Global Precipitation Measurement (GPM) mission project support/ life test battery characterization

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INTRODUCTION

- Lithium-ion batteries are among the most advanced rechargeable batteries available, making them very popular for various applications. A lithium-ion rechargeable battery provides high volumetric and gravimetric energy densities compared to other rechargeable batteries. The battery manufacturer ABL selected the Sony Lithium 18650 HC cell in the late 1990's to make their space qualified cells.

PURPOSE

Establish the baseline characterization of the life-test batteries, which the contractors at the Naval Surface Warfare Center at Crane, Indiana will use to compare later performance tests of the SONY 18650 HC and SONY 18650 HC mandrel cells.

DESCRIPTION OF BATTERY PACKS

- The study was performed on ABL 13 Ah lithium-ion (Li-ion) batteries.
- Testing was performed as a battery pack of 104 SONY Hard Carbon Cells in an 8s13p configuration (8 cells in series and 13 in parallel). Figure 2 & 3

SUMMARY & FUTURE WORK

- Due to limited time we were able to characterize only ABL 18660 HC space qualified battery pack.
- In a future we need to verify that the mandrel tube added to the cells are not going to be a safety issue for future NASA missions.

REFERENCES

1. "ABSL Performance Comparison SONY 18650 Hard Carbon Cell and SONY 18650 Hard Carbon Mandrel Cell" by Joe Troutman

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