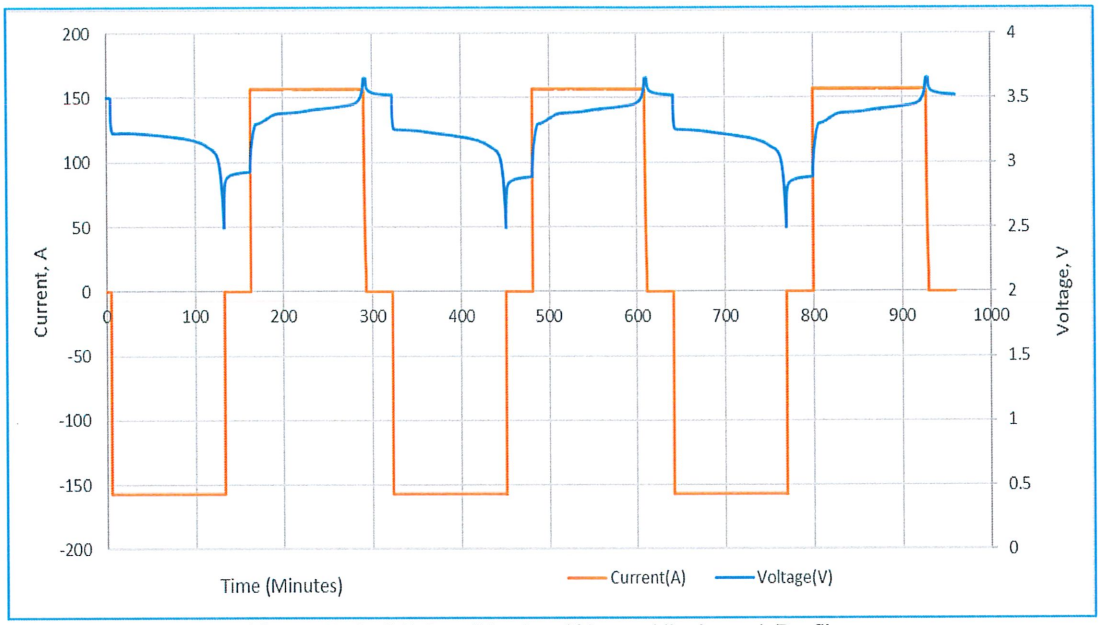
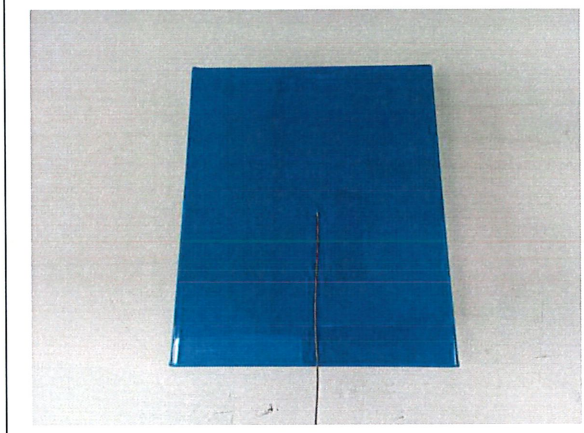
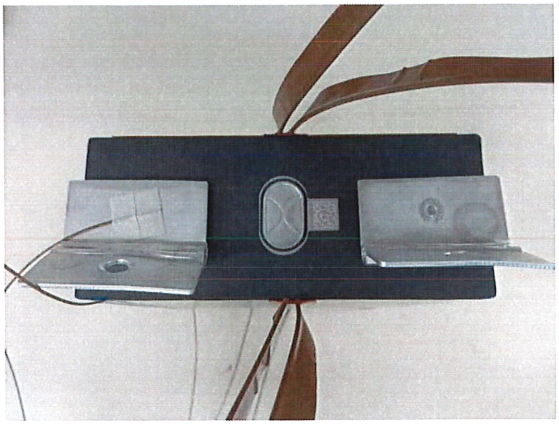
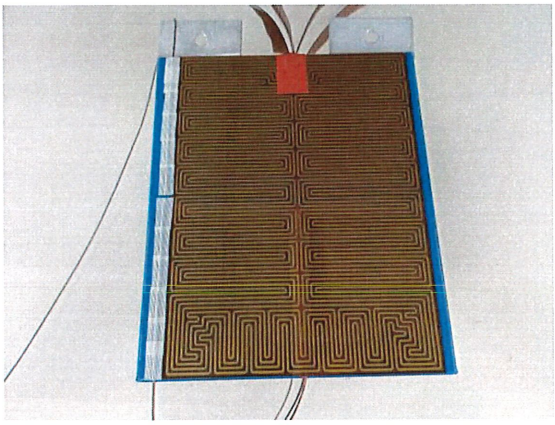


Figure 5: Cell 5 Conditioning (Charge/discharge) Profiles

Attachment B: Cell Instrumentation Photos - (*Pages **20** through **20***)







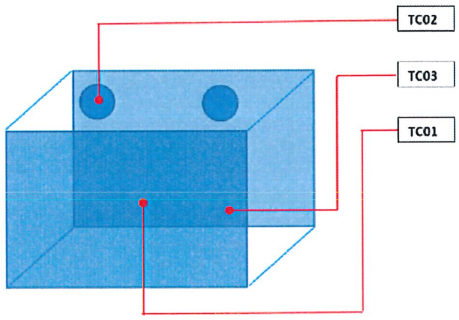


Figure 6: Sample Instrumentation Prior to Test
Note: Heaters were placed on two sides of the cell after thermocouples were instrumented.
Note: TC01 under heater; TC02 on the cell positive; TC03 on the cell body not covered by heater； TC04 ambient temperature; V1 cell voltage;

Attachment C: Cell Temperature Profiles during testing - (*Pages **21** through **23***)

Note: TC01 under heater; TC02 on the cell positive; TC03 on the cell body not covered by heater; TC04 Ambient temperature; V1 cell voltage
TC01 was used to control the temperature at 4 to 7°C/min and TC03 temperatures were reported herein for the surface temperature at the onset of vent and thermal runaway.

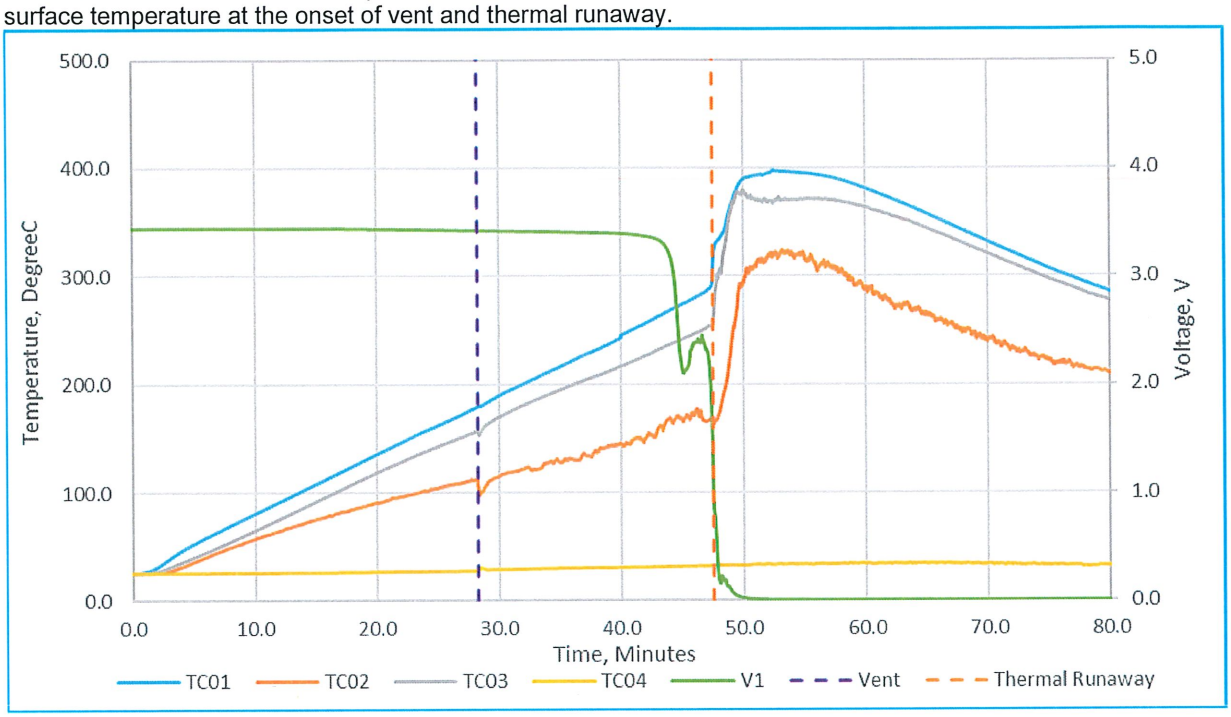


Figure 7: Cell 1 – External Heating 5.5 °C per minute

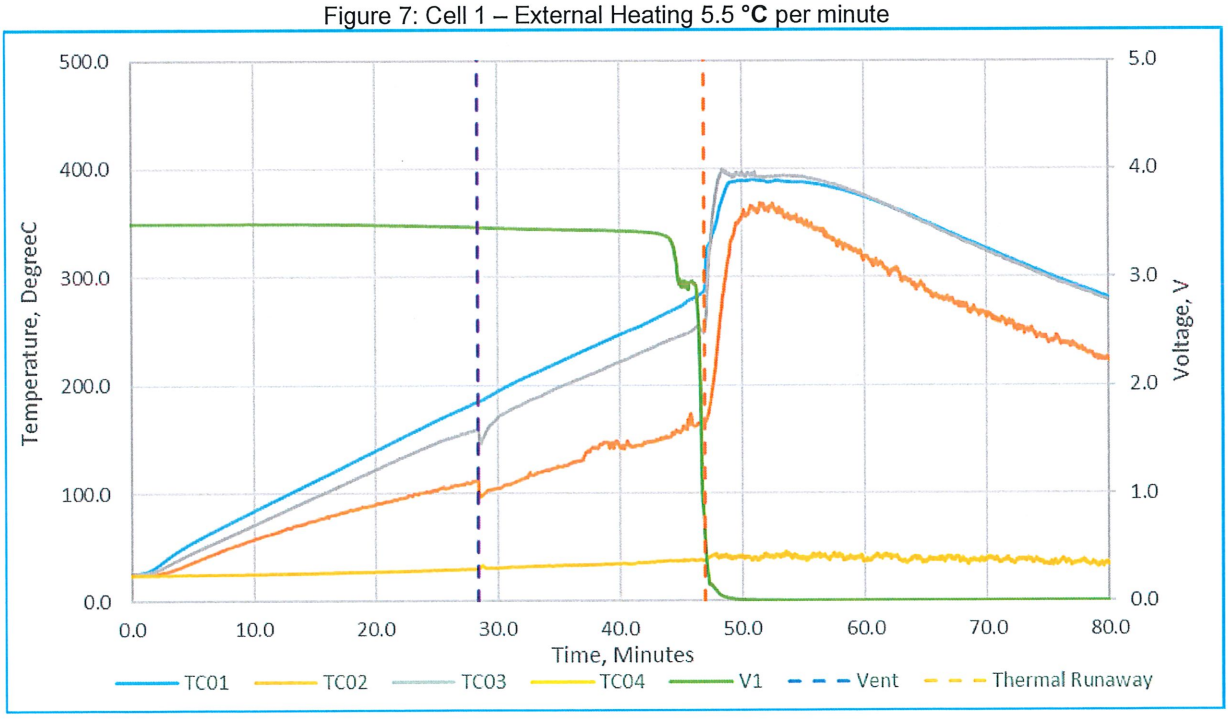


Figure 8: Cell 2 – External Heating 5.5 °C per minute

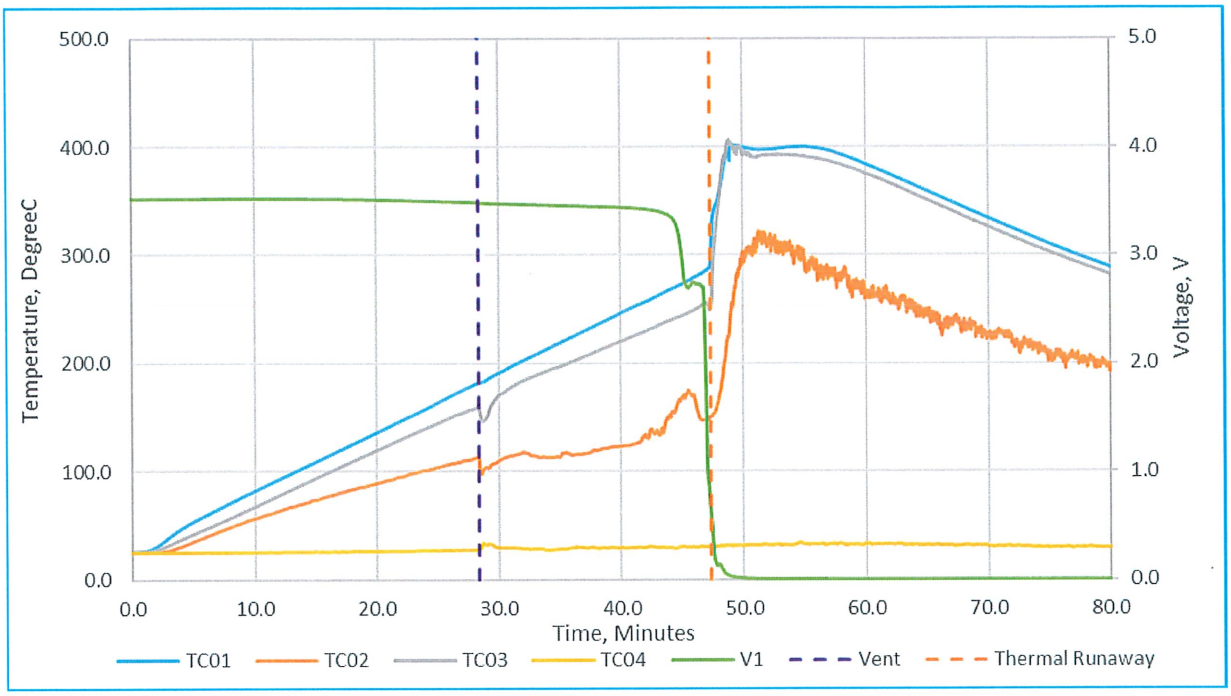


Figure 9: Cell 3 – External Heating 5.5 °C per minute

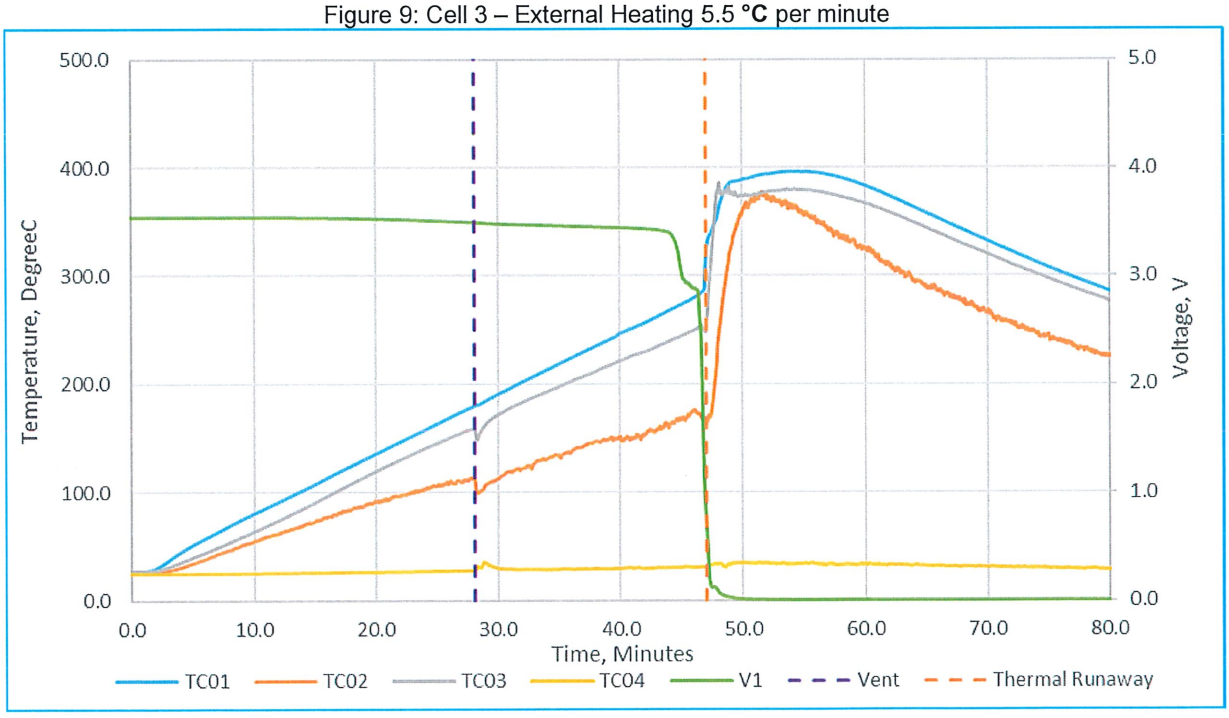


Figure 10: Cell 4 – External Heating 5.5 °C per minute

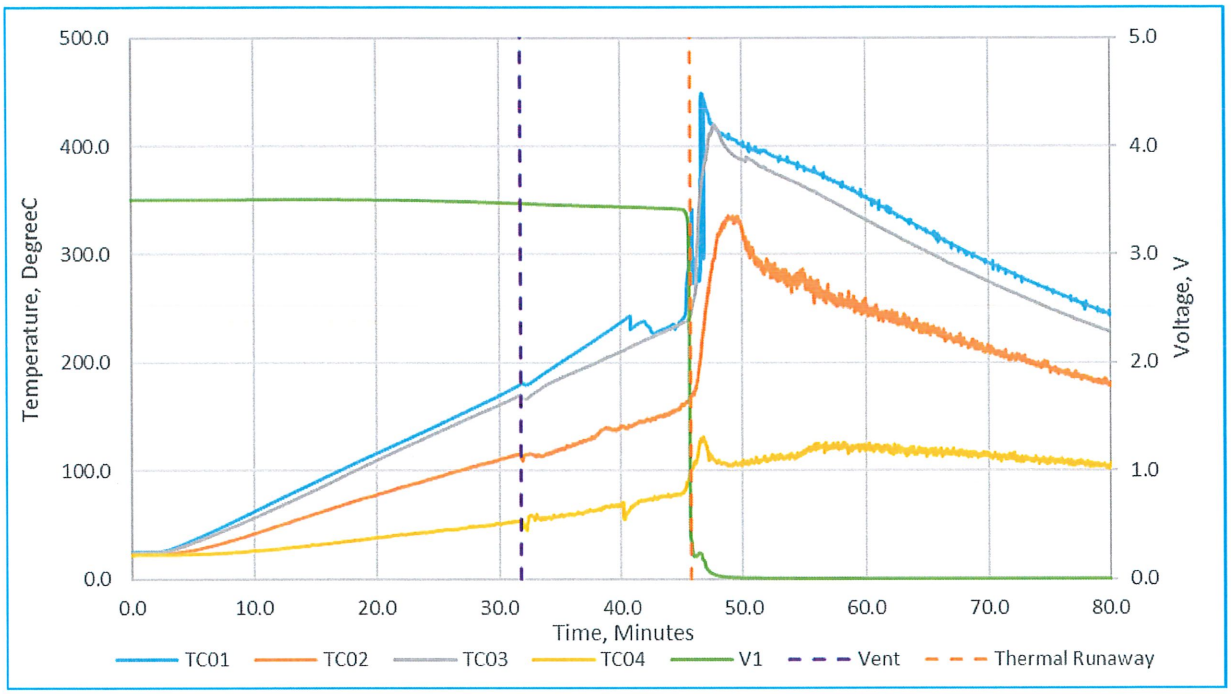
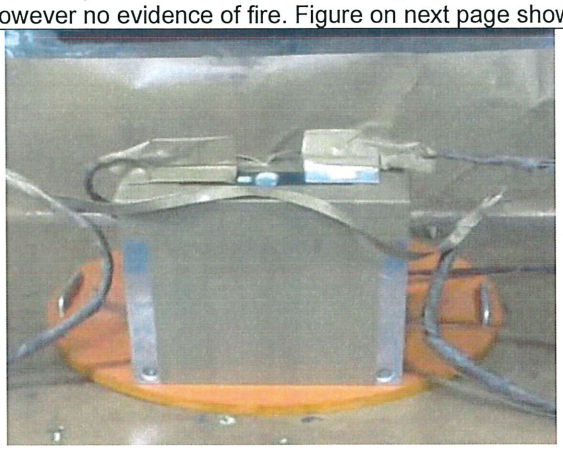


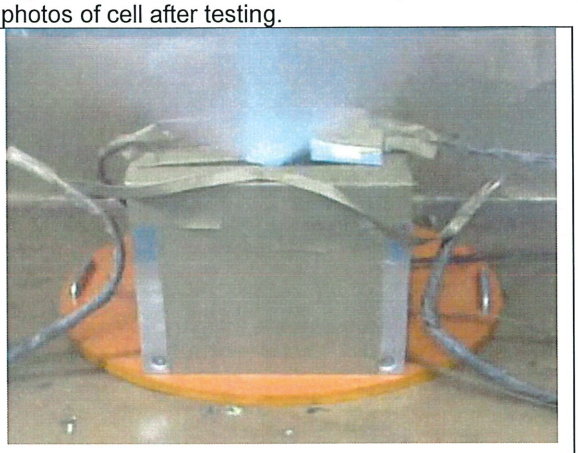
Figure 11: Cell 5 – External Heating 5.5 °C per minute

Attachment D: Cell Testing Photos - (*Pages **24** through **33***)

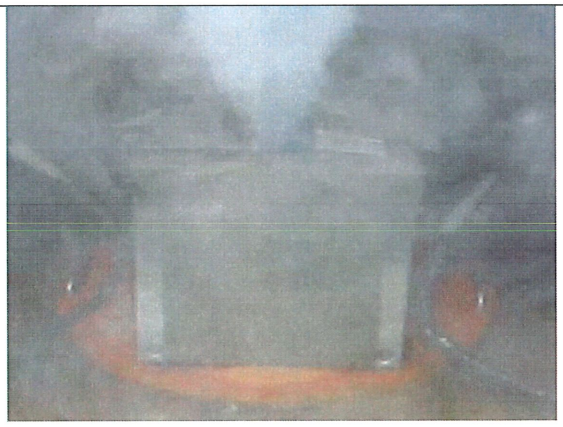
Cell Sample 1 – below figure shows highlights of cell testing. Cell venting and thermal runaway were observed, however no evidence of fire. Figure on next page shows photos of cell after testing.



(a) Test Start
[00:00]



(b) Cell Venting
[28:17]



(c) Thermal runaway behavior
[47:30]

Figure 12: Highlights of Cell 1 Testing

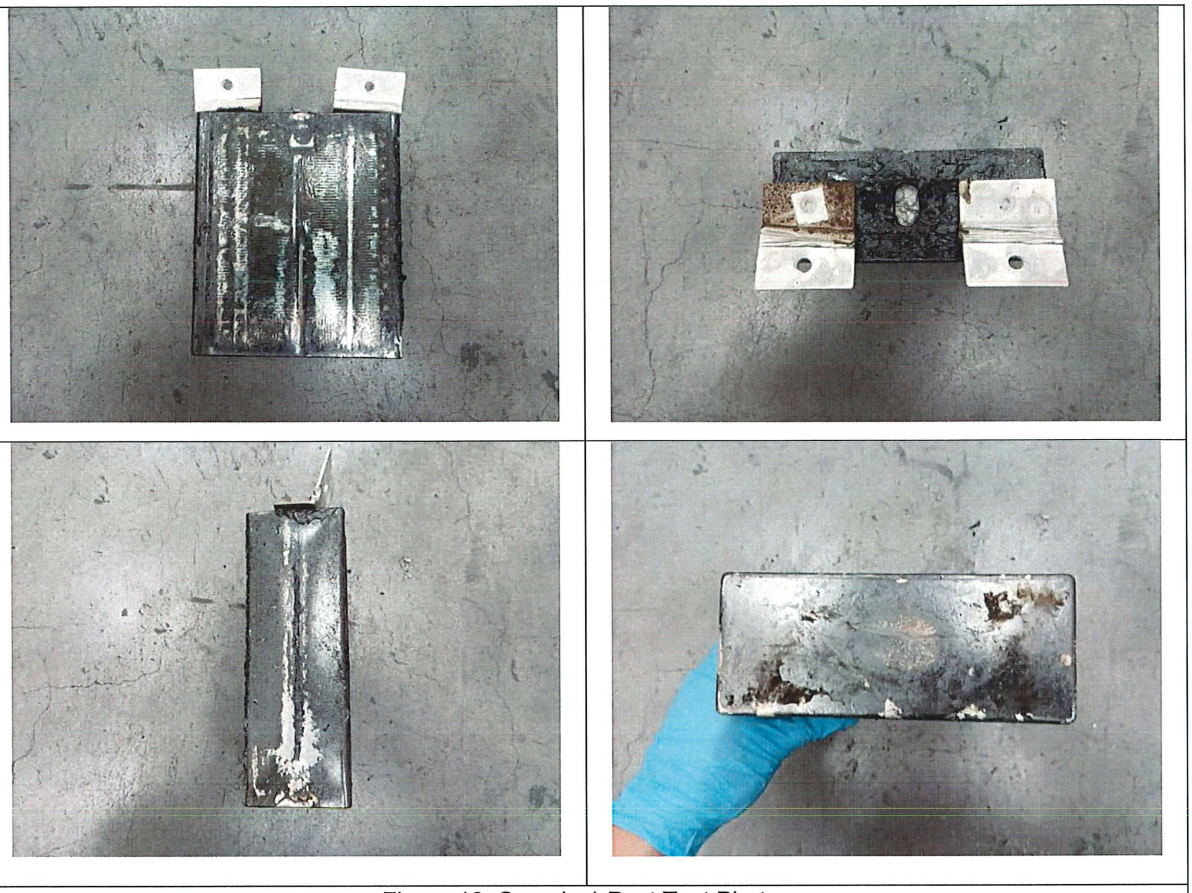
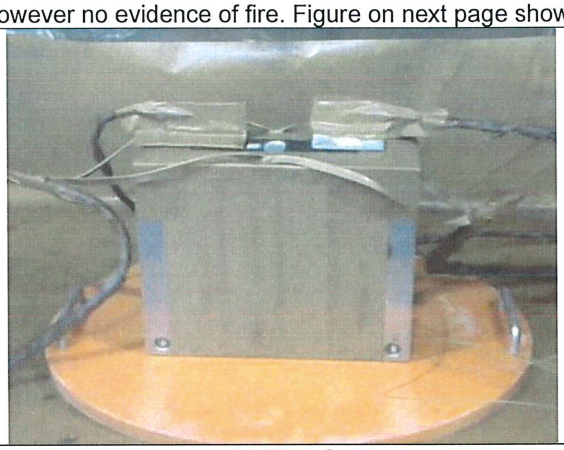
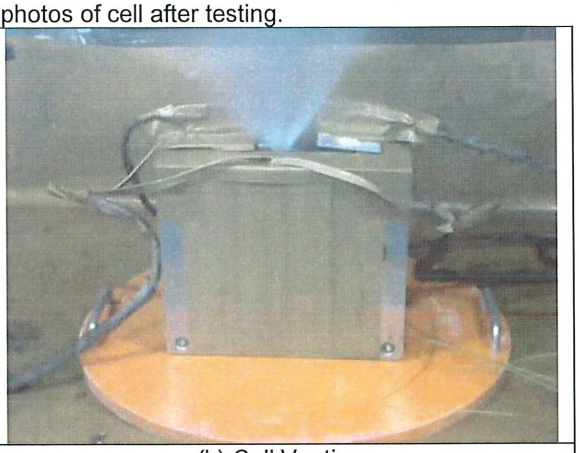


Figure 13: Sample 1 Post Test Photos

Cell Sample 2 – below figure shows highlights of cell testing. Cell venting and thermal runaway were observed, however no evidence of fire. Figure on next page shows photos of cell after testing.



(a) Test Start
[00:00]



(b) Cell Venting
[28:25]

(c) Thermal runaway behavior
[46:54]

Figure 14: Highlights of Cell 2 Testing

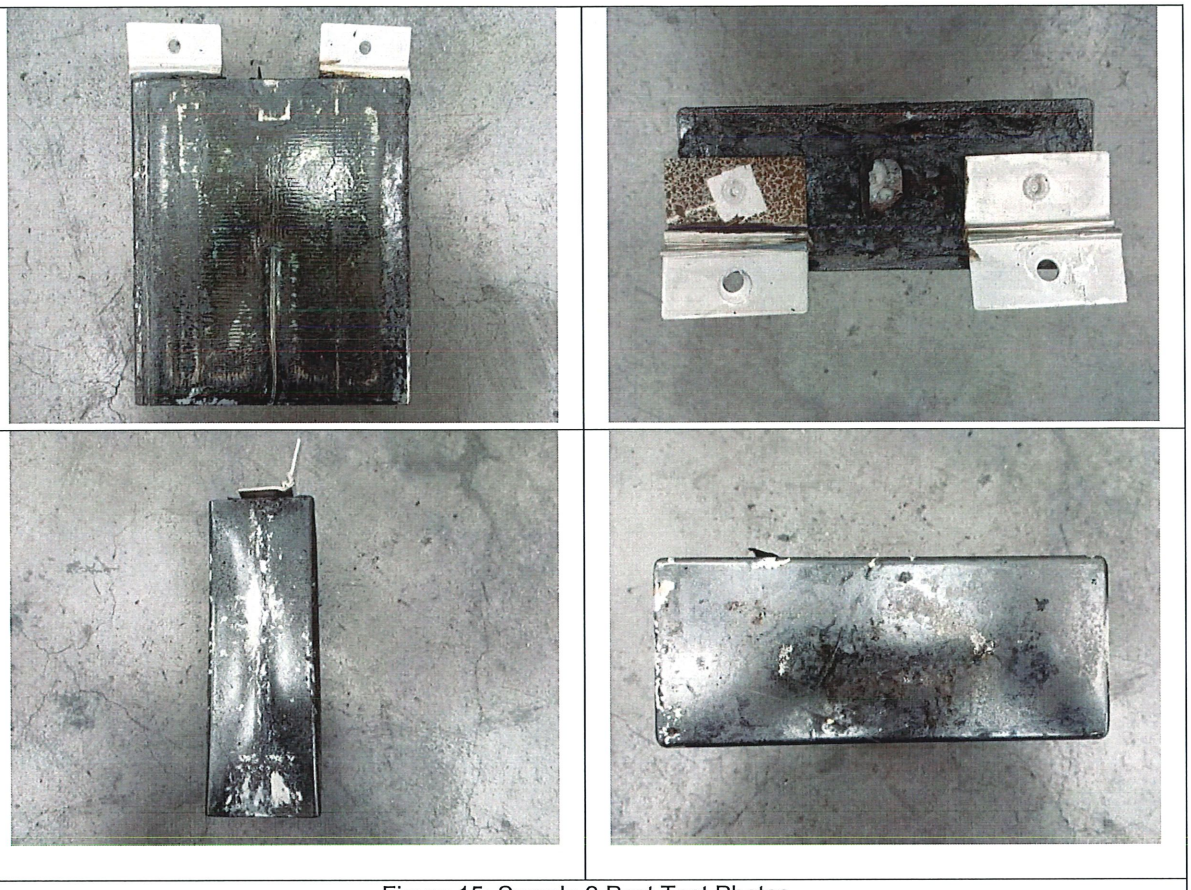
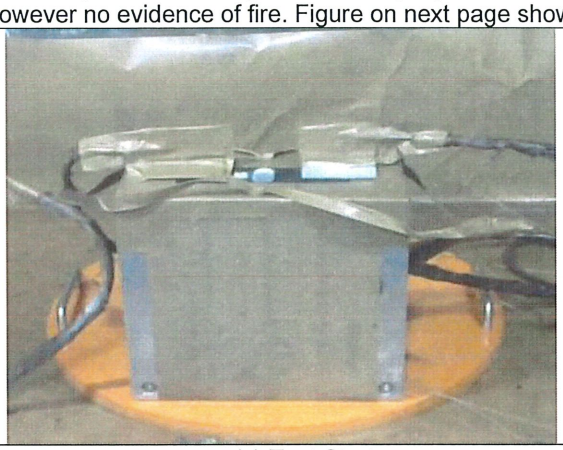
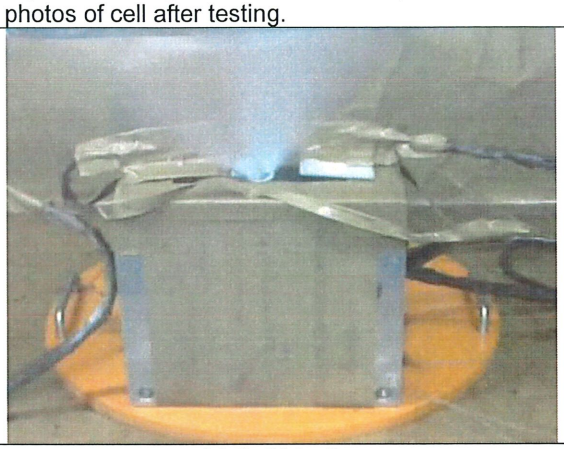


Figure 15: Sample 2 Post Test Photos

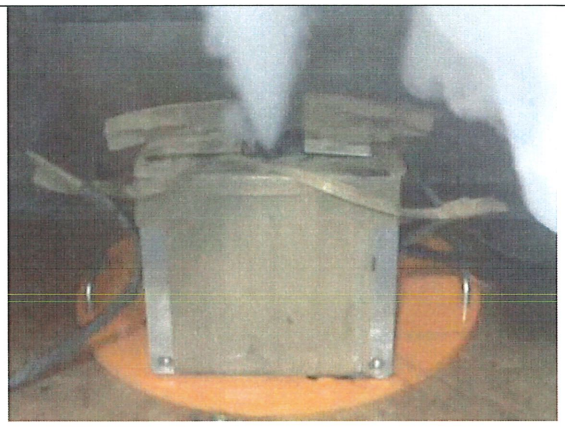
Cell Sample 3 – below figure shows highlights of cell testing. Cell venting and thermal runaway were observed, however no evidence of fire. Figure on next page shows photos of cell after testing.



(a) Test Start
[00:00]



(b) Cell Venting
[28:22]



(c) Thermal runaway behavior
[47:20]

Figure 16: Highlights of Cell 3 Testing

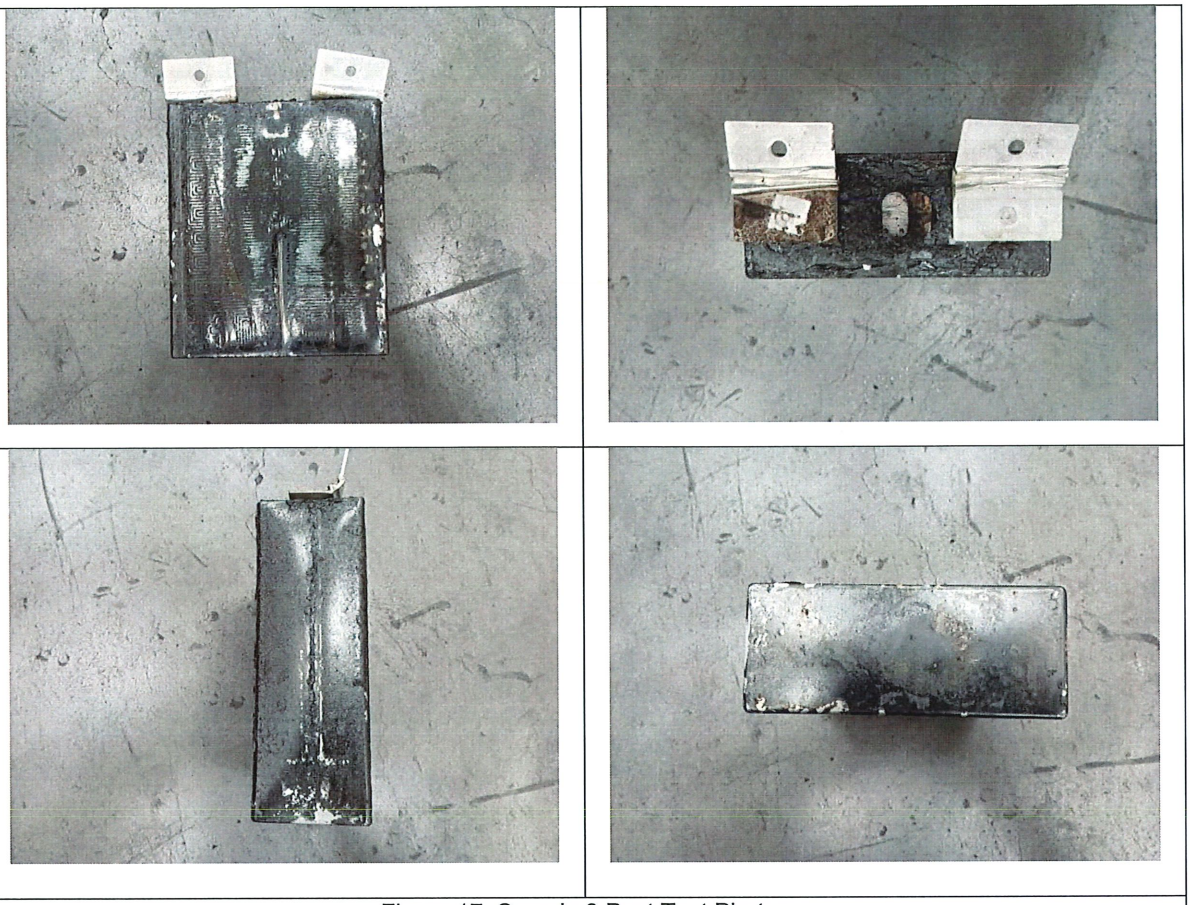
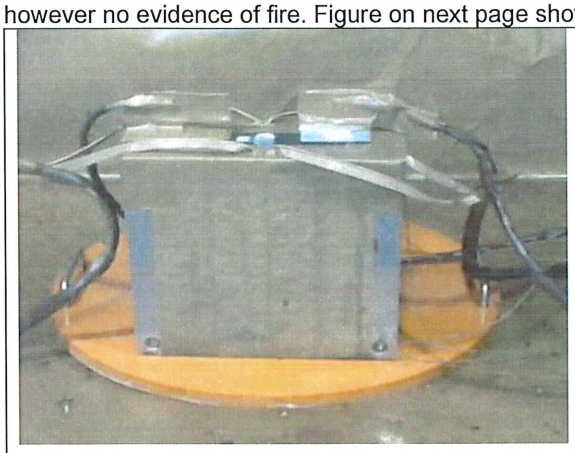


Figure 17: Sample 3 Post Test Photos

Cell Sample 4 – below figure shows highlights of cell testing. Cell venting and thermal runaway were observed, however no evidence of fire. Figure on next page shows photos of cell after testing.



(a) Test Start
[00:00]

(b) Cell Venting
[28:05]

(c) Thermal runaway behavior
[47:02]

Figure 18: Highlights of Cell 4 Testing

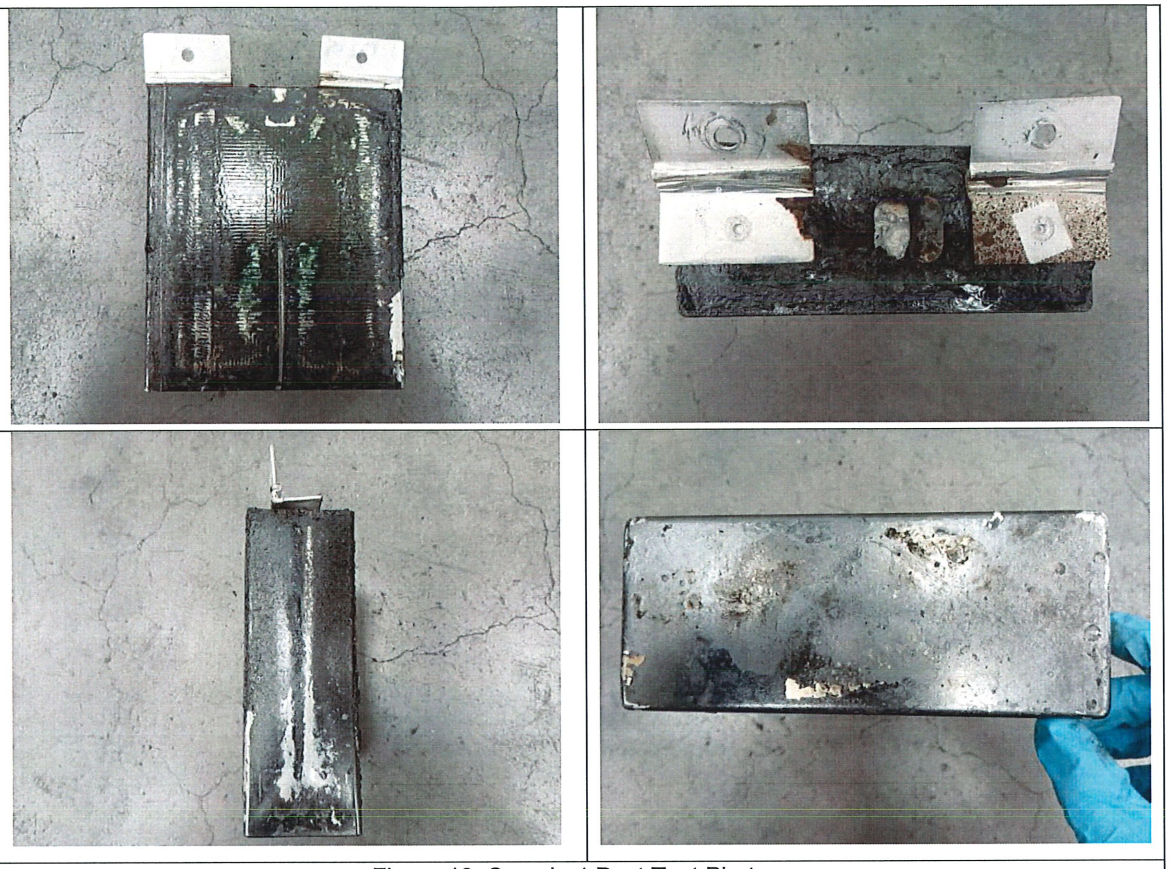
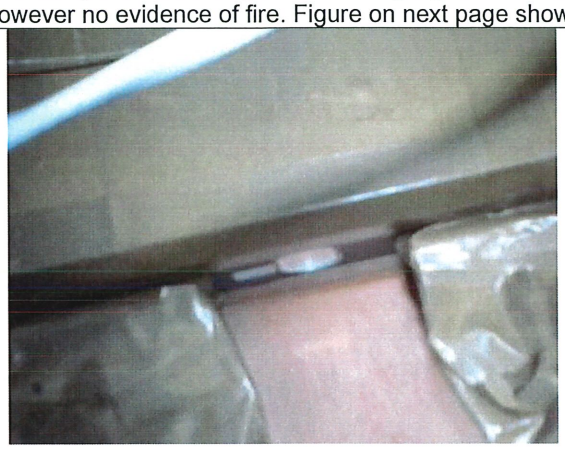
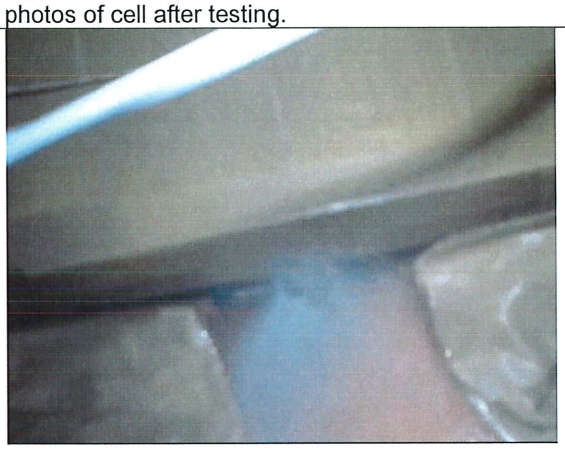


Figure 19: Sample 4 Post Test Photos

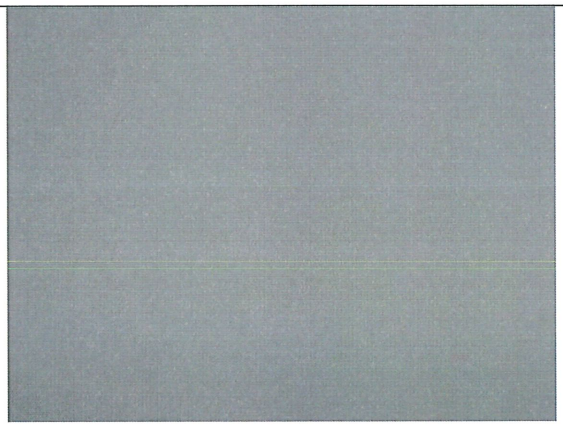
Cell Sample 5 – below figure shows highlights of cell testing. Cell venting and thermal runaway were observed, however no evidence of fire. Figure on next page shows photos of cell after testing.



(a) Test Start
[00:00]



(b) Cell Venting
[31:46]



(c) Thermal runaway behavior
[45:46]

Figure 20: Highlights of Cell 5 Testing

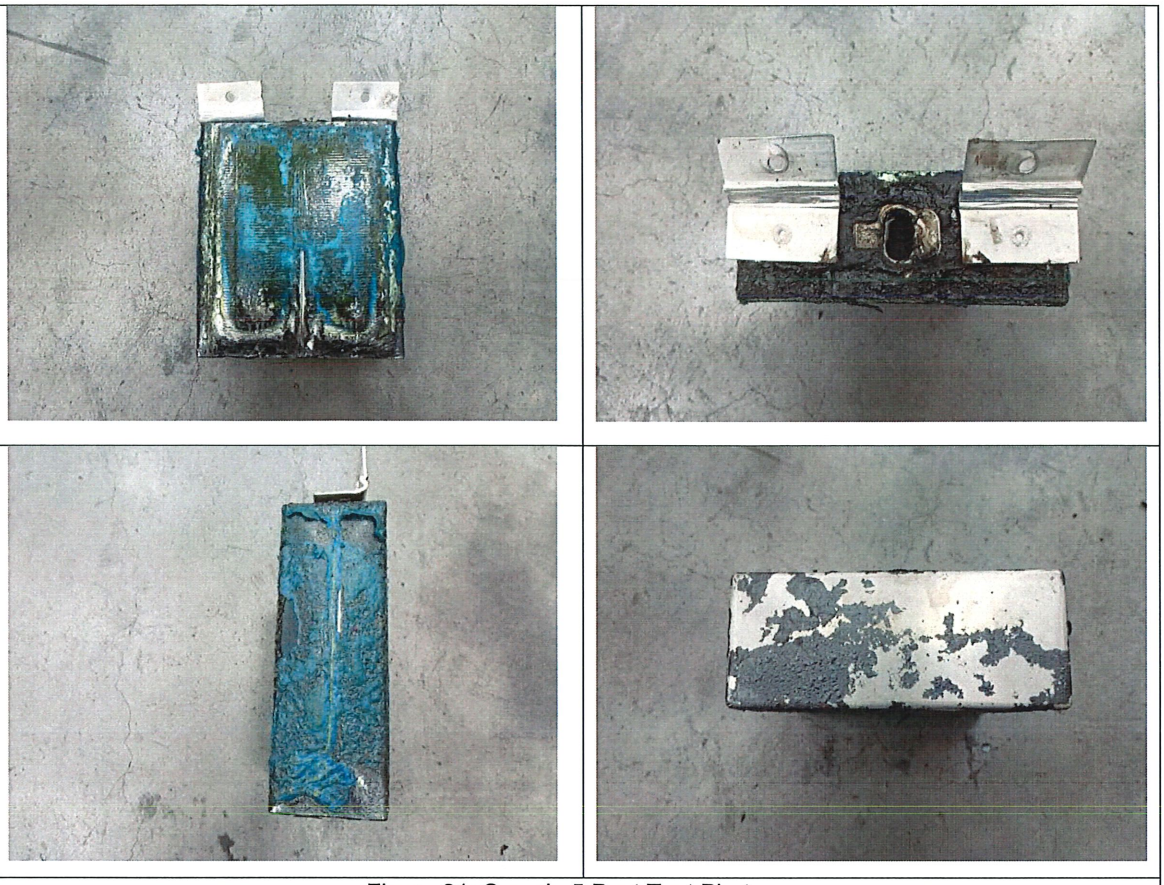


Figure 21: Sample 5 Post Test Photos

Attachment E: Cell vent gas test chamber photo and profile of chamber gas analysis (O_2 and Pressure) - (*Pages **34** through **34***)

The gas composition test was conducted with the battery inserted into the battery gas composition test chamber and the chamber was sealed. The battery gas composition test chamber is a 100 L pressure vessel and is shown in figure below.

Prior to initiating thermal runaway, the chamber's atmosphere was purged until a condition of less than 1% oxygen by volume (actual 0.20%, with initial pressure 0.10psig).

Figure 22: Sample 5 instrumented and inside gas test chamber

$\phi_{O2,\ chamber}$=	0.20	%	Pinitial,chamber=	0.10	psig

Figure 23: Profile of gas test chamber (O2 and Pressure)

Attachment F: Cell Gas Analysis Report - (Pages ***35*** through ***35***)

Table Re-normalized Gas Quantification, excluding N_2 and O_2, and unknown compounds.

Item	Measure	Chemical formula	Conc.(%)
1	Carbon Monoxide	CO	14.507
2	Carbon Dioxide	CO_2	23.000
3	Hydrogen	H_2	45.167
4	Methane	CH_4	4.868
5	Ethylene	C_2H_4	1.804
6	Acetylene	C_2H_2	0.148
7	Ethane	C_2H_6	0.805
8	Propane	$CH_3CH_2CH_3$	1.379
9	Propylene	C_3H_6	2.256
10	Propadiene (Allene)	C_3H_4	0.006
11	Isobutane	$CH_3CH(CH_3)CH_3$	0.106
12	Butane	C_4H_{10}	0.355
13	Isobutylene	C_4H_8	0.855
14	1-Butene	C_4H_8	0.224
15	trans-2-Butene	C_4H_8	0.284
16	cis-2-Butene	C_4H_8	0.204
17	Pentane	C_5H_{12}	0.367
18	trans-2-Pentene	C_5H_{10}	0.050
19	cis-2-Pentene	C_5H_{10}	0.030
20	1,4-Pentadiene	C_5H_8	0.000
21	Hexane	C_6H_{14}	0.017
22	1-Hexene	C_6H_{12}	0.004
23	Benzene	C_6H_6	0.018
24	1-Heptene	C_7H_{14}	0.004
25	Toluene	C_7H_8	0.001
26	Styrene	C_8H_8	0.000
27	Dimethyl Carbonate	$C_3H_6O_3$	3.340
28	Ethyl Methyl Carbonate	$C_4H_8O_3$	0.198
29	Diethyl Carbonate	$C_5H_{10}O_3$	0.000
	Total	Measurement result	100.000