NATO STANDARD

ANEP-89

DESIGN CRITERIA FOR REPLENISHMENT ASPECTS OF NEW CONSTRUCTION NAVAL VESSELS

Edition (B) Version (1)

MARCH 2017

NORTH ATLANTIC TREATY ORGANIZATION

ALLIED NAVAL ENGINEERING PUBLICATION

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PUBLICATION NOTICE

1. ANEP-89(B)(1), DESIGN CRITERIA FOR REPLENISHMENT ASPECTS OF NEW CONSTRUCTION NAVAL VESSELS, is effective upon receipt. It supersedes ANEP-89(A)(1).

2. Summary: Chapter 2 incorporates STANAG 1453 hoisting arrangements for sea-boats on board warships, and interface connections for hoisting sea-boats used for transferring personnel and small goods between ships at sea.

This notice will assist in providing information to cognizant personnel. It is not accountable.

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

NATO STANDARDIZATION OFFICE (NSO)

NATO LETTER OF PROMULGATION

1 March 2017

1. The enclosed Allied Naval Engineering Publication, ANEP-89, Edition B, Version 1, DESIGN CRITERIA FOR REPLENISHMENT ASPECTS OF NEW CONSTRUCTION NAVAL VESSELS, which has been approved by the nations in the Military Committee Maritime Standardization Board (MCMSB), is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 1310.

2. ANEP-89, Edition B, Version 1 is effective upon receipt and supersedes ANEP-89, Edition A, Version 1 which shall be destroyed in accordance with the local procedure for the destruction of documents.

4. This publication shall be handled in accordance with C-M(2002)60.

Edvardas MAŽEIKIS
Major General, LTUAF
Director, NATO Standardization Office

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATIONS BY NATIONS
1	FRA, NLD
2	DNK, TUR, USA
General	DEU, POL

NOTE

THE RESERVATIONS LISTED ON THIS PAGE INCLUDE ONLY THOSE THAT WERE RECORDED AT TIME OF PROMULGATION AND MAY NOT BE COMPLETE. REFER TO THE NATO STANDARDIZATION DATABASE FOR THE COMPLETE LIST OF EXISTING RESERVATIONS.

RECORD OF RESERVATIONS

NATION	SPECIFIC RESERVATIONS
DEU	DEU reserves the right not to provide two stations per side by new constructed delivery ships. The ships will be equipped with one station per side of DUAL Type. DEU reserves the right to build ships without hoisting arrangements for sea-boats other than their organic sea-boats.
DNK	DNK can not ratify chapter 2 (Hoisting Arrangements for Sea-Boats On Board Warships) due to lack of lifting capacity (3 ton) in all vessels, and no wave compensation in any vessels.
FRA	Paragraph 0103.a.(3)(b) of ANEP 89 provides for a transfer capacity of up to 6 metric tons for heavy solid delivery stations. In the French navy, the maximum capacity for “heavy RAS” is currently limited to 1.7 ton.
NLD	The number of delivery stations per side as defined in point 0103.a(1) may not be adhered to.
POL	The provisions of the STANAG will be applied since January 2025 with reference to newly built naval vessels.
TUR	Turkey will implement articles in Chapter 2 according to national regulations.
USA	1) Chapter 2 Section 0203 c. (2) calls for hoisting equipment with a minimum working load limit (WLL) of 3.0 tons. The USN operates many ships with boat davits with a WLL of 5,700 lbs (2.85 tons). Increasing the capacity of those davits to 3 tons is not possible without major modifications to the systems or complete system replacements. 2) Chapter 2 Section 0203 c. (3) calls for hoisting equipment to use a standard cargo hook with latch. The USN uses a Vestdavit LB10 or LB4 on load/off load hook.

NOTE

THE RESERVATIONS LISTED ON THIS PAGE INCLUDE ONLY THOSE THAT WERE RECORDED AT TIME OF PROMULGATION AND MAY NOT BE COMPLETE. REFER TO THE NATO STANDARDIZATION DATABASE FOR THE COMPLETE LIST OF EXISTING RESERVATIONS.

NATO NATIONS
EACH NATION SHOULD SUBSTITUTE ITS OWN
NATIONAL LETTER OF PROMULGATION IF REQUIRED

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CONVENTIONS USED IN THIS PUBLICATION

CHANGE SYMBOLS

Revised text in changes is indicated by a black vertical line in either margin of the page, like the one printed next to this paragraph. The change symbol indicates added or restated information. A change symbol in the margin adjacent to the chapter number and title indicates a new or completely revised chapter.

WARNINGS, CAUTIONS, AND NOTES

The following definitions apply to warnings, cautions, and notes used in this manual:

WARNING

AN OPERATING PROCEDURE, PRACTICE, OR CONDITION THAT MAY RESULT IN INJURY OR DEATH IF NOT CAREFULLY OBSERVED OR FOLLOWED.

CAUTION

AN OPERATING PROCEDURE, PRACTICE, OR CONDITION THAT MAY RESULT IN DAMAGE TO EQUIPMENT IF NOT CAREFULLY OBSERVED OR FOLLOWED.

NOTE

AN OPERATING PROCEDURE, PRACTICE, OR CONDITION THAT REQUIRES EMPHASIS.

WORDING

Word usage and intended meaning throughout this publication is as follows:

“Shall” indicates the application of a procedure is mandatory.

“Should” indicates the application of a procedure is recommended.

“May” and “need not” indicates the application of a procedure is optional.

“Will” indicates future time. It never indicates any degree of requirement for application of a procedure.

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CHAPTER 1 Design Criteria for Replenishment Aspects of New Construction Naval Vessels

0101 Purpose and Scope

The purpose of this chapter is to adopt standard minimum design criteria for replenishment aspects of new construction naval vessels. Participating nations agree to adopt the minimum replenishment at sea design criteria specified herein for new construction naval vessels with an overall length greater than 107 m (350 ft).

0102 General

1. Related Documents:

   a. ATP/MTP-16, Replenishment at Sea.

   b. ISO 45, Aircraft—Pressure Refuelling Connections.

   c. STANAG 1453 RAS, Hoisting Arrangements for Sea-Boats on Board Warships.

   d. MPP-02.3.3, Vertical Replenishment (VERTREP) Operating Area Marking, Clearances, and Lighting.

2. Definitions. The following terms and definitions are used for the purpose of this publication:

   a. Dual station: A replenishment at sea station that can deliver or receive solids and liquids.

   b. Single station: A replenishment at sea station that can deliver or receive either solids or liquids.

   c. Heavy replenishment at sea (Heavy RAS): Replenishment at sea involving the transfer of solid cargo greater than 2,000 kg (4,410 lb) to a maximum weight of 6,000 kg (13,216 lb) including the container.

0103 Design Criteria

The following minimum design criteria are established for replenishment at sea aspects of new construction naval vessels. These criteria apply to both delivery and receiving ships as these terms are used in ATP/MTP-16 and are described in terms of delivery and receiving stations.

a. Delivery Stations.

(1) Quantity of Stations per Side. R

(a) A minimum of two stations per side is required. When there are only two stations on the side, the bow station shall be dual, solid and liquid. (See Figure 1-1.)

(b) When more than two stations per side are installed, they may be of the single type. In this situation, at least one solid delivery station shall be preceded by a liquid delivery station. The liquid delivery station(s) shall be able to deliver both F-44/F-43, F-76/F-75, and potable water. (See Figure 1-1.)

(c) All liquid delivery ships should be equipped with astern refueling capabilities similar to those defined by ATP/MTP-16.

(d) Dual station requirements do not apply to single product delivery ships.

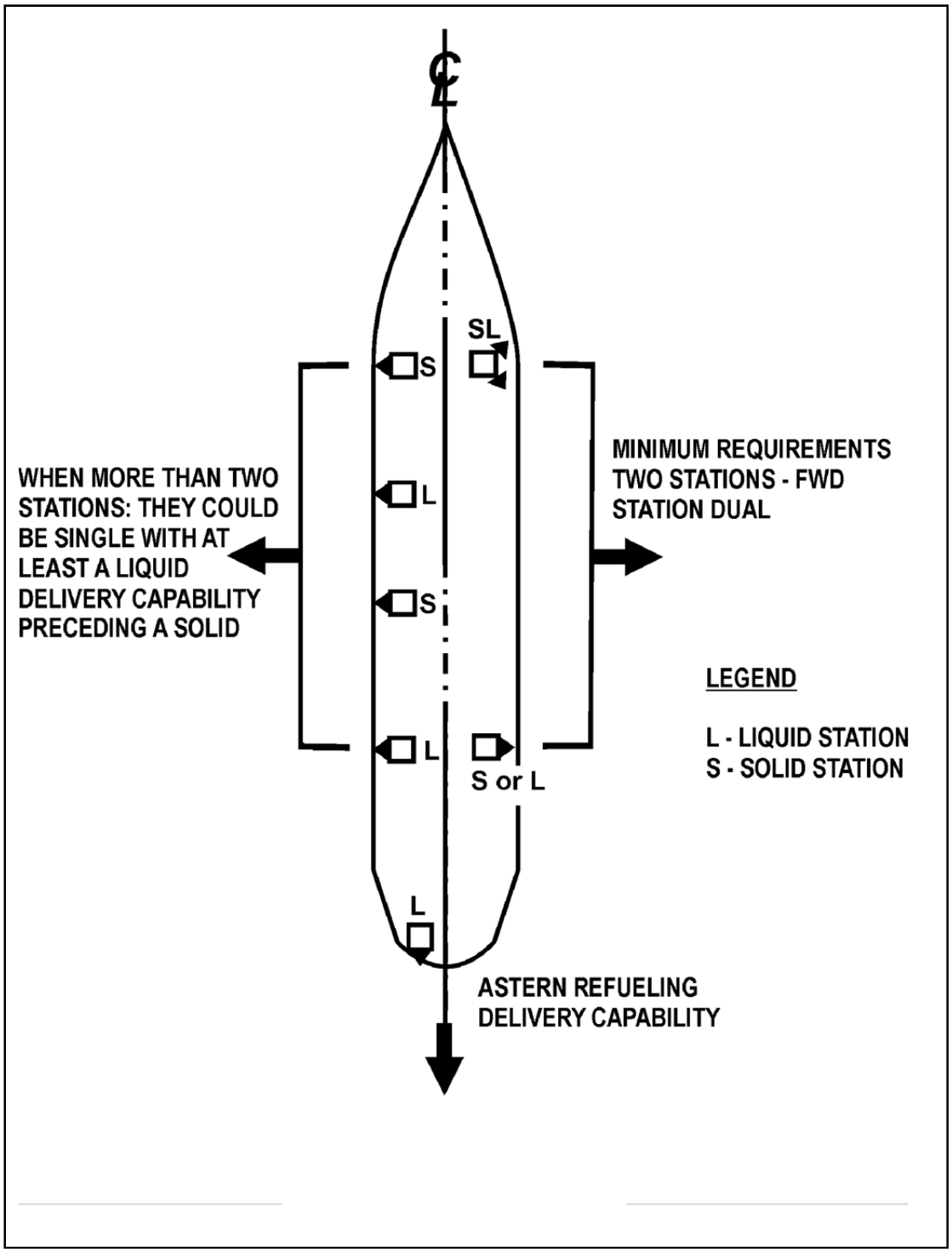

Figure 1-1. Delivery Refueling Characteristics

(2) Operational Clearance Requirements. Delivery stations (i.e., solids and liquids) shall have a minimum operational clearance of 30 degrees AFT to 30 degrees FWD from the outermost swiveling point. When a dual station is used, this clearance requirement must be met from both outriggers. Sufficient clearance shall be provided for deployment of astern refueling rig to preclude any interference with the deck, stern, stern mounted equipment and propellers. (See Figure 1-2.)

(3) Transfer Capabilities.

(a) Solid Stations. Solid delivery station machinery shall have a minimum transfer capacity of 1 metric tonne (2,205 lb). Solid delivery station machinery shall have a minimum mechanical transfer capability of 25 loads per hour.

(b) Heavy RAS Stations. For Heavy RAS, the solids delivery station shall have a transfer capacity of up to 6 metric tonnes (13,200 lb). Heavy RAS delivery stations shall have a minimum transfer capability of 25 loads per hour. R

(c) Liquid Stations. Liquid delivery, as well as receiving stations, shall have a maximum transfer rate dictated by the hose size through which liquids are being transferred as given in Table 1-1.

(d) Each delivery station shall be equipped with a (regularly) calibrated flowmeter inclusive fuel temperature compensation and read-out/ticket printer.

(4) Station Separation. Alongside delivery, station separation (i.e., solids and liquids) shall have a maximum longitudinal separation not to exceed 40 m (131 ft) and a minimum longitudinal separation of no less than 20 m (66 ft) to allow for proper alignment for replenishment at sea operations. (See Figure 1-2.)

Table 1-1. Maximum Liquid Transfer Rates

Hose Size Millimeters (Inches)	Interface Coupling	Implementing Document	Transfer Rate Cubic Meter/Hour (U.S. Gallon/Hour)
178 (7)	Probe	ATP/MTP-16	626 (165.500)
152 (6)	Probe or Spool	ATP/MTP-16	454 (120.000)
75 (3)	NATO Nozzle	ISO 45	70 (18.500)
65 (2.5)	NATO Nozzle	ISO 45	57 (15.000)
Note. *To avoid unsafe electrostatic buildup, maximum safe velocity is 7m/s for liquid transfers.*			

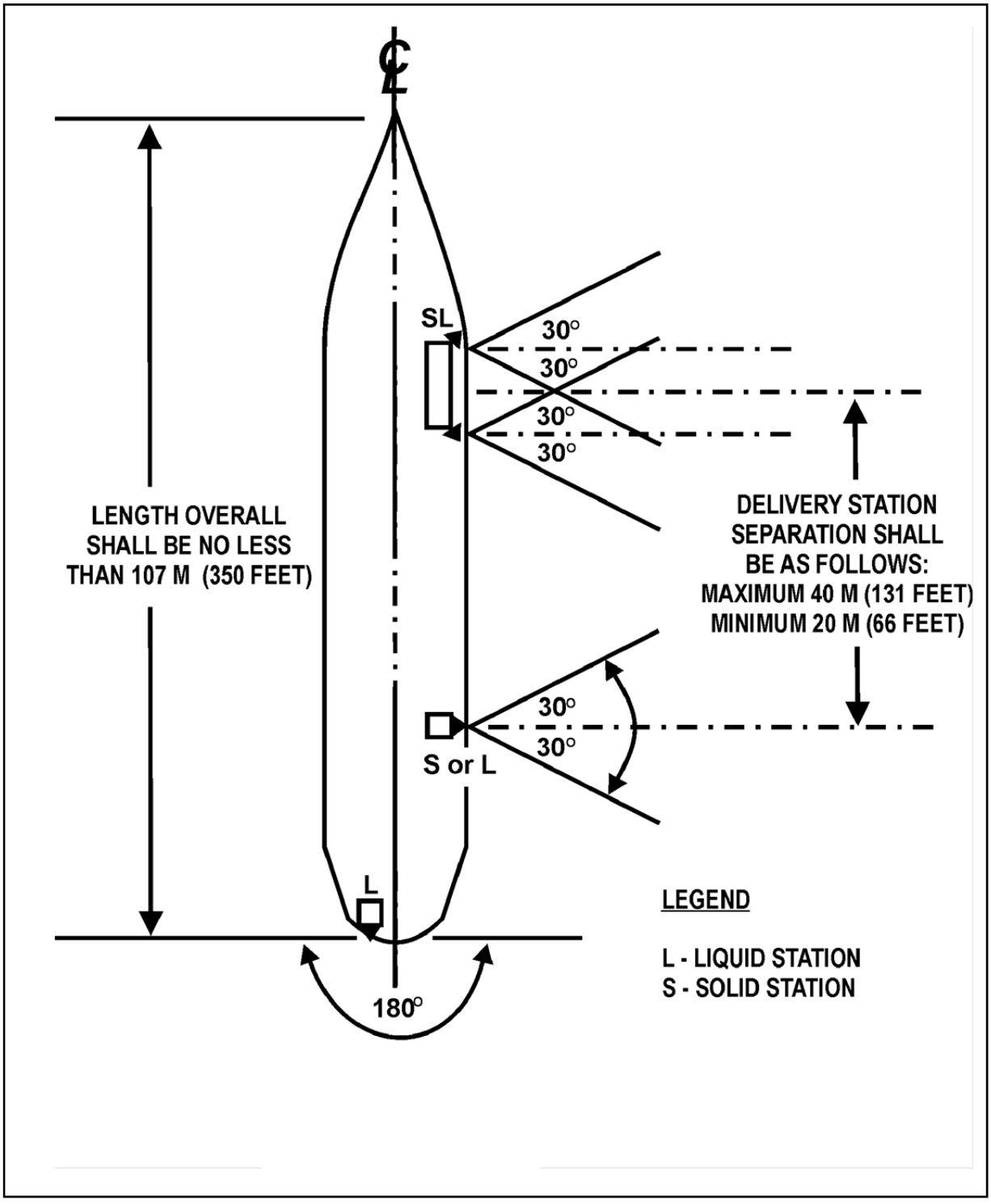

Figure 1-2. Delivery Station Characteristics

b. Receiving Stations.

(1) Quantity of Stations per Side. If more than two stations are installed and they are not all of the dual type, at least the FWD most station shall be configured to receive solid cargo. (See Figure 1-3.)

(2) Operational Clearance Requirements.

(a) Receiving stations (i.e., solids and liquids) shall have a minimum operational clearance of 30 degrees AFT to 30 degrees FWD from the receiving station padeye to which the delivery rig is connected. (See Figure 1-3.)

(b) A vertical operational clearance ranging from 30 degrees up to 15 degrees down from the same attachment point described in paragraph 0103.a.(2) shall be provided at all stations. (See Figure 1-3.)

(3) Transfer Acceptance Capabilities.

(a) The receiving padeyes to which the delivery rigs connect during the transfer of solid and liquid cargo shall have a minimum working load limit (WLL) of 8 metric tonnes (17,640 lb). Solid receiving stations shall have a minimum receiving capability of 25 loads per hour.

(b) The liquid cargo receiving stations shall be capable of accepting the flow rate outlined in Table 1-1 by means of a probe receiver or a breakable spool as required. The liquid receiving systems should withstand a minimum working pressure of 10 bars (140 psi).

(c) For Heavy RAS, the receiving padeyes, to which the delivery rigs connect during the transfer of solid cargo, shall have a minimum WLL of 22.7 metric tonnes (50,000 lb). Heavy RAS receiving stations shall have a minimum receiving capability of 25 loads per hour.

(d) For transfer by boat, the receiving ships should have a seaboat hoisting facility for boats with a maximum weight of 3.5 metric tonnes.

(4) Station Separation. Receiving stations separation shall be such that these stations line up with delivery stations within the working range stated in paragraph 0103.a.(4) and shall not exceed 65 m separation. (See Figure 1-3.).

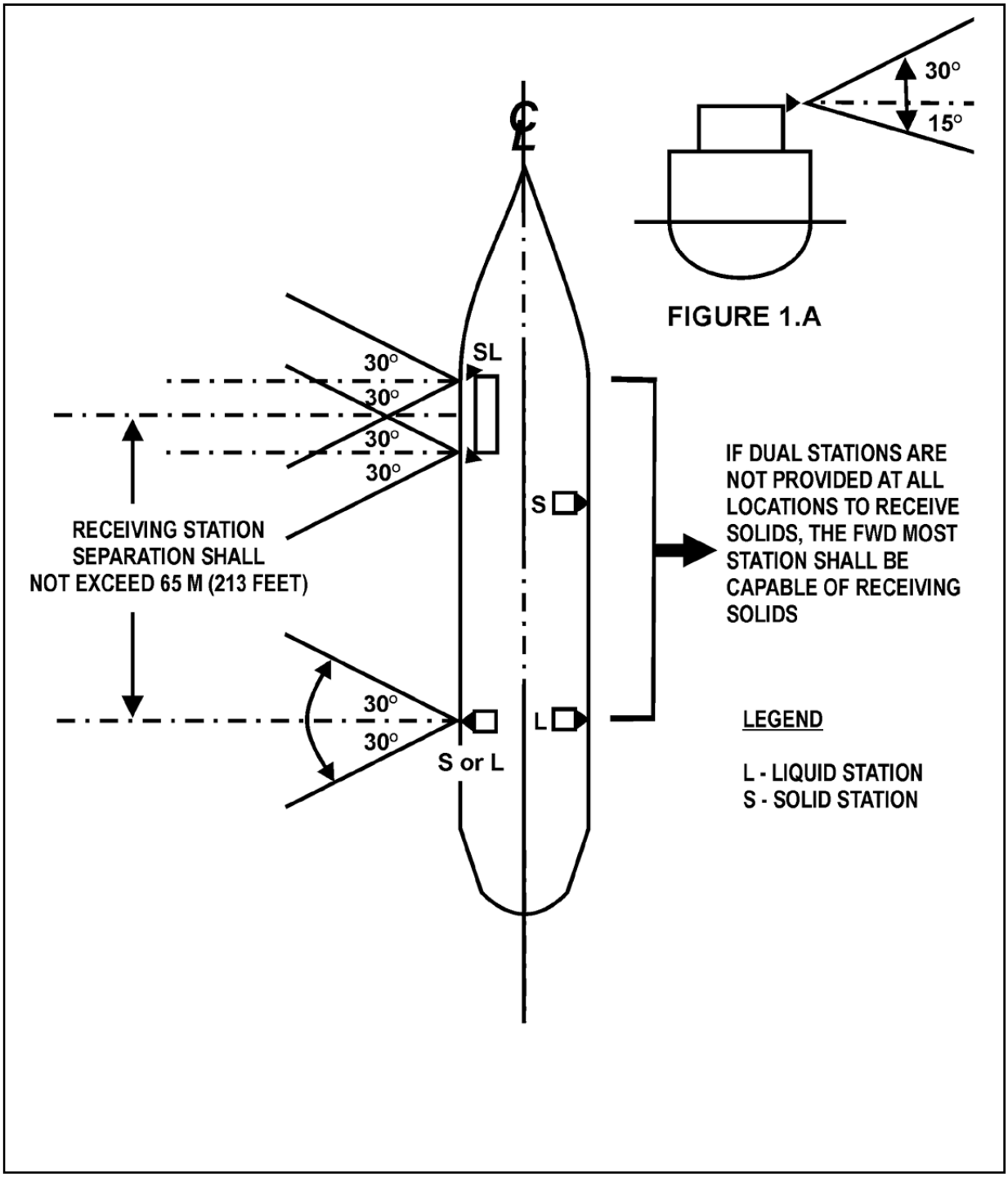

Figure 1-3. Receiving Station Characteristics

CHAPTER 2 Hoisting Arrangements for Sea-Boats On Board Warships

R

0201 Purpose and Scope

The purpose of this chapter is to establish standard hoisting arrangements and interface connections for hoisting sea-boats used for transferring personnel and small goods between ships at sea. Participating nations agree to implement hoisting arrangements suitable for hoisting any sea-boat, within the weight specifications and applicable environmental conditions, up to main-deck level in order to embark/disembark personnel and/or goods in a safe way.

0202 General

Related Documents:

a. ATP/MTP-16, Replenishment at Sea.

b. ATP-01, Volume II, Allied Maritime Tactical Signal and Maneuvering Book.

0203 Hoisting Arrangements for Sea-Boats

The hoisting arrangements on the ships shall allow a safe handling of all sea-boats, independent of its own sea-boat stowed on board.

a. Communications. Basic communication and rendezvous procedures will be conducted as outlined in ATP-01, Volume II and ATP/MTP-16.

b. Maneuvering. Basic maneuvering and handling procedures will be conducted as outlined in ATP/MTP-16.

c. General Requirements:

(1) The hoisting equipment shall be of a suitable type.

(2) The hoisting equipment shall have a Working Load Limit (WLL) of at least 3.0 tonnes. R

(3) The crane/davit hook shall be a standard Cargohook with latch (Crosby S322C or equal), or equivalent (e.g., a long link with latch attached). R

(4) The hoisting equipment shall be equipped with a wave compensation system which prevents slack wire during hoisting.

(5) The hoisting equipment shall be certified by a Notified Body in accordance with the International Labour Office (ILO) Convention (Occupational Safety and Health Convention of 1979) No. 152, or equivalent (Inter)national regulations, e.g., Lloyd's Register's Code for Lifting Appliances in a Marine Environment and safety of life at sea (SOLAS) regulations.

(6) The receiving ship shall provide a painter line of sufficient length and strength, with a spliced eye of 500 mm at the end to be placed on the bollard in the sea-boat.

d. Sea-boats. The sea-boat used for transport shall be equipped with its own Hendric Hook or comparable system for hoisting.

0204 National Hoisting Arrangements

Nations should extend the national datasheets in the ATP/MTP-16.1 with an overview of sea-boats that can be hoisted in accordance with the standard described in this chapter.

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MAR 2017	1-1 thru 1-6
MAR 2017	2-1, 2-2
MAR 2017	LEP-1, LEP-2

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