

**Ingalls
Shipbuilding**

A Division of Huntington Ingalls Industries

NSRP Electrical Technologies
Panel Project:
***Low Voltage Shipboard Lighting
Feasibility Study***



GENERAL DYNAMICS
Bath Iron Works



Electrical Technologies Panel Meeting Update
Washington, DC
July 25, 2018

Agenda

- Background
- Project Team
- Task Overview
- Schedule
- Progress
- Near Term Plans
- Questions & Discussion



Background/Opportunity

- The use of LED lighting offers opportunities to greatly decrease the cost of lighting:
 - Use of low voltage (<30VDC)
 - Reduction of support structures
 - Installation labor reductions
 - Power distribution efficiency improvements



Project Summary

- This project will evaluate the feasibility of new light fixtures and power distribution concepts for use in forward fit applications. This effort will focus on solutions that exploit the use of LED technology for more efficient lighting system designs.

✓ Supports Navy's ongoing initiatives to improve energy efficiency of the fleet and decrease life-cycle costs



Team Members

	ORGANIZATION	POC	CONTACT
Project Lead	Ingalls Shipbuilding	Jason Farmer	(228) 935-7573 Jason.Farmer@HII-Ingalls.com
Project Participants	Austal USA	Shawn Wilber	(251) 445-1999 Shawn.Wilber@austalusa.com
	Bath Iron Works (BIW)	Greg Stevens	(207) 442-5870 Gregory.Stevens@gdbiw.com
	Newport News Shipbuilding (NNS)	Justin Zeman	(757) 380-7127 justin.zeman@hii-nns.com
Participating Government Stakeholder	NAVSEA 05Z32	Chris Nemarich	(202) 781-0413 christopher.nemarich@navy.mil
Project Manager	NSRP	Chad Bryant	(843) 760-3232 Chad.Bryant@ati.org
Project Technical Representative	NSRP Electrical Technologies Panel	Walter Skalniak	(757) 309-6344 Walter.Skalniak@panduit.com



Objective

- Decrease installation and operation costs associated with shipboard lighting systems by evaluating the potential of low voltage (<30V DC) lighting system hardware & power system architectures for US Navy Ship applications.
- Benefits include a reduction in installation (labor & materials) costs, reduced light fixture cost, improved energy efficiency, and reduced life-cycle maintenance cost.

Project Goal:

Decrease installation & operation cost associated with ship's lighting systems



Project Scope

- The scope of this study is limited to Type III, Class 2 (solid state, general illumination) light fixtures



SEE TITLE SLIDE FOR DISTRIBUTION RESTRICTIONS



Newport News
Shipbuilding

GENERAL DYNAMICS
Bath Iron Works

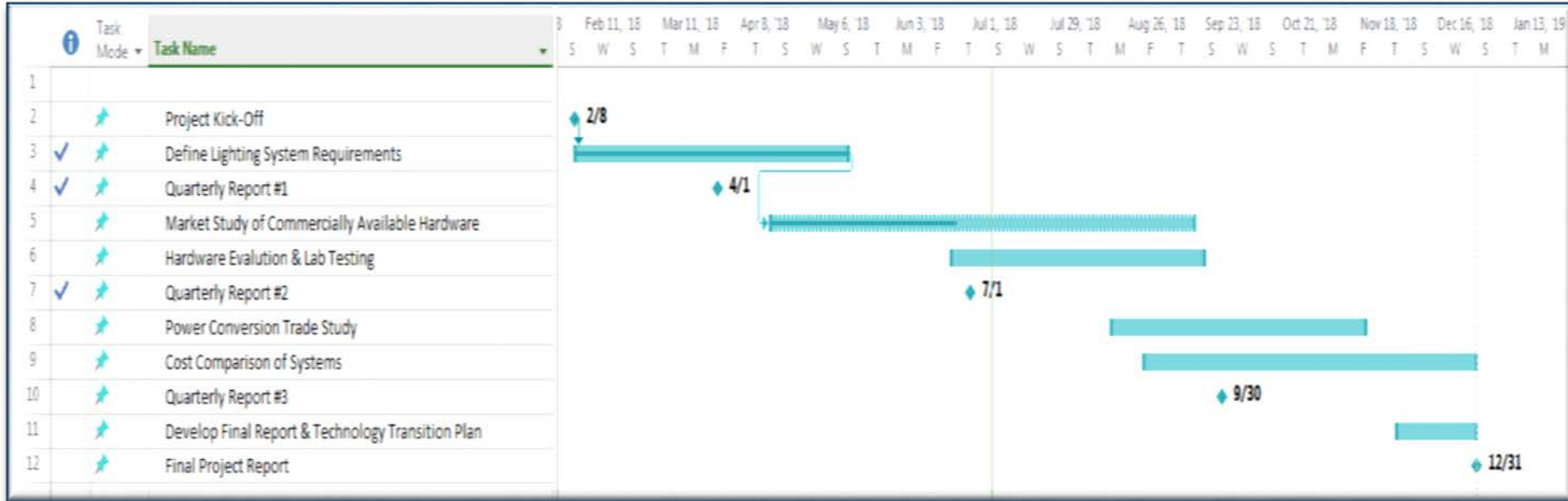


Task Overview

- ✓ Define Lighting System Requirements
- Conduct Market Survey of Commercially Available Hardware
- Power Conversion Trade Study
- Develop Cost Comparison of Systems
- Final Report



Project Schedule



SEE TITLE SLIDE FOR DISTRIBUTION RESTRICTIONS



Newport News Shipbuilding

GENERAL DYNAMICS
Bath Iron Works



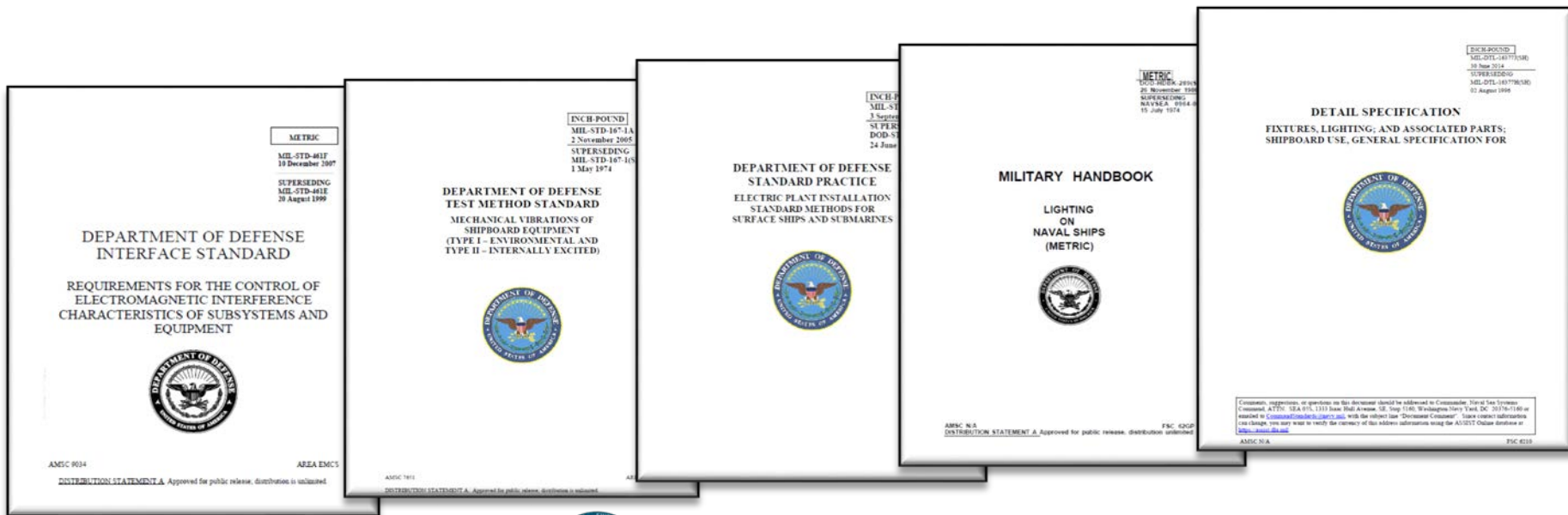
Activity Since Last Meeting

- ✓ Finalized Requirements
- ✓ Quarterly Report #1
- ✓ Quarterly Report #2
- ✓ IPT Conference Calls
- Market Survey (in process)



Task 1: Requirements

- Review requirements impacting shipboard lighting systems
- Develop list of requirements for proposed approach



SEE TITLE SLIDE FOR DISTRIBUTION RESTRICTIONS



Newport News
Shipbuilding

GENERAL DYNAMICS
Bath Iron Works



General Requirements – Light Fixture

■ General Requirements:

- Voltage Level: <30 VDC
- Operating Temperature Range: -13 to 140 °F
- Chromaticity: The fixture shall be capable of providing the following lighting conditions IAW MIL-STD-16377, Section 3.7.4
 - White
 - White + Red (White + Yellow)
 - White + Blue



General Requirements – Power Supply

■ General Requirements:

- Input Voltage Level: 115 VAC
- Output Voltage Level: 24VDC - 28VDC
- Power Rating: 300+ W
 - 10 fixtures x 3 bulbs/fixture x 10 W/fixture
- Operating Temperature Range: -13 to 140 °F



Task 2: Market Survey

- Market survey is focusing on commercially available light fixture hardware
- Items identified to be down-selected based on anticipated ability to meet needed performance



Path Forward

- Finalize market survey and down-select options
- Meet with vendors to review products and options
- Conduct laboratory evaluations of hardware as needed
- Conduct trade study of power conversion options and cost comparison of proposed approach





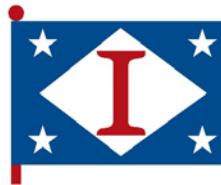
SEE TITLE SLIDE FOR DISTRIBUTION RESTRICTIONS



Newport News
Shipbuilding

GENERAL DYNAMICS
Bath Iron Works





**Ingalls
Shipbuilding**

A Division of Huntington Ingalls Industries

SEE TITLE SLIDE FOR DISTRIBUTION RESTRICTIONS



**Newport News
Shipbuilding**

GENERAL DYNAMICS
Bath Iron Works

