

**NEWPORT NEWS SHIPBUILDING
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APPENDIX E - DOD CONTRACTS
TECHNICAL MANUALS
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I. INTRODUCTION.

Appendix E is provided for sellers (vendors) to use when developing technical manuals to submit to Newport News Shipbuilding (NNS) in order to satisfy coded note requirements included in individual equipment purchase orders. The use of Appendix E by the vendor will ensure format and content requirements of the applicable contract are met along with ensuring delivery of consistent technical manual products between various vendors. The overall goal of Appendix E is to limit the amount of rework required by the vendor through first time submittal of technical manuals that are formatted correctly and contain the technical content requirements called out by the applicable contract.

Appendix E covers the submittal of vendor technical manuals developed in accordance with a suite of Technical Manual Contract Requirements (TMCR) providing specific requirements for each type of technical manual specified and is applicable to aircraft carriers undergoing Refueling and Complex Overhaul (RCOH) availabilities at NNS.

General information is covered in the following section.

II. GENERAL.

Technical manuals are furnished by the vendor when specified by the applicable purchase order coded note. Where the requirements of the purchase order and this appendix, which forms a part of the purchase order, are at variance with other referenced specifications, the purchase order shall apply.

The maximum use of existing manuals is expected and encouraged.

If equipment supplied is identical or nearly identical to equipment supplied under a previous Government contract, and is supported by an existing, Navy-approved technical manual, the vendor may propose the existing technical manual be extended as is if the existing, Navy-approved technical manual covers the equipment being purchased by this purchase order in its entirety without change to any front matter, text, illustrations, drawings, or part numbers.

All manuals, whether or not they have been approved for use by the Navy or whether or not they have had NAVSEA numbers assigned, are submitted to the Purchaser for approval by this Company and the Navy Department for applicability to the contract.

Unless specified in the TMCR or purchase order, the use of certification data sheets and any such data that tends to limit the use of the manual to one ship is not allowed.

NOTE: The use of approved production type or working drawings in technical manuals, except where needed for installation information, is not a specification requirement. The use of such drawings in lieu of illustrative material prepared specifically for the publication should be limited. Where approved working drawings are included in technical manuals, they must be in agreement with approved drawings of the same revision in the Navy system and meet illustration requirements of the applicable TMCR.

The Shipbuilder is contractually obligated to make delivery of final technical manuals to the Navy on a predetermined schedule. By acceptance of the purchase order, the vendor agrees to expedite all phases of technical manual preparation, to submit both preliminary and final manuals promptly, and to cooperate with the purchaser in timely delivery of the Final Reproducible Copy (FRC) to the Navy. The purchase order number shall not be shown on the title page.

III. SUMMARY OF TECHNICAL MANUAL CONTRACT REQUIREMENTS (TMCRS) FOR VENDOR EQUIPMENT OR SYSTEM MANUALS

1.0 PURPOSE.

This document will provide sellers (vendors) a ready reference to use as a guide for developing technical manuals to ensure the format and content requirements of the applicable TMCRs are met. This document is intended for use as a guide only. Vendors should consult the applicable TMCR(s) for specific information regarding technical manual format and content requirements.

2.0 TECHNICAL MANUAL DEVELOPMENT MILESTONES.

2.1 Narrative Outline and Book Plan (for New Technical Manuals Only). A narrative outline and book plan may be required for submission to the buyer at NNS and the Government for review and approval for each new technical manual before developing the preliminary copy. This will provide NNS and the Government the opportunity to ensure technical data required in the technical manual is reflected in the book plan before preliminary technical manual development. Contact the buyer before starting development to confirm the need for a narrative outline and book plan.

2.2 Preliminary Technical Manual. A preliminary technical manual is provided to NNS and the Government for review and approval to ensure fulfillment of all technical manual format and content requirements, and may be used for interim support of equipment or systems prior to delivery of FRCs.

2.3 Final Reproducible Copy (FRC). Final Government approved technical manuals ready for reproduction and publication with all necessary changes incorporated as a result of engineering reviews and desktop validation, including Government conditions for acceptance or approval.

3.0 VENDOR DELIVERABLES.

The various types of technical manuals provided for the contract are prepared and submitted in accordance with the applicable TMCR or as specified herein. The vendor shall deliver the following technical manual deliverables to NNS for each technical manual via electronic media:

- Narrative Outline and Book Plan (new technical manuals only)
- Preliminary Technical Manual Copy
- In-Process Review (IPR) Copy (as required)
- Final Reproducible Copy (FRC)

4.0 REFERENCES.

To determine the applicable TMCR/contract requirements, contact Huntington Ingalls Industries at:

HII - Fleet Support Group
5200 West Mercury BLVD Suite 250
Hampton, VA 23606
Technical Documentation Project Manager
Office: 757 896-5621

5.0 GENERAL REQUIREMENTS.

Technical manuals are supplied via electronic media in accordance with the applicable TMCR when the requirement for a technical manual is invoked in the NNS equipment purchase order. Technical manual requirements may be fulfilled using existing Government or commercial manuals conforming to the

requirements identified herein or by developing a new technical manual in accordance with the applicable TMCR. Develop a new technical manual only if an existing, Navy-approved technical manual cannot be modified to meet the equipment or application requirements of the purchase order. If complete manuals exist identical to those previously approved, they are furnished in lieu of above manuals.

Maximum use of existing manuals is expected and encouraged. If equipment supplied is identical or nearly identical to equipment supplied under a previous Government contract, and is supported by an existing, Navy-approved technical manual, the vendor has two options. The vendor may either propose the existing technical manual be extended as is (as long as the existing, Navy-approved technical manual covers the equipment being purchased by this purchase order in its entirety without change to any front matter, text, illustrations, drawings, or part numbers), or provide update pages incorporating the actual equipment configuration (new components or modifications to existing components), as applicable.

COTS technical manuals are prepared in accordance with the applicable contract TMCR and Data Item Description (DID) document invoked at the issuance of the purchase order. They are forwarded to NNS for review and validation against the equipment. NNS will submit the COTS manual to the Government, in accordance with contract requirements, for approval. This is to facilitate a timely approval process. The Government may require supplemental information be added to the COTS manual. If supplemental information is deemed necessary, it is the Government's responsibility to obtain it. It is not the intent of this document to require equipment suppliers to develop new COTS technical manuals when a COTS technical manual exists that contains adequate installation, operation, maintenance, and repair information (including parts lists) meeting the requirements of the applicable contract TMCR.

6.0 NARRATIVE OUTLINE AND BOOK PLAN.

Technical manual narrative outlines and book plans are developed and submitted for new technical manuals only and are developed in accordance with the applicable DID. Narrative outlines and book plans are submitted to the Government, via NNS, for acceptance prior to developing the preliminary technical manual. If rejected, the unacceptable portions are corrected and resubmitted for Government approval.

6.1 Narrative Outline and Book Plan Requirements. The narrative outline and book plan shall indicate the planned technical manual development approach, identify which options are permitted by the contract, and specify options the vendor is electing to pursue. The narrative outline and book plan shall contain the following:

- a. A text outline that is in accordance with the requirements of the applicable TMCR, showing volume, part, chapter, section, and paragraph titles to indicate the intended coverage of the various aspects of the equipment or system. Each paragraph title is followed by a brief statement outlining the information presented. The text outline shall clearly state the specific equipment or system and related procedures and data planned for inclusion in the manual.
- b. An illustration plan and a table plan keyed to the text outline. Describe each illustration and table listed in the plans. The illustration plan shall contain figure numbers, title, intent of the illustration, use of color, graphic source file format (e.g., JPEG), and approximate size (physical and source file size) and nature of the illustration (e.g., exploded view, schematic, line drawing). The table plan shall describe the tables by table number, information content and estimated page count for each table. Depict samples of each table type.
- c. An estimated text page count and a statement indicating the scope, depth, or coverage for each chapter.
- d. The book plan shall include the contractor's approach to task analysis showing traceability to the Logistic Support Analysis Requirements (LSARs) (if available) and approved maintenance plan. The plan is correlated to the maintenance concept or plan by direct referencing.

- e. For compound equipment, the preferred method of data presentation is to divide the equipment into functional assemblies and their associated subassemblies. Each functional assembly should be contained in a separate volume. It may be considered appropriate to present the test data record sheets for each functional assembly as a separately bound part of a volume. For hull, mechanical, and electrical (HM&E) equipment, include examination, test, and repair action record data sheets in a separately bound part of a volume for each functional assembly.
- f. The outline shall fully represent all content requirements.
- g. Identify problems regarding TMCR requirements, interpretation, and/or application.
- h. Highlight conflicts between guidance documents.

6.2 Narrative Outline and Book Plan Submittals. All narrative outlines and book plans are submitted for NNS and Government review and approval. Any unapproved sections are corrected by the vendor and resubmitted. This process shall continue until the entire book plan is approved.

When specified or approved by the Government; an existing, Navy-approved technical manual covering similar equipment may be used as a model to develop the narrative outline and book plan for a new technical manual. The existing, Navy-approved technical manual table of contents is marked up to show any required changes, as applicable. Text from the existing technical manual may be used verbatim with changes to cover equipment differences and to correct inconsistencies, unclear wording, or obvious editorial or typographical errors. However, the format requirements in the applicable TMCR shall apply to all new technical manuals developed for the availability. Narrative outlines and book plans are submitted, via NNS, to the Government for review and approval. Identify all inconsistencies, unclear wording, or errors noted in the existing manual in the marked up copy submitted to the Government for review and approval.

The Government-approved narrative outline and book plan then becomes a supplementary specification to the applicable TMCR used to develop the preliminary technical manual. Narrative outlines and book plans are compared with preliminary technical manuals at the In-Process Review (IPR) (if required). Acceptance of the narrative outline and book plan by the Government shall not waive any technical manual requirements within the scope of the contract.

7.0 IN-PROCESS REVIEWS (IPRs).

IPRs are convened for technical manuals to provide a mechanism to ensure coordination between the Government and NNS during technical manual development. These government-initiated reviews permit early detection of problems in scheduling, contract interpretation, specification requirements, and/or maintenance concepts. IPRs can be authorized quarterly and convened by the Government at NNS or, if approved by the Government, at a designated Government facility. Only technical manuals that have been reviewed, desktop validated, and have received preliminary approval by NNS at the time of the Government's request are eligible for an IPR. NNS will coordinate the time, date, and place of the IPR. The contractor and vendor will support IPRs and provide access to materials used to develop technical manuals, to include preliminary and final products. At a minimum, IPRs will include evaluation of:

- Source data
- Book plans
- Modes of presentation
- TMCR compliance
- Modes of preparation
- Complete documentation (text and artwork) format and technical content
- Readability

8.0 TECHNICAL MANUAL DEVELOPMENT.

8.1 Preliminary Technical Manual Development. New preliminary technical manuals are developed using the format and technical content requirements as called out in the applicable TMCRs. All deviations from contractual specifications must be annotated in the individual narrative outline and book plan for each technical manual and approved by the Government.

Revisions or changes to an existing, Navy-approved technical manual are developed using the existing size, content, and format arrangement of the base technical manual (refer to paragraph 8.2).

Text, illustrations, drawings, and tables are in final size, complete with titles and figure or table number, in accordance with the applicable TMCR.

Place the words PRELIMINARY ISSUE on the title page.

Proper classification or handling markings shall appear on every page (top and bottom), if applicable. Unclassified technical manuals prepared for the Government that contain NOFORN information shall be clearly marked with NOFORN centered at the top and bottom of each page.

Use the United States Government Printing Office (GPO) Style Manual 2016 for capitalization, punctuation, compounding of words, numerals in the text, and spelling of non-technical words.

Electronic copies are submitted by an approved method. Confirm the approved method through the NNS Buyer before submitting electronic copies.

The delivery of the preliminary technical manual does not relieve the vendor of any contractual requirements pertaining to delivery of complete, adequate, and accurate FRCs.

8.1.1 Front Matter. Front matter for technical manuals is prepared in accordance with the applicable TMCR, and shall include the following in the order provided.

- Title Page
- Record of Revisions
- Foreword/Preface/Introduction
- Table of Contents
- List of Illustrations
- List of Tables
- Safety Summary (as applicable)

8.1.1.1 Title Page. The title page for preliminary technical manuals shall meet the content and format requirements in accordance with the applicable TMCR.

8.1.1.2 Foreword. The foreword shall briefly describe the purpose and scope of the technical manual. It shall indicate the structure of the technical manual by containing a list of the numerical designations and titles for all volumes, parts, chapters, and sections.

8.1.1.3 Text. The text is technically edited, validated, and computer generated. Identity numbers, nomenclature, and reference designations appearing throughout the text are the same as those appearing on Government approved documents. Unless otherwise specified herein, vendor-furnished technical manuals shall meet the general style and format requirements of the Master and applicable subordinate TMCRs.

8.1.3 Dangers, Warnings, Cautions, and Notes. Dangers, warnings, and cautions shall consist of four parts: a signal word (heading), a statement of the hazard, the minimum precautions required, and the possible result if minimum precautions are not followed (unless the result is obvious). Dangers, warnings, and cautions immediately precede the step or procedure to which they apply, but follow paragraph headings. Notes can precede or follow text. Dangers, warnings, cautions, and notes do not contain procedural steps.

8.1.4 Readability. The level of coverage and complexity of technical descriptions for newly-developed technical manuals, and changes/revisions to existing manuals, is composed and edited to the level of understanding of someone possessing a ninth (9th) grade reading level in accordance with the applicable TMCR.

8.1.5 Technical Content. The technical content of technical manuals is developed in accordance with the applicable TMCR.

8.1.6 Illustrations. Each illustration shall follow as closely as possible its first reference in the narrative text. However, when an illustration is extensive and requires a foldout sheet, such as for a large schematic diagram, it is located at the end of a chapter. All illustrations shall have a figure number and title.

Identity numbers, nomenclature, and reference designations appearing on the illustrations are the same as those appearing on Government-approved documents.

Nomenclature, callouts, tabular material, and symbols on illustrations are a final size of no smaller than 8-point and no larger than 10-point with upper case lettering. Index numbers for each figure (multi-sheet illustrations are considered one figure) start with Arabic numeral 1 and continue consecutively. Index number sequence is from top to bottom or clockwise, when possible. Index numbers for exploded views are in disassembly order. Exploded views should be used to the greatest extent possible in the technical manual.

Line drawings are used instead of photographs (halftones) when practical.

8.1.7 Foldouts. Foldouts are placed at the end of the applicable chapter or at the end of the manual. Foldouts follow normal figure and page number sequencing when placed at the end of a chapter.

The minimum margins for foldouts are 1/2-inch on the top and bottom, and 1/4-inch on the outer edge.

All foldout pages are prepared for printing on one side only and shall appear on right-hand pages.

8.2 Preliminary Technical Manual Revision Development. Preliminary technical manual revisions are developed in accordance with the size, content, and format arrangement of the basic manual.

Front matter, text, illustrations, drawings, and tables are final size, complete with titles and figure or table number, in accordance with the base technical manual.

Place the words PRELIMINARY ISSUE on the title page.

Proper classification markings shall appear on every page (top and bottom), if applicable. Unclassified technical manuals prepared for the Government that contain NOFORN information shall be clearly marked with NOFORN centered at the top and bottom of each page.

All change symbols (pointing hands, change bars, shading, screening, etc.) are removed when the manual is revised. Eliminate partial pages.

Utilize the United States Government Printing Office (GPO) Style Manual 2016 for capitalization, punctuation, compounding of words, numerals in the text, and spelling of non-technical words.

Electronic copies are submitted by an approved method. Confirm the approved method through the NNS Buyer before submitting electronic copies.

The delivery of the preliminary technical manual revision does not relieve the vendor of any contractual requirements pertaining to delivery of complete, adequate, and accurate FRCs.

8.2.1 Front Matter. Front matter for technical manual revisions shall include the following in the Appendix E - DOD

order provided.

- Record of Revisions
- Foreword/Preface/Introduction
- Table of Contents
- List of Illustrations
- List of Tables
- Safety Summary (as applicable)

Indicate the revision identification letter/number in the upper right-hand corner of the title in bolded font (e.g., REVISION 1).

8.2.2 Illustrations. New callouts are added in numerical sequence starting after the largest callout number on the illustration (single or multi-page). Suffixed index numbers need not be eliminated for a revision unless the illustration must be redrawn.

9.0 TECHNICAL MANUAL CORRECTIONS.

The vendor shall correct discrepancies in technical manuals found unacceptable as a result of Government or NNS review. A technical manual is considered unacceptable if:

- It does not reflect the configuration purchased
- It does not meet desktop validation requirements
- It does not meet the requirements of the applicable Master and subordinate TMCR and other contractual requirements
- Vendor source data including Microsoft Word source files, Adobe PDF files, tagged image format files, and illustrations in AutoCAD are incomplete or incorrect for final technical manual deliverables

The vendor's responsibility for revisions to technical manuals is from issue of purchase order through final Government approval. The vendor is responsible for the technical accuracy and adequacy of manuals provided by them to NNS under the associated contract as well as for those manuals provided by the vendor from subcontractors to NNS.

10.0 FINAL REPRODUCIBLE COPY (FRC) DEVELOPMENT.

Final technical manuals are developed ready for reproduction and publication as an authenticated technical manual including all necessary changes made as a result of desktop validation procedures, IPRs, and Government conditions of acceptance or approval. The delivery media is in an approved electronic format. Confirm the approved format through the NNS Buyer before submitting electronic copies.

The FRC is developed in accordance with the applicable TMCR with the following clarifications:

- The FRC shall incorporate all comments resulting from technical and format compliance reviews, NNS desktop validation, and Government reviews, along with IPR comments (if applicable) and any comments resulting from the interim use of a preliminary technical manual.
- Text is prepared using a word processor or document publishing system.
- The FRC shall include all text (including tabular data) and reproducible artwork (including foldouts) suitable for reproduction. The FRC and integrally related artwork (including schematics, wiring diagrams, and block diagrams) is of sufficient darkness to reproduce clearly at required reproduction size without additional treatment.
- Minimum type size for text is 10-point elite type. Spacing and lettering shall conserve space without lessening usability or clarity of material. Letters, lines, and symbols are of a uniform contrast throughout the text material and shall not touch.

Front matter shall be in accordance with paragraph 8.1.1 and 8.2.1 of this document except that the title page shall not include the words PRELIMINARY ISSUE.

Text shall be in accordance with paragraph 8.1.2 of this document. Illustrations shall be in accordance with paragraph 8.1.6 and 8.2.6 of this document.

Auxiliary equipment vendors shall ensure the entire technical manual, including source data obtained from sub-component vendors, meets FRC requirements.

11.0 FINAL DELIVERABLES.

Deliver the FRC of the Government-approved technical manual in accordance with the applicable purchase order coded note. Xerographic copies will not be accepted as FRC material.