

**NSRP** | National Shipbuilding Research Program

# Alternatives to Fiber Optic Connectors

## 2015 Electrical Technologies Panel Project



Distribution Statement A: Approved for public release.

# Motivation

## **PROBLEM**

Fiber optic connectors are meant for situations where frequent mate / demate is required. In Navy ships, present fiber optic link margin could be reduced if the connector loss and its instability were reduced. Fusion splicing is a useful alternative, but few cable restoration methods and splice enclosures are available.

## **OPPORTUNITY**

Splices (particularly fusion splices) are a low loss / high stability alternative to fiber optic connectors, and are commonly used in commercial applications.

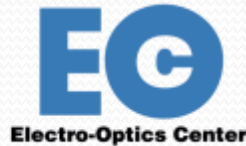
OBJECTIVE- Increase number of situations where fusion splices can be used.

Identify accepted splice methods, cable restoration methods, and splice enclosures.

BENEFIT- Decrease link budgets and margins for fiber optic links. Increase stability and reliability of fiber optic connections over lifetime. Increase maintainability.

# Project Team

PENNSSTATE



**Ingalls Shipbuilding**

A Division of Huntington Ingalls Industries



DAHLGREN

# PANDUIT



**GENERAL DYNAMICS**

Bath Iron Works

**GENERAL DYNAMICS**

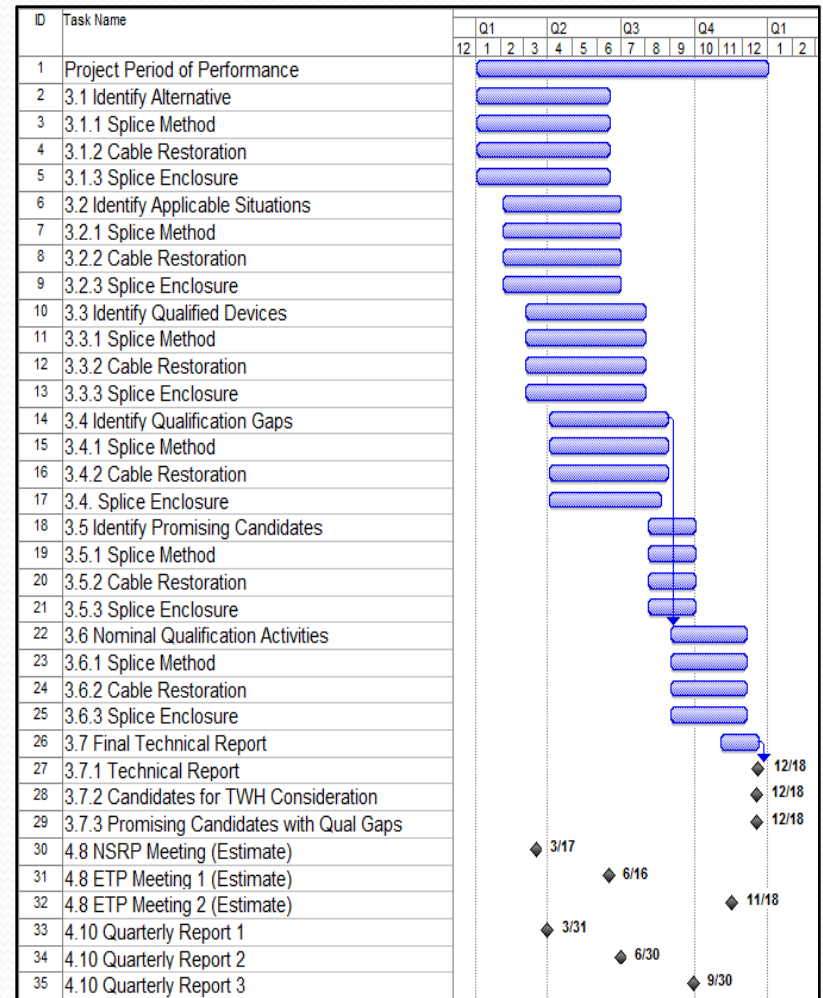
Electric Boat

# Technical Approach

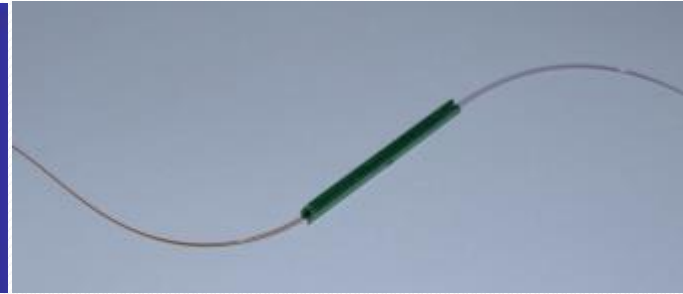
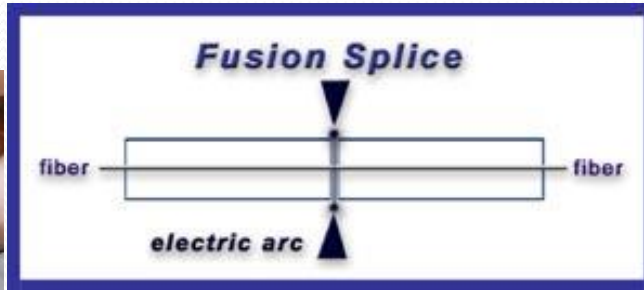
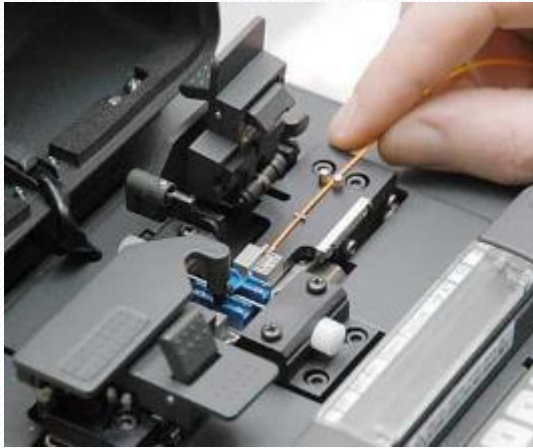
***For SPLICES, CABLE RESTORATION, and SPLICE ENCLOSURES:***

- Identify alternate solutions and applications
- Identify qualified devices and qualification gaps
- For promising devices, conduct testing for shock and vibration tolerance

***Emphasis on replacement of CONNECTORS with FUSION SPLICES to improve loss performance, stability, and reliability.***



# Splice



## *Mechanical Splice*



Corning CAM Splice



TE Corelink



Siemon Ultrasplice



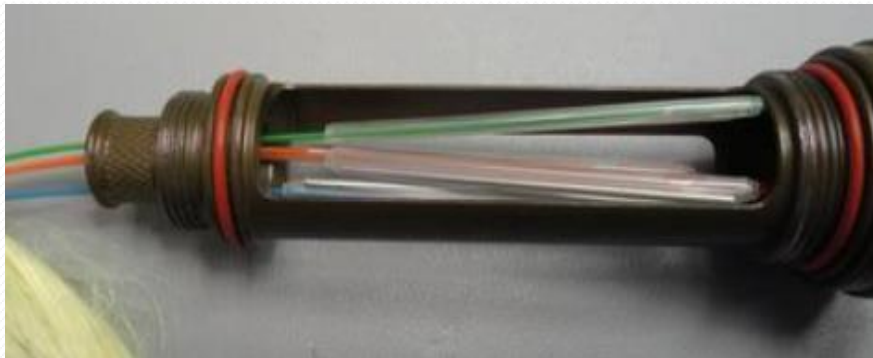
# Cable Restoration



3M Large / XL Splice Case



Panduit FOSM



Glenair Corporation



TE Connectivity

# Splice Enclosure



Present Splice Enclosure



TE Connectivity FOSC 450



Starfighter Enclosure



3M Small Fiber Optic Splice Case

# Project Status

- Team Members and Level of Support identified
- Project plan / Statement of Work complete
- RFPs to Team Members (SCRA) are in process





Thank you!