



Federal Aviation
Administration

G27 Initiation cell test results

Presented to: Spring 2021 Systems Meeting

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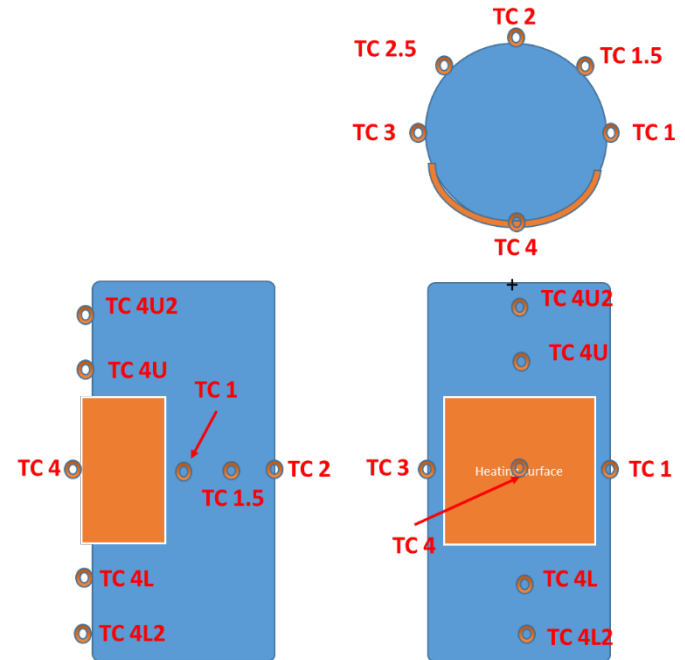
Background

- **A group has been meeting to come up with recommended procedures for how to heat an “initiating cell” into thermal runaway.**
 - Where to place the thermocouple in relation to the heater.
 - What types of heaters are allowable?



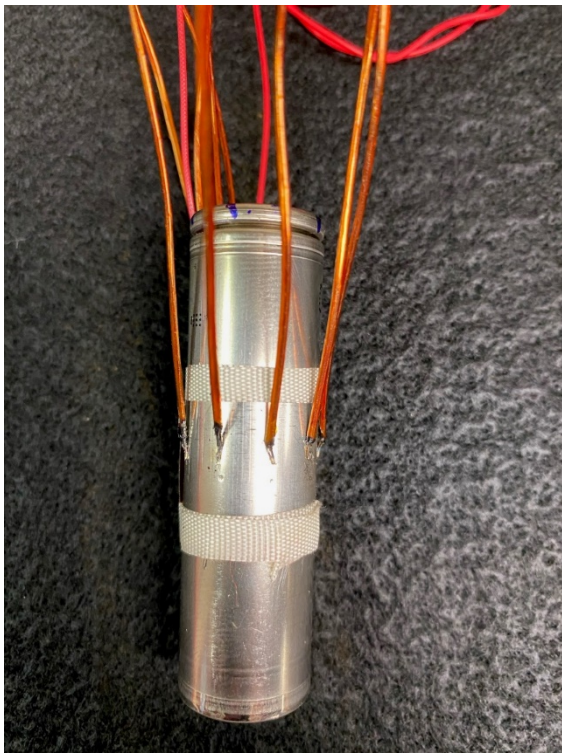
Test Plan

Test #	Control TC	Heating rate (°C/min)
1a	TC1	5
1b	TC1	5
1c	TC1	5
2	TC1	10
3	TC1	15
4	TC1	20
5	TC2	5
6	TC2	10
7	TC2	15
8	TC2	20

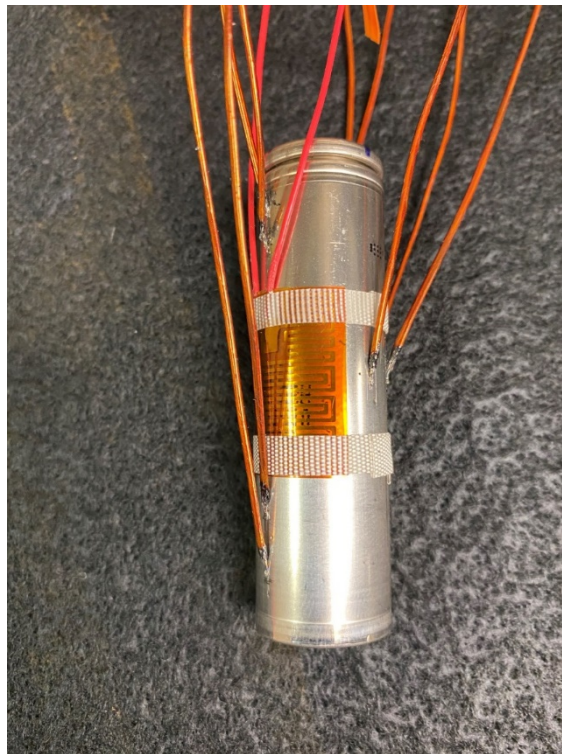


FAA test setup

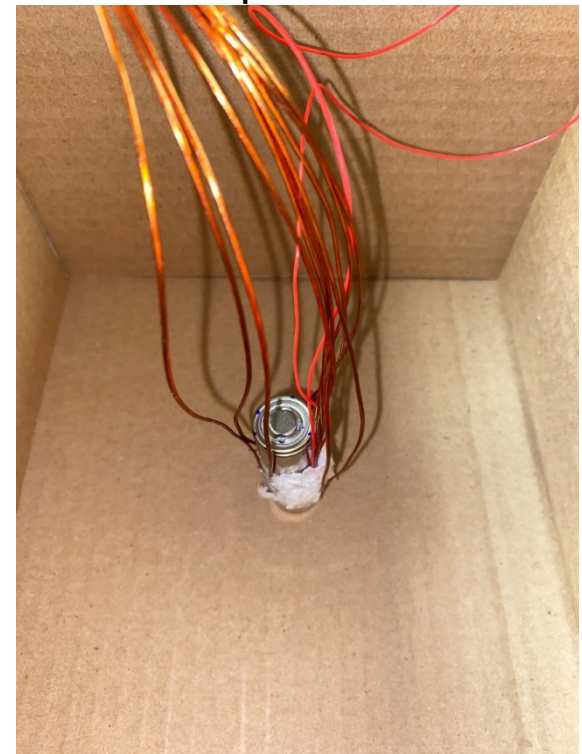
Back of cell



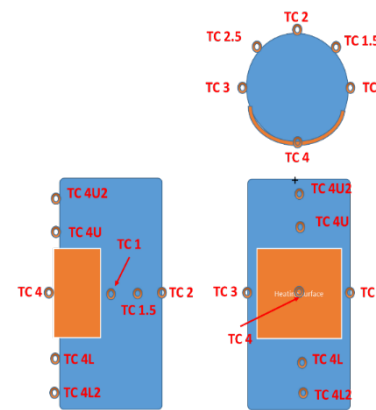
Front of cell



Top of cell



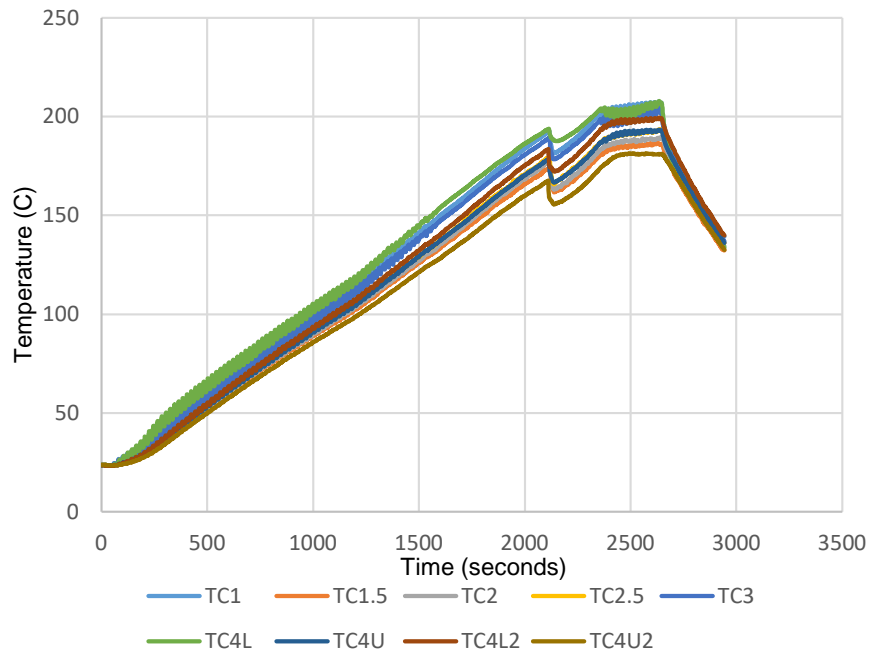
Test 1b, 8



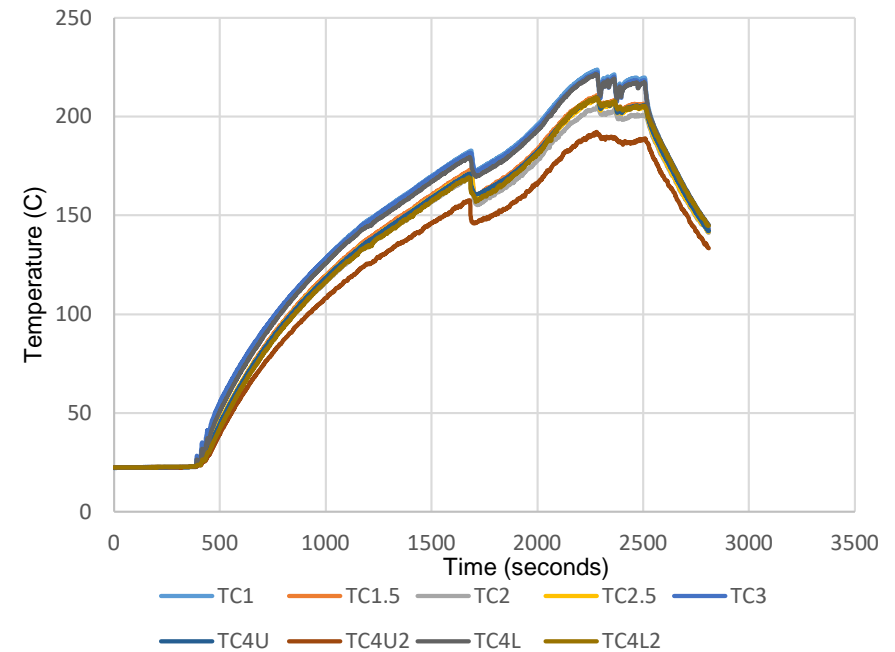
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7	TC2	15
8	TC2	20

test 1b

test 8



5C/min



20C/min

Summary of FAA findings

- **The specific 1” by 1” heater that the group selected does not provide enough heat unless voltage is increased past the manufacturers spec.**
- **Any thermocouple can be used and any temperature gradients can be taken account for numerically if needed.**
- **However,**
 - The most convenient location for an easy test setup is on the backside of the cell.
 - The location that will have the least variability due to a variation in heater type & size, is furthest away from the heater. On the backside of the cell.

