INCH-POUND
MIL-DTL-24784/5C(NAVY)
3 November 2007
SUPERSEDING
MIL-DTL-24784/5B(SH)
15 February 2002

DETAIL SPECIFICATION SHEET

OPERATIONAL STATIONS BOOK (OSB)
REQUIREMENTS FOR DESIGN, CONSTRUCTION, AND MAJOR MODIFICATION

This specification is approved for use by the Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-DTL-24784.

1. SCOPE

1.1 Scope. This specification sets forth requirements for a Concept and Preliminary Design Operational Stations Book (OSB) and a Construction or Major Modification Operational Stations Book (see 6.2). The OSB is employed to describe how the ships' personnel operate within the shipboard operational systems, for the establishment of team training of military personnel (not individual operator training) within described operational spaces and stations and as a historical record of the design philosophy intended by the designer, or the effect of the design upon operations.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification 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 of documents cited in sections 3, 4, or 5 of this specification, 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 cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-24784 - Manuals, Technical: General Acquisition and Development Requirements, General Specification for

(Copies of this document are available online at http://assist.daps.dla.mil/quicksearch/ or http://assist.daps.dla.milor from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

Comments, suggestions, or questions on this document should be addressed to: Commander, Naval Sea Systems Command, ATTN: SEA 05M3, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard DC 20376-5160 or emailed to CommandStandards@navy.mil, with the subject line "Document Comment". Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at http://assist.daps.dla.mil.

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

3. REQUIREMENTS

3.1 Preparation of digital data for page-oriented printed delivery. The source information for the OSB shall be prepared in the Extensible Markup Language (XML) or the Standardized General Mark-Up Language (SGML) in accordance with MIL-DTL-24784.

3.2 OSB types.

3.2.1 Concept and/or preliminary design OSB. An OSB shall normally be prepared during the later stages of concept design or early in the preliminary design stage. It shall be developed prior to detailed design and shall be used for:

a. Guidance and development of a subsequent Construction and Major Modification OSB.

b. Computer programming.

c. Manning and training determinations.

d. Ship design modifications.

e. Operational forces comments.

f. Design approval documentation.

3.2.2 Construction or major modification OSB. An OSB shall normally be prepared during ship construction or for a major modification. For operating ships, with systems in existence or to be immediately modified, an OSB is appropriate. In the development of the OSB, previously developed documentation shall be utilized. Where a Ship and System Operational Manning and Maintenance Data Document (or similarly titled document) or a Concept Design OSB has been prepared, these documents shall be employed to develop the Construction and Major Modification OSB. The OSB shall normally be finalized within 90 days subsequent to post-shakedown availability or completion of a major modification. Development shall be as follows depending upon availability of guidance documentation:

a. Guidance documentation available. Where a Concept Design OSB is available, the following shall be considered in modifying the Concept Design OSB for use in the development of a Construction or Major Modification OSB:

   (1) The rationale supporting the original design.

   (2) Modification of equipment.

   (3) Expansion or reduction of operational positions, spaces, or stations.

   (4) Characteristic changes.

   (5) Computer programming changes.

   (6) Concept Design OSB comments or other design review comments and recommendations.

   (7) Revised or new personnel data.

   (8) Revised or new training requirements data.

b. No guidance documentation. Where a Concept Design OSB is not available, the Construction and Major Modification OSB shall utilize analytical techniques – a work-study shall be conducted. The work-study shall be constrained and limited by a given set of equipment and a fixed arrangement. The study shall ensure optimization of procedures presented in the OSB without modifying the existing equipment configuration. Recommendations for changes to fixed arrangements shall be submitted to the Government for consideration in future designs.

3.3 Development. OSBs are developed to maintain the greatest effectiveness and efficiency in designing new shipboard integrated combat systems. OSBs may also be used in the modernization of older systems, and may be used in the development of associated documentation requirements. The OSB shall describe relationships between components of the shipboard operational system-human factors, equipment factors and interfacing software support requirements, and operational concepts and environments. The OSB shall describe these relationships with particular attention to:

a. The operational (rather than the technical) system.

b. The man, machine, software interface.

c. Optimum system employment as developed through analytical techniques.

d. Operating and system setup procedures for all modes of operation, including casualty conditions and special evolutions applicable to the system.

e. Rationale, including work study, to support the system design concept and the developed operational procedures.

f. Sequenced, step-by-step, operator procedures, and operator actions or interactions.

g. Manning requirements for readiness conditions I and III, the governing readiness condition (if other than readiness conditions I and III), special sea detail, and predominate special evolutions (for example, underway replenishment, vertical replenishment, and so forth) (see figure 1).

h. Special skills, knowledge, or training required to operate the system.

i. Providing a source of information not readily available from other sources.

3.3.1 Space applicability. When specified by the acquiring activity (see 6.2), the OSB shall define and describe the relationships of shipboard operational systems and system components for the spaces. The size, mission, and tasks of the ship shall be used to determine the shipboard spaces, stations, and systems to be included in the OSB. Spaces and stations specified as follows are typical of those which may be considered for inclusion in the OSB:

a. Pilot house and bridge wings (including exposed and auxiliary conning stations).

b. Chart room.

c. Signal station and signal bridge.

d. Secondary conning station.

e. Weapons control stations.

f. Flag bridge and command and control complex (including tactical flag command center).

g. Combat information center complex (including sonar control room, antisubmarine warfare module and central computer complex).

h. Meteorological spaces and stations.

i. Operational intelligence spaces.

j. Communications complex.

k. Engineering and machinery monitoring and control stations.

l. Damage control stations.

m. Spaces in which special evolutions are carried out, such as:

(1) Aircraft operations control (fixed and rotary wing).

(2) Aircraft handling and maintenance control.

(3) Amphibious and landing force command and control.

(4) Ammunition and cargo handling.

(5) Air squadron ready rooms.

(6) Deck operations (such as handling of mine countermeasures equipment, replenishment, beaching equipment, rescue and salvage equipment).

3.4 Ensurance of complete and up-to-date data. Information contained in an OSB shall be checked against established Chief of Naval Operations, Department of the Navy manning authorizations, actual shipboard equipment lists (such as drawings, specifications, ship characteristics, and mockups), latest shipboard arrangement configurations, and documented information sources, immediately prior to submission for review and approval.

3.4.1 Preparation techniques. The OSB shall be in consonance with the application of design work study techniques employed in the early stages of design, to the degree specified by the acquiring activity (see 6.2), to ensure functional and operational accuracy. Where the application of design work study techniques is not specified by the acquiring activity (see 6.2) in the design stages, an adequate level of design work study, as specified in flow process charts, as a minimum (see 3.3f and 3.8.2.2.2.2) shall be accomplished. Primary applicable design work-study techniques are:

a. Functional analysis.

b. Functional flow diagrams (FFD).

c. Operational sequence diagrams (OSD).

3.4.2 Layout. The OSB layout shall provide for ease of use so that it may be directly promulgated as ship's doctrine. The OSB shall be in loose-leaf form so that parts may be separated from the basic publication for use by individual operators.

3.5 Security classifications, distribution statement, and destruction notice. The security classification, distribution statement, and destruction notice shall be in accordance with MIL-DTL-24784.

3.5.1 Classified information. Wherever possible, the manual shall be void of classified material. Information classified higher than confidential shall not be included in the manual. Confidential material shall be kept to a minimum and, if possible, shall be assembled in an appendix or other division of the manual, for ease of identification, removal, and separate distribution where desired.

3.6 Deliverable products and data items. Deliverable products and data items shall be in accordance with MIL-DTL-24784 (see 6.2).

3.6.1 Format and development instructions. Unless otherwise specified by the acquiring activity or herein (see 6.2), the writing style, safety precautions, tabular material, graphics, and numbering shall be in accordance with MIL-DTL-24784.

3.7 Arrangement. Unless otherwise specified by the acquiring activity (see 6.2), the manual shall be arranged in a standardized format; that is, front matter, technical content, appendices, glossaries, indices, and Technical Manual Deficiency/Evaluation Report (TMDER) and shall be appropriately divided by volume, part, chapter, and section in accordance with Appendix A of MIL-DTL-24784 and the following.

3.7.1 Manual title. The prime title for a Design OSB shall be as follows:

OPERATIONAL STATIONS BOOK (DESIGN)
FOR
(INDICATE SPECIFIC SHIP AND CLASS)
(VOLUME NO., IF MULTIPLE VOLUMES)
(OPERATIONAL AREA(S) OR SYSTEM DESCRIBED)

The prime title for Construction and Modification OSBs shall be as follows:

OPERATIONAL STATIONS BOOK (CONSTRUCTION/MODIFICATION)
FOR
(INDICATE SPECIFIC SHIP OR CLASS)
(VOLUME NO., IF MULTIPLE VOLUMES)
(OPERATIONAL AREA(S) OR SYSTEM DESCRIBED)

3.7.2 Introduction. The OSB introduction shall state the purpose of the OSB and its intended use. The introduction shall, as a minimum, include the following:

a. A short explanation of the design philosophy used to develop the operational system.

b. A brief description of the design criteria that optimized the procedures and minimized the manning requirements within the configuration.

c. A statement indicating that the procedures were developed within the arrangement according to analytical techniques, and that any changes in the arrangement might severely hamper the effectiveness and efficiency of the system.

d. An explanation as to why this configuration, with the operational procedures contained in the OSB, benefits the operator. A statement shall be included to the effect that the operator was given prime consideration throughout the development of the procedures presented.

e. A statement of reporting errors (see TMDER in Appendix A of MIL-DTL-24784).

3.8 Contents. The contents shall be limited to information required by the user (operator) to understand and carry out the required functions of the shipboard operational system. Only major functional units of equipment shall be included in the OSB. The contents shall be organized in a format so that only those changes which affect the ships functional operations will require revision to the OSB. To avoid the requirement for minor revisions, the following shall not be included in the OSB:

a. Specific military designations for equipment or system nomenclatures (use of general terms is intended).

b. Course numbers for service schools or correspondence courses.

c. Specific characteristics of the ship, systems, or equipment.

d. Listings of items such as equipment, systems, or armaments.

e. Equipment operating instructions contained in technical manuals.

3.8.1 Symbology. The symbology employed on the contents of the OSB shall be standardized. It is extremely important that the OSB users have a thorough understanding of the meaning and use of the various symbols. Symbols not only provide the design engineer a means of examining the numerous operational tasks to be performed, but once established, if properly interpreted and employed, the symbols greatly facilitate and simplify operator training and user understanding of the functions to be performed. The symbols to be employed in the OSB to denote actions shall be as specified in 3.8.1.1 through 3.8.1.7 and sequential employment of symbology shall be as shown on figure 2.

3.8.1.1 Transport. An open arrow shall be employed to denote movement of personnel material or transfer of information (see figure 2).

3.8.1.2 Operation. An open circle shall be employed to denote an operation performed.

3.8.1.3 Inspection. An open rectangle shall be employed to denote a test or examination.

3.8.1.4 Mandatory actions. Solid line symbols shall be employed to denote mandatory actions. Solid lines connecting the symbols shall be employed to denote mandatory sequential actions (see figure 2).

3.8.1.5 Optional actions. Dash (broken line) symbols shall be employed to denote optional actions. Dash lines connecting symbols shall be employed to denote optional sequential actions (see figure 2).

3.8.1.6 Double symbols. Combined symbols shall be employed where the exterior symbol denotes the primary action and the interior symbol denotes the secondary action within the sequence of events (see figure 2).

3.8.1.7 Symbol identification. If identified, symbols for primary actions shall be sequentially identified for each type of action by means of numerically increasing Arabic numerals placed in the center of the symbols. Where symbols representing secondary actions are employed and identified, they shall be sequentially identified for each type of action alphabetically by means of small English letters placed in the center of the symbols (see figure 2).

3.8.2 Informative chapters. The first page of each chapter shall provide a list of sections and the primary articles therein listed with titles and page numbers.

3.8.2.1 Chapter 1 (general information). If the OSB covers several major systems, this chapter shall include general information on the overall operational concepts of the ship, to include:

a. Missions and tasks (if this can be published as unclassified information).

b. General characteristics which were developed by design work study techniques in the design layout of the ship and which are not covered in subsequent chapters, such as the relationship of areas to each other.

c. Operational concepts of the ship indicating the major functions to be performed and the interrelationship of the areas to be covered in subsequent chapters.

3.8.2.2 Other chapters. Each chapter following Chapter 1 shall describe a specific physical area (space or station) on the ship. Modularized (functional) areas within a space shall be presented in sections of the chapter. For those spaces which are not described by use of functional areas, all information shall be described in the chapter without section numbering. The requirements of 3.8.2.2.2.1 shall be presented in the general articles and the requirements of 3.8.2.2.2.2 shall be presented in the other articles of this unsectionalized chapter.

3.8.2.2.1 Section I (general information). Section I shall be the general section and shall provide general information on its subject space. The articles contained in this chapter shall be numbered: -101 through -199 (dashes denote the number of the appropriate chapter). As a minimum, the general section shall include:

a. General functions within the overall space.

b. Operation and supervision of the space, describing any variations for special evolutions or conditions, including emergencies and casualties.

c. Team training required for the personnel manning of the space, in general terms unless specific requirements are furnished by the Government (in all cases specific course numbers shall be avoided).

d. List of functional areas within the space (indicating the section of the chapter for the area described).

e. Operational aids required in the area (for example, publication records, reports, and portable equipment).

f. Diagram of the space showing areas (labeling functional areas by name and referencing the applicable OSB section number) (see figure 3).

g. Where applicable, a matrix indicating which areas are manned under each operational condition or evolution.

h. Key plan of the space showing its location within the ship (see figure 4).

3.8.2.2.2 Other sections (describing modular areas).

3.8.2.2.2.1 General articles. General articles shall provide general information on the modular (functional) area described by the parent section. General articles shall be numbered: --01 through --09 (dashes denote the number of the appropriate chapter and section). As a minimum the general articles shall describe the following:

a. General functions within the area.

b. Operation and supervision of the area, describing any variations for special evolutions or conditions, including emergencies and casualties.

c. Team training required for personnel manning the module, in general terms unless specific requirements are furnished by the Government.

d. List of operational positions within the area (indicating the article in which the operational position is described).

e. Operational aids required in the area (for example, publication records, reports, and portable equipment).

f. Diagram of the area showing the following:

(1) Ship centerline with forward arrow, if applicable, and major frame numbers.

(2) Major equipment.

(3) Positions manned during evolutions with maximum manning (labeled by the article describing the position).

(4) Tabulation of station article numbers with corresponding operational position titles for the evolution depicted.

(5) If feasible, within areas with repetitive operations (for example, communications space), major flow of information indicated by a line with an arrow (labeled with the method of transmission and circuit, if applicable).

g. Manning matrix indicating which positions (by position name and article number versus evolutions) are manned during each evolution. As a minimum manning for readiness conditions I and III, special sea detail, and the controlling special evolution (for example, flight quarters, underway replenishment, and so forth), as applicable to the space or area depicted shall be listed. An “X” shall be used to indicate that the position is manned, a dash (“-”) shall be used to indicate that the position is not manned, an “0” shall be used to indicate optional manning, and “W/R” shall be used to indicate manned when required (see figure 1).

3.8.2.2.2.2 Other articles. Other articles shall describe specific operational positions. These articles shall be numbered: --10 through --99 (dashes denote the number of the specific chapter and section). As a minimum these articles shall describe the following:

a. Name of operational position.

b. Station and equipment manned.

c. When manned.

d. General training requirements for manning the position or equipment shall be indicated unless specific requirements are provided by the Government, in which case the specific requirements shall be described. Training requirements shall include:

(1) Schools or course descriptions (not titles or numbers).

(2) Reference publications for study. Naval Warfare Publications and similar authoritative publications may be included, but reference to specific manuals or instructions, by the exact title or number shall be avoided.

(3) If applicable, qualifications in other positions or jobs. If developed and provided by the command or agency concerned, qualification standards and or special skills for the position shall be included in this part of the text or as an appendix, whichever is appropriate.

e. Facilities (for example, communications and/or special tools or equipment) required in the position for carrying out duties. Where a selection of facilities is available, the facilities may either be referenced to those listed for the module or those for other positions in the module.

f. Duties and responsibilities of the operational position, including a description of the operating procedures for the position, any variations for casualties, special evolutions or conditions. Command and control spaces, at least one alternate position (method) shall be indicated for a major casualty to the equipment at the position described. The description shall be thorough enough to cover the operational concepts, preparation of the equipment (tuning and watch standing routines), reports, and information sent and received including, where applicable, transmission methods (type of system and circuit nomenclature) and terminal equipment (handset, headset, keyset, speaker, and so forth). The description shall be simple, concise, readable, and not repeat information which is readily available through other publications or the previous training of the individual. Specific operating instructions for equipment (covered in manuals), procedures for communicating (covered by previous training), and responsibilities of such positions as commanding officer or officer-of-the-day (covered in current regulations and directives) shall not be specified. Duties which are applicable to the operational concepts of the system shall be specified. The operations shall be shown in a logic flow process chart.

3.9 Appendices. Where applicable, appendices shall be provided to present summations to clarify or assist ship personnel, as follows and as specified by the acquiring activity (see 6.2):

a. Interior communications including an operational station versus circuit matrix identifying interior communications circuits and facilities available at each operational station and/or position within spaces or stations covered by the OSB. The matrix shall reflect operator position, circuit designation (by circuit name and designation), E-Call and selector facilities, and interphone capabilities for sound powered telephone systems, Naval Tactical Data Systems (NTDS) interphone facilities, ship service telephones, announcing systems (for example, 1MC, or 5MC), intercommunications systems (amplified voice) (for example, 21MC, 39MC, and so forth), voice tubes, pneumatic tube facilities, and Interior Voice Communication Systems (IVCS), or equal capabilities.

b. Exterior communications including a matrix identifying remote exterior communications circuits and facilities available at each operational station or position within spaces or stations covered by the OSB. The matrix shall reflect operator position, circuit designation channel selection capability and whether the circuit is at a remote individual terminal, incorporated within an NTDS console or subconsole, or a capability within IVCS. Additionally, normal mode of operation (for example, guard or monitor) shall be indicated for each position located. The matrix shall indicate send or receive terminal locations for teletype equipment (for example, LINK 14) within Command and Control and Combat System spaces and stations.

c. Interior and exterior communications NTDS console matrix reflecting interior (inclusive of amplified voice) and exterior communications capabilities at each NTDS console or subconsole within spaces or stations covered by the OSB, when extraction of such facilities from complex interior and exterior communications matrices will enhance readability.

d. Check-off list for evolutions such as casualty control.

e. Special tools (if a separate complete listing would be useful).

f. Separation of classified information from the remainder of the text (see 3.5.1).

g. Qualification standards if provided by the command or agency concerned and not part of the text (see 3.8.2.2.2.2d.3).

4. VERIFICATION

4.1 Verification. The verification requirements shall be in accordance with MIL-DTL-24784.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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 Design OSB and the Construction and Major Modification OSB are intended to describe the ship's personnel operation within the shipboard operational systems.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of the specification (or any TMCR referencing this specification).

b. Type and quantity of the manual required (see 1.1).

c. Issues documents to be cited in the solicitation (see 2.2.1).

d. List of spaces to be included (see 3.3.1).

e. Extent or non-requirement of design work-study techniques (see 3.4.1).

f. Type and quantity of deliverable products (see 3.6).

g. Indicate format items, if other then specified (see 3.6.1).

h. Arrangement in other than standardized format (see 3.7).

i. Requirements for appendices, glossaries, and indices (see 3.9).

j. Packaging requirements (see 5.1).

6.3 Technical manual acquisition. This specification (or a TMCR based on this specification) must be listed on the Contract Data Requirements List (DD Form 1423) in order to acquire the technical manuals described by this specification. An alternate acquisition strategy should be devised by contracting officers for those solicitations or contracts which are exempted from using the Uniform Contract Line Item Numbering System (UCLINS).

6.4 Definitions. The words or phrases used throughout this specification sheet are defined in MIL-DTL-24784.

6.5 Subject term (key word) listing.

Appendices

Articles

Symbology

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

LEGEND: X: MANNED
-: NOT MANNED
O: OPTIONAL MANNING
W/R: MANNED WHEN REQUIRED

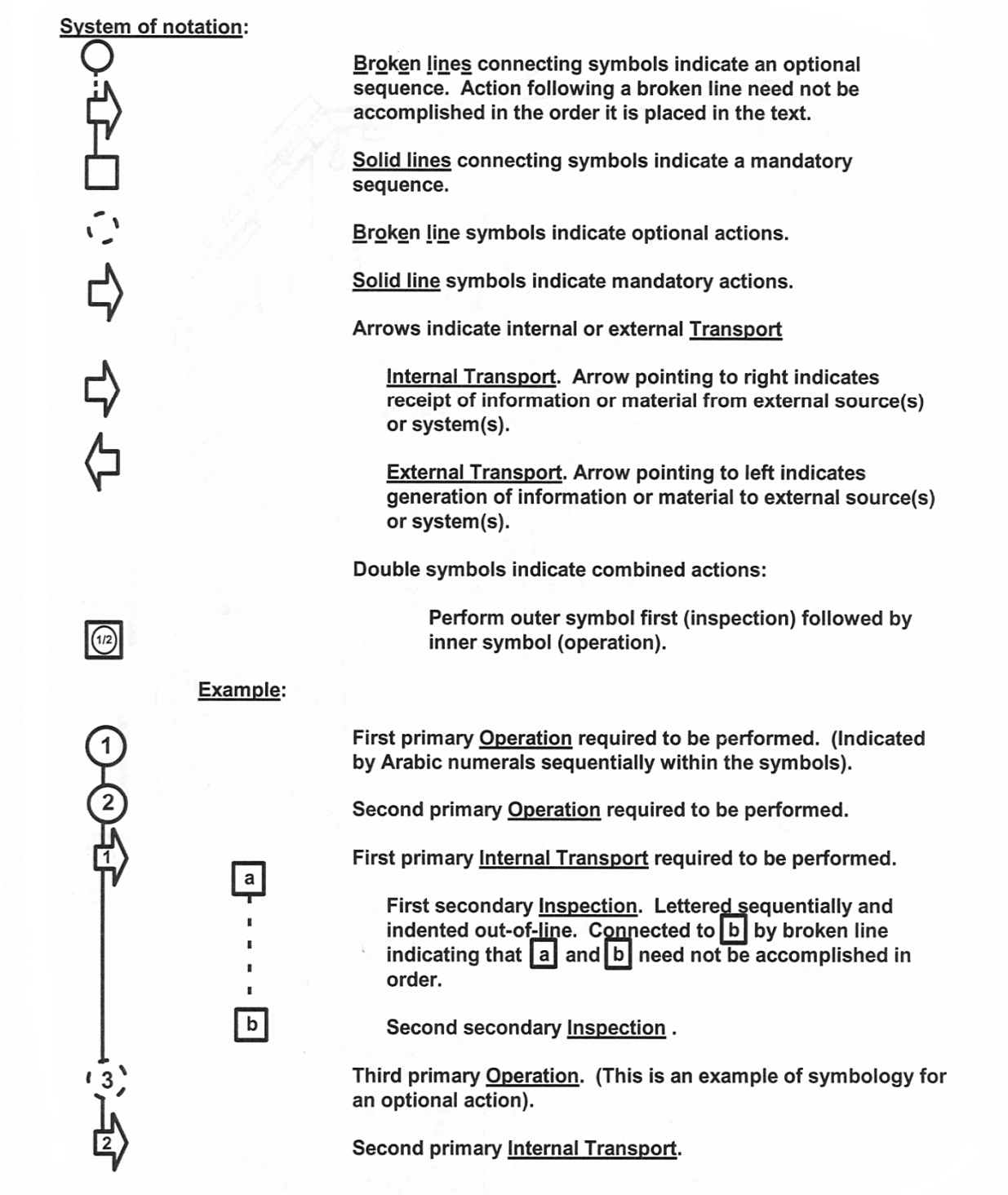
OPERATIONAL STATIONS	STA ABBREV	READINESS CONDITIONS: CONDITION I	CONDITION ___	CONDITION III	SPECIAL EVOLUTIONS: SPECIAL SEA DETAIL		STATION REFERENCE: STATION ARTICLE	SMD STA. NO.	NOTES
PILOTHOUSE/BRIDGE									
Commanding Officer	CO	X	O	O	X		3110		
Navigator	NAV	W/R	W/R	W/R	X		3111		1
Officer of the Deck	OOD	X	X	X	X		3112		
Junior Officer of the Deck	JOOD	X	W/R	W/R	X		3113		
Assistant Navigator	ASTNAV	X	W/R	W/R	X		3114		2
Boatswain's Mate of the Watch	BMOW	X	-	-	X		3115		
Quartermaster of the Watch	QMOW	X	X	X	X		3116		
Ship Control Console Operator	SCCO	X	X	X	X		3117		
Messenger of the Watch/ Relief SCCO	MOW	X	W/R	X	X		3118		
SP Phone Talker (JA)	JA TLKR	X	W/R	-	-		3119		
Status Board Keeper/ Talker (JS)	BD KPR	X	X	-	X		3120		
BRIDGE WINGS (P/S)									
Bearing Taker (P/S)(JW)	BEARNG TKR	X	W/R	-	X		3121 3122		
Lookout (P/S)(JL)	LKOUT	X	X	X	X		3123 3124		
Lookout (Aft)(JL)	AFT LKOUT	X	X	X	X		3125		

NOTES:

1. Primary functions as TAO in CIC during evolutions requiring TAO.
2. Functions as bearing recorder (J) during special sea detail evolutions.

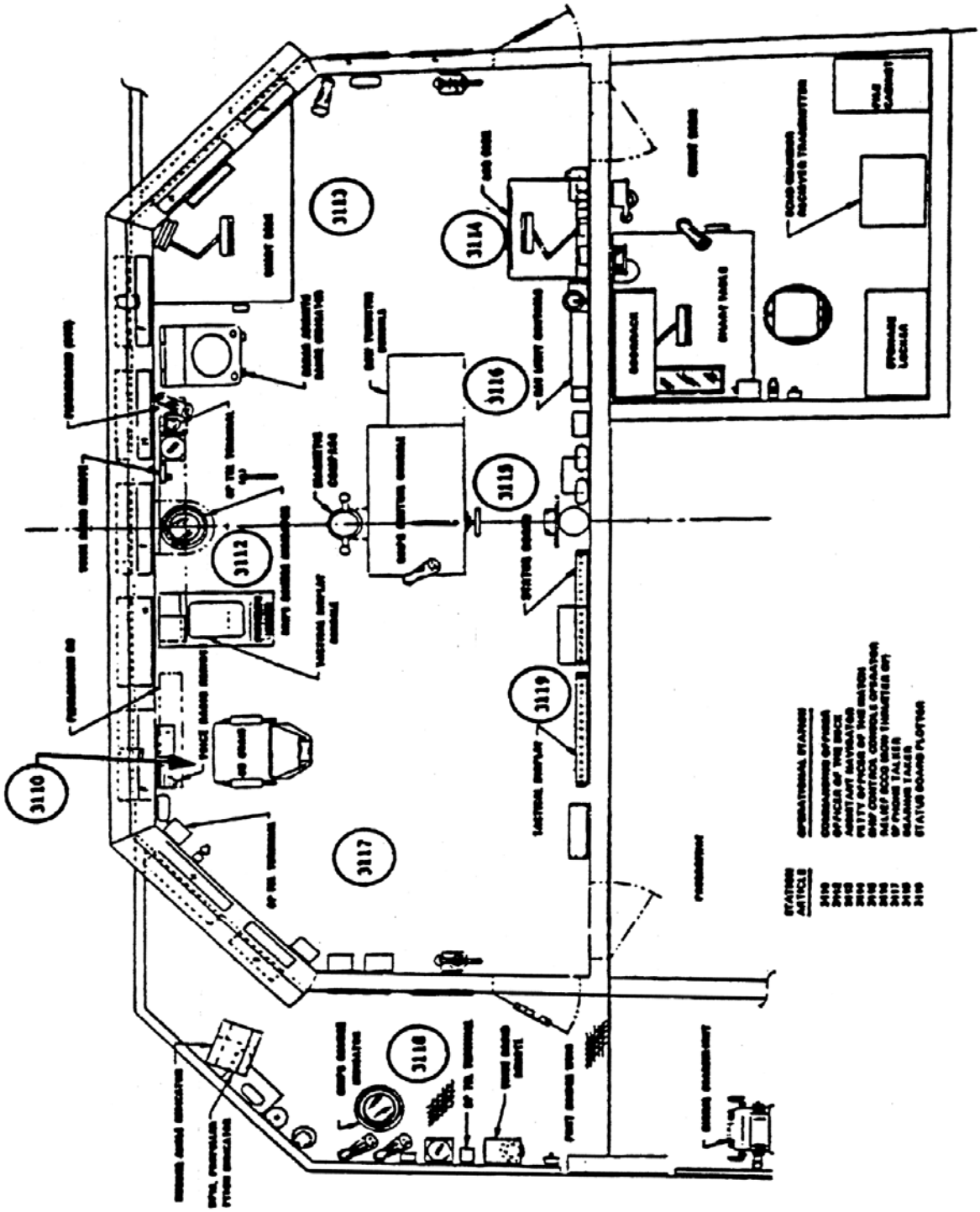
Note: Sample arrangement only. Size and legibility requirements do not necessarily conform to minimum specification requirements.

FIGURE 1. Pilothouse and bridge wing manning requirements.



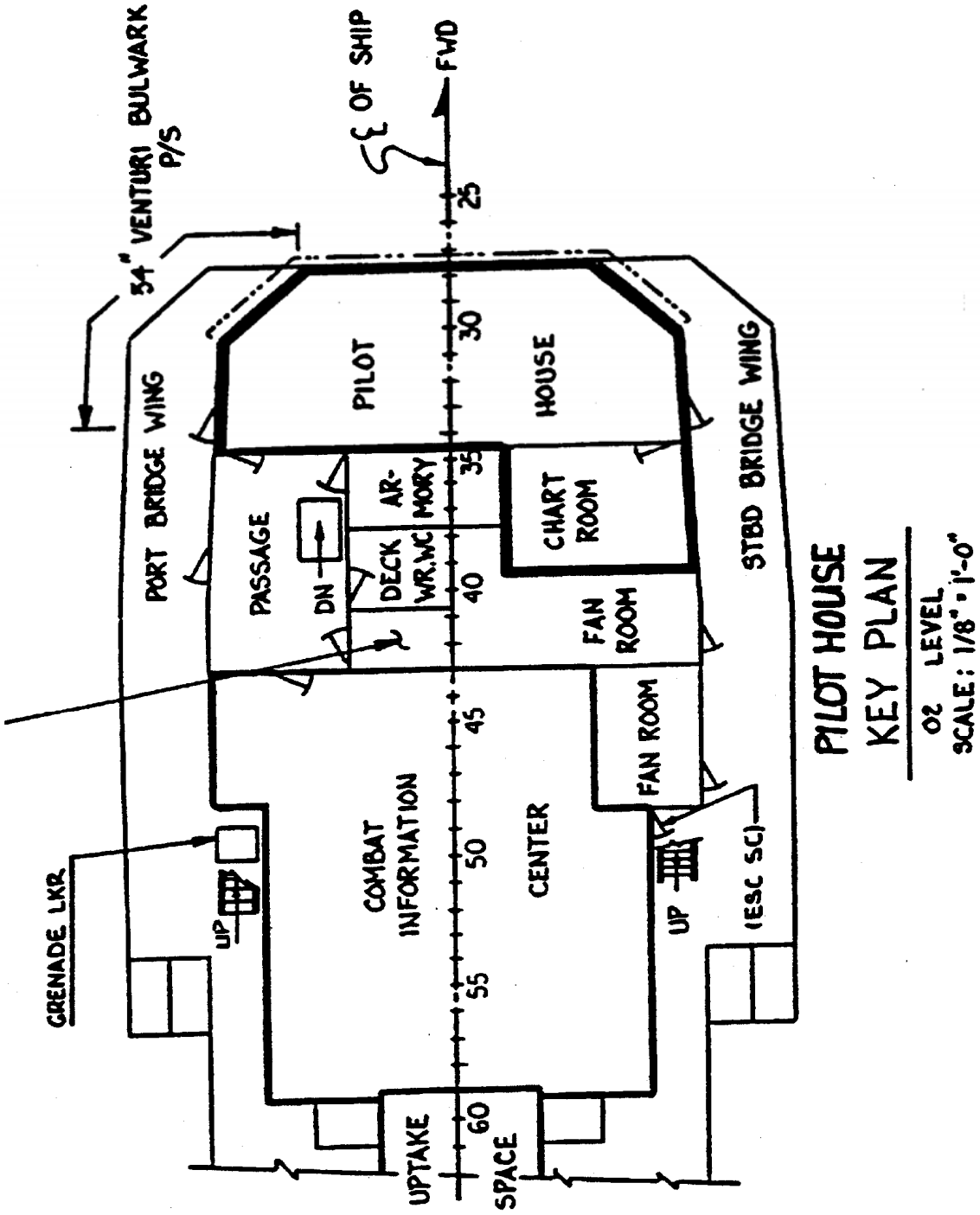
Note: Sample arrangement only. Size and legibility requirements do not necessarily conform to minimum specification requirements.

FIGURE 2. Symbology sequence system.



Note: Sample arrangement only. Size and legibility requirements do not necessarily conform to minimum specification requirements.

FIGURE 3. Space diagram.



Note: Sample arrangement only. Size and legibility requirements do not necessarily conform to minimum specification requirements.

FIGURE 4. Key plan.

Custodian:
Navy – SH

Review Activity:
Navy – EC

Preparing Activity:
Navy – SH
(Project TMSS-N244-000)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://assist.daps.dla.mil.