

15kV MIL-SPEC Cable Development for U.S. Navy Ships

2025 NSRP Panel Project Overview

Presented at the NSRP All Panel Meeting
February 27, 2025

Greg Keyes II,
HII-Ingalls Shipbuilding

15kV MIL-SPEC Cable Development for U.S. Navy Ships

Electrical Technologies Panel

1 of 2

PROJECT INFORMATION	OBJECTIVE
<p><u>Prime/Lead</u>: HII-Ingalls Shipbuilding</p> <p><u>Team Members</u>: NAVSEA 05Z33, Marmon Aerospace and Defense, HII-Newport News Shipbuilding, GD – Bath Iron Works</p> <p><u>Duration</u>: 12 Months <u>TRL</u>: 7 to 9</p>	<p>The goal of the project is to design and manufacture a cable that would be fully MIL-DTL-24643 compliant for use in U.S. Navy 13.8 kV, 60 Hz power systems. The goal would be realized by identifying new materials and/or modifying the cable construction in order to meet requirements for circuit integrity (i.e., must survive a 3-hour flame test for vital designated cables) and incorporating a water blocking system in the cable while not suffering a reduction in performance in other areas required by spec.</p>
DELIVERABLES/BENEFITS/ROI	FINANCIAL
<ul style="list-style-type: none">• Deliverables: cable insulation materials review report, cable design details, product samples, test results, and a final report.• The U.S. Navy needs a 15kV cable that is MIL-SPEC compliant to fully achieve the level of performance and safety expected on a U.S. Navy asset.• Would be a more cost-effective solution for surface combatants compared with the 777 kcmil design.	<p>Program Funds: \$200K Cost Share:</p>

15kV MIL-SPEC Cable Development for U.S. Navy Ships

- 15kV Class cable will be needed for future ship programs
- Currently no fully qualified MIL-DTL-24643 compliant 15kV class cable exists for use on U.S. Navy ships.
- A low smoke-zero halogen (LSZH) cable was developed and produced for the U.S. Navy Carrier Program Office that is nearly MIL-DTL-24643 compliant
 - Concessions were made to achieve flexibility necessary for shipboard installations
 - A waiver is required from NAVSEA for use on U.S. Navy Ships (does not meet M24643 requirements)
- New materials and/or modified designs would allow MIL compliant cable design while enabling needed flexibility for shipboard installations
- The proposed project will:
 - Evaluate new insulation materials for improved design
 - Must meet requirements for circuit integrity (i.e., pass 3-hr flame test)
 - Evaluate cable construction options
 - Incorporate water blocking system into the design
 - Maintain performance (in all spec areas) necessary for shipboard installation
- Goal is to leverage Subject Matter Expertise and findings from previous cable development to develop design concepts & construction methods to produce a MIL compliant cable to assure the level of performance and safety expected on a U.S. Navy ship