



TEP Rocky Mountain LLC

Garfield County, CO NAD83

SG 11-22 Pad

SG 511-22 - Slot SG 511-22 (B7)

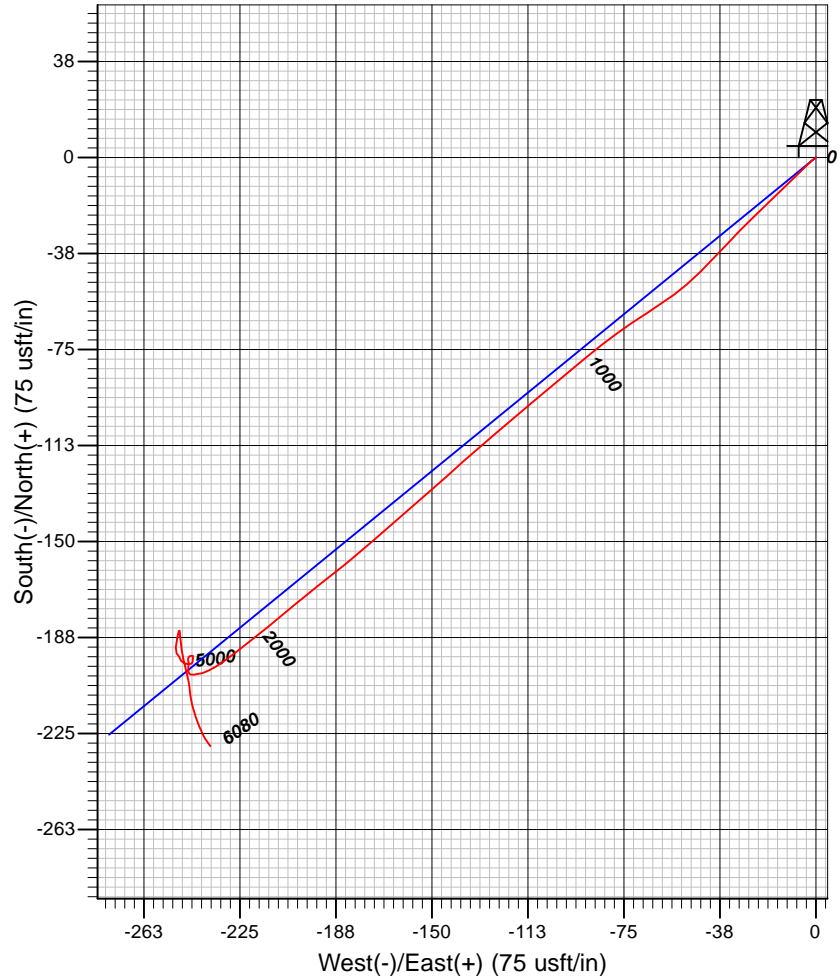
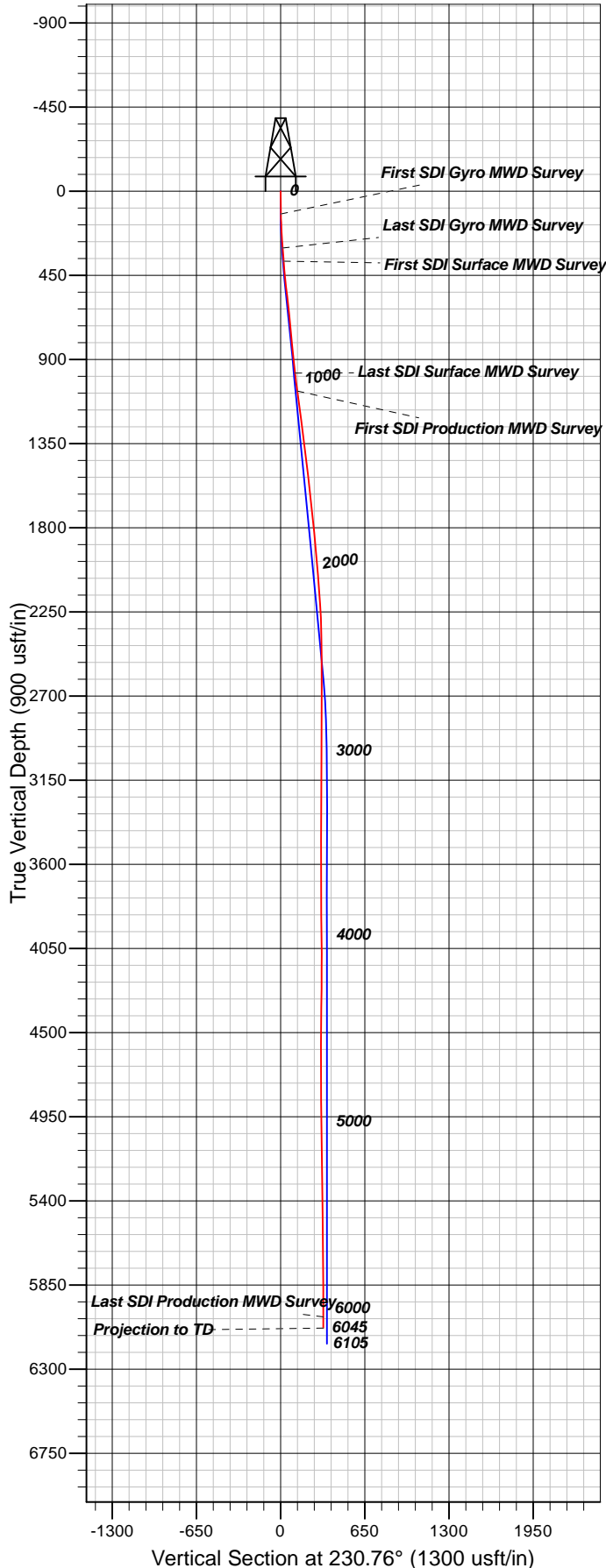
OH

Design: OH

Standard Survey Report

21 March, 2019





Well Details: SG 511-22

TVD Reference: GL 6092.4' & RKB 24' @ 6116.40usft
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1591218.50 2264535.00 39.4277209 -108.1040100SG 511-22 (B7)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SG 511-22 - Slot SG 511-22 (B7), True North
 Vertical (TVD) Reference: GL 6092.4' & RKB 24' @ 6116.40usft
 Section (VS) Reference: Slot - SG 511-22 (B7)(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

11:40, 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 511-22
County & State	Garfield County, CO
SDI Job No.	OP.016911
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 6,105 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 511-22 - Slot SG 511-22 (B7)
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 511-22	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 511-22 - Slot SG 511-22 (B7)					
Well Position	+N/-S	0.00 usft	Northing:	1,591,218.50 usft	Latitude:	39.4277209
	+E/-W	0.00 usft	Easting:	2,264,535.00 usft	Longitude:	-108.1040101
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	2/27/2019	9.38	65.58	51,620

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	230.76	

Survey Program	Date	3/21/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
122.00	305.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
376.00	981.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,079.00	6,105.00	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	1.41	231.24	121.99	-0.94	-1.17	1.50	1.16	1.16	0.00	
First SDI Gyro MWD Survey										
213.00	4.84	225.53	212.84	-4.33	-4.78	6.45	3.78	3.77	-6.27	
305.00	5.98	226.14	304.43	-10.37	-11.01	15.09	1.24	1.24	0.66	
Last SDI Gyro MWD Survey										
376.00	6.42	225.77	375.01	-15.70	-16.52	22.73	0.62	0.62	-0.52	
First SDI Surface MWD Survey										

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 511-22 - Slot SG 511-22 (B7)
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 511-22	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)
468.00	8.35	226.12	466.24	-23.92	-25.02	34.51	2.10	2.10	0.38
559.00	9.43	222.25	556.15	-34.02	-34.80	48.47	1.36	1.19	-4.25
651.00	9.13	225.86	646.95	-44.68	-45.10	63.20	0.71	-0.33	3.92
745.00	7.71	233.54	739.93	-53.62	-55.53	76.93	1.92	-1.51	8.17
839.00	7.81	237.60	833.07	-60.79	-65.99	89.57	0.59	0.11	4.32
934.00	8.97	234.47	927.06	-68.56	-77.47	103.37	1.31	1.22	-3.29
981.00	9.41	231.39	973.45	-73.08	-83.45	110.86	1.40	0.94	-6.55
Last SDI Surface MWD Survey									
1,079.00	10.49	230.27	1,069.98	-83.78	-96.57	127.80	1.12	1.10	-1.14
First SDI Production MWD Survey									
1,173.00	11.34	229.63	1,162.28	-95.24	-110.20	145.59	0.91	0.90	-0.68
1,267.00	11.08	230.25	1,254.48	-107.00	-124.18	163.87	0.30	-0.28	0.66
1,362.00	10.69	227.57	1,347.77	-118.78	-137.70	181.79	0.67	-0.41	-2.82
1,456.00	9.52	229.20	1,440.32	-129.75	-150.02	198.27	1.28	-1.24	1.73
1,550.00	9.41	228.93	1,533.04	-139.87	-161.70	213.72	0.13	-0.12	-0.29
1,645.00	8.72	228.79	1,626.85	-149.72	-172.97	228.68	0.73	-0.73	-0.15
1,739.00	8.07	230.44	1,719.84	-158.62	-183.42	242.40	0.74	-0.69	1.76
1,834.00	8.29	232.87	1,813.87	-167.00	-194.02	255.91	0.43	0.23	2.56
1,928.00	7.90	229.30	1,906.94	-175.30	-204.32	269.14	0.68	-0.41	-3.80
2,022.00	7.65	231.54	2,000.07	-183.40	-214.12	281.85	0.42	-0.27	2.38
2,117.00	6.57	231.32	2,094.34	-190.73	-223.31	293.61	1.14	-1.14	-0.23
2,211.00	5.28	234.20	2,187.84	-196.63	-231.02	303.31	1.41	-1.37	3.06
2,305.00	3.60	245.13	2,281.55	-200.40	-237.21	310.48	1.99	-1.79	11.63
2,400.00	1.21	268.64	2,376.47	-201.68	-240.92	314.16	2.67	-2.52	24.75
2,494.00	1.22	247.33	2,470.45	-202.08	-242.83	315.91	0.48	0.01	-22.67
2,588.00	0.62	318.90	2,564.44	-202.09	-244.09	316.88	1.26	-0.64	76.14
2,683.00	0.35	258.76	2,659.43	-201.76	-244.71	317.15	0.57	-0.28	-63.31
2,777.00	1.01	352.75	2,753.43	-200.99	-245.10	316.97	1.16	0.70	99.99
2,872.00	0.86	2.18	2,848.41	-199.45	-245.18	316.05	0.23	-0.16	9.93
2,966.00	0.62	13.03	2,942.41	-198.25	-245.03	315.19	0.29	-0.26	11.54
3,061.00	0.54	342.49	3,037.40	-197.32	-245.05	314.61	0.33	-0.08	-32.15
3,081.37	0.57	344.92	3,057.77	-197.13	-245.11	314.54	0.20	0.16	11.93
SG 511-22 BTV									
3,155.00	0.70	351.71	3,131.40	-196.33	-245.27	314.15	0.20	0.17	9.22
3,250.00	0.44	28.72	3,226.39	-195.43	-245.18	313.52	0.46	-0.27	38.96
3,344.00	0.54	59.29	3,320.39	-194.89	-244.62	312.74	0.29	0.11	32.52
3,439.00	0.45	85.62	3,415.39	-194.63	-243.87	312.00	0.25	-0.09	27.72
3,533.00	0.17	136.19	3,509.38	-194.71	-243.40	311.68	0.39	-0.30	53.80
3,627.00	0.28	197.75	3,603.38	-195.03	-243.38	311.86	0.26	0.12	65.49
3,722.00	0.72	179.01	3,698.38	-195.84	-243.44	312.43	0.49	0.46	-19.73
3,816.00	1.02	191.53	3,792.37	-197.25	-243.59	313.44	0.38	0.32	13.32
3,911.00	1.02	281.09	3,887.36	-197.92	-244.59	314.64	1.51	0.00	94.27
4,005.00	1.31	271.85	3,981.34	-197.72	-246.49	315.98	0.37	0.31	-9.83
4,100.00	1.31	338.96	4,076.32	-196.68	-247.96	316.46	1.52	0.00	70.64

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Site:	SG 11-22 Pad	MD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft
Well:	SG 511-22	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)	
4,194.00	0.96	328.84	4,170.30	-195.00	-248.76	316.01	0.43	-0.37	-10.77	
4,289.00	1.00	315.56	4,265.29	-193.73	-249.75	315.98	0.24	0.04	-13.98	
4,383.00	2.11	7.58	4,359.25	-191.43	-250.09	314.79	1.80	1.18	55.34	
4,477.00	2.37	10.87	4,453.18	-187.80	-249.50	312.04	0.31	0.28	3.50	
4,572.00	1.14	16.76	4,548.14	-184.97	-248.86	309.74	1.31	-1.29	6.20	
4,666.00	1.04	180.87	4,642.13	-184.92	-248.60	309.52	2.30	-0.11	174.59	
4,760.00	1.80	170.57	4,736.10	-187.23	-248.37	310.80	0.85	0.81	-10.96	
4,855.00	1.76	175.58	4,831.06	-190.16	-248.01	312.38	0.17	-0.04	5.27	
4,949.00	2.20	168.73	4,925.00	-193.37	-247.55	314.05	0.53	0.47	-7.29	
5,044.00	1.93	173.74	5,019.94	-196.75	-247.02	315.77	0.34	-0.28	5.27	
5,138.00	2.29	160.20	5,113.87	-200.09	-246.21	317.26	0.65	0.38	-14.40	
5,233.00	1.95	168.50	5,208.81	-203.46	-245.25	318.64	0.48	-0.36	8.74	
5,327.00	2.11	174.53	5,302.75	-206.75	-244.76	320.35	0.28	0.17	6.41	
5,422.00	2.02	172.75	5,397.69	-210.15	-244.38	322.21	0.12	-0.09	-1.87	
5,516.00	2.16	166.55	5,491.63	-213.52	-243.76	323.86	0.28	0.15	-6.60	
5,611.00	1.49	162.13	5,586.58	-216.43	-242.97	325.09	0.72	-0.71	-4.65	
5,706.00	1.78	162.54	5,681.54	-219.02	-242.15	326.08	0.31	0.31	0.43	
5,800.00	1.76	156.01	5,775.49	-221.73	-241.12	327.01	0.22	-0.02	-6.95	
5,894.00	1.84	158.55	5,869.45	-224.45	-239.98	327.85	0.12	0.09	2.70	
5,989.00	1.76	145.87	5,964.40	-227.08	-238.61	328.44	0.43	-0.08	-13.35	
6,045.00	1.76	145.52	6,020.37	-228.50	-237.64	328.59	0.02	0.00	-0.63	
Last SDI Production MWD Survey										
6,105.00	1.76	145.52	6,080.35	-230.02	-236.59	328.74	0.00	0.00	0.00	
Projection to TD - SG 511-22 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
122.00	121.99	-0.94	-1.17	First SDI Gyro MWD Survey	
305.00	304.43	-10.37	-11.01	Last SDI Gyro MWD Survey	
376.00	375.01	-15.70	-16.52	First SDI Surface MWD Survey	
981.00	973.45	-73.08	-83.45	Last SDI Surface MWD Survey	
1,079.00	1,069.98	-83.78	-96.57	First SDI Production MWD Survey	
6,045.00	6,020.37	-228.50	-237.64	Last SDI Production MWD Survey	
6,105.00	6,080.35	-230.02	-236.59	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____