NAVSEA WARFARE CENTERS CARDEROCK

CLASSIC Battery Container

Charging-capable Li-ion Autonomous Safe Storage Inter-service Container

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NAVSEA Warfare Centers
10 Divisions – One Team

NSWC Crane Division
Crane, Ind.

NSWC Carderock Division
West Bethesda, Md.

NSWC Panama City Division
Panama City, Fla.

NSWC Dahlgren Division
Dahlgren, Va.

NSWC Port Hueneme Division
Port Hueneme, Calif.

NSWC Philadelphia Division
Philadelphia, Penn.

NSWC Corona Division
Corona, Calif.

NSWC Indian Head Division
Indian Head, Md.

Naval Surface Warfare Center

Naval Undersea Warfare Center

NUWC Keyport Division
Keyport, Wash.

NUWC Newport Division
Newport, R.I.

Roles of the Warfare Centers

- Make naval technical programs successful
- Provide a bridge between the technical community and the warfighter
- Determine and develop capabilities for the fleet
- Verify the quality, safety, and effectiveness of platforms and systems
- Design, develop, and field solutions for urgent operational fleet needs

Operating Principles

- Part of the Naval Research & Development Establishment (NR&DE)
- Technical Capabilities - disciplined process for accepting and assigning the right work to the right Division
- Operate under the Navy Working Capital Fund business model
- Workforce size based on funded workload
- Perform work our industry partners can't, won't or shouldn't do

Safety Challenges of Li-ion Batteries

- Li-ion Batteries pose a significant risk to platforms when aggregated.
- Current method to reduce risk is to transport and store batteries at 30% State of Charge (SOC), reducing operational readiness.
- The purpose of the CLASSIC is to provide a safe means to transport, store and charge Li-ion Batteries.

BB 2590 (~300Wh) went into thermal runaway, while stored in an Army vehicle mounted shelter in the presence of combustible materials.

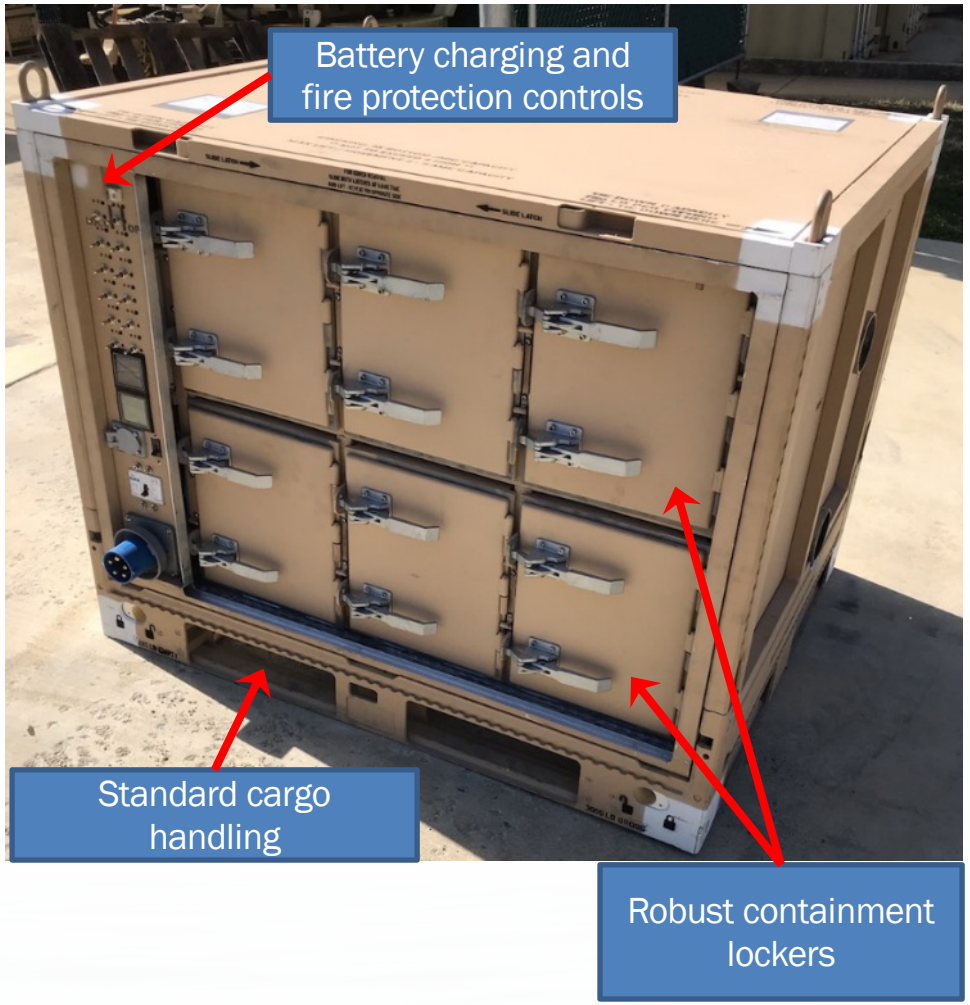
A fire involving a lithium-ion battery on a charger at an Army facility.

$5 million in damage to local equipment.

The CLASSIC Solution

- NSWC Carderock Division developed and tested a standard footprint container capable of transport, charging and storing various Li-ion batteries safely on DoD platforms.
- The CLASSIC incorporates sensors capable of detecting a battery casualty, active fire mitigation agent, and passive mitigation measures to prevent propagation of failure to other batteries stored.
- The container will also contain/redirect the effects of a Li-ion battery fire and prevent damage to personnel and the platform.

Specifications		
Weight (approximate)	3000 lbs.	
Size	57 ft^3 (52” x 43” x 42”)	
Handling	Forklift and Sling Hoist	
Power Inputs	208VAC 3-phase	(Full function)
	120VAC	(Fire protection only)
Operating Environment	All Weather	
IP	DoD Owned	



One Team: Expanding the Advantage

CLASSIC Safety Comparison

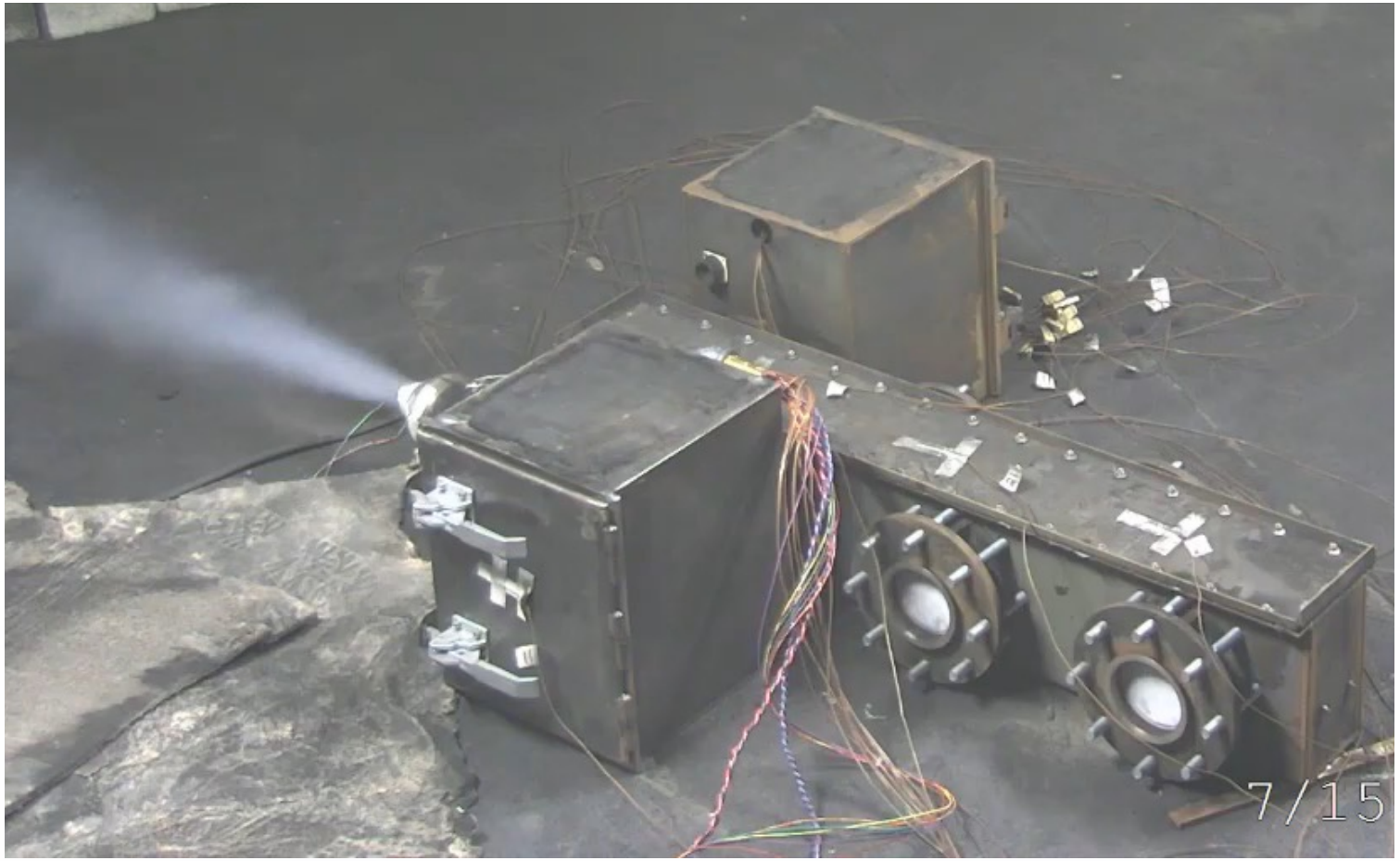
Demonstration of fire resulting from 2 small Li-ion batteries

Identical battery fire arrested and contained by CLASSIC

One Team: Expanding the Advantage

CLASSIC Safety Comparison

Li-ion 6T fire event



Li-ion 6T fire event in CLASSIC locker

Path to Fielding

- Ruggedization of the CLASSIC, with focus on electronic components is needed for transportation and environmental testing (MIL STD 810H)
- Shipboard demonstration and/or other DoD platform demonstrations
- **Transition to Program Office**

One Team: Expanding the Advantage