NOTICE OF CHANGES

METRIC

DOD-STD-1399(NAVY)
SECTION 532
NOTICE 1
28 February 1990

MILITARY STANDARD
INTERFACE STANDARD FOR SHIPBOARD SYSTEMS
SECTION 532
COOLING WATER FOR SUPPORT OF ELECTRONIC EQUIPMENT
(METRIC)

TO ALL HOLDERS OF DOD-STD-1399(NAVY), SECTION 532:

1. THE FOLLOWING PAGES OF DOD-STD-1399(NAVY), SECTION 532 HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
3	28 February 1990	3	10 May 1978
3a	28 February 1990	–	–
4	10 May 1978	4	REPRINTED WITHOUT CHANGE

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of DOD-STD-1399(NAVY), Section 532 will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retainced by stocking points until the military standard is completely revised or canceled.

Preparing activity:
Navy – SH
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AMSC N/A

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require significant increases in cost, weight, space, and a potential compromise in reliability of the air conditioning system. Any need to deviate from this temperature interface characteristic shall be fully justified (see 7.1).

5.2.3 **Pressure.** For surface ships, the water pressure will be within the range of 69 kilopascals (kPa) (10 pounds per square inch (lb/in^2)) to 758 kPa (110 lb/in^2). The equipment cooling system shall be capable of withstanding a hydrostatic pressure test of 1034 kPa (150 lb/in^2).

For submarine service, the water pressure will be within the range of 69 kilopascals (kPa) (10 pounds per square inch (lb/in^2)) to 1415 kPa (205 lb/in^2). The equipment cooling system shall be capable of withstanding a hydrostatic pressure test of 1898 kPa (275 lb/in^2).

5.2.4 **Flow rate.** The flow rate will be as required by the electronic equipment and controlled by the design of the equipment water passages. Water flow and distribution as described in MIL-W-21965 shall be used for guidance.

5.3 **Interface constraints.** The interface characteristics of the shipboard electronic cooling water system impose certain constraints on the design of electronic equipment utilizing such support. These constraints are specified in 5.3.1 and through 5.3.5.

5.3.1 **Compatibility.** The design of electronic equipment utilizing ships cooling water support shall be compatible with the interface characteristics given in 5.2.

5.3.2 **Pressure drop.** The maximum pressure drop from inlet to outlet of each electronic cabinet shall not exceed 69 kPa (10 lb/in^2). However, state-of-the-art breakthrough is required in certain tube designs (e.g., klystron tube) in order to stay within the maximum 69 kPa (10 lb/in^2) pressure drop. While a high pressure piping system required to support large pressure drops is not desirable from the point of view of the additional weight and cost involved, when weighed against the probability and cost of the state-of-the-art breakthrough in tube design, it may be a cost-effective compromise and a deviation from this interface constraint may be indicated. In such instance, the need to deviate from this pressure drop interface shall be fully justified (see 7.1).

5.3.3 **External connections.** Each unit shall have a single supply and single return water connection for attachment to the electronic cooling water system. The two connections, for rigidly-mounted equipments, shall be union joints or flanges in accordance with Category C-1 of MIL-STD-777 for surface ships or Category N of MIL-STD-438 for submarine service and shall be rigidly fastened to the outside surface of the enclosure. Shock mounted equipments shall be provided with hose assemblies in accordance with MIL-H-24520.

5.3.4 Materials. The coolant circuit shall be constructed of high-purity cooper materials which are electrochemically compatible with the materials listed in Category C-1 of MIL-STD-777 for surface ships or Category N or MIL-STD-438 for submarine service. Materials containing carbon are not acceptable.

5.3.5 User cooling water requirements. The cooling water requirements of each user system/equipment shall be reported as specified in 6.1.

6. DOCUMENTATION REQUIREMENTS

6.1 DD Form 1423. Where this standard is invoked in direct Government procurements or on a prime contractor who must obtain the data for contractor-furnished equipment (CFE) from his subcontractor, the following data requirements, as applicable, shall be specified by the Principal Development Activity (PDA) on DD Form 1423 (Contract Data Requirements List) attached to the contract or order. Data Item Description UDI-S-23272 may be cited in the DD Form 1423, blocks 2 and 4, as appropriate, with suitable further identification of the particular data item in block 3. The Naval Ship Engineering Center, Auxiliary Water and Compressed Gases Section, shall be included in the distribution listed in block 14 of DD Form 1423 for data specified.

(a) *Cooling water requirements – individual user equipment.* This documentation applies to each user equipment (see 3.2) which will utilize cooling water from a shipboard electronic cooling water system. It shall include the following information:

(1) Nominal operating pressure – kPa (lb/in^2).

(2) Maximum operating pressure – kPa (lb/in^2).

(3) System design pressure – (lb/in^2).

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(4) Flow rate - liters per minute (L/min) (gallons per minute (gal/min)) (average per unit).
(5) Flow rate - L/min (gal/min) (maximum per unit).
(6) Purity.[1/]
(7) Temperature.[1/]

[1/] If incompatible with standards specified in 5.2.1 and 5.2.2.

(b) Cooling water requirements - total ship. This documentation applies to the total ship electronic cooling water support system. It shall include the following information:
(1) User equipment identification.
(2) Number installed.
(3) Nominal operating pressure - kPa (lb/in^2).
(4) Maximum operating pressure - kPa (lb/in^2).
(5) System design pressure - kPa (lb/in^2).
(6) Total flow rate - L/min (gal/min).
(7) Use factor (percent).
(8) Purity.[1/]
(9) Temperature.[1/]

[1/] If incompatible with standards specified in 5.2.

6.1.1 A sample format for reporting the information specified in 6.1 is shown on figure 2.

7. DEVIATIONS

7.1 Conditions. In achieving the purpose of this section, it is recognized that there must be some flexibility of application. During the early design stage of shipboard electronic equipment utilizing the shipboard electronic cooling water system, it may become apparent that significant advantages in the overall design/operation of such equipment can be achieved by deviating from the standard characteristics specified herein. In such instance, the provisions of section 6, "Deviations" of DOD-STD-1399 shall be complied with.

7.1.1 Deviation procedure. Request for deviations shall be submitted to the Naval Sea Systems Command with copies to:

(a) Program/Project manager.
(b) NAVSEC 6154.

User activity:
AS

Preparing activity:
Navy - SH
(Project 1990-N021)