7,275.07	-1,519.90	-441.60	1,579.47	0.35	-0.35	-2.36
7,610.00	0.73	347.75	7,370.06	-1,518.79	-441.68	1,578.41	0.24	0.12	-18.44
7,705.00	0.70	10.02	7,465.05	-1,517.63	-441.71	1,577.28	0.29	-0.03	23.44
7,800.00	0.67	344.83	7,560.05	-1,516.52	-441.75	1,576.21	0.32	-0.03	-26.52
7,894.00	1.23	352.27	7,654.03	-1,514.99	-442.03	1,574.77	0.61	0.60	7.91
7,989.00	0.88	5.54	7,749.02	-1,513.26	-442.10	1,573.09	0.45	-0.37	13.97
8,083.00	1.43	19.61	7,843.00	-1,511.43	-441.64	1,571.21	0.65	0.59	14.97
8,178.00	0.88	16.17	7,937.98	-1,509.62	-441.04	1,569.31	0.58	-0.58	-3.62
8,273.00	0.62	15.29	8,032.97	-1,508.42	-440.70	1,568.07	0.27	-0.27	-0.93

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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 524-12	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)
8,367.00	0.81	36.34	8,126.96	-1,507.39	-440.17	1,566.95	0.34	0.20	22.39
8,462.00	0.79	48.87	8,221.96	-1,506.42	-439.28	1,565.81	0.18	-0.02	13.19
8,557.00	0.46	87.59	8,316.95	-1,505.98	-438.40	1,565.18	0.55	-0.35	40.76
8,651.00	0.40	107.16	8,410.95	-1,506.06	-437.71	1,565.11	0.17	-0.06	20.82
8,746.00	0.18	265.41	8,505.95	-1,506.17	-437.55	1,565.18	0.60	-0.23	166.58
8,840.00	0.38	265.12	8,599.95	-1,506.20	-438.00	1,565.32	0.21	0.21	-0.31
8,935.00	1.14	265.17	8,694.94	-1,506.31	-439.26	1,565.70	0.80	0.80	0.05
9,030.00	1.41	264.82	8,789.91	-1,506.50	-441.36	1,566.33	0.28	0.28	-0.37
9,124.00	1.93	266.05	8,883.87	-1,506.71	-444.10	1,567.13	0.55	0.55	1.31
9,219.00	2.46	266.57	8,978.80	-1,506.94	-447.73	1,568.15	0.56	0.56	0.55
9,314.00	2.99	265.34	9,073.69	-1,507.27	-452.23	1,569.44	0.56	0.56	-1.29
9,408.00	2.79	264.07	9,167.58	-1,507.70	-456.95	1,570.88	0.22	-0.21	-1.35
9,503.00	2.37	268.60	9,262.48	-1,507.99	-461.21	1,572.09	0.49	-0.44	4.77
9,598.00	2.11	293.20	9,357.41	-1,507.35	-464.78	1,572.24	1.04	-0.27	25.89
9,692.00	1.85	300.41	9,451.35	-1,505.90	-467.68	1,571.45	0.38	-0.28	7.67
Last SDI Production MWD Survey									
9,761.00	1.85	300.41	9,520.32	-1,504.77	-469.61	1,570.76	0.00	0.00	0.00
Projection to TD - SR 524-12 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
121.00	121.00	-0.19	0.01	First SDI Gyro MWD Survey
581.00	576.50	-55.77	-7.64	Last SDI Gyro MWD Survey
658.00	650.96	-75.26	-9.82	First SDI Surface MWD Survey
1,084.00	1,055.99	-202.17	-44.85	Last SDI Surface MWD Survey
1,181.00	1,147.14	-234.36	-52.90	First SDI Production MWD Survey
9,692.00	9,451.35	-1,505.90	-467.68	Last SDI Production MWD Survey
9,761.00	9,520.32	-1,504.77	-469.61	Projection to TD

Checked By: _____ Approved By: _____ Date: _____



Well Details: SR 524-12

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 1597640.10 2340268.90 39.4509981 -107.8365739 SR 524-12 (B12)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 524-12 - Slot SR 524-12 (B12), True North
 Vertical (TVD) Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
 Section (VS) Reference: Slot - SR 524-12 (B12)(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

13:44, February 20 2018
 Created By: Mel Mireles Jr.