



TEP Rocky Mountain LLC

Garfield County, CO NAD83

SG 11-22 Pad

SG 42-21 - Slot SG 42-21 (B8)

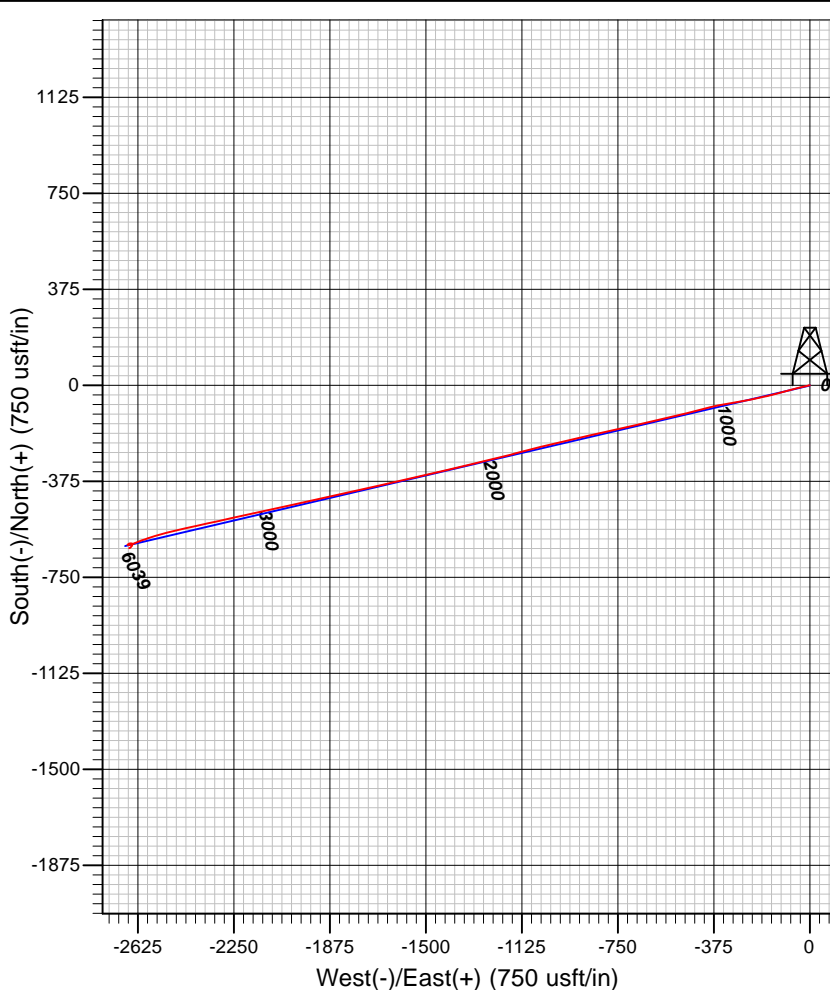
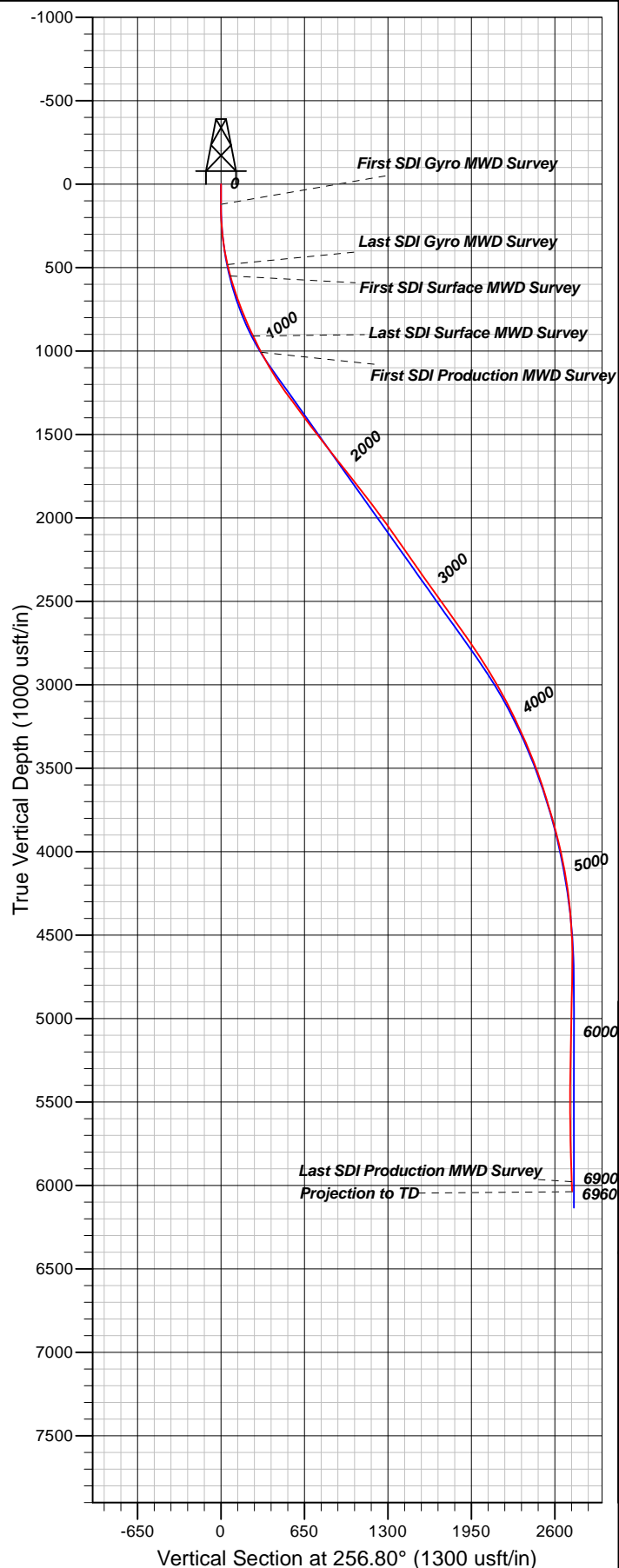
OH

Design: OH

Standard Survey Report

12 March, 2019





Well Details: SG 42-21

TVD Reference: GL 6092.4' & RKB 24' @ 6116.40usft and Level: 6092.40
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1591214.50 2264528.70 39.4277094 -108.1040319 SG 42-21 (B8)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SG 42-21 - Slot SG 42-21 (B8), True North
 Vertical (TVD) Reference: GL 6092.4' & RKB 24' @ 6116.40usft
 Section (VS) Reference: Slot - SG 42-21 (B8)(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

12:43, March 12 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 42-21
County & State	Garfield County, CO
SDI Job No.	OP.017007
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 6,960 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

12-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 42-21 - Slot SG 42-21 (B8)
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 42-21	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 42-21 - Slot SG 42-21 (B8)					
Well Position	+N/-S	0.00 usft	Northing:	1,591,214.50 usft	Latitude:	39.4277095
	+E/-W	0.00 usft	Easting:	2,264,528.70 usft	Longitude:	-108.1040320
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	3/3/2019	9.38	65.58	51,619

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	256.80	

Survey Program	Date	3/12/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
122.00	488.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
559.00	961.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,078.00	6,960.00	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	0.44	352.44	122.00	0.46	-0.06	-0.05	0.36	0.36	0.00	
First SDI Gyro MWD Survey										
213.00	3.08	259.45	212.95	0.36	-2.51	2.36	3.44	2.90	-102.19	
305.00	7.57	256.55	304.53	-1.50	-10.84	10.90	4.89	4.88	-3.15	
396.00	12.76	255.94	394.08	-5.34	-26.43	26.95	5.70	5.70	-0.67	
488.00	16.98	255.50	482.97	-11.17	-49.30	50.55	4.59	4.59	-0.48	
Last SDI Gyro MWD Survey										

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 42-21 - Slot SG 42-21 (B8)
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 42-21	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)	
559.00	19.29	255.78	550.44	-16.65	-70.71	72.64	3.26	3.25	0.39	
First SDI Surface MWD Survey										
651.00	22.87	255.29	636.27	-24.92	-102.74	105.72	3.90	3.89	-0.53	
745.00	26.58	255.68	721.64	-34.77	-140.80	145.02	3.95	3.95	0.41	
839.00	28.93	256.70	804.82	-45.20	-183.31	188.79	2.55	2.50	1.09	
934.00	30.99	259.28	887.12	-55.04	-229.71	236.20	2.56	2.17	2.72	
961.00	31.48	259.52	910.21	-57.61	-243.47	250.19	1.87	1.81	0.89	
Last SDI Surface MWD Survey										
1,078.00	34.02	260.63	1,008.60	-68.50	-305.81	313.37	2.23	2.17	0.95	
First SDI Production MWD Survey										
1,173.00	36.85	258.77	1,086.00	-78.38	-359.99	368.37	3.19	2.98	-1.96	
1,267.00	39.40	255.84	1,159.95	-91.17	-416.57	426.38	3.33	2.71	-3.12	
1,362.00	42.75	255.18	1,231.56	-106.80	-476.99	488.78	3.56	3.53	-0.69	
1,456.00	44.33	257.51	1,299.70	-122.06	-539.91	553.52	2.40	1.68	2.48	
1,550.00	43.45	255.70	1,367.44	-137.15	-603.30	618.68	1.63	-0.94	-1.93	
1,645.00	44.67	257.21	1,435.71	-152.61	-667.52	684.74	1.69	1.28	1.59	
1,739.00	45.75	258.05	1,501.93	-166.90	-732.69	751.44	1.31	1.15	0.89	
1,834.00	44.51	256.16	1,568.96	-181.91	-798.31	818.76	1.92	-1.31	-1.99	
1,928.00	44.82	258.26	1,635.82	-196.53	-862.74	884.83	1.60	0.33	2.23	
2,022.00	46.22	257.89	1,701.68	-210.39	-928.36	951.88	1.52	1.49	-0.39	
2,117.00	45.90	257.03	1,767.60	-225.24	-995.14	1,020.28	0.73	-0.34	-0.91	
2,211.00	46.00	255.46	1,832.96	-241.31	-1,060.75	1,087.83	1.21	0.11	-1.67	
2,305.00	45.59	254.60	1,898.50	-258.71	-1,125.85	1,155.18	0.79	-0.44	-0.91	
2,400.00	43.56	255.84	1,966.17	-275.73	-1,190.31	1,221.82	2.32	-2.14	1.31	
2,494.00	42.49	256.39	2,034.89	-291.13	-1,252.57	1,285.96	1.21	-1.14	0.59	
2,588.00	42.59	256.49	2,104.15	-306.03	-1,314.35	1,349.51	0.13	0.11	0.11	
2,683.00	42.54	257.09	2,174.12	-320.71	-1,376.91	1,413.77	0.43	-0.05	0.63	
2,777.00	42.37	257.07	2,243.47	-334.90	-1,438.76	1,477.22	0.18	-0.18	-0.02	
2,872.00	41.80	256.14	2,313.97	-349.65	-1,500.70	1,540.89	0.89	-0.60	-0.98	
2,966.00	42.85	258.20	2,383.47	-363.69	-1,562.41	1,604.17	1.85	1.12	2.19	
3,061.00	42.74	257.04	2,453.19	-377.52	-1,625.44	1,668.71	0.84	-0.12	-1.22	
3,155.00	43.25	256.39	2,521.94	-392.26	-1,687.83	1,732.81	0.72	0.54	-0.69	
3,250.00	43.47	257.68	2,591.01	-406.89	-1,751.39	1,798.03	0.96	0.23	1.36	
3,344.00	42.56	257.59	2,659.74	-420.62	-1,814.03	1,862.15	0.97	-0.97	-0.10	
3,439.00	41.24	257.23	2,730.45	-434.44	-1,875.94	1,925.58	1.41	-1.39	-0.38	
3,533.00	41.31	257.66	2,801.09	-447.92	-1,936.47	1,987.59	0.31	0.07	0.46	
3,627.00	39.63	256.91	2,872.60	-461.34	-1,995.98	2,048.60	1.86	-1.79	-0.80	
3,722.00	38.11	258.55	2,946.57	-474.03	-2,054.23	2,108.20	1.93	-1.60	1.73	
3,816.00	36.23	258.35	3,021.47	-485.40	-2,109.87	2,164.97	2.00	-2.00	-0.21	
3,911.00	34.71	256.41	3,098.84	-497.42	-2,163.66	2,220.08	1.99	-1.60	-2.04	
4,015.00	32.06	258.74	3,185.67	-509.77	-2,219.53	2,277.29	2.83	-2.55	2.24	
4,100.00	30.57	257.83	3,258.29	-518.73	-2,262.78	2,321.45	1.84	-1.75	-1.07	
4,194.00	29.67	257.02	3,339.59	-529.00	-2,308.82	2,368.62	1.05	-0.96	-0.86	
4,289.00	28.25	257.80	3,422.71	-539.03	-2,353.71	2,414.61	1.55	-1.49	0.82	

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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 42-21	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	25.09	257.60	3,506.70	-548.01	-2,394.93	2,456.79	3.36	-3.36	-0.21
4,477.00	23.71	256.69	3,592.30	-556.65	-2,432.79	2,495.62	1.52	-1.47	-0.97
4,572.00	22.20	256.96	3,679.78	-565.09	-2,468.86	2,532.67	1.59	-1.59	0.28
4,666.00	20.72	256.43	3,767.26	-573.00	-2,502.33	2,567.06	1.59	-1.57	-0.56
4,760.00	18.89	254.11	3,855.70	-581.07	-2,533.13	2,598.89	2.12	-1.95	-2.47
4,855.00	18.03	253.36	3,945.81	-589.49	-2,562.01	2,628.93	0.94	-0.91	-0.79
4,949.00	15.66	251.59	4,035.77	-597.66	-2,587.99	2,656.09	2.58	-2.52	-1.88
5,044.00	13.08	249.95	4,127.79	-605.40	-2,610.25	2,679.53	2.75	-2.72	-1.73
5,138.00	10.38	248.53	4,219.82	-612.15	-2,628.13	2,698.48	2.89	-2.87	-1.51
5,206.21	8.45	247.95	4,287.10	-616.28	-2,638.49	2,709.51	2.84	-2.83	-0.84
SG 42-21 BTV									
5,233.00	7.69	247.65	4,313.63	-617.70	-2,641.98	2,713.22	2.84	-2.83	-1.14
5,327.00	5.56	252.12	4,407.00	-621.49	-2,652.13	2,723.97	2.33	-2.27	4.76
5,422.00	4.42	264.86	4,501.64	-623.23	-2,660.15	2,732.19	1.67	-1.20	13.41
5,516.00	1.41	293.35	4,595.51	-623.10	-2,664.83	2,736.70	3.46	-3.20	30.31
5,611.00	1.02	54.12	4,690.50	-622.14	-2,665.21	2,736.86	2.23	-0.41	127.13
5,705.00	2.20	58.86	4,784.46	-620.71	-2,662.99	2,734.37	1.26	1.26	5.04
5,800.00	1.70	54.52	4,879.41	-618.95	-2,660.28	2,731.33	0.55	-0.53	-4.57
5,894.00	1.81	64.17	4,973.36	-617.50	-2,657.81	2,728.59	0.33	0.12	10.27
5,989.00	1.30	89.43	5,068.33	-616.83	-2,655.38	2,726.08	0.89	-0.54	26.59
6,083.00	1.17	97.79	5,162.31	-616.95	-2,653.37	2,724.14	0.24	-0.14	8.89
6,178.00	1.69	97.96	5,257.28	-617.28	-2,651.02	2,721.93	0.55	0.55	0.18
6,272.00	1.51	107.28	5,351.24	-617.84	-2,648.46	2,719.57	0.34	-0.19	9.91
6,367.00	0.74	147.59	5,446.22	-618.73	-2,646.94	2,718.29	1.12	-0.81	42.43
6,461.00	1.44	180.87	5,540.21	-620.42	-2,646.63	2,718.38	0.97	0.74	35.40
6,556.00	1.90	201.13	5,635.17	-623.08	-2,647.22	2,719.56	0.78	0.48	21.33
6,650.00	2.26	208.83	5,729.10	-626.16	-2,648.67	2,721.68	0.48	0.38	8.19
6,745.00	2.66	213.47	5,824.02	-629.64	-2,650.79	2,724.53	0.47	0.42	4.88
6,839.00	3.25	234.47	5,917.89	-633.01	-2,654.16	2,728.58	1.30	0.63	22.34
6,900.00	2.73	240.09	5,978.81	-634.74	-2,656.83	2,731.58	0.98	-0.85	9.21
Last SDI Production MWD Survey									
6,960.00	2.73	240.09	6,038.74	-636.16	-2,659.31	2,734.31	0.00	0.00	0.00
Projection to TD - SG 42-21 PBHL									



Scientific Drilling, Intl
Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 42-21 - Slot SG 42-21 (B8)
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 42-21	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	122.00	0.46	-0.06	First SDI Gyro MWD Survey
488.00	482.97	-11.17	-49.30	Last SDI Gyro MWD Survey
559.00	550.44	-16.65	-70.71	First SDI Surface MWD Survey
961.00	910.21	-57.61	-243.47	Last SDI Surface MWD Survey
1,078.00	1,008.60	-68.50	-305.81	First SDI Production MWD Survey
6,900.00	5,978.81	-634.74	-2,656.83	Last SDI Production MWD Survey
6,960.00	6,038.74	-636.16	-2,659.31	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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