

INCH-POUND

MIL-DTL-24784/11D(NAVY)

6 June 2017

SUPERSEDING

MIL-DTL-24784/11C(NAVY)

3 November 2007

DETAIL SPECIFICATION SHEET
SHIP INFORMATION BOOK (SIB) REQUIREMENTS

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 specified herein shall consist of this specification sheet and MIL-DTL-24784.

1. SCOPE

1.1 Scope. This specification contains requirements for the preparation of a Ship Information Book (SIB) that is to be used as a system-level ready reference for the purpose of training and familiarization of ship systems. The SIB will be used by ship operating, maintenance, and overhaul personnel onboard ship and in Navy training schools.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 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 and 4 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://quicksearch.dla.mil/>.)

Comments, suggestions, or questions on this document should be addressed to: Commander, Naval Sea Systems Command, ATTN: SEA 05S, 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 <https://assist.dla.mil>.

AMSC 9831

AREA TMSS

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

MIL-DTL-24784/11D(NAVY)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications 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.

NAVAL SEA SYSTEMS COMMAND (NAVSEA) PUBLICATIONS

TL121-AA-SPN-010 - Requirements for Submarine Ship Systems Manuals and Related Documents

(Copies of this document are available online via Technical Data Management Information System [TDMIS] at <https://mercury.tdmis.navy.mil/> by searching for the document number without the suffix. Refer questions, inquiries, or problems to: DSN 296-0669, Commercial [805] 228-0669.)

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 Development. The SIB shall be developed on an individual ship basis. It shall be complete and detailed as required to serve as the primary intrasystem and intersystem technical publication covering installation and operation of ship systems and equipment. It shall provide a basic reference and training source for ships' force; building, planning, and overhaul yards; Fleet and training commands; and for tenders and other naval activities. Coverage shall include mechanical; heating, ventilation, and air conditioning; piping; electrical; and electronics systems and equipment on the ship. It shall provide a thorough understanding of the installations on the ship, together with intrasystem and intersystem capabilities and limitations. It shall contain or provide familiarization and training for proper operation in the systems and equipment covered.

3.1.1 Submarines. Submarines no longer use SIBs. Submarine Ship Systems Manuals (SSMs) are developed and used by the submarine Fleet. These manuals are developed and maintained in accordance with TL121-AA-SPN-010.

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

3.3 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 the Technical Manual Deficiency/Evaluation Report [TMDER]) and appropriately divided by volume, part, chapter, and section in accordance with the requirements of MIL-DTL-24784 and the requirements provided herein.

3.4 Format and style. Unless otherwise specified by the acquiring activity (see 6.2) or herein, the format and style shall be in accordance with MIL-DTL-24784.

3.5 General content requirements. Content of chapters and sections shall be in accordance with the volume arrangement identified in 3.6. Section and subsection content and location may vary within a particular chapter to accommodate necessary or unique data coverage, as specified by the acquiring activity (see 6.2).

- a. Data presented shall be concise and to the depth necessary for supporting the objectives of the SIB.
- b. The text, illustrations, and tables prescribed in this specification reflect minimum SIB requirements. Where the system configuration provides additional capabilities, operating modes, or functions other than covered herein, such additional coverage by text, illustrations, and tabulated data shall be provided. Piping system diagrams shall include identification for all valves, either by words, symbols, or both.
- c. Current system diagrams may be used as the diagrammatics for each chapter. If used, the diagrams shall be revised to remove numbered references, revision symbols, notes that are not applicable, title blocks, and other information extraneous to the SIB. Connection diagrams and other illustrations required for connecting major components in a system or plant shall be used.

MIL-DTL-24784/11D(NAVY)

d. The text shall not include detailed component operating and maintenance instructions that would duplicate those in the system and component technical manuals (TMs) but shall instead refer to these TMs for operation and maintenance. The text shall include clear instructions relating basic component operation to the overall system operation (see 3.6.2.1.2.g) and system maintenance (see 3.6.2.1.2.h). Reference to the Naval Ships' Technical Manual (NSTM) shall be made where appropriate.

3.6 Specific content requirements. The SIB shall consist of the following volumes, or parts of volumes and parts as applicable, with the titles as indicated. For ships under 300 feet in length, the SIB may be bound in a single volume, provided the titles indicated are clearly separated and indicated (for example, thumb-indexed), and size limitation for a single volume is not exceeded.

- a. Volume 1 - Hull and hull mechanical systems.
 - (1) Part 1 - Propulsion plant, general design and operating procedures.
 - (2) Part 2 - Auxiliary machinery, piping, environmental pollution control, air conditioning, ventilation, and heating systems.
- c. Volume 3 - Power and lighting systems.
 - (1) Part 1 - General description and design information of systems.
 - (2) Part 2 - General description of electrically operated auxiliaries.
- d. Volume 4 - Electronic systems.
- e. Volume 5 - Interior communication (IC) systems.
 - (1) Part 1 - IC systems.
 - (2) Part 2 - Sound-powered telephone systems, voice tubes, and message passing facilities.
- f. Volume 6 - Weapons control systems.
- g. Volume 7 - Ballasting systems, as applicable.

3.6.1 Volume 1 - hull and mechanical systems. Volume 1 of the SIB shall include a general description of the ship's design characteristics and the major shipboard arrangements and systems. Descriptive material, lists, and illustrations, as applicable, shall be under the appropriate section number and title. Sections shall be in numerical sequence. Each section of the Ship Specification, including all drawings and other documents developed therefrom, shall be carefully studied for applicable subject matter for this book. In addition, subjects such as docking and towing, which may not be covered in the Ship Specification but for which specific information is applicable and necessary for ship operation or maintenance, shall be included in the appropriate volume.

3.6.2 Volumes 2 through 7. Volumes 2 through 7 of the SIB shall describe ship systems, including design functions, operations, and limitations of each system, interrelationships between systems, troubleshooting, fault-isolation techniques, system checkout, and routine system maintenance. General or specific information contained in the Combat Systems Technical Operations Manual (CSTOM), when prepared, the NSTM, and equipment TMs, respectively, shall not be repeated in the SIB, except as necessary to fulfill the intent of the text. The following references, if of a permanent nature, shall be provided in the text, where applicable:

- a. Reference to appropriate drawings.
- b. Reference to drawing indices, books, schedules, or other manuals such as damage control books, operational station books, schedule of watertight integrity tests and inspections, and equipment manuals.
- c. Cross references between volumes of the SIB, and between sections or chapters within a volume, shall be included only where necessary for continuity to assist in complete understanding of the text and for avoidance of repetition.

MIL-DTL-24784/11D(NAVY)

3.6.2.1 Volume 2 - machinery plant. This volume shall consist of two parts.

3.6.2.1.1 Part 1 - propulsion plant general design and operation procedures. Part 1 shall acquaint and instruct the operators in the operation of the propulsion plant and describe the centralized control system. Part 1 shall contain information and data in appropriate chapters and sections as outlined below, and shall conform, in general, to the sequence of the outline (as applicable to the type of propulsion plant):

- a. List of references including principal equipment manuals or other TMs and drawings used in Part 1 preparation, table of contents, list of illustrations, and legend of symbols.
- b. Arrangement of machinery including brief description, arrangement drawings, and list of machinery correlated with the arrangement drawings.
- c. Arrangement of operating station enclosure including associated list of equipment and arrangement drawing.
- d. Machinery components, including as a minimum, a brief description, design ratings, and characteristics including, but not restricted to, the following:
 - (1) Main boilers:
 - (a) Integral accessories, such as burners, soot blowers, and safety valves.
 - (b) Nonintegral auxiliaries (excluding feedwater and fuel oil), such as forced draft blowers.
 - (c) Control systems including a composite diagram of functions, such as combustion, feed water, forced draft blower, speed versus airflow, and fuel oil burner characteristic curves.
 - (2) Main propulsion turbines:
 - (a) Diagram of turbine steam flow and associated valve operation handwheels and control diagram for one propulsion set.
 - (3) Propulsion internal combustion engines including control system.
 - (4) Propulsion electrical system including control system.
 - (5) Propulsion gas turbines including control system.
 - (6) Propulsion reduction gear including, as applicable:
 - (a) Attached lubrication oil pump.
 - (b) Shaft turning gear.
 - (c) Revolution counter drive.
 - (d) Internal instrumentation.
 - (7) Propulsion shafting and propeller including, as applicable:
 - (a) Shaft securing device.
 - (b) Shaft brake.
 - (c) Uncoupling shaft.
 - (d) Thrust bearings.
 - (e) Auxiliary thrust device.
 - (f) Shaft bearings.
 - (g) Fairwaters.
 - (h) Rope guards.
 - (i) Controlled pitch change equipment.
 - (8) Turbine generator (mechanical end only):
 - (a) Diagram of turbine steam flow and associated valve operation, handwheels, and control diagram for one turbine generator set.
 - (9) Distilling plant.

MIL-DTL-24784/11D(NAVY)

- (10) Piping systems, including a brief description, with diagrams and lists of equipment served.
- (11) Collecting, holding, and transfer system including a brief description with diagrams.
- (12) Main steam:
 - (a) List of pressure reducing stations including rating, number, location, and equipments served.
- (13) Auxiliary steam.
- (14) Feed water, including main, booster recirculation control, and differential pressure control.
- (15) Main condensate.
- (16) Auxiliary condensate.
- (17) Other auxiliary systems:
 - (a) Lubricating oil.
 - (b) Fuel oil service.
 - (c) Control air, machinery, and piping system drainage (low pressure and high pressure).
- e. For the above systems and components in Part 1, general directions shall be included for operation, with appropriate references to diagrams or other illustrations, for normal operation, split plant operation, emergency operation, and standby operation. These procedures shall be summarized in a condensed manner for plant-wide operations for the following conditions:
 - (1) Standby.
 - (2) Warmup of main propulsion plant.
 - (3) Underway, cruising.
 - (4) Underway, full power.
 - (5) Secure, main propulsion plant.
 - (6) Moored at pier, using shore electric power and steam.
 - (7) Auxiliary steaming.
 - (8) Split plant operation

3.6.2.1.2 Part 2 - auxiliary machinery, piping, environmental pollution control, air conditioning, ventilation, and heating systems. The systems and components in Part 2 shall be described in a manner to permit understanding of their intended functions, operations, and limitations. A chapter shall be devoted to each piping system, each independent auxiliary machinery plant, each air conditioning, ventilation, and heating system, and an overall chapter pertaining to pumps. Wherever reference is made to a piping component, the component designation, as specified in the applicable Ship Specification, shall be included. Tables shall be included showing the time required to flood and drain each damage control void and the time required to ballast and deballast each fuel and ballast tank or both, as applicable to expedite fueling-at-sea. The ship's liquid loading instruction shall be referenced describing the manner in which protection against fragment damage can be maintained as ship fuel and aviation fuel are pumped down. The chapter on pumps shall include pump tables and shall reference, in addition to the information contained in those tables, the applicable TM, compartment name and number of space containing each pump, title of the system in which the pump is located, and the applicable SIB chapter number of the system. The chapter shall be categorized into the following subsections, as applicable: centrifugal, rotary, reciprocating, attached, and portable. The schedule for preparation of Volume 2, Part 2 shall permit issue of approved preliminary chapters at least 30 calendar days prior to the operational check of the associated system. Part 2 shall include, but is not restricted to, the following:

- a. Auxiliary machinery plants:
 - (1) Auxiliary boilers.
 - (2) Refrigeration machinery.
 - (3) Air conditioning machinery.
 - (4) Steering system.

MIL-DTL-24784/11D(NAVY)

- (5) Bow transfer system (where applicable).
- (6) Fin stabilizer machinery (where applicable).
- b. Air conditioning, ventilation, and heating systems - Section 512:
 - (1) Recirculating.
 - (2) Supply.
 - (3) Exhaust.
 - (4) Maintenance.
 - (5) Filter locations.
 - (6) Filter and duct cleaning instructions.
 - (7) Collective Protection System (CPS) (where applicable).
- c. Piping systems - One chapter for each type system as described in the noted section of the Ship Specification, as applicable:
 - (1) Steam - Section 253 and Section 517.
 - (2) Feed and condensate - Section 255 and Section 517.
 - (3) Sea water cooling - Section 256 and Section 521.
 - (4) Lubricating oil - Section 262.
 - (5) Fire main and sea water sprinkling - Section 521.
 - (6) Plumbing drainage, deck drainage, and so forth - Section 528.
 - (7) Main, secondary, and special drainage - Section 529.
 - (8) Fresh water - Section 532.
 - (9) Machinery and piping systems drainage - Section 534.
 - (10) Ship fuel - Section 541.
 - (11) Aviation fuel and gasoline - Section 542.
 - (12) Compressed air - Section 551.
 - (13) Compressed gas - Section 552.
 - (14) Fire extinguishing - Section 555
 - (15) Special - Section 558.
- d. Pumps - Section 503.
- e. Environmental pollution control system - Section 593:
 - (1) Sewage systems.
 - (2) Waste water systems.
 - (3) Solid waste system.
 - (4) Oil pollution control system.
 - (5) Air pollution control system.
 - (6) Chemical and industrial waste system.

Except for the chapter on pumps described above, each chapter shall be subdivided into three sections as follows:

f. Section I - Description and principles of operation. This section shall be further subdivided into the three units described below:

(1) Unit 1 - Introduction. This unit shall cover the purpose, general description, and major design characteristics of the system or independent auxiliary machinery plant, and shall include a diagrammatic or schematic drawing, or both.

MIL-DTL-24784/11D(NAVY)

(2) Unit 2 - Detailed description. This unit shall discuss the overall system or independent auxiliary machinery plant components and its controls, instruments, and protective devices. Interrelationship between system components and the overall system or related companion system shall be included.

(3) Unit 3 - Principles of operation. This unit shall describe system or independent auxiliary machinery plant operations, list applicable precautions, and discuss applicable operating stations. This unit shall convey information in an explanatory and descriptive manner as to what operations can be performed by or with the system or independent auxiliary machinery plant. Reference shall be made to corresponding operating instructions in Section II for detailed step-by-step instructions, as applicable. Operations shall be discussed under the headings of Normal, Starting, Securing, Infrequent, Abnormal, and Emergency (see 6.4).

g. Section II - Operating instructions. This section shall be further subdivided into the four units described below:

(1) Unit 1 - Introduction. This unit shall simply describe the content of the section and reference the principles of operation described in Section I.

(2) Unit 2 - Initial conditions and precautions. This unit shall specify those initial conditions that provide a starting point for each operating instruction and shall caution and instruct, and familiarize the operators so that they fully understand the extent of the operation to be performed and its effect on system and independent auxiliary machinery plant conditions. Operators shall also ascertain whether the instruction can be accomplished without conflicting with other operations. Initial conditions shall be based on valve lineup shown on the system and independent auxiliary machinery plant diagrams for normal operations. Lineup should not conflict with Engineering Operational Sequencing System (EOSS) or current configuration.

(3) Unit 3 - Procedures. This unit shall cover detailed step-by-step procedures for performing the operations of the operating instruction under normal conditions. Where necessary, steps or instructions shall be emphasized by the use of a danger, warning, caution, or note to ensure safe procedures (see MIL-DTL-24784). Each operating instruction shall be provided with a minimum valve lineup table for performing the instruction or portion thereof. Procedures shall specify which steps may be performed in any sequence or in parallel. Procedures shall also include statements that permit the crew to omit certain steps under certain conditions while still ensuring that crucial steps are performed in proper sequence. In addition, procedures shall be written to permit the crew to enter a procedure at any point, provided the conditions at that point are the same as they would have been had the procedure been performed starting from the initial condition stated in the procedure. Operating procedures in each chapter shall be based on the following format:

- (a) Initial conditions.
- (b) Precautions.
- (c) Summary checklist (for immediate action on casualties only).
- (d) Operations flow diagrams (for complex evolutions only).
- (e) Detailed procedure.
- (f) Notes and references to other operating instructions within the volume shall be minimized.

Wherever possible, operating procedures shall be written to cover a single evolution and shall not contain extra steps intended to make the procedure cover more than one evolution.

(4) Unit 4 - Backup operation. This unit shall be used for those systems and independent auxiliary machinery plants that have backup methods of operation and shall be addressed as being performed only when the procedures of Unit 3 are not practicable or possible. Backup operations relating to the failure of any component or system that forms part of the heating, ventilation, and air conditioning portion of the CPS shall be exactly delineated, especially with respect to the loss of pressurization in a CPS zone.

h. Section III - Maintenance. This section shall be further subdivided into the three units described below:

(1) Unit 1 - Principles of maintenance. This unit shall cover and discuss the importance proper maintenance has in retaining system and independent auxiliary machinery plant capability; discuss items that are generally applicable to a wide range of maintenance operations, such as cleanliness, lubrication, and isolation criteria; reference sources of additional maintenance information; provide general precautions for performing maintenance; and define and briefly discuss maintenance instructions and maintenance procedures.

MIL-DTL-24784/11D(NAVY)

(2) Unit 2 - Maintenance instructions. This unit shall provide specific maintenance instructions for system-independent subsystems and independent auxiliary machinery plant. Each instruction shall have breakdowns on general information, precautions, preventive maintenance, troubleshooting, and corrective maintenance. A preventive maintenance summary table shall be provided for each instruction. Preventive maintenance instructions shall be retained in this unit until formal implementation of the 3-M Planned Maintenance System.

(3) Unit 3 - Maintenance procedures. This unit shall contain maintenance operations of a general nature, such as hydrostatic testing, component handling, routinely performed tests, and adjustment procedures for special system cleaning and preventative maintenance operations.

3.6.3 Volume 3 - power and lighting systems. This volume shall consist of two parts.

3.6.3.1 Part 1 - general description and design information of systems. The format and applicable subject matter shall include the following:

a. Generating plant - A description shall be given, including tables and illustrations included where necessary, of ship service, emergency, and special systems:

- (1) Type, size, and location of generators.
- (2) Temperature rises to be expected at various points in the generator during normal operation and methods of measuring temperature by use of the thermocouples in the stator of the generator.
- (3) Use of space heaters within the generator during periods of shutdown.
- (4) Type of voltage regulator, method of regulation, and degree of voltage regulation.
- (5) Prime mover information including kind, rating, speed, reduction gear data, and manufacturer.
- (6) Type of governor and method of regulation, degree of frequency regulation, and generator load balancing features.
- (7) Overload and unbalance ratings of the generators, including the short time overload ratings and special overload requirements, if any, the allowable phase unbalance for three-phase generators, and allowable unbalance for three-wire, DC generators.
- (8) Brief power analysis to show what loads may be expected during various conditions of operation including the event of loss of part of the generating capacity.
- (9) Instructions for operating the system under split plant or parallel conditions, proper bus tie connections for the various shipboard conditions, and the number of ship service generators that may be operated safely in parallel without exceeding the interrupting capacity of the circuit breakers shall be specified. A note shall be added that this should not limit the number of ship service generators, which may be paralleled momentarily for transfer of load or synchronizing. It is not intended that detailed instructions be included for the operation of the generator itself, such as method of starting, controlling, and paralleling.

b. Distribution system - A description shall be given and illustrations included, where specified, for ship's service, emergency, and special power and lighting systems.

c. Type of distribution:

- (1) A statement of the method of distributing the electric power, covering, for example, that the system is of the radial type, consisting of switchboards, load centers and power panels, bus ties, feeders, mains, and submains.
- (2) A schematic wiring diagram, as well as written descriptive material of the ship service, emergency, and special electric power distribution systems, and including the following, but showing nothing beyond the power panel or individual load supplies by each feeder emanating from the ship service switchboards, emergency switchboards, or load center switchboard:
 - (a) Switchboard bus arrangement.
 - (b) Generators (ship service, emergency, and special), motor generator sets, and solid-state frequency changers (including electronics, aircraft servicing, interior communication, and weapons control).
 - (c) Bus ties and bus feeders.
 - (d) Shore power connections.
 - (e) Line voltage regulators.

MIL-DTL-24784/11D(NAVY)

- (f) Voltage and frequency monitors.
 - (g) Rectifiers.
 - (h) No-break power supplies.
 - (i) Feedback circuits.
 - (j) Transformers (lighting and interior communication).
 - (k) Circuit breakers (types, size, and element ratings).
 - (l) Feeder designation with name and designation of load centers, power panels, transformers, or individual loads served.
 - (m) Generator prime mover types.
- (3) A diagram showing the normal, alternate, and emergency feeders to the following loads:
- (a) Steering gear.
 - (b) Weapons systems.
 - (c) Electronic systems.
 - (d) Main drainage pumps and fire pumps.
 - (e) Interior communication switchboards.
- (4) In addition, bus ties and other interconnections shall be shown. For special types of ships, other loads shall be shown that are considered of the same order of importance as those listed above. This diagram shall show the loads, switchboards, and generators in block form with no interior connections or details, such as circuit breakers or bus arrangements, and shall show each of these elements at their approximate frame location. No effort shall be made to differentiate between different deck levels. The cables shall be shown in their actual location only insofar as they are to port, center, or starboard. For ships with three decks or platform levels or less (excluding superstructure), a wiring deck plan of the power systems shall be included. For all other ships, an isometric diagram of the power systems shall be provided.
- d. Switchboard - A description shall be given and illustrations included, where specified:
- (1) Number and location.
 - (2) Use of each unit or section, for example, whether for generator, bus tie, or distribution.
 - (3) Any special features applying to switchboards, such as:
 - (a) Automatic operation of the emergency generating plant.
 - (b) Feedback arrangements.
 - (c) Current controlled contactors.
 - (4) Requirements for paralleling with shore power.
 - (5) Single generator.
- e. Central control console (where applicable) - A description shall be given and illustrations included, where specified:
- (1) Location.
 - (2) Use of the unit (equipment or systems controlled or monitored).
 - (3) Any special features, such as:
 - (a) Relinquishing control to a local switchboard.
 - (b) Automatic paralleling.
- f. Protective devices - A description shall be given and the following illustrations included:
- (1) A circuit breaker coordination chart shall be prepared showing the time-current characteristics of all the circuit breakers used in series from the generator to the load on a representative feeder. The bus tie circuit breakers shall be plotted on log paper and shall cover the complete range from the long-time delay pickup value of current of the smallest breaker to the instantaneous trip point of the breaker with the highest setting.

MIL-DTL-24784/11D(NAVY)

(2) The short circuit current characteristics of the generator shall also be shown on this chart. The following are typical examples of the types, sizes, element ratings, and settings of the breaker circuits to be covered for selective tripping:

- (a) Generator connection to switchboard.
- (b) Bus tie.
- (c) Feeder.
- (d) Main and branch.
- (e) Uses of fuses (on both power and lighting).
- (f) Design characteristics of controllers, such as:
 - 1 Manual operation.
 - 2 Magnetic operation.
 - 3 Low voltage protection.
 - 4 Low voltage release.
- g. Lighting systems - A description shall be given and illustrations included as applicable:
 - (1) For ships with three decks or platform levels or less (excluding superstructure), a wiring deck plan of the lighting systems shall be included.
 - (2) For all other ships, an isometric diagram of the lighting distribution system shall be included.
 - (3) Door switches and light traps for darkened ship operation.
 - (4) Red illumination, description of its operation, and use.
 - (5) Relay and portable lanterns, description of their operation, and use.
 - (6) Broad band blue illuminations, description of their operation, and use.
 - (7) Navigation and signal light:
 - (a) Elementary wiring diagram.
 - (b) Outboard profile of the ship showing locations of the lights.
 - (c) Operational procedures.
 - (8) Lights for night flight operations:
 - (a) Elementary wiring diagram.
 - (b) Equipment and light location (including flight deck).
 - (c) Operational procedures.
- h. Other systems and miscellaneous - A description shall be given and illustrations included:
 - (1) Shore power connections:
 - (a) Location.
 - (b) Reference to power system diagrams.
 - (c) Current capacity.
 - (d) Hook-up procedures.
 - (2) Receptacles for portable connections for portable submersible pumps and portable welding sets:
 - (a) An illustration to show the locations and rating of outlets on the plan views of each deck on which outlets are located. In addition, an elevation view at the centerline shall be shown with all outlets as projected on the center plane. Sufficient compartmentation shall be shown to accurately indicate the location of outlets.
 - (3) Indication of length of cables supplied.
 - (4) How many cable types and in which repair station they are stowed.

MIL-DTL-24784/11D(NAVY)

(5) Arrangements for placing in simultaneous operation in each machinery room the maximum number of submersible pumps using the specified number and lengths of portable cables supplied. This shall be shown on both plan and elevation views.

(6) A drawing showing the location of main wireways on all decks.

(7) Casualty power system: A description of the purpose, scope, limitations, and proper use of this system. An isometric diagram of the complete casualty power system (showing terminals) shall be included.

(8) Degaussing system: A general description of the system with instructions for operation. A sketch illustrating the approximate location of the coils shall be included.

(9) Isolated receptacle circuits: A general description of this system including its purpose and need for maintaining high insulation resistance to ground.

(10) Electrical schematic of lighting and outlet circuits and a table showing electrical feeders and breakers by compartment.

3.6.3.2 Part 2 - general description of electric equipment and electrically-operated auxiliaries.

a. This part shall be divided into four chapters as follows:

(1) Chapter 1 - Power equipment.

(2) Chapter 2 - Electric-operated auxiliaries.

(3) Chapter 3 - Lighting equipment.

(4) Chapter 4 - Miscellaneous equipment (test panels, storage batteries, instruments, and related equipment).

b. Data, as applicable, for each item of power and lighting equipment, exclusive of power equipment tabulated in Chapter 2, shall be tabulated under the following headings in Chapters 1, 3, and 4:

(1) Name of equipment.

(2) Name of manufacturer.

(3) Number of units.

(4) Location (designating number in accordance with the Ship Specification).

(5) Electrical data (brief).

(6) Controlling equipment (type and manufacturer).

(7) Reference to applicable TMs.

(8) For electric-operated auxiliaries, data shall be tabulated as follows:

(a) Name of auxiliary.

(b) Name of manufacturer of electric equipment.

(c) Number of units.

(d) Size (power of electric equipment).

(e) Location (designating number in accordance with the Ship Specification).

(f) Electrical data (state source of type of electric power supply).

(g) Controlling equipment (type and manufacturer).

(h) Reference to applicable TMs (electric and mechanical).

c. Where no TM has been provided for an item of equipment, a brief description shall be given in addition to tabulated data relative to the function, purpose, and general features of the equipment. A wiring diagram shall also be included for such equipment.

3.6.4 Volume 4 - electronic systems. Many of the systems or equipment will be included in the CSTOM in similar format if prepared for the ship. Information in the CSTOM shall not be repeated in the SIB, except as necessary to fulfill the intent of the text.

MIL-DTL-24784/11D(NAVY)

3.6.4.1 Text. The text shall present a general overall description of the electronic systems' installations so that those whose duties require a knowledge of the broad phases, purposes, and functions of the various electronic systems may quickly and easily familiarize themselves with operational capabilities and general characteristics of the installations. The text shall be divided into chapters, each covering a logical grouping of electronic equipment, units, and accessories comprising a particular system installed. Chapters shall be arranged in alphabetical order by system title. Each chapter shall begin with a general discussion of the system. The major emphasis of each chapter, however, shall be on operating capabilities and limitations. Each chapter shall include sufficient description concerning other systems that supply information to or receive information from electronic systems to permit an understanding of the relationship between the described electronic system and other associated systems.

3.6.4.2 Drawings. Drawings required for clarification shall be included as one of the last chapters. The following drawings shall be included:

- a. Antenna arrangement (locating all installed antennas and antenna space reservations).
- b. Antenna system (including retractable or tilting masts, mast controls and indicators, transmission lines, connectors, and operating limitations).
- c. Power supply system between distribution centers and electronic equipment and between units of electronic equipment (block diagram).
- d. Radar and identification friend or foe system design drawing (block diagram).
- e. Radio communication system design drawing (block diagram).
- f. Sonar system drawing (block diagram).
- g. Electronic countermeasures system design drawing (block diagram).
- h. Navigation system design drawing (block diagram).
- i. Radio system design drawing (block diagram).
- j. Waveguide isometric wiring diagrams (other isometric wiring diagrams are not included).

3.6.4.3 Tables. Table I shall be titled "List of Electronic Equipment Installed" and shall contain data under the following heading:

- a. Model or type number, or both.
- b. Location (compartment designation number).

3.6.5 Volume 5 - IC systems. This volume shall present a general overall description of the IC systems and related equipment so that those whose duties require knowledge of the various installations may easily familiarize themselves with the principal installation and the operational features. The volume shall be divided into two separately bound parts as follows:

3.6.5.1 Part 1 - IC systems.

- a. This part shall be divided into applicable chapters as follows:
 - (1) Chapter 1 - IC switchboards (including IC test switchboards).
 - (2) Chapter 2 - Ship control consoles and ship control indicators.
 - (3) Chapter 3 - Telephone system, dial.
 - (4) Chapter 4 - Amplified voice communications, recording, television, and entertainment systems.
 - (5) Chapter 5 - Electrical alarm, safety, and warning systems.
 - (6) Chapter 6 - Indicating, order, and metering systems.
- b. Throughout Part 1, where applicable, systems shall be arranged and listed in alphabetical order according to circuit designations. Circuit designations shall appear to the left of system titles. The description of each installation shall include the following information, as applicable:
 - (1) Purpose - The text shall describe the basic purpose for which the subject system is installed.
 - (2) System classification - Importance and readiness classification shall be designated for each system.

MIL-DTL-24784/11D(NAVY)

(3) Equipment description - A listing of principal system equipments, including switching, shall be provided. The list shall denote equipment type, quantity, location, and the functional end use of each. Where equipments or components (such as loudspeakers and high temperature thermostats) are associated with a specific group or area, they shall be categorized accordingly.

(4) Operation - The system operational capabilities and limitations shall be described in consonance with the applicable shipboard installation drawings. Input and output characteristics of major equipments shall be defined where they affect overall system operation. Special emphasis shall be devoted to modes of operation, transfer, and action-cutout switching to facilitate expedient operational decisions during damage emergencies, equipment failure, and changing requirements in system loads. A single line flow diagram shall be provided to supplement the written text for all systems having complex switching arrangements. The following is a list of systems having complex switching arrangements either singularly or in combination with other systems. The list is not intended to preclude diagrams for other systems, where required, to simplify the operational description:

<u>Circuit</u>	<u>System title</u>
HD-HE	Wind direction and speed system
L	Rudder order system
LB	Steering emergency signal system
LC	Gyrocompass system
XLC	Auxiliary gyrocompass system
LN	Ship's inertial navigation system
LV	Ships aircraft inertial automatic navigator alignment system
M	Propeller order system
MB	Engine or motor order system
3MB	Engine control order system
4MB	Propulsion control order system
1MC	General announcing systems
3MC	Aviators' announcing systems
4MC	Damage control announcing system
MS	Remote switching control system
N	Rudder angle indicator system
5N-6N	Emergency rudder angle indicator systems
RC	Catapult signal system
TL	Dead reckoning system
VP	Controllable pitch propeller indicating system
Y	Underwater log system

(5) Flow diagrams - Flow diagrams shall depict transmission of signals from source or origin to destination. Typical flow diagrams, with appropriate reference to tables, may be used for systems containing duplicate subsystems. Directional flow diagrams shall be marked to indicate the specific electrical and mechanical signal characteristics being transmitted. The text, in conjunction with supporting diagrams, shall define the interrelationships between the systems being described and associated systems.

MIL-DTL-24784/11D(NAVY)

(6) System checkout - System checkout procedures shall be provided to enable periodic evaluation of the system's operational status. A systematic approach shall be included for isolating equipment failure, open circuits, shorts, and grounds in system cabling. Checkout procedures in equipment TMs and test memoranda shall be referenced to supplement the description, as required.

(7) Power supplies - Voltage, frequency, phase, source, and location of power supply (switch and fuse size not required) shall be identified. A schematic wiring diagram showing switchboard power supplies, bussing, and interties shall be included in the section covering IC switchboards.

(8) Referenced material - Principal installation drawings, TMs, and other data pertaining to the installation shall be referenced, where applicable.

3.6.5.2 Part 2 - sound-powered telephone systems, voice tubes, and message-passing facilities.

a. Part 2 shall be divided into applicable chapters as follows:

- (1) Chapter 1 - General information.
- (2) Chapter 2 - Ship control circuit.
- (3) Chapter 3 - Engineers' and damage control circuits.
- (4) Chapter 4 - Armaments control and associated circuits
- (5) Chapter 5 - Miscellaneous circuits (not included in above categories).
- (6) Chapter 6 - Voice tubes and message-passing facilities.

b. Chapter 1 shall include information on the telephone systems and types of circuits installed and the function and use of associated equipment such as plotter's transfer switchboard, amplifiers, tie switches, untie switches, tie lines, and selective switches. A complete list of the telephone circuits (in alphabetical order) and a list of the selective switches shall be included.

c. Chapters 2 through 5 shall describe the function of the associated circuits and shall include a list of telephones by circuit and a list of telephones by station. Sound-powered telephone calls provided shall be included in the list of telephones by circuit. A comprehensive description and schematic wiring diagrams shall be provided for those circuits that incorporate special transfer switching.

d. Chapter 6 shall contain a description and list (including calls) of the voice tubes and a description and list of the message-passing facilities.

3.6.6 Volume 6 - weapons. All of the systems and equipment shall be in the CSTOM, if prepared for the ship. This volume shall present a general overall description of the weapons control system and special equipment, so that those whose duties require knowledge of the various installations may easily familiarize themselves with the principal installation and operational features.

a. The volume shall be divided into chapters as follows:

- (1) Chapter 1 - Weapons control systems.
- (2) Chapter 2 - Weapons control switchboards.

b. Throughout Chapters 1 and 2, where applicable, systems shall be arranged and listed in alphabetical order according to circuit designations. Circuit designations shall appear to the left of system titles. In general, the description of each installation shall include the following information, as applicable:

- (1) Purpose.
- (2) Type and location of major units.
- (3) Principal features, method of operation (refer to applicable TM for detailed descriptions), and transfer and action cutout switching.
- (4) Power supplies (switch and fuse sizes not required).
- (5) Reference TMs.
- (6) Reference drawings (principal installation drawings).

MIL-DTL-24784/11D(NAVY)

c. For a system having an extensive switching arrangement, a simplified schematic wiring diagram shall be provided to supplement the switching description. A schematic wiring diagram showing switchboard power supplies, bussing, and interties shall be included.

3.6.7 Volume 7 - ballasting systems. This volume shall present a comprehensive description, including basic drawings, diagrams, and tabulations, of the arrangement, functions, operational sequences, and limitations of the ballasting systems for ships having extensive ballasting systems, such as Landing Ship Dock (LSD) and Landing Platform Dock (LPD). Where Volume 7 is required, a sample volume shall be provided for guidance.

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 SIB is intended to be used as a basic reference for ships' force; building, planning, and overhaul yards; Fleet and training commands; and tenders and other naval activities. It is the primary information source concerning shipboard arrangements and systems.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification (or any Technical Manual Contract Requirement [TMCR] referencing this specification).
- b. Arrangement, if other than standardized format (see 3.3).
- c. Format and style requirements, if other than as specified in MIL-DTL-24784 (see 3.4).
- d. Identification of ship type and unique data coverage (see 3.5).
- e. Packaging requirements (see 5.1).

6.3 Technical manuals. The requirement for technical manuals should be considered when this specification is applied on a contract. If technical manuals are required, specifications and standards that have been authorized and assigned an Acquisition Management Systems Control (AMSC) number or a TMCR based on those specifications and standards must be listed on a separate Contract Data Requirements List (DD Form 1423), which is included as an exhibit to the contract. The technical manuals must be acquired under separate contract line item in the contract.

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

6.4.1 Abnormal operation. An operation that results when specific equipment or components of a system or independent auxiliary machinery plant is not available for service.

6.4.2 Emergency operation. An operation performed as a result of a malfunction or maloperation of a system or component, the consequences of which prevent or seriously restrict the operation of the system or independent auxiliary machinery plant or jeopardizes the safety of ship, personnel, or both.

MIL-DTL-24784/11D(NAVY)

6.5 Subject term (key word) listing.

Maintenance

Operating

Overhaul personnel

Training schools

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.

CONCLUDING MATERIAL

Custodian:

Navy – SH

Preparing activity:

Navy – SH

(Project TMSS-2017-008)

Review activity:

Navy – EC

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 <https://assist.dla.mil>.