



# Defense-Wide Manufacturing Science & Technology (DMS&T) Program

## Standard High Energy Storage Modules

### PROBLEM / OBJECTIVE

- Weapon Systems require lower cost, higher energy batteries with increased operational and cycle life
- Conventional lead acid batteries for military vehicles and even dismounted roles have low cycle life and energy density
- Preferred lithium-ion technologies require advanced and standardized manufacturing to achieve lower costs

### APPROACH / BENEFITS

#### *Objectives*

- Implement the production processes for advanced lithium-ion power sources through specific portable and vehicle battery applications.
- SAFT America to reach TRL7 and MRL8 in a power source for Long-Range Advance Scout Surveillance System (LRAS3).
- Quallion to reach MRL7 in a replacement “6T” power source for military vehicles.

#### *Approach*

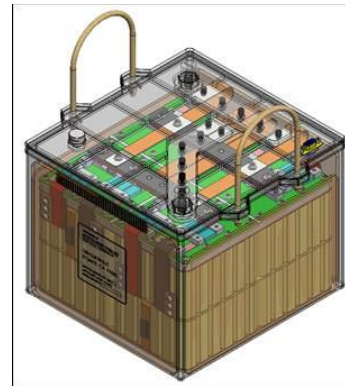
- SAFT - Advanced Electronics and Cell Technology Integration
  - Integrate high rate production cells into production design
  - Integrate advanced cell balance and control electronics into the production design
- Manufacturing Process Improvements and Modifications
  - Modify tooling to enable the production of energy storage system
  - Modify process to fabricate and test the charger functions
- Demonstrate units with U.S. Army PMO Ground Sensors
- Further the development of the ALPS TRL7 and MRL8
- Quallion - Implement automation processes and equipment for manufacturing the Li-ion 6T battery
  - Leverage modular Li-ion 6T design, which uses standardized modules and components and is a drop in replacement for LA 6T.
    - Refine the design to leverage the automated modular manufacturing capability currently being implemented.
- Further the development of the Li-ion 6T from MRL4 to MRL7

## ***Expected Benefits and Warfighter Impact***

- Systems impacted
  - Long-Range Advance Scout Surveillance System
  - US Army PM Ground Sensors and CERDEC serve as requiring activity and qualifying authority for procurement
  - 95% of military ground vehicles use 6T batteries (currently lead acid)
    - E.g., HMMWV
  - US Army RDECOM-TARDEC will qualify batteries for procurement
- Benefits to acquisition and sustainment communities
  - Cycle life: >1000 compared to 100-300 for lead acid
  - Increased surge capacity
- Benefits to the Defense Industrial Base
  - Will establish new manufacturing capability
  - Reduced manufacturing cost
  - Shortened fabrication time



Advanced Lithium Power Source (ALPS)



Li-ion 6T battery

## **POINT OF CONTACT**

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