



TEP Rocky Mountain LLC

Garfield County, CO NAD83

SG 11-22 Pad

SG 341-21 - Slot SG 341-21 (A9)

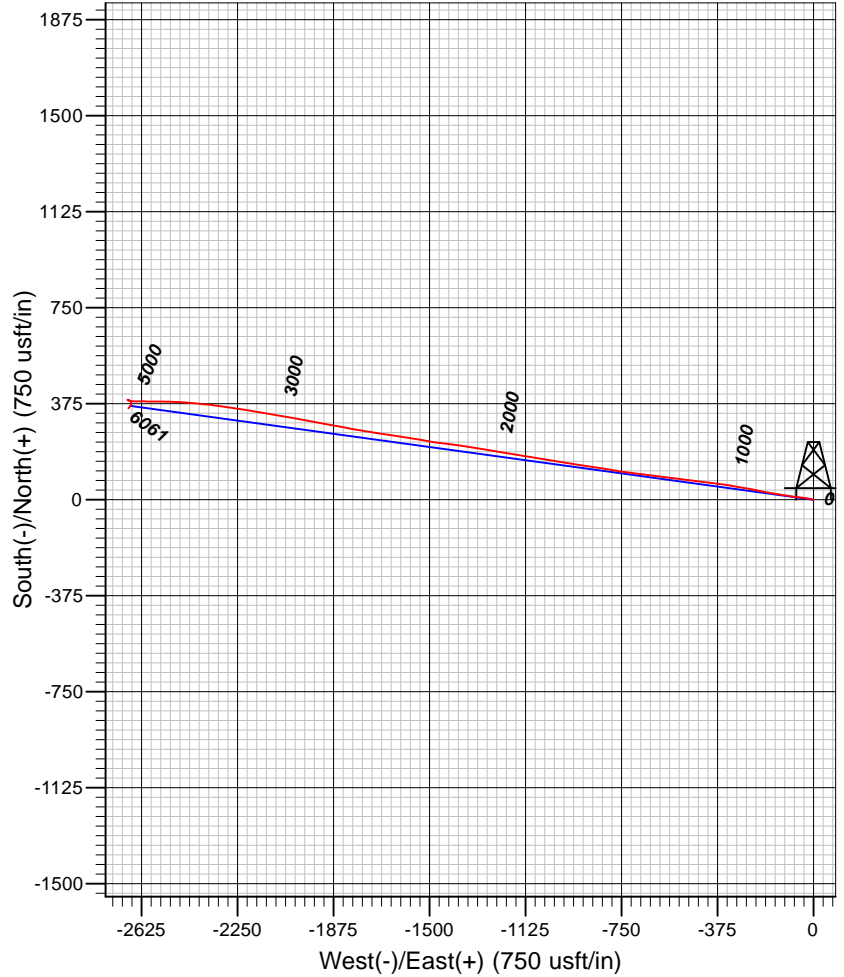
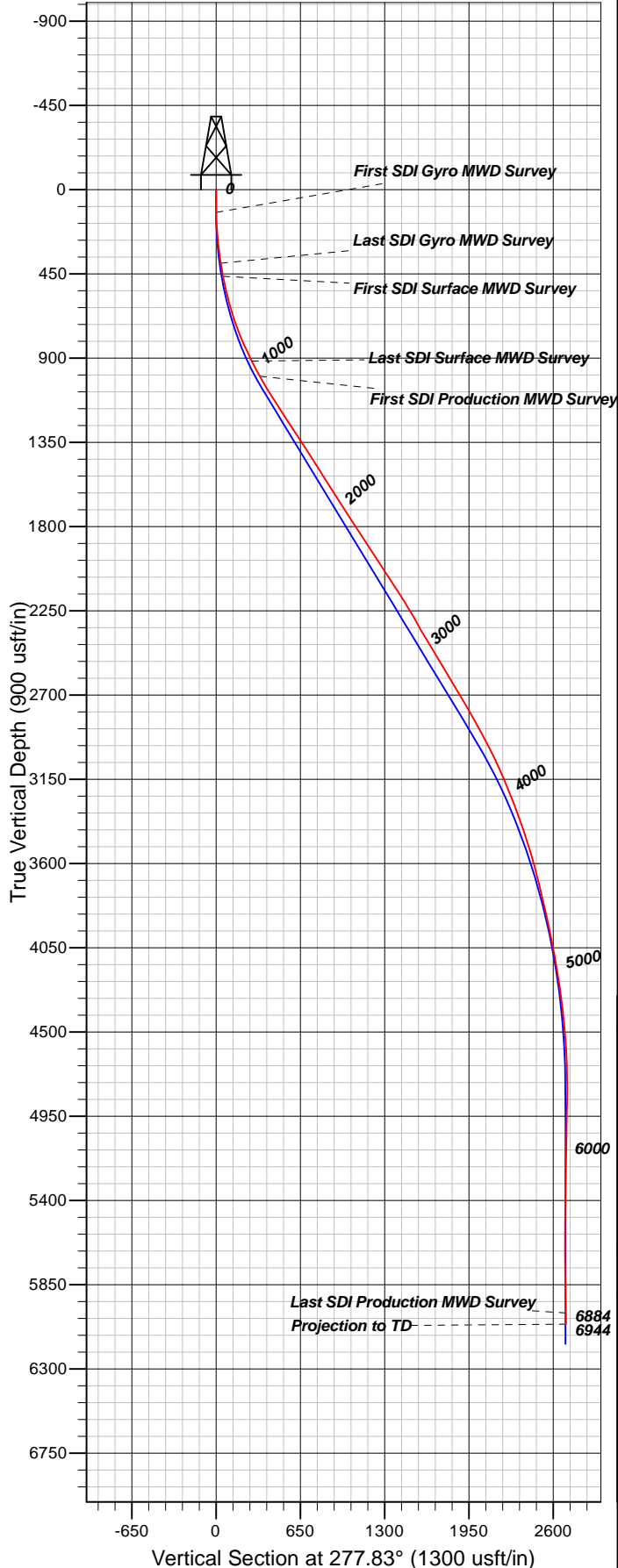
OH

Design: OH

Standard Survey Report

21 March, 2019





Well Details: SG 341-21

TVD Reference: GL 6092.4' & RKB 24' @ 6116.40usft and Level: 6092.40					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1591218.90	2264517.00	39.4277206	-108.1040738

Slot SG 341-21 (A9)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SG 341-21 - Slot SG 341-21 (A9), True North
 Vertical (TVD) Reference: GL 6092.4' & RKB 24' @ 6116.40usft
 Section (VS) Reference: Slot - SG 341-21 (A9)(0.00N, 0.00E)
 Measured Depth Reference: GL 6092.4' & RKB 24' @ 6116.40usft
 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

10:19, March 21 2019
 Created By: Mel Mireles Jr.



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.	SG 341-21
County & State	Garfield County, CO
SDI Job No.	OP.017179
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 6,994 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

21-Mar-19

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 341-21 - Slot SG 341-21 (A9)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft
Site:	SG 11-22 Pad	MD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft
Well:	SG 341-21	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		SG 11-22 Pad			
Site Position:		Northing:	1,591,239.00 usft	Latitude:	39.4277783
From:	Map	Easting:	2,264,548.70 usft	Longitude:	-108.1039637
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.64 °

Well	SG 341-21 - Slot SG 341-21 (A9)					
Well Position	+N/-S	0.00 usft	Northing:	1,591,218.90 usft	Latitude:	39.4277206
	+E/-W	0.00 usft	Easting:	2,264,517.00 usft	Longitude:	-108.1040738
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,092.40 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/11/2019	9.38	65.58	51,617

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	277.83	

Survey Program	Date	3/21/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
122.00	396.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
468.00	976.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,078.00	6,944.00	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	
122.00	0.97	280.90	121.99	0.20	-1.01	1.03	0.80	0.80	0.00	
First SDI Gyro MWD Survey										
213.00	5.45	285.73	212.83	1.51	-5.93	6.08	4.93	4.92	5.31	
305.00	9.50	280.11	304.03	4.03	-17.62	18.00	4.47	4.40	-6.11	
396.00	13.20	278.17	393.23	6.83	-35.30	35.90	4.09	4.07	-2.13	
Last SDI Gyro MWD Survey										
468.00	15.36	277.09	463.01	9.17	-52.90	53.66	3.02	3.00	-1.50	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 341-21 - Slot SG 341-21 (A9)
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Site:	SG 11-22 Pad	MD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft
Well:	SG 341-21	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									
559.00	18.70	277.69	550.00	12.61	-79.33	80.31	3.68	3.67	0.66
650.00	22.59	278.31	635.14	17.09	-111.09	112.38	4.28	4.27	0.68
745.00	27.54	280.26	721.17	23.65	-150.78	152.60	5.28	5.21	2.05
839.00	31.69	280.89	802.87	32.19	-196.43	198.99	4.43	4.41	0.67
934.00	34.92	280.78	882.26	41.99	-247.66	251.07	3.40	3.40	-0.12
976.00	35.53	279.91	916.57	46.34	-271.49	275.27	1.88	1.45	-2.07
Last SDI Surface MWD Survey									
1,078.00	38.77	279.27	997.86	56.58	-332.22	336.83	3.20	3.18	-0.63
First SDI Production MWD Survey									
1,173.00	40.82	277.07	1,070.85	65.20	-392.40	397.62	2.62	2.16	-2.32
1,267.00	43.85	277.68	1,140.33	73.33	-455.17	460.92	3.25	3.22	0.65
1,362.00	43.61	276.88	1,208.98	81.66	-520.31	526.59	0.63	-0.25	-0.84
1,456.00	43.20	276.31	1,277.27	89.08	-584.48	591.16	0.60	-0.44	-0.61
1,550.00	43.17	278.09	1,345.81	97.14	-648.29	655.48	1.30	-0.03	1.89
1,645.00	42.38	276.48	1,415.55	105.32	-712.28	719.99	1.42	-0.83	-1.69
1,739.00	43.24	279.50	1,484.51	114.21	-775.52	783.85	2.37	0.91	3.21
1,833.00	42.00	278.02	1,553.68	123.92	-838.43	847.49	1.70	-1.32	-1.57
1,928.00	43.16	279.40	1,623.64	133.66	-901.96	911.76	1.57	1.22	1.45
2,022.00	41.73	279.73	1,693.00	144.20	-964.51	975.17	1.54	-1.52	0.35
2,116.00	43.66	279.31	1,762.08	154.74	-1,027.37	1,038.88	2.08	2.05	-0.45
2,211.00	43.22	279.00	1,831.06	165.13	-1,091.86	1,104.18	0.51	-0.46	-0.33
2,305.00	42.54	278.26	1,899.94	174.73	-1,155.10	1,168.14	0.90	-0.72	-0.79
2,400.00	44.46	280.49	1,968.86	185.40	-1,219.61	1,233.49	2.59	2.02	2.35
2,494.00	43.69	279.05	2,036.39	196.50	-1,284.04	1,298.84	1.34	-0.82	-1.53
2,588.00	43.21	279.02	2,104.63	206.65	-1,347.88	1,363.47	0.51	-0.51	-0.03
2,683.00	42.33	277.69	2,174.37	216.03	-1,411.70	1,427.97	1.33	-0.93	-1.40
2,777.00	40.43	277.34	2,244.90	224.16	-1,473.31	1,490.11	2.04	-2.02	-0.37
2,871.00	39.07	279.93	2,317.17	233.17	-1,532.72	1,550.20	2.28	-1.45	2.76
2,966.00	40.75	279.93	2,390.04	243.68	-1,592.76	1,611.11	1.77	1.77	0.00
3,060.00	41.43	278.45	2,460.89	253.54	-1,653.74	1,672.86	1.26	0.72	-1.57
3,155.00	40.29	277.90	2,532.74	262.38	-1,715.26	1,735.01	1.26	-1.20	-0.58
3,249.00	41.43	280.43	2,603.83	272.19	-1,775.96	1,796.48	2.14	1.21	2.69
3,344.00	41.01	280.57	2,675.29	283.60	-1,837.51	1,859.01	0.45	-0.44	0.15
3,438.00	40.04	279.69	2,746.74	294.34	-1,897.63	1,920.04	1.20	-1.03	-0.94
3,533.00	39.21	280.99	2,819.92	305.21	-1,957.23	1,980.57	1.23	-0.87	1.37
3,627.00	37.42	280.01	2,893.67	315.84	-2,014.53	2,038.78	2.01	-1.90	-1.04
3,722.00	37.06	280.06	2,969.30	325.86	-2,071.14	2,096.22	0.38	-0.38	0.05
3,816.00	35.17	279.56	3,045.23	335.30	-2,125.73	2,151.59	2.03	-2.01	-0.53
3,910.00	31.57	279.82	3,123.72	344.00	-2,176.69	2,203.26	3.83	-3.83	0.28
4,005.00	30.38	278.81	3,205.17	351.92	-2,224.93	2,252.13	1.37	-1.25	-1.06
4,099.00	29.40	278.61	3,286.67	359.01	-2,271.24	2,298.97	1.05	-1.04	-0.21
4,194.00	27.08	277.51	3,370.35	365.33	-2,315.74	2,343.92	2.50	-2.44	-1.16
4,289.00	25.94	277.19	3,455.36	370.76	-2,357.79	2,386.32	1.21	-1.20	-0.34

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Site:	SG 11-22 Pad	MD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft
Well:	SG 341-21	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)
4,383.00	22.68	275.19	3,541.02	374.97	-2,396.25	2,424.99	3.58	-3.47	-2.13
4,477.00	21.19	274.72	3,628.21	378.01	-2,431.23	2,460.06	1.60	-1.59	-0.50
4,571.00	19.44	273.19	3,716.36	380.28	-2,463.78	2,492.62	1.95	-1.86	-1.63
4,666.00	18.70	273.14	3,806.15	381.99	-2,494.77	2,523.55	0.78	-0.78	-0.05
4,760.00	17.66	271.88	3,895.45	383.29	-2,524.07	2,552.75	1.18	-1.11	-1.34
4,854.00	16.48	269.93	3,985.31	383.74	-2,551.65	2,580.14	1.40	-1.26	-2.07
4,949.00	15.39	269.80	4,076.66	383.68	-2,577.74	2,605.97	1.15	-1.15	-0.14
5,044.00	12.96	271.00	4,168.76	383.82	-2,601.00	2,629.04	2.58	-2.56	1.26
5,138.00	11.97	272.60	4,260.55	384.44	-2,621.27	2,649.21	1.12	-1.05	1.70
5,197.53	10.83	270.70	4,318.90	384.79	-2,633.03	2,660.91	2.02	-1.92	-3.20
SG 341-21 BTV									
5,233.00	10.15	269.36	4,353.78	384.80	-2,639.49	2,667.30	2.02	-1.90	-3.77
5,327.00	8.35	269.71	4,446.55	384.67	-2,654.60	2,682.25	1.92	-1.91	0.37
5,422.00	6.24	277.53	4,540.78	385.31	-2,666.61	2,694.24	2.45	-2.22	8.23
5,516.00	4.04	291.60	4,634.40	387.20	-2,674.76	2,702.57	2.68	-2.34	14.97
5,611.00	1.93	303.11	4,729.27	389.31	-2,679.21	2,707.27	2.30	-2.22	12.12
5,705.00	0.97	65.53	4,823.25	390.50	-2,679.81	2,708.03	2.75	-1.02	130.23
5,800.00	1.73	97.07	4,918.22	390.66	-2,677.66	2,705.91	1.09	0.80	33.20
5,894.00	2.02	112.83	5,012.17	389.84	-2,674.72	2,702.89	0.63	0.31	16.77
5,989.00	1.72	130.59	5,107.12	388.26	-2,672.10	2,700.08	0.68	-0.32	18.69
6,083.00	1.58	137.70	5,201.08	386.39	-2,670.15	2,697.90	0.26	-0.15	7.56
6,178.00	1.49	142.97	5,296.05	384.43	-2,668.53	2,696.02	0.18	-0.09	5.55
6,272.00	1.54	141.91	5,390.02	382.46	-2,667.01	2,694.25	0.06	0.05	-1.13
6,367.00	1.48	151.70	5,484.98	380.38	-2,665.64	2,692.61	0.28	-0.06	10.31
6,461.00	1.67	173.48	5,578.95	377.95	-2,664.91	2,691.56	0.66	0.20	23.17
6,556.00	1.97	187.46	5,673.90	374.95	-2,664.97	2,691.20	0.56	0.32	14.72
6,650.00	2.39	215.51	5,767.84	371.76	-2,666.32	2,692.10	1.20	0.45	29.84
6,744.00	3.17	208.48	5,861.73	367.88	-2,668.69	2,693.93	0.90	0.83	-7.48
6,839.00	3.96	215.22	5,956.54	362.89	-2,671.84	2,696.36	0.94	0.83	7.09
6,884.00	3.78	214.78	6,001.44	360.40	-2,673.58	2,697.75	0.41	-0.40	-0.98
Last SDI Production MWD Survey									
6,944.00	3.78	214.78	6,061.31	357.15	-2,675.84	2,699.54	0.00	0.00	0.00
Projection to TD - SG 341-21 PBHL									



Scientific Drilling, Intl

Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 341-21 - Slot SG 341-21 (A9)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft
Site:	SG 11-22 Pad	MD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft
Well:	SG 341-21	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
122.00	121.99	0.20	-1.01	First SDI Gyro MWD Survey
396.00	393.23	6.83	-35.30	Last SDI Gyro MWD Survey
468.00	463.01	9.17	-52.90	First SDI Surface MWD Survey
976.00	916.57	46.34	-271.49	Last SDI Surface MWD Survey
1,078.00	997.86	56.58	-332.22	First SDI Production MWD Survey
6,884.00	6,001.44	360.40	-2,673.58	Last SDI Production MWD Survey
6,944.00	6,061.31	357.15	-2,675.84	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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