



DEPARTMENT OF THE NAVY

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IN REPLY REFER TO

3910
Ser W23/011
2 Jun 10

From: Commander, Dahlgren Division, Naval Surface Warfare Center

Subj: POLICY TO INVOKE MIL-STD-2052A FOR FIBER OPTIC SYSTEM DESIGN

Ref: (a) MIL-STD-2052A - FIBER OPTIC SYSTEMS DESIGN
(b) CONCURRENCE OF TECHNICAL WARRANT HOLDER IN ENGINEERING AGENT
ASSIGNMENT - Ser T/136

1. Purpose. Per Reference (b), the Naval Surface Warfare Center, Dahlgren Division (NSWCDD) is the Technical Direction Agent (TDA) for Navy fiber optics. Part of the TDA roles and responsibilities is to ensure technical products are in conformance with technical policy, standards, processes, and requirements. This letter documents the necessity to invoke reference (a) for all shipboard fiber optic systems during the system design process and during any modernization efforts.

2. Background. Reference (a) provides detailed information, guidelines, procedures, and requirements for selecting and using fiber optic components to transmit fiber optic signals in Navy systems. Reference (a) is a standard practice that identifies the considerations used in the selection of specific Navy fiber optic components and the performance of those components in the surface ship and submarine environments. Furthermore, reference (a) is the standard practice that provides detailed explanations of the fiber optic system design procedures. Currently, the scope of reference (a) states, "This design criteria standard provides design requirements for digital fiber optic systems having data transmission rates not greater than 500 megabits per second (Mbps) installed aboard Navy surface ships and submarines." Because of this statement, many Program Acquisition Resource Managers and fiber optic system designers are not invoking reference (a) in their system requirements. This practice can lead to an increased risk of failure in the fiber optic systems affected and allow for fiber optic system integrators to utilize commercial practices instead of adhering to Navy-specific requirements when designing a fiber optic system for shipboard use.

3. Applicability of reference (a). Even though reference (a) provides design requirements for fiber optic system with data transmission rates up to 500 Mbps, the core detailed information, guidelines, procedures, and requirements for selecting and using fiber optic components are still applicable for bandwidths exceeding 500 Mbps. Reference (a) has been utilized for fiber optic systems that have exceeded 500 Mbps (e.g., one Gbps) and those systems have been successful with meeting

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and implementing the requirements within the document. The power budget calculations utilized in reference (a) do accommodate bandwidths higher than 500 Mbps; however, the current value for the distortion power penalty is more stringent for higher bandwidth systems. Therefore, the TDA for Navy fiber optics, NSWCDD, Fiber Optics Section, has created supplemental optical power budgeting models that implement the design requirements of reference (a) with improved calculations for power penalties of higher bandwidth systems. When designing a new system or upgrading an existing system, reference (a) in combination with the supplemental optical power budget models, shall be utilized and invoked. This process shall continue until reference (a) can be updated by the Technical Authority for Navy fiber optics.

4. Invoking reference (a). As described in this policy, reference (a) is applicable and shall be invoked during the design of shipboard fiber optic systems and during any modernization efforts for a shipboard fiber optic system. Invoking reference (a) supports the following:

a. Ensures that the fiber optic components selected for a system are in accordance with the Navy's fiber optic component specifications.

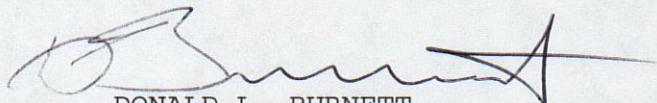
b. Allows for system designers to evaluate the chosen fiber optic components and link configuration to understand if the system will meet the expected life prior to being installed on a ship.

c. Allows for system designers to make technical and programmatic changes to system components prior to installation.

d. Reduces the risk of a fiber optic system, installed on a ship, from failing prior to its expected life.

e. Helps protect warfighters from technologies or decisions that can negatively affect their mission operations prior to the system being installed.

5. If you have any questions, concerns, or when system PARMs require the use of the supplemental optical power budgeting models, please contact Mr. Michael S. Brown at (540) 653-0626, michael.s.brown4@navy.mil or Mr. Robert A. Throm at (540) 653-4203, robert.throm@navy.mil.



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