



TEP Rocky Mountain LLC

Garfield County, CO NAD83

SG 11-22 Pad

SG 411-22 - Slot SG 411-22 (A7)

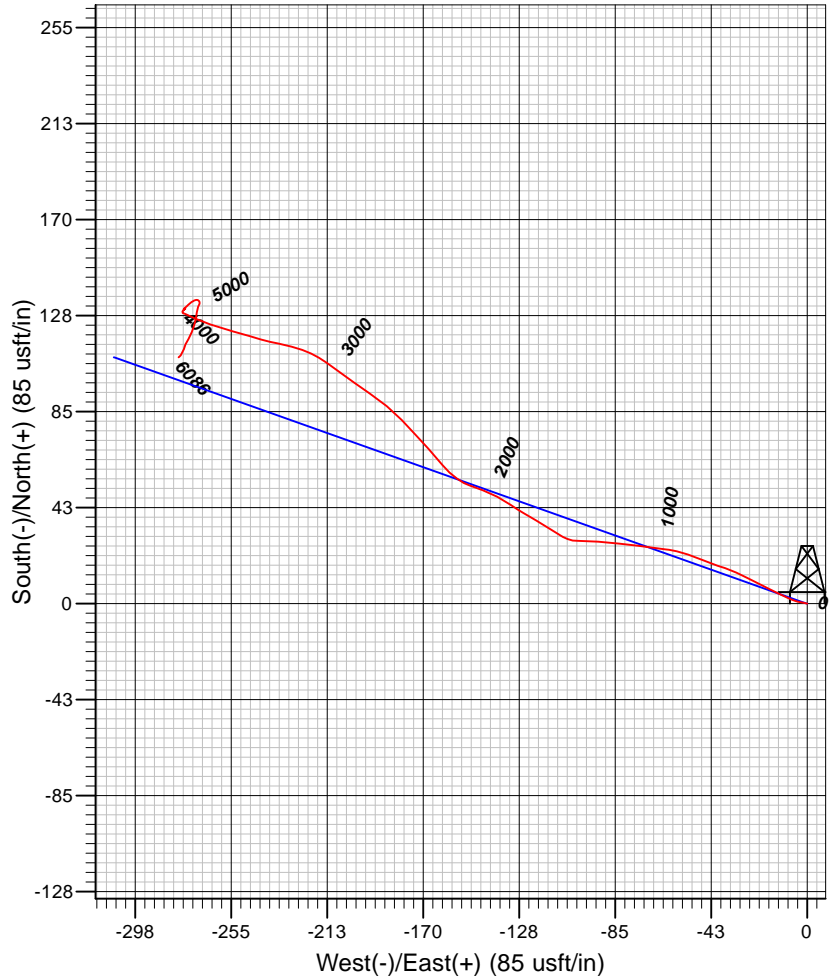
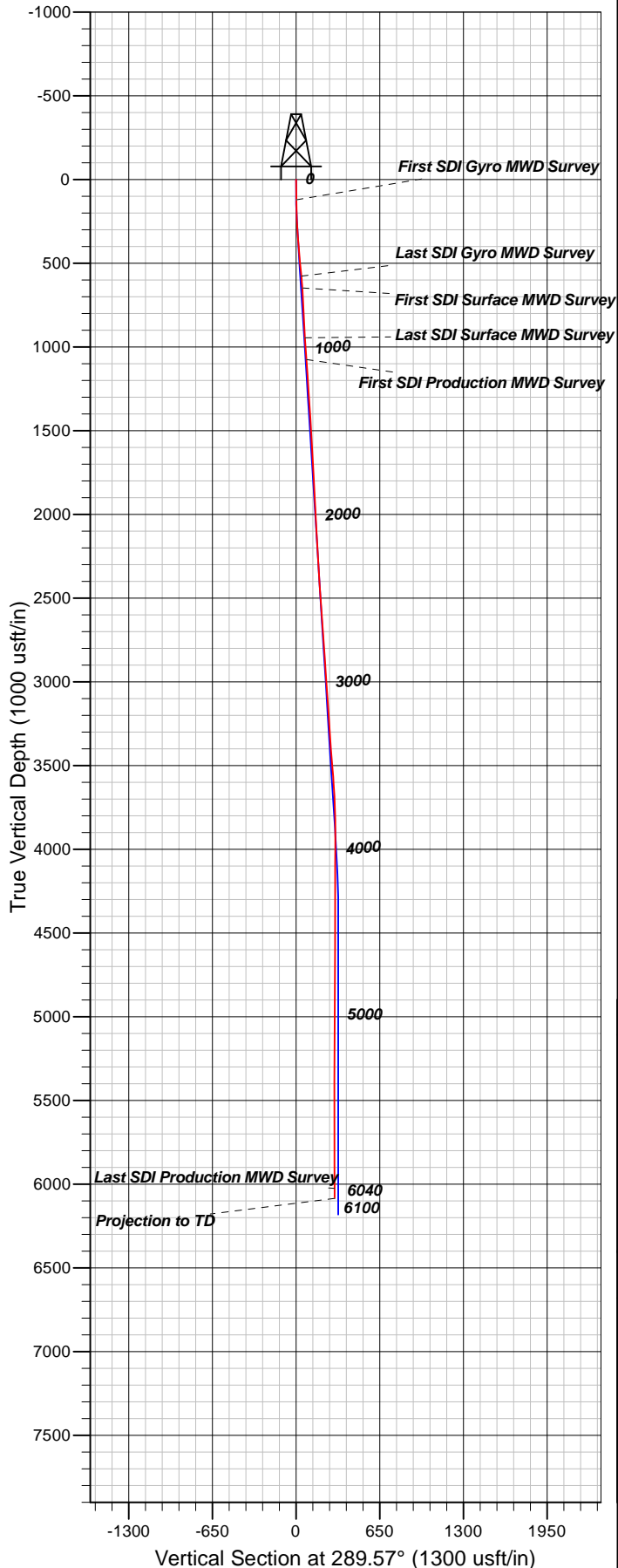
OH

Design: OH

Standard Survey Report

06 March, 2019





Well Details: SG 411-22

TVD Reference: GL 6092.4' & RKB 24' @ 6116.40usft (H&P 318) Level: 6092.40
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1591226.90 2264529.70 39.4277435 -108.1040296SG 411-22 (A7)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SG 411-22 - Slot SG 411-22 (A7), True North
 Vertical (TVD) Reference: GL 6092.4' & RKB 24' @ 6116.40usft (H&P 318)
 Section (VS) Reference: Slot - SG 411-22 (A7)(0.00N, 0.00E)
 Measured Depth Reference: GL 6092.4' & RKB 24' @ 6116.40usft (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

11:59, March 06 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 411-22
County & State	Garfield County, CO
SDI Job No.	OP.016851
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 6,100 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

06-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 411-22 - Slot SG 411-22 (A7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft (H&P 318)
Site:	SG 11-22 Pad	MD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft (H&P 318)
Well:	SG 411-22	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 411-22 - Slot SG 411-22 (A7)					
Well Position	+N/-S	0.00 usft	Northing:	1,591,226.90 usft	Latitude:	39.4277436
	+E/-W	0.00 usft	Easting:	2,264,529.70 usft	Longitude:	-108.1040297
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	2/24/2019	9.38	65.58	51,621

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	289.57	

Survey Program	Date	3/6/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
122.00	579.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
651.00	949.00	Survey #2 - Surface MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
1,079.00	6,100.00	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	0.88	285.64	122.00	0.25	-0.90	0.93	0.72	0.72	0.00	
First SDI Gyro MWD Survey										
213.00	2.38	279.58	212.96	0.76	-3.44	3.49	1.66	1.65	-6.66	
305.00	4.84	294.52	304.77	2.68	-8.85	9.24	2.84	2.67	16.24	
396.00	6.25	296.98	395.34	6.53	-16.76	17.98	1.57	1.55	2.70	
488.00	7.21	296.89	486.71	11.41	-26.37	28.67	1.04	1.04	-0.10	
579.00	6.60	289.51	577.05	15.74	-36.40	39.57	1.18	-0.67	-8.11	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 411-22 - Slot SG 411-22 (A7)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft (H&P 318)
Site:	SG 11-22 Pad	MD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft (H&P 318)
Well:	SG 411-22	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									
651.00	5.54	289.58	648.64	18.28	-43.57	47.18	1.47	-1.47	0.10
First SDI Surface MWD Survey									
745.00	3.60	292.49	742.34	20.93	-50.57	54.66	2.08	-2.06	3.10
839.00	2.96	285.54	836.18	22.71	-55.64	60.03	0.80	-0.68	-7.39
934.00	4.43	279.00	930.98	23.94	-61.63	66.09	1.61	1.55	-6.88
949.00	4.92	277.71	945.93	24.12	-62.84	67.29	3.34	3.27	-8.60
Last SDI Surface MWD Survey									
1,079.00	5.47	276.73	1,075.40	25.60	-74.51	78.78	0.43	0.42	-0.75
First SDI Production MWD Survey									
1,173.00	5.45	276.57	1,168.97	26.63	-83.40	87.50	0.03	-0.02	-0.17
1,268.00	5.60	274.04	1,263.53	27.47	-92.50	96.36	0.30	0.16	-2.66
1,362.00	4.99	270.15	1,357.13	27.81	-101.17	104.64	0.75	-0.65	-4.14
1,456.00	4.22	301.88	1,450.84	29.65	-108.19	111.87	2.79	-0.82	33.76
1,550.00	4.25	301.10	1,544.59	33.27	-114.11	118.66	0.07	0.03	-0.83
1,645.00	4.13	301.79	1,639.33	36.89	-120.03	125.46	0.14	-0.13	0.73
1,739.00	3.55	299.19	1,733.12	40.09	-125.45	131.63	0.64	-0.62	-2.77
1,834.00	4.57	305.13	1,827.88	43.71	-131.11	138.18	1.16	1.07	6.25
1,928.00	4.22	296.17	1,921.61	47.39	-137.28	145.22	0.82	-0.37	-9.53
2,022.00	4.16	291.95	2,015.35	50.19	-143.55	152.07	0.33	-0.06	-4.49
2,117.00	3.25	288.08	2,110.16	52.31	-149.30	158.20	0.99	-0.96	-4.07
2,211.00	4.84	305.13	2,203.92	55.42	-155.08	164.69	2.10	1.69	18.14
2,305.00	5.98	319.34	2,297.51	61.42	-161.51	172.76	1.86	1.21	15.12
2,400.00	5.35	319.25	2,392.04	68.53	-167.63	180.90	0.66	-0.66	-0.09
2,494.00	5.22	316.58	2,485.64	74.95	-173.43	188.52	0.30	-0.14	-2.84
2,588.00	5.40	317.21	2,579.24	81.30	-179.37	196.24	0.20	0.19	0.67
2,683.00	5.72	308.38	2,673.79	87.52	-186.12	204.69	0.96	0.34	-9.29
2,777.00	5.54	304.60	2,767.34	93.01	-193.53	213.50	0.44	-0.19	-4.02
2,872.00	5.19	305.31	2,861.92	98.10	-200.81	222.07	0.37	-0.37	0.75
2,966.00	5.21	305.45	2,955.54	103.03	-207.76	230.26	0.03	0.02	0.15
3,061.00	5.00	305.46	3,050.16	107.93	-214.64	238.40	0.22	-0.22	0.01
3,155.00	5.39	289.64	3,143.78	111.79	-222.14	246.75	1.57	0.41	-16.83
3,250.00	4.89	284.10	3,238.40	114.28	-230.27	255.24	0.74	-0.53	-5.83
3,344.00	4.57	281.58	3,332.08	116.01	-237.82	262.94	0.41	-0.34	-2.68
3,439.00	6.41	288.06	3,426.64	118.41	-246.57	271.99	2.04	1.94	6.82
3,533.00	6.10	283.77	3,520.08	121.23	-256.41	282.20	0.60	-0.33	-4.56
3,627.00	4.80	291.36	3,613.65	123.85	-264.92	291.10	1.58	-1.38	8.07
3,722.00	3.80	294.49	3,708.38	126.60	-271.49	298.21	1.08	-1.05	3.29
3,816.00	1.74	290.90	3,802.27	128.40	-275.66	302.74	2.20	-2.19	-3.82
3,911.00	0.81	39.19	3,897.25	129.44	-276.58	303.96	2.25	-0.98	113.99
4,005.00	0.62	39.17	3,991.25	130.34	-275.84	303.57	0.20	-0.20	-0.02
4,100.00	0.27	111.22	4,086.24	130.66	-275.31	303.17	0.63	-0.37	75.84
4,194.00	0.26	239.13	4,180.24	130.47	-275.28	303.09	0.51	-0.01	136.07
4,289.00	0.75	238.92	4,275.24	130.04	-276.00	303.62	0.52	0.52	-0.22

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Site:	SG 11-22 Pad	MD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft (H&P 318)
Well:	SG 411-22	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)	
4,354.62	0.64	34.37	4,340.86	130.12	-276.16	303.80	2.07	-0.17	236.88	
SG 411-22 BTV										
4,383.00	1.22	40.71	4,369.23	130.48	-275.88	303.65	2.07	2.04	22.35	
4,478.00	1.23	52.62	4,464.21	131.87	-274.41	302.72	0.27	0.01	12.54	
4,572.00	1.21	43.94	4,558.19	133.19	-272.92	301.77	0.20	-0.02	-9.23	
4,666.00	0.74	71.95	4,652.18	134.10	-271.65	300.87	0.70	-0.50	29.80	
4,760.00	0.51	75.25	4,746.17	134.39	-270.67	300.05	0.25	-0.24	3.51	
4,855.00	0.44	86.72	4,841.17	134.52	-269.90	299.36	0.12	-0.07	12.07	
4,949.00	0.51	153.42	4,935.17	134.17	-269.35	298.73	0.56	0.07	70.96	
5,044.00	0.45	147.26	5,030.16	133.47	-268.96	298.13	0.08	-0.06	-6.48	
5,138.00	0.60	213.72	5,124.16	132.76	-269.03	297.96	0.63	0.16	70.70	
5,233.00	1.14	196.76	5,219.15	131.44	-269.58	298.03	0.62	0.57	-17.85	
5,327.00	1.82	193.22	5,313.12	129.09	-270.19	297.82	0.73	0.72	-3.77	
5,422.00	1.67	184.37	5,408.07	126.24	-270.64	297.29	0.32	-0.16	-9.32	
5,516.00	1.85	200.38	5,502.03	123.45	-271.27	296.95	0.55	0.19	17.03	
5,611.00	2.20	200.01	5,596.97	120.30	-272.43	296.99	0.37	0.37	-0.39	
5,706.00	1.94	210.60	5,691.91	117.20	-273.87	297.31	0.49	-0.27	11.15	
5,800.00	1.41	206.26	5,785.87	114.80	-275.20	297.75	0.58	-0.56	-4.62	
5,894.00	1.32	189.47	5,879.84	112.69	-275.89	297.70	0.43	-0.10	-17.86	
6,040.00	1.23	226.47	6,025.81	109.95	-277.30	298.11	0.56	-0.06	25.34	
Last SDI Production MWD Survey										
6,100.00	1.23	226.47	6,085.79	109.07	-278.23	298.69	0.00	0.00	0.00	
Projection to TD - SG 411-22 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
122.00	122.00	0.25	-0.90	First SDI Gyro MWD Survey	
579.00	577.05	15.74	-36.40	Last SDI Gyro MWD Survey	
651.00	648.64	18.28	-43.57	First SDI Surface MWD Survey	
949.00	945.93	24.12	-62.84	Last SDI Surface MWD Survey	
1,079.00	1,075.40	25.60	-74.51	First SDI Production MWD Survey	
6,040.00	6,025.81	109.95	-277.30	Last SDI Production MWD Survey	
6,100.00	6,085.79	109.07	-278.23	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____