METRIC
MIL-STD-2042A(SH)
29 September 1997
SUPERSEDING
MIL-STD-2042(SH)
7 July 1993

DEPARTMENT OF DEFENSE
STANDARD PRACTICE

FIBER OPTIC CABLE TOPOLOGY INSTALLATION STANDARD METHODS FOR NAVAL SHIPS

AMSC N/A

AREA GDRQ

FOREWORD

1. This Department of Defense Standard Practice is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 03K12, 2531 Jefferson Davis Highway, Arlington, VA 22242-5160 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

3. This standard practice provides detailed information and guidance to personnel concerned with the installation of fiber optic cable topologies (fiber optic cabling and associated components) on Naval surface ships and submarines. The methods specified herein are not identifiable to any specific ship class or type, but are intended to standardize and minimize variations in installation methods to enhance the compatibility of the installations on all Naval ships.

4. In order to provide flexibility in the use and update of the installation methods, this standard practice is issued in seven parts; the basic standard practice and six numbered parts as follows:

Part 1 Cables
Part 2 Equipment
Part 3 Cable Penetrations
Part 4 Cableways
Part 5 Connectors and Interconnections
Part 6 Tests

5. Considering the magnitude of this standard, along with the changing requirements imposed on the fiber optic cable topology, it is inevitable that changes will be required to update these methods. Therefore, when the need for change is recognized, comments should be forwarded to Naval Sea Systems Command (NAVSEA) 03K12. Revisions to this standard will be by issuance of change pages.

CONTENTS

1. SCOPE

1.1 Scope. This standard provides detailed methods for the installation and test of fiber optic cabling and associated components (see 3.2) on Naval surface ships and submarines.

1.1.1 Applicability. These criteria apply to installations on specific ships when invoked by the governing ship specification or other contractual document. They are intended primarily for new construction; however, they are also applicable for conversion or alteration of existing ships. The rapidly changing state of the art in fiber optic technology makes it essential that some degree of flexibility be exercised in enforcing this document. Where there is a conflict between this document and the ship specification or contract, the ship specification or contract shall take precedence. Where ship design is such that the methods herein cannot be implemented, users shall submit new methods or modifications of existing methods to NAVSEA 03K12 for approval prior to implementation.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4 and 5 of this standard. This section does not include documents cited in other sections of this standards or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3, 4 and 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards and handbooks. The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

STANDARDS

MILITARY

MIL-STD-2042-1 - Fiber Optic Cable Topology Installation, Standard Methods for Naval Ships (Cables) (Part 1 of 6 Parts).

MIL-STD-2042-2 - Fiber Optic Cable Topology Installation, Standard Methods For Naval Ships (Equipment) (Part 2 of 6 Parts).

MIL-STD-2042-3 - Fiber Optic Cable Topology Installation, Standard Methods for Naval Ships (Cable Penetrations) (Part 3 of 6 Parts).

MIL-STD-2042-4 - Fiber Optic Cable Topology Installation, Standard Methods for Naval Ships (Cableways) (Part 4 of 6 Parts).

MIL-STD-2042-5 - Fiber Optic Cable Topology Installation, Standard Methods for Naval Ships (Connectors and Interconnections) (Part 5 of 6 Parts).

MIL-STD-2042-6 - Fiber Optic Cable Topology Installation, Standard Methods For Naval Ships (Tests) (Part 6 of 6 Parts).

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Documents Order Desk, 700 Robbins Ave, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 End user equipment. End user equipment refers to any cabinet, case, panel, or device, that contains components that are either the origin or destination of an optical signal.

3.2 Fiber optic cable topology. The fiber optic cable topology consists of fiber optic interconnection boxes, outlets, trunk and local cables and the connectors and splices used to interconnect trunk and local cables.

3.3 Local cable. A local cable is a fiber optic cable that provides a continuous optical path between an interconnection box (or outlet) and an end user equipment or between an interconnection box and an outlet, and is typically not run through the main cableways.

3.4 Outlet. An outlet is a small termination box used to break out a local cable from an interconnection box to one or more equipments within a compartment.

3.5 Trunk cable. A trunk cable is a fiber optic cable that provides a continuous optical path between interconnection boxes. Typically, trunk cables are run in the main cableways and have higher fiber counts per cable than local cables.

4. GENERAL REQUIREMENTS

4.1 Organization. This standard is comprised of seven different parts, each of which is a separate publication with a unique identification number. This organization provides maximum flexibility in using, referencing and revising the standard. The complete standard consists of the basic standard and six numbered parts as follows:

MIL NUMBER	TITLE
MIL-STD-2042	Fiber Optic Cable Topology Installation Standard Methods For Naval Ships.
MIL-STD-2042-1	Fiber Optic Cable Topology Installation Standard Methods for Naval Ships (Cables)(Part 1 of 6 Parts).
MIL-STD-2042-2	Fiber Optic Cable Topology Installation Standard Methods for Naval Ships (Equipment)(Part 2 of 6 Parts).
MIL-STD-2042-3	Fiber Optic Cable Topology Installation Standard Methods for Naval Ships (Cable Penetrations)(Part 3 of 6 Parts).
MIL-STD-2042-4	Fiber Optic Cable Topology Installation Standard Methods for Naval Ships (Cableways)(Part 4 of 6 Parts).
MIL-STD-2042-5	Fiber Optic Cable Topology Installation Standard Methods for Naval Ships (Connectors and Interconnections)(Part 5 of 6 Parts).
MIL-STD-2042-6	Fiber Optic Cable Topology Installation Standard Methods for Naval Ships (Tests)(Part 6 of 6 Parts).

4.2 Arrangement and contents. Each numbered part of this standard contains a series of standard installation methods. Methods providing similar functions are grouped together for ease of useability and referencing as follows:

MIL-STD-2042 Part Number	Functional group	Function
1 (Cables)	A	Cable end-sealing
	B	Cable jacket repair
2 (Equipment)	A	Cable entrance to equipment via nylon stuffing tubes
	B	Cable entrance to equipment via MCP
	C	Cable and buffered fiber forming and shaping
	D	Splice assembly and alignment
3 (Penetrations)	A	Cable penetrations via metal stuffing tubes
	B	Cable penetrations via Multicable Penetrator (MCP)
4 (Cableways)		Methods in DOD-STD-2003 referenced
5 (Connectors and Inter-connections)	A	Multiple terminus connector installation
	B	
	C	Single terminus connector installation
6 (Tests)	A	Mechanical splice ferrule installation
	B	
	C	Visual inspection of fiber optic components
	D	
	E	Cable attenuation test Cable assembly link loss test
	F	Cable continuity test
	G	Cable topology end-to-end attenuation test Test jumper cable selection test Heavy duty connector mechanical pull test

5. DETAILED REQUIREMENTS (Not applicable)

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The standard methods for installation and test of the fiber optic cable topology depicted in Parts 1 through 6 of this standard are intended primarily for new construction; however, they are also applicable for conversion or alteration of existing ships. In the case of conversion or alteration, the degree of applicability of these criteria shall be specified by the activity preparing instructions for the work.

6.2 Issue of DODISS. When this standard is used in acquisition, the applicable issue of DODISS must be cited in the solicitation (see 2.2.1).

6.3 Subject term (key word) listing.

Arrangement and content
Cable
Organization

Preparing activity:
NAVY - SH
(Project GDRQ-N169)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE *(YYMMDD)*
	MIL-STD-2042A(SH)	970929

3. DOCUMENT TITLE
FIBER OPITIC CABLE TOPOLOGY INSTALLATION STANDARD METHODS FOR NAVAL SHIPS

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(Include Zip Code)*	d. TELEPHONE *(Include Area Code)* (1) Commercial (2) AUTOVON *(If applicable)*	7. DATE SUBMITTED *(YYMMDD)*

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE *(Include Area Code)*	
TECHNICAL POINT OF CONTACT IS: DR. CHARLES COURCHAINE 03J2	(1) Commercial (703) 602-7241	(2) AUTOVON 332-7241
c. ADDRESS *(Include Zip Code)* Commander, Naval Sea Systems Command, SEA 03R42 2531 Jefferson Davis Hwy. Arlington, VA 22242-5160	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	