

**NOT MEASUREMENT  
SENSITIVE**

**MIL-PRF-63005E(AV)  
25 November 2008  
SUPERSEDING  
MIL-M-63005D(AV)  
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## **PERFORMANCE SPECIFICATION**

### **MANUALS, TECHNICAL: PREPARATION FOR SHIPMENT OF ARMY AIRCRAFT**

This specification is approved for use by the US Army Aviation and Missile Command (AMCOM), Department of the Army, and is available for use by all departments and agencies of the Department of Defense.

#### **1. SCOPE**

1.1 Scope. The specification prescribes the requirements for writing technical manuals (TMs) for preparation for shipment of Army aircraft by cargo aircraft, vessel, truck, and helicopter (aerial recovery). These requirements establish the format and contents of the technical manuals but not the design or construction of materiel.

1.2 Figures. In the event of a conflict between the text and the illustrations, the text of the document takes precedence over the figures.

Comments, suggestions, or questions on this document should be addressed to: Commander, U.S. Army Research, Development and Engineering Center, ATTN: AMSRD-AMR-SE-TD, Redstone Arsenal, AL 35898-5000. 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>.

AMSC 9049

AREA TMSS

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

**MIL-PRF-63005E(AV)****2. APPLICABLE DOCUMENTS**

2.1 General. The documents listed in this section are specified in Section 3, 4 or 5 of this specification. The 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 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 the contract.

**STANDARDS**Department of Defense

MIL-STD-38784	DOD Standard Practice, General Style and Formatting Requirements for Technical Manuals
MIL-STD-129	Military Marking for Shipment and Storage

(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Bldg 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents 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.

**AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)**

ASME Y14.38	Abbreviations and Acronyms
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Copies of this document are available from [www.asme.org](http://www.asme.org) or ASME Information Central Orders/Inquiries, P.O. Box 2300, Fairfield, NJ 07007-21300.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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### 3. REQUIREMENTS

#### 3.1 General.

3.1.1 Title and general contents. Each TM shall contain all essential information required by personnel engaged in preparing and loading aircraft for shipment by all modes of transportation worldwide. The title shall be "Preparation for Shipment of Army Model (insert model and nomenclature of the aircraft)". The text shall, as a minimum, contain the information elements described in 3.2.1 through 3.2.24.14.

3.1.2 Classified information. Classified information shall not be included in any TMs.

3.1.3 Publication number. Unless specified (6.2), the publication number shall be the same as the TM number of the aircraft system, followed by the letter suffix "-S". It shall be in boldfaced type at the upper outer edge of each page.

3.1.4 Publication data. The publication date shall be the cutoff date from which no further changes to the TM are permitted without issuing a formal change. This is normally the "approved date", that is, the date the government accepts the TM subject to the inclusion of specified comments. Unless otherwise specified (6.2), the publication date shall be the date at which the last material to be included was received. The date shall be written in the sequence: day; month; year, for example 23 June 1996.

3.1.5 Page numbers. Page numbers shall be located at the lower outer edge, right justified, and shall be in boldfaced type. Even numbers, including zero, shall be assigned to left-hand pages and odd numbers to right-hand pages. Manuals divided into chapters shall contain consecutively numbered pages, tables and illustrations for the entire chapter. Page, table, and illustration numbers shall consist of the chapter number, followed by a hyphen, and then a second number representing the order within the chapter. The page number for a foldout page shall be placed (lower outer edge, right justified) so that the number will be visible when the printed page is folded. See MIL-STD-38784 for additional information on page numbering.

3.1.6 Notice of supersession. Unless otherwise specified (6.2), the supersession notice shall be placed on the cover/title page when the manual/change/revision/rapid action change (RAC) under preparation supersedes all or portions of other manuals/changes/revisions. When specified, the notice of supersession shall include a list of all currently superseded supplements and RAC's. Superseded supplements/RAC's shall normally be listed individually, but when several alphabetically/numerically sequenced supplements/RAC's are superseded, they shall be grouped. The applicable portions of the following notice shall be used:

This (manual/change/revision/RAC) supersedes (applicable manual/change/revision number or portions of) dated (date of superseded document), change (change number) dated (change date), including (superseded supplement/RAC numbers).

3.1.7 Manual types. There are three types of draft publications covered in this specification. The requirements specified in Section 3 apply to all three. See 6.4 for definitions of the three types.

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- a. Preliminary draft equipment publication (PDEP)
- b. Draft equipment publication (DEP)
- c. Final draft equipment publication (FDEP)

3.1.8 Text. The text shall be written in clear, simple, and concise language. Technical terms requiring special knowledge shall be avoided, except where no other working will convey the intended meaning. Procedures shall be broken down into distinct steps for accomplishment. All procedures called out shall be fully explained in logical completion sequence. When possible, a tabular format shall be used to simplify complicated or comparative data.

3.1.9 Joint manuals. When TMs are acquired by one Service for joint use with another Service, each Service's number shall be prefixed with the word "Army", "Navy (NAVSEA) (NAVAIR)", "Marine Corps", or "Air Force", as applicable. The contracting activity's TM number shall be placed above the using activity's TM number. Paragraphs in joint publications which do not apply to all Services concerned shall be marked to indicate the Services to which they do apply.

3.1.10 Abbreviations. Abbreviations shall be written in accordance with ASME Y14.38. The first time an abbreviation is used in text, it shall be placed in parentheses and preceded by the word or term spelled out in full.

3.1.11 Acronyms. The first time an acronym is used in text, it shall be placed in parentheses and shall be preceded by the word or term spelled out in full. Acronyms used in figures and table shall be spelled out in a footnote to the applicable figure or table.

3.1.12 Structure. The contents of the TM shall be structured in the following fashion:

- a. Chapters—divides TM into major divisions
- b. Sections—divides chapters into specific areas of coverage
- c. Paragraphs and subparagraphs—divide sections into specific topics

No less than two of any subdivision shall be used; for example, chapters shall contain at least two sections, sections shall contain at least two paragraphs, etc.

3.1.13 Text formatting. All text within the TM shall be formatted in the following manner.

3.1.13.1 Primary sideheads. Primary sideheads shall divide text within chapters or sections into two or more portions. There shall be at least one primary sidehead in each chapter or section. Primary sideheads stand alone (are not run in with text) and shall appear in capital letters, be underlined, end with a period, and shall begin at the left margin.

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3.1.13.2 Paragraph numbering and titling. Subordinate paragraphs shall be numbered consecutively within the chapter. All paragraph numbers shall be preceded by the chapter number and a period, and paragraph titles shall be underlined and end with a period. The first word in the paragraph title shall be capitalized. Second and subsequent lines of subordinate paragraphs shall begin at the left margin.

3.1.13.3 Procedural steps. Procedural steps shall begin two spaces below the preceding text, numbered sequentially with Arabic numbers or alphabetic letters, and indented two spaces from the left margin. Substeps shall begin two spaces below the preceding step and indented an additional two spaces. The text shall begin on the same line as the step number and be separated by two spaces. Carry over lines shall not return to the left margin but shall start under the first letter of the preceding line.

3.1.14 Revisions. When specified (6.2), a complete, an update, a nonsuperseding, or a pickup revision shall be prepared. (See 6.4 for definitions.) Revisions shall incorporate current information from previously issued changes to the existing TM. Revisions or changes shall be published at the same frequency as other aircraft system manuals.

3.1.14.1 Renumbering and removal. In a complete revision, all pages, paragraphs, illustrations, and tables shall be renumbered, as necessary, to eliminate all number suffixes and to establish correct sequences. Complete revisions shall be prepared to current specifications and standards. In an update revision, suffixed paragraph, illustration, and table numbers shall be retained when use of the TM will not be substantially improved by renumbering. All change numbers and change dates shall be removed from pages. All partial pages, miniature pointing hands, shading, screening, vertical lines in margin and other change symbols shall be eliminated. For additional guidance see MIL-STD-38784.

3.1.14.2 Revision and new change symbols. When specified (6.2), after all previous change symbols have been eliminated, new change symbols shall be inserted to identify technical changes in text, illustrations, and tables that differ in the revision from those contained in the latest previous edition of the TM.

3.1.15 Changes. The change package shall conform to the format of the basic manual and shall incorporate all approved information. The changes shall also incorporate all advanced change notices and resolution of outstanding deficiencies. Unless otherwise specified (6.2), a change record shall be prepared. It should not back or be backed up. These pages shall not be numbered. Detailed instructions for issuing changes can be found in MIL-STD-38784.

3.1.16 Artwork. All artwork shall be line drawings.

3.1.16.1 Color in artwork. Shading, patterns, crosshatching, or dots in black and white shall be used in place of colors on original artwork.

3.1.16.2 Lettering. Lettering and type on original artwork shall be well-defined and large enough to be easily read when the illustration is reproduced at page size. Lettering and type shall be in

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capital letters. It is recommended that the minimum type size be eight point. Spacing of letters and words shall be controlled to insure clear, legible copy.

3.1.16.3 Keys for illustrations. Keys shall, when feasible, be included on the illustration. Where keys are too numerous or the explanations too lengthy to fit within the illustration cropped area without crowding, they shall be placed in tabular form immediately above or below the illustration or on the facing page. These tables shall be considered as a text function.

3.1.17 Emergency procedures. Text that contain emergency procedure information/steps shall have heavy black diagonal lines around three edges.

3.1.18 Shall, should, and may. The following shall be placed near the beginning of Chapter 1.

Use “shall” whenever a TM expresses a provision that is binding. Use “should” to indicate a non-mandatory but preferred method of accomplishment. The word “may” shall be used to indicate an acceptable method of accomplishment.

3.2 Specific contents and format. Each TM shall apply to a single aircraft series. Specific requirements and procedures relating to shipment by cargo aircraft, vessel, truck, crated shipment, containerized shipment, and external transport by helicopter shall be detailed. Procedures necessary for tactical, minimum disassembly (logistical), maximum density (logistical) and palletized shipments shall be described. Each TM shall be written in the same format so that the same type of information is presented in the same order in each TM. The following is the format which shall be followed:

- a. Cover/title page
- b. Distribution statement
- c. Warning page
- d. Table of contents
- e. Reporting of errors statement
- f. List of illustrations
- g. List of tables
- h. Chapter 1 – Introduction
  - (1) Section I – Purpose and scope
  - (2) Section II – General
  - (3) Section III – Aircraft description

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- (4) Section IV – Shipping characteristics
  - (5) Section V – Ground handling
  - (6) Section VI – Safety
  - (7) Section VII – Preservation/depreservation check sheets
- i. Chapter 2 – Shipment by Cargo Aircraft
- (1) Section I – General
  - (2) Section II – Shipment by C-5 aircraft
  - (3) Section III – Shipment by C-17 aircraft
  - (4) Section IV – Shipment by C-141 aircraft
  - (5) Section V – Shipment by C-130 aircraft
- j. Chapter 3 – Shipment by Vessel
- (1) Section I – General
  - (2) Section II – Tactical shipment
  - (3) Section III – Logistical shipment
  - (4) Section IV – Shipment by US Navy air capable ships
- k. Chapter 4 – Shipment by Truck
- (1) Section I – General
  - (2) Section II – Aircraft recovery and tactical transport
  - (3) Section III – Logistical (long haul) transport by truck
- l. Chapter 5 – Crated and Intermodal Container Shipment
- (1) Section I – Crated shipment
  - (2) Section II – Intermodal container shipment
- m. Chapter 6 – Preservation and Packaging

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- (1) Section I – General
- (2) Section II – Aircraft cleaning
- (3) Section III – Preservation of aircraft
- (4) Section IV – Preservation and packaging of components
- (5) Section V – Marking of aircraft/preparation of shipping documents
- (6) Section VI – Depreservation and assembly

### n. Chapter 7 – Transportability Equipment Fabricated at Unit Level

#### o. Chapter 8 – Operator and Maintenance Instructions for Transportability Equipment Including Repair Parts and Special Tools List

- (1) Section I – Operator instructions
- (2) Section II – Repair/overhaul procedures
- (3) Section III – Repair parts and special tools list (RPSTL)

### p. Chapter 9 – External Transport by Helicopter (Aerial Recovery)

- (1) Section I – General
- (2) Section II – Single cargo hook rotor head lift
- (3) Section III – Single cargo hook hard point lift
- (4) Section IV – Dual cargo hook rotor head lift
- (5) Section V – Dual cargo hook hard point lift
- (6) Section VI – Single cargo hook belly band lift

### q. Appendices

- (1) Appendix A – References
- (2) Appendix B – Preservation/Depreservation Check Sheets
- (3) Appendix C – Weight and Balance Information for Transportability

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- (4) Appendix D – Consumable Materials List
- (5) Appendix E – Special Tools and Equipment List
- (6) Appendix F – Quarantine Inspection/Customs Clearance
- (7) Appendix G – Aircraft Protective Covering

r. Index (if applicable)

3.2.1 Front matter. Front matter pages, except change record pages, following the list of effective pages and preceding Chapter 1 shall be assigned sequential lower case Roman numerals, i.e., i, ii, iii, etc. Unless otherwise specified (6.2), material preceding the first chapter of a TM shall consist of the following in the order specified:

Cover/title page

Warning page

List of effective pages

Table of contents

3.2.2 Cover/title page. Manuals shall have either a cover or title page, or an abbreviated title page. When specified (6.2), there shall be a cover and title page. When an abbreviated title followed by text on the same page is used instead of a cover/title page, the abbreviated title shall be confined to a 7 by 5-1/2 inch area. Type size shall be such that all the information can be included within the prescribed area. Abbreviated title pages shall be used only when specified by the contracting activity (6.2). The cover/title page shall contain the various elements found in MIL-STD-38784. Unless otherwise specified (6.2), if there is both a cover and a title page, the date shall be omitted from the cover. The backbone or cover of a final draft equipment publication (FDEP) shall be in accordance with the illustration in MIL-STD-38784. When specified (6.2), certain information such as the supersession notice, supplement notice, disclosure notice and destruction notice, as applicable, may be placed on the reverse side of the title page if additional space is needed to avoid overcrowding of the title page. When the reverse side of the title page, T-2, is used, a statement shall be placed on the title page indicating which information has been moved to the T-2 page.

3.2.3 Distribution statement. All TMs shall have a distribution statement placed on the cover/title page. Unless otherwise specified (6.2), the statement shall be as follows: “Distribution Statement A. Approved for public release; distribution is unlimited.”

3.2.4 List of effective pages. The list of effective pages shall be a complete list of all manual pages, including title page, T-2 page (if used), list of pages currently in effect, verification status pages, table of contents pages, safety summary pages, blank pages, deleted pages, added pages, and foldout pages. The list of effective pages shall include a statement of the total number of

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pages in the manual. The list of effective pages shall be updated for each change or revision. The listing shall be held to a minimum by grouping numbers where applicable. The page numbers for a blank page and the printed side of the sheet shall be listed as separate numbers even though a double number shall appear on the printed side of the sheet. Appropriate change numbers shall be indicated for each page that is changed. The words “deleted” or “blank” shall be placed along side the page number that is affected. The pages shall be numbered with an upper case letter in the lower left-hand corner.

3.2.5 Warning page. When specified (6.2), a warning page(s) shall include each general type of warning and warning symbol used within the TM. This shall not be a list of specific warnings that pertain to particular procedural steps, but shall include general hazardous subject data such as radiation, chemicals, high voltage, gas pressure, laser light, etc. The warning page shall be placed on the inside front cover or be the initial page(s) of the manual. The warning page(s) shall be numbered with lower case letters.

3.2.6 Table of contents. The table of contents shall list the chapters, sections, and paragraphs by number and title in the order in which they occur in the manual. In publications containing alphabetical indices, only primary and first subordinate paragraphs shall be listed in the table of contents. Each manual or volume in a set of manuals shall contain its own table of contents. The first volume or manual shall contain a complete table of contents covering the entire set. Entries shall indicate the volume in which the referenced material appears.

3.2.7 Reporting errors. To assist in improving TMs and reporting errors, the following information shall be outlined in the TM.

3.2.7.1 Errors statement. The following statement shall be placed at the top of the table of contents page:

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 2028-2, located in the back of this manual directly to: Commander, U.S. Army Research, Development and Engineering Center, ATTN: AMSRD-AMR-SE-TD, Redstone Arsenal, AL 35898-5000.

An overprinted sample of DA Form 2028-2 and three pre-addressed tear out DA Form 2028-2's shall be included at the back of each manual.

3.2.7.2 E-mail. The following instructions shall be placed at the back of the manual immediately in front of the DA Form 2028-2's.

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The following format must be used when submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

Subject: DA Form 2028

1. **From:**
2. Unit:
3. **Address:**
4. **City:**
5. **St:**
6. **Zip:**
7. **Date sent:**
8. **Pub No:**
9. **Pub title:**
10. **Publication date:**
11. Change No:
12. Submitter rank:
13. **Submitter Fname:**
14. Submitter Mname:
15. **Submitter Lname:**
16. **Submitter phone:**
17. **Problem:**
18. Page:
19. paragraph:
20. Line:
21. NSN:
22. Reference:
23. Figure:
24. Table:
25. Item:
26. Total:
27. **Text:**

(Enter the text for the problem below line 27.)

3.2.8 Index. Unless otherwise specified (6.2), an alphabetical index shall be prepared when a publication exceeds 100 titled paragraphs. It shall list pertinent subjects under every topic for which users are likely to look. "See" and "see also" references may be included to guide the user to other pertinent entries. All applicable paragraph numbers for each item shall be indicated. The index shall be so constructed as to enable the user to easily locate any part, information or operation described in the text. They shall begin on a right hand page. Page numbers for indexes shall be consecutively numbered in Arabic numerals with the word "Index" preceding the page number. The index shall be located at the end of the publication but shall be located before foldout page(s). Each manual or volume in a set of manuals shall contain its own index. In

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addition, Volume 1 or the first manual of the set shall contain an index for all volumes or manuals in the set.

**3.2.9 Chapter 1 – Introduction.**

3.2.9.1 Section I – Purpose and scope. This section shall state, among other things, the purpose of the TM, what it covers, who will use it, and its applicability.

3.2.9.2 Section II – General. This section shall include general administrative information relating to the use of the TM including:

3.2.9.2.1 Description and use of this manual. Describe the layout and use of the manual. For example, indicate sections that are general in nature and those that apply to specific modes.

3.2.9.2.2 Classified materials. If classified items are located in specific aircraft, that shall be noted, as well as specific handling requirements.

3.2.9.2.3 Warnings, cautions, and notes. (See 6.4 for definitions.) They shall be short, concise and used only to emphasize important or critical data. They shall state the hazard and result, or reason, unless obvious. Unless otherwise specified (6.2), warnings and cautions shall precede the text but follow paragraph headings to which they apply. Notes may precede or follow applicable text. Warnings, cautions, and notes shall not contain procedural steps nor shall the headings be numbered. If it is necessary to precede a paragraph with two or more of these notations, the more serious one shall precede the less serious one.

3.2.9.2.4 Deviations. The following statement concerning deviations shall be included: “Deviations from the procedures of this manual must be approved by Commander, U.S. Army Research, Development and Engineering Center, ATTN: AMSRD-AMR-SE-TD, Redstone Arsenal, AL 35898-5000.”

3.2.9.3 Section III – Aircraft description. This section shall include a description of the aircraft and identification drawings including elevation and plan drawings. If applicable, differences in models and other pertinent general information shall be provided. The basic weight of the aircraft shall be included.

3.2.9.3.1 Line drawings. Left side, front, and top view drawings shall be made of the aircraft in its operational configuration. The drawings shall include the dimensional data outlined in 3.2.9.3.3. For TMs covering different models that exhibit external differences, drawings shall be included for each model.

3.2.9.3.2 Scale. The drawings shall be as large as practicable, consistent with the space available. Scale shall be indicated by use of a graphic bar.

3.2.9.3.3 Dimensional data. All dimensions on drawings shall be shown to the nearest 1/10 of an inch, including the following (some dimensions are only applicable for certain types of aircraft):

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### a. Lateral dimensions

- (1) Landing gear width
- (2) Wingspan
- (3) Propeller diameter
- (4) Fuselage (maximum width)
- (5) Main rotor blade chord
- (6) Horizontal stabilizer span

### b. Longitudinal dimensions

- (1) Fuselage length
- (2) Overall length
- (3) Main rotor diameter(s)
- (4) Tail rotor diameter
- (5) Wing chord
- (6) Horizontal stabilizer chord
- (7) Distance from the nose to centerline of nearest wheel or tip of skid and distance from the tail to centerline of nearest wheel or tip of skid
- (8) Centerline of front wheels to centerline of rear wheels
- (9) Skid length

### c. Vertical dimensions

- (1) Ground to fuselage (minimum)
- (2) Ground to fuselage at midpoint between landing gear
- (3) Ground to propeller (minimum)
- (4) Ground to top of vertical stabilizer (maximum)
- (5) Ground to tip of tail rotor (maximum)

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- (6) Ground to tip of main rotor (minimum)
- (7) Ground to topmost point of main rotor
- (8) Maximum height, if not previously covered
- (9) Ground to lowest part of wing
- (10) Ground to bottom of horizontal stabilizer

d. Additional dimensions relevant to clearances needed for transportability

3.2.9.4 Section IV – Shipping characteristics. This section shall present a brief overview of the modes of shipment and include information applicable to more than one mode of shipment and deployment.

3.2.9.4.1 Flight delivery. This paragraph shall provide a statement indicating self-deployment as the preferred method of delivery. Information on maximum range, availability of auxiliary fuel systems, and their capabilities shall be included.

3.2.9.4.2 Modes of shipment. This paragraph shall describe the modes of shipment available (cargo aircraft, surface vessel, truck, helicopter, containerized shipment, and crated shipment) for transporting the aircraft and indicate the appropriate chapter in the TM that pertains to that specific mode.

3.2.9.4.3 Types of shipment. This paragraph shall compare the types of shipment: tactical (flyable or nearly flyable), minimum disassembly (logistical), maximum density (logistical), and palletized (cargo aircraft only). (See 6.4 for definitions of these types of shipments.)

3.2.9.4.4 Tabular data. Construct a table comparing the number of personnel and total manhours required to prepare, load, tiedown, unload, and prepare for flight one aircraft for each mode and type of shipment.

3.2.9.4.5 Tiedowns. This paragraph shall include a diagram of the aircraft showing tiedowns (lashing) for shipment, and the location and maximum strength of tiedown points. Strengths shall be shown fore and aft in longitudinal planes, left and right in lateral planes, and up and down in vertical planes. General tiedown methodology shall be presented using diagrams as needed.

3.2.9.4.6 Disassembly. This paragraph shall make reference to the appropriate TMs for disassembly. Also, a table shall be constructed comparing component removal required for each type and mode of shipment.

3.2.9.4.7 Unusual characteristics. This paragraph shall list and explain aircraft peculiar equipment requiring special environmental, handling, and or security precautions.

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3.2.9.4.8 International shipment. Reference shall be made to Appendix F for information on customs and quarantine clearance.

3.2.9.5 Section V – Ground handling. This section shall include all information concerning towing and maneuvering the aircraft in accordance with TM 1-1500-204-23 and applicable operator and maintenance manuals. Included shall be information on operation of ground handling equipment, towing, maneuvering, operation of aircraft brakes, safety, and wing walker requirements. Illustrations shall be included as needed.

3.2.9.6 Section VI – Safety. This section shall include general safety information applicable to all modes and types of shipment. Also, the applicable chapters, sections, and paragraphs in the TM shall be referenced concerning safety considerations for specific modes of shipment.

3.2.9.7 Section VII – Preservation/depreservation check sheets. This section shall establish the requirement to use preservation/depreservation check sheets prepared on DA Form 2408-13-2E for preparation of aircraft for shipment and for the depreservation and reassembly of aircraft. Reference shall be made to Appendix B for examples and for instructions on the preparations, use, and disposition of checklists.

3.2.10 Chapter 2 – Shipment by Cargo Aircraft.

3.2.10.1 Section I – General. This section shall include all information of a general nature applying to the transport of the specific Army aircraft in cargo aircraft and an overview of requirements.

3.2.10.1.1 Types of shipment. This paragraph shall specify all requirements for tactical shipment, minimum disassembly (logistical) shipment, maximum density (logistical) shipment, and palletized shipment in C-5, C-17, C-141, and C130 aircraft and discuss the four types of shipment applicable to the aircraft and the relative advantages and disadvantages of each. It shall indicate which cargo aircraft may be used and the aircraft densities for each type of shipment. In addition to the text, a table shall be presented to compare the data. Air Force cargo restraint criteria shall be included.

3.2.10.1.2 Functions of cargo aircraft crew. This paragraph shall list Air Force cargo aircraft crew responsibilities and the type and limits of assistance that Army personnel may expect. The TM shall make clear that the Air Force loadmaster is the final authority on all actions relating to the configuration, loading, tiedown, and unloading of all cargo on the cargo aircraft. The following functions shall be included in the TM:

- a. Preparing the cargo aircraft for loading and unloading.
- b. Rigging and operations of all loading/offloading aids that are part of the cargo aircraft.
- c. Designating aircraft and equipment locations within the cargo aircraft.
- d. Providing tiedown devices.

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e. Inspecting and determining acceptability of tiedowns.

3.2.10.1.3 Functions of the Army loading team. This paragraph shall contain an overview of the responsibilities of the Army loading team. The following functions shall be included:

- a. Plan all aspects of the move so that required materials, tools, equipment, and manpower are available.
- b. Prepare the aircraft for shipment and insure that fuel on board does not exceed 150 gallons, or  $\frac{3}{4}$  full per tank, whichever is less.
- c. Insure that Army aircraft are ready for loading on schedule.
- d. Mark the longitudinal center-of-gravity (CG) and weight on each side of the aircraft fuselage and provide the weight of each aircraft and major component. Insure that the shipping weight does not exceed the maximum weight certified for shipment.
- e. Provide all necessary dunnage, shoring, and/or ramps required to load aircraft and protect cargo aircraft floor.
- f. Furnish, rig, and operate devices not integral to the cargo aircraft loading.
- g. Furnish and operate auxiliary lighting necessary for night loading.
- h. Load Army aircraft aboard cargo aircraft.
- i. Furnish cargo aircraft commander with DD Form 1387-2 in accordance with TM 38-250.
- j. Prepare manifest itemizing weight and location of aircraft, equipment and disassembled components stowed within the cargo aircraft.
- k. Be prepared to demonstrate that disassembled components are packaged correctly and secured in accordance with Air Force restraint requirements.
- l. Unload the aircraft at destination.
- m. Depreserve, reassemble, and prepare aircraft for flight.

3.2.10.1.4 Facility requirements. Indicate specific requirements such as shelter, fire protection, electrical power, grounding, and fresh water.

3.2.10.1.5 Weight and balance. Indicate that the weight and longitudinal CG of the aircraft shall be provided to the loadmaster. Indicate that either of the following procedures is acceptable. The TM shall emphasize the critical nature of determining accurate weight and balance.

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a. Provide procedures for weighing the aircraft in its shipping configuration. Reference the appropriate TM and note any exceptions. Provide instructions for computing the longitudinal CG based on actual weight.

b. Reference shall be made to procedures in Appendix C for computing aircraft shipping weight. Reference shall be made to the maintenance manual from where the instructions are located.

3.2.10.1.6 Security. Specific physical security instructions relevant to shipment of aircraft and equipment onboard shall be provided.

3.2.10.1.7 Safety. General safety considerations applicable to shipment by cargo aircraft shall be listed.

3.2.10.2 Sections II, III, IV, and V – Shipment by C-5, C-17, C-141, and C-130 aircraft. These sections shall contain all information specific to transporting the aircraft by C-5, C-17, C-141, and C130 cargo aircraft respectively. Each section shall contain the same paragraphs and subparagraphs with the same type of information; the only differences shall be the specific information unique to that particular cargo aircraft.

3.2.10.2.1 Characteristics. This paragraph shall provide a brief introduction to the cargo aircraft, its physical characteristics, its operational capabilities, and shall include the following items:

a. Line drawings shall be included showing the cargo aircraft in its operational configuration and configured for loading. Drawings of the operational configuration shall provide overall dimensional data including height, wingspan, and length. Drawings of the loading configuration shall provide all dimensions critical to loading, including ramp dimensions and angles.

b. A general statement shall be made as to the number of aircraft the cargo aircraft can transport for the following types of shipments: tactical; minimum disassembly (logistical), maximum density (logistical), and palletized. The maximum certified shipping weight of the aircraft for transport by cargo aircraft shall be provided.

c. The TM shall include any responsibilities that Army personnel have for preparation of the cargo aircraft. Requirements for ramps and shoring needed for loading and/or protection of the cargo aircraft floor shall be included. Procedures shall be included for calculating shoring dimensions.

d. The TM shall describe safety considerations. Included shall be warnings on jet or prop blasts, engine intakes, and noise hazard diagrams.

3.2.10.2.2 Preparing the aircraft. This paragraph shall detail all requirements for preparing the aircraft for shipment. Requirements shall be included for the four types of shipment. The following shall also be included:

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- a. Left side, front, and top view drawings shall be made of the aircraft in its operational configuration. For TMs covering different models that exhibit external differences, drawings shall be included for each model.
- b. Resources required to ship the aircraft shall be detailed. Quantities shall be shown both for shipping one aircraft and a full load. Notes shall be provided to indicate requirements on a per unit basis, such as one each per aircraft shipped or one per cargo aircraft. This information shall be provided for each type of shipment.
- (1) All tools and equipment shall be listed by nomenclature, reference number, national stock number (NSN), and quantity required. A table shall be included providing comparative quantity data for equipment for the four different types of shipment. Reference shall be made to Appendix E for part number and quantity required, Chapter 7 for fabrication of equipment at the unit level, and Chapter 8 for equipment operating instructions, as applicable.
  - (2) All consumable materials shall be listed by nomenclature, reference number, NSN, and quantity required. Reference shall be made to Appendix D for part number and unit of issue. Include a table to show comparative data for consumable materials, for each type of shipment.
  - (3) Each element and task to be accomplished to prepare for shipment, loading, tiedown, unloading, and preparing the aircraft for flight shall be stated. Personnel requirements, man-hours, and elapsed time shall be provided in a table for each type of shipment.
- c. Reference shall be made to Chapter 6 for detailed information on preservation and packaging.
- d. All tasks required for aircraft disassembly for each type of shipment shall be listed in the order of accomplishment. The appropriate chapter of the maintenance manual shall be referenced for each task. Tasks that are transportability peculiar shall be completely described with drawings or diagrams as necessary.
- e. A scale drawing of the floor plan of the aircraft to be shipped shall be included showing the location and method of securing each item stowed inside. If required for clarification of internal loading, elevation and/or perspective drawings shall be included.

3.2.10.2.3 Loading. This paragraph shall provide detailed information for loading the aircraft. A subparagraph shall be provided for each type of shipment, containing clearance dimensional diagrams for loading ramps and shoring placement. A cargo floor diagram shall be included showing the placement of each aircraft for each of the four types of shipment. Step-by-step instructions shall be provided for loading each aircraft and component. Equipment provided by the Air Force shall be indicated.

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3.2.10.2.4 Tiedown. Detailed procedures required to tiedown the aircraft and components shall be noted. Provide plan, front, rear, and side views to show tiedown installation. This paragraph shall detail equipment and material requirements for shoring and securing the aircraft and components. All equipment used shall be described and pictured, and, instructions for use shall be provided. A table shall be provided listing quantities required to ship one aircraft and also a full load of aircraft for each type of shipment. Equipment to be provided by the Air Force shall be noted.

3.2.10.2.5 Unloading. Step-by-step procedures for unloading shall be provided for each type of shipment.

3.2.10.2.6 Depreservation and reassembly. Step-by-step procedures shall be provided for depreservation and reassembly to return the aircraft to flyable status. Appropriate maintenance manuals shall be referenced by chapter for the procedures. Tasks that are unique to transportability shall be completely described with drawings and diagrams provided as needed.

### 3.2.11 Chapter 3 – Shipment by Vessel.

3.2.11.1 Section I – General. This section shall include all information of a general nature applying to the transport of Army aircraft by vessel and an overview of requirements.

3.2.11.1.1 Types of shipment. This paragraph shall define and describe tactical (flyable) and logistical shipments by lift on/lift off (LOLO) ships, roll on/roll off (RORO) ships, and US Navy air capable ships and the relative merits and disadvantages of each. Reference shall be made to Chapter 5 for complete information on crated and intermodal shipments.

3.2.11.1.2 Responsibilities of Military Traffic Management Command (MTMC). The following responsibilities shall be included:

- a. When contacted by the appropriate command, the MTMC commander will arrange with the Military Sealift Command (MSC) commander for vessel shipment.
- b. The MTMC will prepare the shipment loading plan and manifest based on information provided by the Army loading team.
- c. The MTMC will make arrangements with a stevedore or commercial stevedore firm to load and tiedown the aircraft. The MTMC and MSC will supervise all loading and tiedown procedures.

3.2.11.1.3 Functions of marine terminal personnel. The marine terminal personnel will do the following:

- a. Prepare the vessel for loading.
- b. Provide all necessary dunnage, shoring, and/or ramps needed for loading and unloading.

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- c. Rig and operate all loading/offloading devices.
- d. Perform all loading and offloading functions.
- e. Tiedown aircraft.

3.2.11.1.4 Functions of the Army loading team. The responsibilities of the Army loading team will include:

- a. Coordinate with MTMC the number, type, and weight of aircraft to be shipped, vessel to be used, and the date and time of shipping.
- b. Plan all aspects of the shipment so that required materials, tools, equipment, and manpower are available.
- c. Prepare the aircraft for shipment.
- d. Insure that aircraft are ready for loading on schedule.
- e. Provide technical assistance to MTMC as required for ground handling, loading, tiedown, and unloading.
- f. Insure that provisions are made for enroute maintenance and daily tiedown inspections by Army escort personnel.
- g. Depreserve, reassemble, and prepare aircraft for flight upon arrival at destination.
- h. Coordinate with personnel at AMCOM as to the number and type of aircraft to be shipped, vessel to be used, and the date and time of the movement.

3.2.11.1.5 Equipment requirements. All tools and equipment shall be listed by nomenclature, reference number, NSN, and quantity required. A table shall be included providing comparative quantity data for equipment for the four different types of shipment. References shall be made to Appendix E for part numbers and quantity required, Chapter 7 for fabrication of equipment at the unit level, and Chapter 8 for equipment operating instructions, as applicable.

3.2.11.1.6 Material requirements. All consumable materials shall be listed by nomenclature, reference number, NSN, and quantity required. Reference Appendix D for part number and unit of issue. Include a table to show comparative data for consumable materials for each type of shipment.

3.2.11.1.7 Manpower requirements. Each element and task to be accomplished to prepare for shipment, loading, tiedown, unloading, and preparing the aircraft for flight shall be stated. Personnel requirements, man-hours, and elapsed time shall be provided in a table for each type of shipment.

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3.2.11.1.8 Facility requirements. Indicate specific requirements such as shelter, fire protection, electrical power, fresh water, and grounding.

3.2.11.1.9 Aircraft security. Physical security requirements during preparation and shipment shall be listed.

3.2.11.1.10 Safety. State general safety considerations applicable to shipment by vessel.

3.2.11.1.11 Characteristics. Provide an introduction and general information pertaining to vessel shipment. MTMC restraint criteria for shipment by vessel shall be included. The following three statements shall be included in the TM:

- a. Because of the wide variety of vessel designs, the ship to be used shall be surveyed. The physical characteristics of the vessel will determine its capabilities. In the pre-deployment survey, note layout of tiedown fittings, hatch, hold, door clearances, ventilation system, fire fighting equipment, and capabilities of lifting devices. Ramp angles and ship construction must be surveyed to determine if RORO operations are feasible. Suitability of the below deck environmental conditions shall also be determined.
- b. The number of aircraft that can be shipped in a given vessel is determined by the type of aircraft, the configuration of the aircraft (tactical vs. logistical), and other cargo on board the ship. Stowage of aircraft is normally limited to the first deck below the weather deck due to vessel trim considerations.
- c. Shipment of aircraft above deck (on the weather deck) is considered a high risk option. It should only be used under exceptional conditions because damage to the aircraft is likely.

3.2.11.2 Section II – Tactical shipment. This section shall contain all information pertaining to transporting aircraft in a tactical configuration by vessel.

3.2.11.2.1 Preparing the aircraft. This paragraph shall detail all requirements for preparing the aircraft for tactical shipment by vessel. The categories of information to be entered here shall include the following: drawings; required resources (equipment, consumable materials, and manpower requirements); disassembly, preservation and packing; and load plan. Follow 3.2.10.2.2 for details of the type of information that will go into this paragraph.

3.2.11.2.2 Loading. Detailed information shall be presented for loading the aircraft for LOLO and RORO vessels.

- a. For LOLO vessels detailed instructions shall be included for installing hoisting equipment and tag lines (guide ropes) on the aircraft. Diagrams and/or drawings shall be included as required for clarification. Rigging procedures shall be complete and not reference other publications. Step-by-step instructions shall be provided for loading each aircraft and piece of equipment on-board the vessel. Instructions for maintaining hatch

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clearance shall be provided as required. Diagrams and/or drawings shall be provided as needed. Hoisting procedures shall be complete without reference to other publications.

b. State detailed procedures for loading aircraft on RORO ships. Provide the maximum ramp angles that the aircraft can negotiate without shoring.

c. A plan drawing of the deck shall be provided indicating the placement of aircraft and components.

3.2.11.2.3 Tiedown. This paragraph shall contain all information needed to tiedown aircraft and associated components. The use of “dead man” chains to provide additional tiedown points shall be explained. Provide plan, front, rear, and side views to show tiedown installation. This paragraph shall detail equipment and material requirements for shoring and securing the aircraft and components. All equipment used shall be described and pictured, and instructions for use shall be provided. A table shall be provided listing quantities required to ship one aircraft and also a full load of aircraft for each type of shipment. Equipment provided by the Navy shall be noted.

3.2.11.2.4 Unloading. This paragraph shall provide all information required to offload the aircraft for LOLO and RORO shipments.

3.2.11.2.5 Depreservation and reassembly. Provide step-by-step procedures for depreservation and reassembly to return the aircraft to flyable status. Reference appropriate maintenance manuals by chapter for the procedures. Tasks that are unique to transportability shall be completely described with drawings and diagrams provided as needed.

3.2.11.3 Section III – Logistical shipment. This section shall contain all information specific to transporting the aircraft in maximum density logistical configuration.

3.2.11.3.1 Preparing the aircraft. This paragraph shall detail all requirements for preparing the aircraft for logistical movement by vessel. The categories of information to be entered here shall include: drawings; required resources (equipment, consumable materials, and manpower requirements); disassembly, preservation and packing; and load plan. Paragraph 3.2.10.2.2 shall be followed for details of the type of information that will go into this paragraph.

3.2.11.3.2 Loading. Detailed information shall be presented for loading the aircraft for LOLO and RORO vessels.

a. For LOLO vessels detailed instructions shall be included for installing hoisting equipment and tag lines (guide ropes) on the aircraft. Diagrams and/or drawings shall be included as required for clarification. Rigging procedures shall be complete and not reference other publications. Step-by-step instructions shall be provided for loading each aircraft and piece of equipment on-board the vessel. Instructions for maintaining hatch clearance shall be provided as required. Diagrams and/or drawings shall be provided as needed. Hoisting procedures shall be complete and not reference other publications.

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b. State detailed procedures for loading aircraft on RORO ships. Provide the maximum ramp angles that the aircraft can negotiate without shoring.

c. A plan drawing of the deck shall be provided indicating the placement of aircraft and components.

3.2.11.3.3 Tiedown. This paragraph shall contain all information needed to tiedown aircraft and components. The use of “dead man” chains to provide additional tiedown points shall be explained. Provide plan, front, rear, and side views to show tiedown installation. This paragraph shall detail equipment and material requirements for shoring and securing the aircraft and components. All equipment used shall be described and pictured, and instructions for use shall be provided. A table shall be provided listing quantities required to ship one aircraft and also a full load of aircraft for each type of shipment. Equipment provided by the Navy shall be noted.

3.2.11.3.4 Unloading. This paragraph shall provide all information required to offload the aircraft from LOLO and RORO vessels.

3.2.11.3.5 Depreservation and reassembly. Provide step-by-step procedures for depreservation and reassembly to return the aircraft to flyable status. Appropriate maintenance manuals shall be referenced by chapter for the procedures. Tasks that are unique to transportability shall be completely described with drawings and diagrams provided as needed.

3.2.11.4 Section IV – Shipment by US Navy air capable ships. This section shall contain information specific to transport by and operation from amphibious assault ships (LHA, LHD, LPH), amphibious transport docks (LPD), dock landing ships (LSD), and aircraft carriers (CNV, CV).

3.2.11.4.1 Preparing the aircraft. This paragraph shall detail all requirements for preparing the aircraft for shipment on air capable vessel. The categories of information to be entered here shall include: drawings; required resources (equipment, consumable materials, and manpower requirements); disassembly, preservation and packing; and load plan. Paragraph 3.2.10.2.2 shall be followed for details of the type of information that will go into this paragraph. The differences in preparation requirements shall be specified for aircraft that will be operated and/or maintained during transport and those that will not.

3.2.11.4.2 Loading. Detailed information shall be presented for LOLO operations and fly-on/fly-off operations.

a. Detailed instructions shall be included for LOLO operations. Follow 3.2.11.3.2.a for details of the type of information that shall go into this paragraph.

b. Provide references that govern fly on/fly off operations aboard US Navy ships and the sources for the documents.

c. A plan drawing of the deck shall be provided indicating the placement of aircraft and components as configured for transport.

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3.2.11.4.3 Tiedown. This paragraph shall contain all information required to tiedown aircraft and components. Paragraph 3.2.11.2.3 shall be followed for details of the type of information that shall be in this paragraph.

3.2.11.4.4 Unloading. This paragraph shall provide all information needed to unload the aircraft.

3.2.11.4.5 Depreservation and reassembly. Provide step-by-step procedures for depreservation and reassembly to return the aircraft to flyable status. Reference appropriate maintenance manuals by chapter for the procedures. Tasks that are unique to transportability shall be completely described with drawings and diagrams provided as needed.

### 3.2.12 Chapter 4 – Shipment by Truck.

3.2.12.1 Section I – General. This section shall present information of a general nature pertaining to tactical and logistical shipment by truck. MTMC restraint criteria for shipment by truck shall be included.

3.2.12.1.1 Types of truck shipments. This shall define the various types of truck shipments, including the following:

- a. Tactical (short haul) truck shipments are defined as short haul (less than 100 miles) movement (including aircraft recovery) by an appropriately sized trailer, such as the Army's M270A1 semi-trailer. It is intended to evacuate a disabled aircraft to a maintenance base for repair or preparation for a different mode of transport. In this configuration, the load shall not normally exceed maximum waiverable US highway limits.
- b. Logistical truck shipments are defined as long haul (over 100 miles) movements by standard commercial 30 inch high, low boy semi-trailer. It is intended to evacuate a disabled aircraft to a maintenance facility. In this configuration the load will not normally exceed legal US limits. Serviceable aircraft may be shipped by logistical truck mode when prepared in accordance with these procedures. The following statement shall be included: "Contact for technical assistance in preparing structurally damaged aircraft for shipment can be made with Commander, U.S. Army Research, Development and Engineering Center, ATTN: AMSRD-AMR-SE-TD, Redstone Arsenal, AL 35898-5000.

3.2.12.1.2 Responsibilities of the shipper. This paragraph shall contain an overview of the responsibilities of the shipper and shall include the following:

- a. All shipments shall be coordinated through the supporting transportation office. The shipper shall insure that required highway permits, plus route information, are obtained from the supporting transportation office. The supporting Transportation Officer will provide necessary coordination with the MTMC and local authorities. The shipper will provide the Transportation Officer details and characteristics of the shipment in

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accordance with AR 55-162 for CONUS shipments and local directives for OCONUS shipments.

b. Coordinate the availability of appropriate lifting devices for loading the aircraft. Also, coordinate as needed, with the receiving activity to insure the availability of appropriate lifting devices for unloading the aircraft.

c. Prepare the aircraft for shipment.

d. Provide all necessary equipment and materials to prepare, load, and secure aircraft to the trailer.

e. Furnish and rig all lifting devices.

f. Provide lifting device operator with technical assistance, if needed, in lifting the aircraft.

g. Secure aircraft and components to the trailer as specified in the preparations for shipment manual.

3.2.12.1.3 Equipment requirements. All tools and equipment shall be listed by nomenclature, reference number, NSN, and quantity required. A table shall be included providing comparative quantity data for equipment for the four different types of shipment. References shall be made to Appendix E for part number and quantity required, Chapter 7 for fabrication of equipment at the unit level, and Chapter 8 for equipment operating instructions, as applicable.

3.2.12.1.4 Material requirements. All consumable materials shall be listed by nomenclature, reference number, NSN, and quantity required. Reference Appendix D for part number and unit of issue. Include a table to show comparative data for consumable materials for each type of shipment.

3.2.12.1.5 Manpower requirements. Each element and task required to be accomplished to prepare for shipment, loading, tiedown, unloading, and assembly shall be listed by personnel requirements, man-hours, and elapsed time.

3.2.12.1.6 Facility requirements. Specific facility needs shall be listed.

3.2.12.1.7 Safety requirements. Safety considerations applicable to shipment by truck shall be listed.

3.2.12.2 Section II – Aircraft recovery and tactical transport. This section shall contain information relevant to tactical shipment and recovery of the aircraft by truck.

3.2.12.2.1 Drawings. Left side, front, and top view drawings shall be made of the aircraft prepared for shipment and secured to the M270A1 trailer.

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3.2.12.2.2 Dimensions. The length, height, and width of the trailer and the overall length, height, and width of the load shall be stated.

3.2.12.2.3 Capabilities. Capabilities of the M270A1 trailer shall be listed.

3.2.12.2.4 Limitations. Limitations of the loaded trailer shall be discussed including terrain, surface, slope, speed, weight, and permit requirements.

3.2.12.2.5 Load characteristics. Gross weight, and axle load and spacing for the shipment shall be provided.

3.2.12.2.6 Highway permits. In order to help the shipper in obtaining highway permits, this paragraph shall contain the following:

“It is the responsibility of the shipper to insure that required highway permits are obtained. Permits and routing information are obtained by contacting the supporting Transportation Office. The supporting Transportation Officer will provide necessary coordination with MTMC and local authorities. The shipper will provide the Transportation Officer details and characteristics of the shipment in accordance with AR 55-162 for CONUS shipments and local directives for OCONUS shipments.”

3.2.12.2.7 Preparing the aircraft. This paragraph shall detail all requirements for preparing the aircraft for tactical shipment/recovery by truck.

- a. All tools and equipment shall be listed by nomenclature, reference number, NSN, and quantity required. A table shall be included providing comparative quantity data for equipment for the four different types of shipment. References shall be made to Appendix E for part number and quantity required, Chapter 7 for fabrication of equipment at the unit level, and Chapter 8 for equipment operating instructions, as applicable.
- b. Each element and task to be accomplished to prepare for shipment, loading, tiedown, unloading, and preparing the aircraft for flight shall be stated. Personnel requirements, man-hours, and elapsed time shall be provided in a table for each type of shipment.
- c. Reference shall be made to Chapter 6 for detailed information on preservation and packaging and to Appendix G for aircraft protective covering.
- d. All tasks required for aircraft disassembly shall be listed in the order of accomplishment. The appropriate maintenance manual shall be referenced for each task. Tasks that are transportability peculiar shall be completely described with drawings or diagrams as needed.
- e. If components and/or equipment are required to be placed inside the aircraft for shipment, a scale diagram of the aircraft shall be provided showing components placement and security. Elevations and/or perspective drawings shall be included if required for clarification.

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f. This paragraph shall provide detailed information required to load the aircraft on the semi-trailer. It shall include the following:

(1) Detailed instructions shall be included for installing hoisting equipment and tag lines on the aircraft. Diagrams and/or drawings shall be included as required for clarification.

(2) Step-by-step instructions shall be included for loading the aircraft and each piece of equipment onboard the trailer. Diagrams and/or drawings shall be provided as needed.

(3) A plan drawing of the trailer shall be provided indicating the placement of the aircraft and each component. If ballast is required, the amount and location shall be detailed.

(4) Information needed to tiedown the aircraft and components shall be stated. Material and equipment requirements for shoring and tiedown of aircraft and components shall be listed. Also, detailed procedures shall be listed. Plan, front, rear, and side views of tiedown installations shall be shown.

g. Provide step-by-step procedures for unloading the aircraft and components.

h. Provide step-by-step procedures for depreservation and reassembly. Reference appropriate maintenance publications for each step. Tasks that are transportability peculiar shall be completely described with drawings and diagrams provided as needed.

3.2.12.3 Section III – Logistical transport (long haul) by truck. This section shall contain information for logistical shipment of the aircraft by truck.

3.2.12.3.1 General. This paragraph shall provide an introduction to the standard commercial, 30-inch high, lowboy semi-trailer, its capabilities and limitations. The paragraphs and subparagraphs in this section shall have the same headings and contain the same types of information as found in 3.2.12.2.

3.2.13 Chapter 5 – Crated and Intermodal Container Shipment.

3.2.13.1 Section I – Crated shipment. Procedures applicable to crated shipments shall be included in this section. If crated shipment procedures are not applicable to certain aircraft, the following statement shall be included, “Crated shipment is not applicable to Army model (insert model and nomenclature of the aircraft).”

3.2.13.1.1 Characteristics. This paragraph shall include the intended use of crated shipment, intended modes of transport, and the advantages and disadvantages of crated shipment.

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3.2.13.1.2 Handling methods. Handling methods and devices shall be identified, described, and pictured as required.

3.2.13.1.3 Security requirements. Physical security needs relevant to crated shipment of the aircraft and components shall be indicated.

3.2.13.1.4 Facility requirements. Information on facility requirements such as shelter, overhead crane, electricity, etc. required during crating of the aircraft shall be provided.

3.2.13.1.5 Equipment. All tools and equipment shall be listed by nomenclature, reference number, NSN, and quantity required. A table shall be included providing comparative quantity data for equipment for the four different types of shipment. References shall be made to Appendix E for part number and units of issue, Chapter 7 for fabrication of equipment at the unit level, and Chapter 8 for equipment operating instructions, as applicable.

3.2.13.1.6 Consumable materials. All consumable materials shall be listed by nomenclature, reference number, NSN, and quantity required. Reference Appendix D for part number and unit of issue. Include a table to show comparative data for consumable materials, for each type of shipment.

3.2.13.1.7 Manpower requirements. A listing shall be made for each element and task required to prepare for shipment, disassemble, preserve, crate, uncrate, reassemble, and return the aircraft to flyable status. Personnel requirements, man-hours, and elapsed time shall be provided for each task.

3.2.13.1.8 Aircraft preparation. This paragraph shall provide all information needed to prepare the aircraft for crating.

a. Step-by-step instructions shall be provided for preparing the aircraft for intermediate storage. Reference shall be made to applicable maintenance manuals or Chapter 6 of the TM, as appropriate.

b. This paragraph shall provide step-by-step instructions for aircraft disassembly required for crated shipment. Procedures in the maintenance manuals shall be referenced. For procedures peculiar to crated shipment and/or transportability, detailed instructions shall be included with drawings and diagrams as needed for clarification.

3.2.13.1.9 Crating. This paragraph shall include dimensioned drawings and all instructions for constructing the crate, packing the aircraft and components, and marking the crates.

a. Include the list of materials, working drawings, and instructions for constructing the crates.

b. Include step-by-step instructions for packing the aircraft and components. A drawing shall be included showing the completed crating.

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c. This subparagraph shall contain marking information. It shall include the following:

- (1) Mark each side and end of each crate with 2-inch letters, "USE NO GRAB HOOKS".
- (2) Stencil opening instructions in 1-inch letters on one end of each crate.
- (3) Indicate the center of balance of loaded crates with a painted vertical strip on each side of the crate. Stencil "CENTER OF BALANCE" in 1-inch letters adjacent to the strips.
- (4) Indicate sling points by conspicuous arrows and "SLING HERE" in 1-inch letters.
- (5) Stencil in 1-inch letters adjacent to inspection doors, "PRESERVED FOR INTERMEDIATE STORAGE. REPRESERVE IF NOT ACTIVATED BY (insert that date which is 180 days after the aircraft was initially preserved)".
- (6) The level of preservation shall be marked as level C, which is designed to protect an item for limited storage and immediate use. The preservation level shall be comparable to that described in MIL-STD-129 (part 4). The level of packing shall also be marked as level C, which provides minimum protection to meet conditions of a known favorable logistics path. The packing level shall be comparable to that described in MIL-STD-129. See MIL-STD-129 (part 4) for additional reference.

3.2.13.1.10 Unpacking and reassembly. Step-by-step instructions shall be provided for uncrating, depreservation, reassembly, and returning the aircraft to flyable status. Applicable procedures in maintenance manuals shall be referenced. For tasks unique to crated shipment and/or transportability, detailed procedures shall be provided to include drawings and diagrams, as needed.

3.2.13.2 Section II – Intermodal container shipment. This section shall contain information specific to containerized transport of the aircraft. If containerized shipment is not appropriate for a specific aircraft, the following statement shall be included, "Intermodal container shipment is not applicable to Army model (insert the model and nomenclature of the aircraft)."

3.2.13.2.1 Characteristics. This paragraph shall provide an introduction to intermodal containers and a description of available containers. It shall also include the intended use of containerized shipment and its advantages and disadvantages.

3.2.13.2.2 Drawings. Drawings showing interior dimensions of containers and of the aircraft prepared for containerized shipment shall be provided.

3.2.13.2.3 Security requirements. Physical security requirements for containerized shipment shall be listed.

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3.2.13.2.4 Facility requirements. Information shall be provided on facility requirements such as electricity, overhead crane, shelter, etc. needed during loading of the aircraft into a container.

3.2.13.2.5 Safety requirements. Indicate special safety considerations applicable to containerized shipment.

3.2.13.2.6 Equipment requirements. All tools and equipment shall be listed by nomenclature, reference number, NSN, and quantity required. A table shall be included provided comparative quantity data for equipment for the four different types of shipment. References shall be made to Appendix E for part numbers and quantity required, Chapter 7 for fabrication of equipment at the unit level, and Chapter 8 for equipment operating instructions, as applicable.

3.2.13.2.7 Consumable materials. All consumable materials shall be listed by nomenclature, reference number, NSN, and quantity required. Reference Appendix D for part number and unit of issue. Include a table to show comparative data for consumable materials, for each type of shipment.

3.2.13.2.8 Manpower requirements. A listing shall be made for each element and task required to prepare for shipment, disassemble, preserve, containerize, remove from container, reassemble, and return the aircraft to flyable status. Personnel requirements, man-hours, and elapsed time shall be provided for each task.

3.2.13.2.9 Aircraft preparation. This paragraph shall provide all information needed to prepare the aircraft for containerized shipment

a. This paragraph shall provide step-by-step instructions for aircraft disassembly required for crated shipment. Procedures in the applicable maintenance manuals shall be listed. For procedures peculiar to crated shipment and/or transportability, detailed instructions shall be included with drawings and diagrams as needed for clarification.

b. If components and/or equipment are required to be placed inside the aircraft for shipment, a scale diagram of the aircraft shall be provided showing components placement and security. Elevations and/or perspective drawings shall be included if required for clarification.

3.2.13.2.10 Loading. This paragraph shall provide detailed information needed to load the aircraft in an intermodal container. Step-by-step instructions shall be provided for loading the aircraft and each component in the container. Instructions for maintaining wall clearance shall be provided as required. Diagrams and/or drawings shall be provided as needed for clarification. A plan view of the container shall be provided indicating the placement of the aircraft and each component.

3.2.13.2.11 Tiedown. This paragraph shall contain all information required to tiedown aircraft and components in the container.

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- a. List equipment and material requirements needed to tiedown the aircraft and components. Instructions for use of tiedown equipment shall be provided.
- b. Detailed procedures for tiedown shall be included. Provide plan, front, rear, and side views to show tiedown installation.

3.2.13.2.12 Unloading. Provide step-by-step procedures for unloading the container.

3.2.13.2.13 Depreservation and reassembly. Step-by-step procedures shall be provided for depreservation, reassembly, and returning the aircraft to flyable status. Reference shall be made to appropriate maintenance publications for each step. Tasks that are transportability peculiar shall be completely described with drawings and diagrams as needed.

3.2.14 Chapter 6 – Preservation and Packaging.

3.2.14.1 Section I – General. This section shall explain the necessity for preservation measures. It shall identify and discuss the three types of storage (flyable, short term, and intermediate) and the preservation methods of each.

3.2.14.2 Section II – Aircraft cleaning.

3.2.14.2.1 General. This paragraph shall describe the need for cleaning the aircraft prior to shipment and the consequences if it is not done.

3.2.14.2.2 Equipment requirements. All tools and equipment shall be listed by nomenclature, reference number, NSN, and quantity required. A table shall be included providing comparative quantity data for equipment for the four different types of shipment. References shall be made to Appendix E for part number and quantity required, Chapter 7 for fabrication of equipment at the unit level, and Chapter 8 for equipment operating instructions, as applicable.

3.2.14.2.3 Materials. All consumable materials shall be listed by nomenclature, reference number, NSN, and quantity required. Reference Appendix D for part number and unit of issue. Include a table to show comparative data for consumable materials for each type of shipment.

3.2.14.2.4 Manpower. A list of personnel requirements, man-hours, and elapsed time shall be provided to clean the aircraft.

3.2.14.2.5 Procedures. Step-by-step procedures for cleaning the aircraft shall be listed. References shall be made to specific procedures in maintenance manuals.

3.2.14.3 Section III – Preservation of aircraft.

3.2.14.3.1 General. Rationale shall be provided for preserving aircraft for the various periods of inactivity.

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3.2.14.3.2 Equipment. Equipment required for aircraft preservation shall be listed. Make reference to Appendix E for part numbers and NSN's. Provide a table indicating equipment needed for each term of inactivity.

3.2.14.3.3 Materials. List materials needed for aircraft preservation by noun nomenclature, reference number, and quantity. Make reference to Appendix D for part number and unit of issue. Provide a table indicating materials needed for each term of inactivity.

3.2.14.3.4 Manpower. A list of personnel requirements, man-hours, and elapsed time to preserve the aircraft shall be provided in tabular form for each task and each term of inactivity.

3.2.14.3.5 Procedures. Step-by-step procedures for preserving aircraft for each period of inactivity shall be listed. Reference procedures in maintenance manuals, as applicable.

3.2.14.4 Section IV – Preservation and packaging of components.

3.2.14.4.1 Procedures. Procedures shall be provided for preservation and packaging of each component that may be removed from the aircraft for shipping. These procedures shall be complete and referenced by the applicable TM.

3.2.14.4.2 Manpower. A table shall be prepared listing personnel, man-hours and elapsed time to complete preservation and packaging operations for each component that requires removal.

3.2.14.4.3 Materials. All consumable materials shall be listed by nomenclature, reference number, NSN, and quantity required. Reference Appendix D for part number and unit of issue. A table indicating materials needed for each term of inactivity shall be provided.

3.2.14.4.4 Packaging. Special containers used for transportability, if applicable, shall be described in this paragraph and listed in Appendix E. Containers manufactured at unit level with multiple transportability mode usage shall be described. Drawings, materials lists, and construction procedures shall be contained in Chapter 7 and referenced.

3.2.14.5 Section V – Marking of aircraft/preparation of shipping documents. This section shall contain all information pertaining to marking and labeling the aircraft and components. Also included shall be instructions for completing shipper-prepared documents.

3.2.14.5.1 Identification. Instructions shall be provided to identify each removed component with the serial number of the aircraft from which it was removed and the component's condition.

3.2.14.5.2 Color coding. Indicate that rotor blades and controls shall be properly color coded prior to removal to insure that they will be installed in the proper position.

3.2.14.5.3. Preservation information. Note that such information shall be supplied by tagging each aircraft in a conspicuous location with the following: "AIRCRAFT PRESERVED FOR UP TO (insert specified number of day)", and 'REPRESERVE IF NOT ACTIVATED BY (insert

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that date which is equal to the “preserved to” date plus a specified number additional days)”. The same information shall be included with the shipping documents.

3.2.14.6 Section VI – Depreservation and reassembly. Step-by-step procedures shall be provided for depreservation and reassembly to return the aircraft to flyable status. Reference appropriate maintenance manuals by chapter and paragraph for the procedures. Tasks that are unique to transportability shall be completely described with drawings and diagrams provided as needed.

3.2.15 Chapter 7 – Transportability Equipment Fabricated at Unit Level.

3.2.15.1 General. This chapter shall include drawings, materials, instructions, and manpower requirements for the construction of equipment made at the unit level. If such equipment is not used for preparing specific aircraft for shipment, the TM shall make it clear that transportability equipment fabricated at the unit level does not apply to that specific aircraft.

3.2.16 Chapter 8 – Operator and Maintenance Instructions for Transportability Equipment Including Repair Parts and Special Tools List.

3.2.16.1 Section I – Operator instructions. This section shall provide detailed instructions on the proper installation and use of all transportability equipment. Separate instructions shall be provided for the disassembly of equipment and special packaging for the return of transportability equipment to the specialized control point. A separate paragraph shall be included for each item.

3.2.16.2 Section II – Repair/overhaul procedures. This section shall describe unit, intermediate, and depot repair/overhaul procedures for transportability equipment.

3.2.16.3 Section III – Repair parts and special tools list (RPSTL). This section shall be arranged in figure and item number sequence. It shall provide an illustrated breakdown and tabular listing. The listing shall show illustration figure and item number, Source Maintenance Recoverability (SMR) Code, NSN, Commercial and Government Entity (CAGE) Code, part number, description, unit of issue, and quantity required. A separate paragraph shall be provided for each item of transportability equipment and in the same format as the aircraft RPSTL.

3.2.17 Chapter 9 – External Transport by Helicopter (Aerial Recovery).

3.2.17.1 Section I – General.

3.2.17.1.1 Types of transport. This paragraph shall list the types of helicopters capable of providing external transport of the aircraft and an overview of the types of rigging available. Data shall be provided indicating the relative advantages and disadvantages of each.

3.2.17.1.2 Functions of aircraft recovery team. The following functions shall be included:

- a. Provide information to the recovery aircraft crew including type, weight, location, and condition of the aircraft to be recovered.

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- b. Provide all equipment and materials required to prepare and rig disabled aircraft for transport.
- c. Prepare and rig disabled aircraft.
- d. Hook up disabled aircraft to recovery helicopter.

3.2.17.1.3 Safety. Safety considerations applicable to external transport by helicopter shall be listed. This shall include inspection and load testing of rigging equipment.

3.2.17.1.4 Structurally damaged aircraft. Include the following statement in Chapter 9 of the TM, “When structural damage causes doubt as to the successful use of the procedures in this chapter for transportation, contact Commander, U.S. Army Research, Development and Engineering Center, ATTN: AMSRD-AMR-SE-TD, Redstone Arsenal, AL 35898-5000.”

3.2.17.1.5 Drag. Data shall be presented in the TM concerning the approximate flat plate drag equivalent of the external load.

3.2.17.2 Section II – Single cargo hook roto head lift. This section shall provide all information required to rig and transport the helicopter using the rotor head as the lift point and a recovery helicopter equipped with a single cargo hook.

3.2.17.2.1 Lift factors. This paragraph shall provide specific lift information including the recovery helicopters approximate for this type lift, weight of the aircraft to be recovered, and flight parameters of the recovery helicopter including, but not limited to, maximum air speed, maximum angle of bank, maximum wind velocity during pickup, and requirement for a drogue chute, when necessary.

3.2.17.2.2 Preparing the aircraft. This paragraph shall list requirements for preparing the aircraft for external transport using a single cargo hook rotor head lift. The following information shall be included:

- a. All tools and equipment shall be listed by nomenclature, reference number, NSN, and quantity required. A table shall be included providing comparative quantity data for equipment for the four different types of ships. References shall be made to Appendix E for part number and quantity required, Chapter 7 for fabrication of equipment at the unit level, and Chapter 8 for equipment operating instructions, as applicable.
- b. All consumable materials shall be listed by nomenclature, reference number, NSN, and quantity required. Reference shall be made to Appendix D for part number and unit of issue. Include a table to show comparative data for consumable materials for each type of shipment.

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c. A list shall be provided for the required personnel, man-hours, and elapsed time for each task to be accomplished in preparing, rigging, and hooking up the aircraft for transport.

d. All tasks required for aircraft preparation shall be listed in the order of accomplishment. The appropriate chapter of the maintenance manual shall be reference for each task. Tasks that are transportability peculiar shall be completely described with drawings or diagrams, as needed.

e. If components and/or equipment are required to be placed inside the aircraft for shipment, a scale diagram of the aircraft shall be provided showing components placement and security. Elevations and/or perspective drawings shall be included, if required for clarification.

f. Detailed instructions shall be included for installing rigging equipment on the aircraft to be transported. Drawings and/or diagrams shall be included as required. Detailed information shall be provided on sling leg dimensions and link count.

g. Detailed instructions shall be provided for hook up of the rigged aircraft to the transport helicopter.

3.2.17.2.3 Reassembly. Step-by-step instructions shall be provided for removing rigging and reassembly of the helicopter. Detailed instructions shall be provided for any needed special inspections. Reference shall be made to appropriate maintenance manuals for each task. Tasks that are transportability peculiar shall be completely described with drawings and/or diagrams provided as necessary.

3.2.17.3 Section III – Single cargo hook hard point lift. This section shall provide all information needed to rig and transport the helicopter using airframe hard points as the lift point and a recovery helicopter equipped with a single cargo hook. The paragraphs and subparagraphs in this section shall have the same format and the same type of information found in Section II.

3.2.17.4 Section IV – Dual cargo hook rotor head lift. This section shall provide all information required to rig and transport the helicopter using the rotor head as the lift point and a recovery helicopter equipped with dual cargo hooks. The paragraphs and subparagraphs in this section shall have the same format and contain the same type of information found in Section II.

3.2.17.5 Section V – Dual cargo hook hard point lift. This section shall provide all information required to rig and transport the helicopter using the airframe hard points as the lift point and a recovery helicopter equipped with dual cargo hooks. The paragraphs and subparagraphs in this section shall have the same format and the same type of information found in Section II.

3.2.17.6 Section VI – Single cargo hook belly band lift. This section shall provide all information required to rig and transport the aircraft using belly band type rigging and a recovery helicopter equipped with a single cargo hook. The paragraphs and subparagraphs in this section shall have the same format and contain the same types of information found in Section II.

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3.2.17.7 Alternate methods. The five methods of aerial recovery discussed in Chapter 9 are applicable to aircraft in the inventory. If future aircraft require a different method to conduct an aerial recovery, then such a method(s) shall be described in detail in the same format as the existing methods are.

3.2.18 Appendix A – References. This appendix shall list all references used with the TM or cited in it.

3.2.19 Appendix B – Preservation/Depreservation Check Sheets. This appendix shall provide instructions on the preparation, use, and disposition of check sheets prepared on DA Form 2408-13-2-E. Sample check sheets shall be provided for transport by cargo aircraft, vessel, truck and external lift helicopter. The instructions that are to be provided shall be in accordance with DA Pam 738-751. Each check sheet shall list all steps necessary to disassemble, preserve, depreserve, reassemble, and prepare the aircraft for flight for the worst case scenario of preservation for each mode of shipment. Items that apply only to depreservation shall be included on the form and the appropriate status symbol will be entered at the time the aircraft is prepared for shipping. Instructions shall note that the entry will be signed off as required upon depreservation.

3.2.20 Appendix C – Weight and Balance Information for Transportability. This appendix shall contain all weight and arm data required to compute weight and balance data for each type of transport by cargo aircraft.

3.2.21 Appendix D – Consumable Materials List. This appendix shall alphabetically list all consumable materials used in disassembly, packaging, loading, tiedown, unloading, depreservation, and reassembly of aircraft for all types and modes of shipment. The list shall include noun nomenclature, reference number, NSN, part number, specification number, source of supply, unit of issue, and quantity needed per aircraft. The remarks section shall also note to which mode of transportation the item pertains.

3.2.22 Appendix E – Special Tools and Equipment List. This appendix shall alphabetically list all tools and equipment used in disassembly, preservation, loading, tiedown, unloading, depreservation, and reassembly of the aircraft for all types and modes of shipment. The list shall include noun nomenclature, reference number, NSN, part number, quantity required, and line item number, if applicable. There shall be a remarks section to indicate if equipment is fabricated at the unit level, level of support where the item is available, and if the item is part of a kit or set. If the item is part of a set or kit, the nomenclature, NSN, and line item number of the kit or set shall be included. The remarks section shall also note which mode of transportation to which the item pertains. Also, a notation shall be made that the item is either transportability peculiar (TP) or multipurpose (MP). MP tools and equipment are those items used for both transportability and maintenance.

3.2.23 Appendix F – Quarantine Inspection/Customs Clearance. This appendix shall outline procedures for preparing the aircraft and removed components for quarantine inspection. The

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step-by-step procedures shall be in accordance with AR 40-12 and TM 5-632. Procedures shall also be included for customs clearance.

**3.2.24 Appendix G – Heat Shrink Film Protective Covering.**

3.2.24.1 General. This appendix shall provide procedures to assist personnel in the installation of protective covering on the aircraft.

3.2.24.2 Safety. This paragraph shall identify required safety procedures for application of heat shrink film.

3.2.24.3 Aircraft preparation. This paragraph shall provide instructions for the preparation of the aircraft for the application of heat shrink film. Instructions for needed padding shall also be included.

3.2.24.4 Application of film. This paragraph shall describe the characteristics of the film, the operation of the heat cannon, and the procedures for covering, fusing, shrinking, and inspecting the covering.

3.2.24.5 Fuel and battery vents. This paragraph shall list procedures to insure that fuel and battery vents are vented to the atmosphere during shipment.

3.2.24.6 Installation of ventilators. Information on the need to vent the covering and instructions for the installation of ventilators shall be provided.

3.2.24.7 Hoisting. Procedures for hoisting the aircraft with the shrink film covering installed shall be provided.

3.2.24.8 Tiedown points. Procedures for restraining the aircraft with shrink film covering installed shall be listed.

3.2.24.9 Enroute maintenance. Instructions shall be provided for enroute maintenance of the shrink film.

3.2.24.10 Removal of shrink film. Procedures shall be provided for the removal of shrink film covering.

3.2.24.11 Tools and equipment. All tools and equipment shall be listed by nomenclature, reference number, NSN, and quantity required. References shall be made to Appendix E for part number and quantity required, Chapter 7 for fabrication of equipment at the unit level, and Chapter 8 for equipment operating instructions, as applicable.

3.2.24.12 Consumable materials. All consumable materials shall be listed by nomenclature, reference number, NSN, and quantity required. Reference Appendix D for part number and unit of issue. Include a table to show comparative data for consumable materials for each type of shipment.

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3.2.24.13 Manpower. An estimate shall be made of the personnel needs, required man-hours, and elapsed time for application and removal of heat shrink film.

3.2.24.14 Safety check sheet. A safety check sheet shall be developed for the application of heat shrink film. These requirements shall be included in the preservation/depreservation check sheets for truck and vessel shipment in Appendix B.

#### 4. VERIFICATION

4.1 General. This section shall include all activities to be performed to determine that the item to be offered for acceptance conforms to the requirements in Section 3 of the specification. The requirements shall be verified by following the procedures outlined in the TM to determine if the desired result can be achieved.

4.1.1 Validation. A 100 percent validation of the procedures outlined in the TM shall be performed for technical accuracy and adequacy of content. Validation includes, but is not limited to, the actual performance of operating procedures. It also shall include review of instructions and associated checklists for disassembly and assembly, and technical accuracy and adequacy. Transitions from, references to, and sequences of tasks/task segments, shall be validated in the final PDEP product as a whole.

Tasks in the PDEP may be validated at any time. There is no requirement that they be done together or in any particular sequence. The only requirement is that the task selected for validation be performed completely, so that the task can be inspected for technical adequacy. No task segment which stops short of achieving the task goal shall be considered as validated.

4.1.1.1 Performance. The PDEP shall be reviewed for:

- a. Conformance to applicable requirements of the governing documents. This review shall include editorial reviews of the manuscript.
- b. Technical accuracy and adequacy of the content. This review shall include the actual performance of all of the instructions required to prepare the aircraft for shipment. It shall also include, but not be limited to, a review of the essential need and adequacy of illustrations cited in the text and the adequacy of references cited.

4.1.2 Verification. All procedures outlined in the TM, to include external transport by helicopter, are subject to verification unless specifically excluded in contract documents. The methods listed are in addition to reviewing the publication for conformance to the requirements of the governing documents. Verification may be accomplished by performing 100 percent of the operating procedures in the TM by using military operational and support personnel of the type and qualifications of those expected to maintain and support the equipment when deployed. Each procedure shall be performed successfully at least once. The desk review shall include a check of those portions of the publication not subject to hands-on performance, such as index, content, proper style, and adequacy of writing.

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5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (6.2). when actual packaging of materiel is to be performed by DOD or in-house personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the Military Service's System Command. 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 which may be helpful but is not mandatory.)

6.1 Intended use. This specification is to be used for information and guidance in writing technical manuals for the preparation of aircraft for shipment by cargo aircraft, vessel, truck, and external lift by helicopter.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of specification
- b. Provide publication number if different than what is specified in the specification (see 3.1.3).
- c. Provide publication date if different than date prescribed in the specification (see 3.1.4).
- d. Placement of the supersession notice if different than required by the specification (see 3.1.6).
- e. Type of revision to prepare (see 3.1.14).
- f. Use of new change symbols (3.1.14.2).
- g. Do not prepare a change record if other than as specified (see 3.1.15)
- h. Front matter composition if other than as specified (see 3.2.1).
- i. A separate cover page and title page are required (see 3.2.2).
- j. Use of an abbreviated title page (see 3.2.2).
- k. Omit date from the cover page (see 3.2.2).

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- l. Manual requires a backbone (see 3.2.2).
- m. Place certain notices on the reverse side of the title page (see 3.2.2).
- n. Use distribution statement other than Statement A (see 3.2.3).
- o. Include a warning page (see 3.2.5).
- p. Prepare an index regardless of the number of paragraphs, unless instructed not to (see 3.2.8).
- q. Location of warnings and cautions should be other than specified (see 3.2.9.2.3).
- r. 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 cleared and listed in DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL) 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.

6.4.1 Caution. Highlights an essential operating or maintenance procedure, practice, condition, statement, etc. which, if not strictly observed, could result in damage to, or destruction of, equipment or loss of mission effectiveness.

6.4.2 Complete revision. A complete revision requires rewrite or reorganization of the technical content of the material and is prepared in accordance with the current content specification and as outlined by this specification.

6.4.3 Draft equipment publication (DEP). Those publications prepared during the full scale development phase of the equipment which are used for Technical Test I (TTI) and user tests, usually with prototype models of equipment. The DEP is also used for coordination and review by user agencies and for verification. The DEP also designates the publication that is sent for user coordination during revision of the DA equipment publications. It is an updated version of the PDEP. The term replaces preliminary technical manual.

6.4.4 Final draft equipment publication (FDEP). Those publications prepared during the final development or initial production phase of the equipment of the equipment and used for printing of the DA equipment publication. The term replaces final reproducible copy.

- a. The FDEP is the final document with illustrations, ready for transmittal to the US Army Publication and Printing Command for printing and publication as an authenticated

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DA equipment publication. It includes all necessary changes and final resolutions of all comments and recommendations made as a result of technical and user testing, if conducted, service test, validation/verification, user coordination, and maintenance literature conference.

b. This definition replaces terms formerly used to refer to publications used for the above purpose and phase of development.

6.4.5 Maximum density (logistical) shipment. One of three types of logistical shipments. It is associated with shipment of aircraft for new system fielding and to and from maintenance depots. Primary consideration is to reduce dimensions of aircraft to permit high density loading. This configuration is a compromise between maximizing density and the effort required to disassemble and assemble the aircraft. It may not be applicable to all modes of shipment.

6.4.6 Minimum disassembly (logistical) shipment. This type of logistical shipment is used when less than maximum density of aircraft is required during shipment.

6.4.7 Nonsuperseding revision. A revision which does not supersede the preceding edition. When a new manual is needed to cover a different configuration of a system or equipment for which there is a high degree of commonality, a nonsuperseding revision can be published to minimize cost. A nonsuperseding revision will stand on its own and should be identified by a unique TM identification number.

6.4.8 Note. Highlights an essential operating or maintenance procedure, condition, or statement.

6.4.9 Palletized shipment. One type of logistical shipment whose primary objective is rapid loading/offloading of aircraft. The aircraft is partially disassembled and secured to a series of pallets. The main disadvantage is that the loading of the pallets onboard the cargo aircraft requires a specialized loader.

6.4.10 Pickup revision. A pickup revision incorporates the basic TM, all previous changes and the new data that would require the issuance of an additional change. Only those changed, revised, or added pages should have the current change number and date. Other existing pages should be reissued without changes to dates, change symbols or other modification.

6.4.11 Preliminary draft equipment publication (PDEP). Those publications prepared during the development phase of the equipment which are used for validation and early technical and user testing. The PDEP need not conform to format requirements of the applicable specification. It may be in the form of printed books or manuscript, or they may be a package of documentation such as a draft maintenance allocation charts, engineer drawings, or technical data extracted from the Logistics Support Analysis Record (LSAR). The PDEP replaces the review draft copy.

6.4.12 Tactical shipment. This type of shipment is designed to arrive at the destination with aircraft in flyable or nearly flyable status. Primary concern is to avoid removal of components. Density of load is a secondary consideration.

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6.4.13 Transportability peculiar. That which is unique to transportability functions and not authorized for maintenance tasks.

6.4.14 Updated revision. An updated revision incorporates the basic manual, all previous changes, and new data that would require the issuance of an additional change. The update is prepared by incorporating applicable portions of pages in the TM without requiring rewrite or reorganization of the technical content of the material. It is prepared in the style and format of the basic TM.

6.4.15 Warning. Highlights an essential operating or maintenance procedure, practice, condition, statement, etc. which if not strictly observed, could result in injury to, or death of, personnel or long term health hazards.

6.4.16 Subject term (key word) listing.

- Aerial recovery
- Air capable ship
- Aircraft, cargo
- Assembly
- Changes
- Depreservation
- Disassembly
- Ground handling
- Hoisting
- Lift on/lift off (LOLO)
- Intermodal
- Maximum density
- Minimum disassembly
- Number, publication
- Page, warning
- Palletized
- Preservation
- Rigging
- Roll on/roll off (RORO)
- Statement, distribution
- Tiedown
- Transport
- Transportability peculiar
- Weight and balance

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6.5 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  
Army – AV

PREPARING ACTIVITY  
Army – AV

(Project No. TMSS-2008-019)

REVIEW ACTIVITY:  
Army - TM

NOTE: The activities listed above were 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>.