

FIBER OPTIC TESTING ENHANCEMENT FOR COST REDUCTION FOLLOW-ON

Improvement to FO Testing for significant manpower and schedule reduction benefits

Project Update
5/12/2020

Presented by:
Dan Morris (KITCO Fiber Optics)



FIBER OPTIC TESTING ENHANCEMENT FOR COST REDUCTION FOLLOW-ON

NSRP Project Task Order:	2019-472
KITCO Project:	NSRP-2019-472
Sponsor:	Advanced Technology International 315 Sigma Drive Summerville SC 29486
Sponsor TPOC:	<u>Nick Laney</u> (843) 760-3485 nicholas.laney@ati.org
Sponsor Contracts:	Scott Leacock (843) 760-3226 scott.leacock@ati.org
Contractor:	KITCO Fiber Optics 5269 Cleveland Street Virginia Beach, VA 23462
Principal Investigator:	Dan Morris (757) 216-2220 dan.morris@kitcofo.com
KITCO Fiber Optics Contracts:	Holly Andrews (757) 216-2301 holly.andrews@kitcofo.com
Project Manager:	Felipe Guadalupe 757 216-2226 felipe.guadalupe@kitcofo.com
Project Technical Rep (PTR):	Jason Farmer (228) 935-7573 jason.farmer@hii-ingalls.com
Data Category B:	Data developed partially with funding from project participants that was not charged to a government contract and partially with government funding.
Distribution Statement:	Limited Distribution Authorized to U.S. Shipyards, NSRP Program Representatives, and Government Agencies.

Project Overview






This project will focus on the validation of the previous project laboratory findings thru evaluation of optical testing on a new construction VCS submarine, USS Montana (SSN-774). The intent is to investigate the potential for Fiber Optic Testing Enhancement for Cost Reduction by evaluating the commercial practice of using an Optical Time Domain Reflectometer (OTDR) to replace the Optical Loss test Set (OLTS) and Optical Return Loss Meter (ORLM) in performance of MIL-STD-2042 Part 6 required shipboard installations tests that must be performed at various stages during the construction process, minimizing the number of tests and the time to perform the separate testing. In addition, the OTDR test results will provide enhanced data that is not currently captured resulting in reduced time for system acceptance and identification of potential faults for expedited troubleshooting and repair during construction.

Project Schedule Challenges/Changes

How has the schedule changed since project approval?

- Project contracting timeline delayed in order to get NNS Subk cost estimate and Subk contract executed. (This delay is reflected in the current project schedule.)
 - ❑ Impact: Created ~ 4 month delay in project start and KO meeting completion.
- Anticipated Submarine construction schedule shifted to the right by ~ 3 months. (This delay is reflected in the current project schedule.)
 - ❑ Impact: Allowed absorption of contracting delay and put project back on schedule. Moved planned test window from Jan 2020 thru Mar 2020 TO Apr 2020 thru Jul 2020.
- Delay in obtaining verification of project FO test paths configurations – Ongoing.
 - ❑ Impact: Has resulted in delay in verification by NSWCCD of project testing scope.
 - ❑ Impact: Has resulted in delay of identifying FO test cable configurations and procurement.
- COVID-19
 - ❑ Impact: Not fully understood at this time.
 - ❑ Impact: Difficulty in communicating with NNS to obtain required data.
 - ❑ Impact: Potential travel challenges for project team (primarily NSWCCD).
 - ❑ Impact: Likely submarine construction delay with further schedule shift to right.

Project Schedule

	Oct 19	Nov 19	Dec 19	Jan 20	Feb 20	Mar 20	Apr 20	May 20	Jun 20	Jul 20	Aug 20	Sep 20
1) Kick-Off Meeting and Project Plan Development												
2) Procurement of Test Equipment and Materials				Waiting for Additional Test Path Configuration Information from NNS								
												
3) Testing of FO Circuit Leads onboard SSN-794							Not started at this time					
4) Testing Result Comparison Analysis										Not started at this time		

Procured Equipment

Procured Equipment List			
Manufacturer	Description	QTY	Date
EXFO-945	Light Source, SM & MM (with EF Launch)/Power Meter /ORLM	2	21-Feb-20
EXFO iOLM	OTDR, SM and MM (with EF Launch)/Power Meter	2	20-Mar-20

The Two (2) MAX-OLSTNAVY-NSRP1 (EXFO-945) were delivered on 02/27/2020 to NSWC Dahlgren Division, Code A31 for evaluation

*Not Yet Procured Equipment List					
M85045/16-01 (MM)			M85045/16-02 (SM)		
Part #	Description	QTY	Part #	Description	QTY
KFO 60810-EXP	MQJ ST/4 CH Recpt 1 meter 6877804-08	2	KFO 60830-EXP	MQJ ST/4 CH Recpt 1 meter 6877804-08SME	2
KFO 60510	MQJ ST/ST 1 meter 6877804-05	4	KFO 60530	MQJ ST/ST 1 meter 6877804-05SME	4
0705-5610	MQJ ST/LC 1 Meter 6877804-15	4	KFO-11923	MQJ ST/LC 1 Meter 6877804-15SME	4
N/A	MQJ ST/4CH Recpt 50 meter (Special Cable)	2	N/A	MQJ ST/4CH Recpt 50 meter (Special Cable)	2
N/A	MQJ ST/8 CH Recpt 50 meter (Special Cable)	2	N/A	MQJ ST/8 CH Recpt 50 meter (Special Cable)	2

***Note: The not yet procured equipment is awaiting configuration verification based on HII-NNS input regarding planned project test links**

Project Outstanding Tasks

Tasks/Items that still need to be accomplished include:

- Verification of possible FO paths for project testing (to include fiber and connector configurations)
- Identification of potential additional paths (to include fiber and connector configurations)
- Presentation of this information to NSWCCD to verify their concurrence that the FO paths identified will allow for appropriate analysis of test result data in order to draw acceptable conclusions
- Identification of project required MQJ's and test leads
- Procurement of required test leads
- Identification of reasonable and acceptable project site visits dates to conduct the required testing (assumes 3 to 4 visits of 3 to 4 days each)
- Verification that all parties can support such dates and MQJs will be ready
- Actual site visits for project testing – Project team records project test data (assumes 3 to 4 visits of 3 to 4 days each)
- Testing by NNS of the same paths and transference of test data to compare to project test data
- Analysis of project data
- Final report drafting
- Review by all team members
- Final report finalization

Project Status Summary

- Appears more likely we will miss our test window to complete full project scope on USS Montana due to related project schedule impacts. Input from NNS expected next week to allow further determination.
- Have started discussions with NNS and PTR in order to identify options:
 - 1) Shift project to future submarine (USS New Jersey). Likely creates ~1 year delay?
 - 2) Determine if other options exist. Shift to another platform or modified scope?
 - 3) Cancel Project?
- Considerations:
 - A. Project Cost Impact? (i.e.- any changes to project cost?)
 - B. Project FY Funding? (i.e.- can funds for all project participants cross FY's?)
 - C. Project Schedule Impact? (i.e.- modified project timeline profile?)

Project Considerations if Moved to USS New Jersey



Use Montana to identify and consider:

1. The most appropriate FO paths to be targeted for testing on the next available boat.
2. Configurations of all such paths (to include fiber and connector configurations).
3. Presentation and concurrence by NSWCDD.
4. Establishment of the optimal project testing timeline. How many visits? How long the visits should take? Etc.
5. Identification of project required MQJs

Take this time on USS Montana to develop a project model that will ensure project plan success if shift to USS New Jersey.

Current Deliverables Schedule

Deliverable	Team Member(s)	Due Date
Project/Test plan & Schedule	KITCO Fiber Optics - Dan Morris	2/15/20
Quarterly Report #1	KITCO Fiber Optics - Dan Morris	12/15/2019
List of Material Procured	KITCO Fiber Optics - Dan Morris	2/31/20
Project Status Brief to ETP	KITCO Fiber Optics - Dan Morris HII-NNS - Dave White/Dave Ellis	12/10/2019
Quarterly Report #2	KITCO Fiber Optics - Dan Morris	3/15/2020
Project Status Brief to ETP	KITCO Fiber Optics - Dan Morris HII-NNS - Dave White/Dave Ellis	4/30/2020 Updated to 5/12/2020
Summary Report of all Project Visits and Tests conducted	KITCO Fiber Optics - Dan Morris	Update to: TBD 5/1/2020
Quarterly Report #3	KITCO Fiber Optics - Dan Morris	6/15/2020
Project Status Brief to ETP	KITCO Fiber Optics - Dan Morris HII-NNS - Dave White/Dave Ellis	Update to: TBD 7/10/2020
Final Report with Recommendation	KITCO Fiber Optics - Dan Morris	9/15/2020

- The Base TOA (2019-472) was executed on 09/17/2019. MOD 1 updated POP to 10/11/2019 – 09/15/2020 and MOD 2 updated POP to 02/15/2020 – 09/15/2020.
- We are still working with NNS to outline a project plan timeline. We will likely need to use TBD dates.

Questions???

