NOT MEASUREMENT SENSITIVE

MIL-DTL-81310G(AS)
31 March 2008

SUPERSEDING
MIL-DTL-81310F(AS)
19 March 2004

DETAIL SPECIFICATION

MANUALS, TECHNICAL: AIRBORNE WEAPONS/STORES LOADING/ WEAPONS ASSEMBLY/SUPPORT EQUIPMENT CONFIGURATION

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

1. SCOPE

1.1 Scope. This specification covers the requirements for the preparation of technical manuals (TMs) and checklists for aircraft preparation, for functionally testing various armament systems, and for loading/unloading conventional airborne weapons/stores that are approved for carriage on/in naval aircraft, conventional weapons assembly and airborne weapons support equipment description/configuration. Also included are requirements for the preparation of an airborne weapons/stores publication index. The requirements are applicable for both paper and digitally displayed page-oriented TMs and checklists.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

Comments, suggestions, or questions on this document should be addressed to Commander, Naval Air Systems Command, 41K000B120-3 Highway 547, Lakehurst, NJ 08733-5100 or email to michael.sikora@navy.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at http://assist.daps.dla.mil.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-28000 - Digital Representation for Communication of Product Data: IGES Application Subsets and IGES Application Protocols

MIL-PRF-28002 - Raster Graphics Representation in Binary Format, Requirements for

MIL-PRF-28003 - Digital Representation for Communication of Illustration Data: CGM Application Profile

MIL-DTL-31000 - Technical Data Packages

MIL-DTL-87268 - Interactive Electronic Technical Manuals - General Content, Style, Format, and User-Interaction Requirements

DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-9660 - Handbook for DoD-Produced CD-ROM Products

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

2.2.2 Other Government documents, drawings and publications. The following other Government documents, drawings and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

EXECUTIVE ORDERS

EO 12958 - Classified National Security Information

(Copies of Executive Orders are available online from the National Archives at http://www.archives.gov/federal-register/executive-orders/.)

DEPARTMENT OF DEFENSE DIRECTIVES/REGULATIONS

DoD 5200.1R - Information Security Program Regulation

DoD 5220.22-M - National Industrial Security Program Operations Manual

DoD 5230.24 - Distribution Statements on Technical Documents

(Copies of DoD Directives and Regulations are available online from the Defense Technical Information Center at http://www.dtic.mil.)

DEPARTMENT OF THE NAVY INSTRUCTIONS

OPNAVINST 4790.2 - The Naval Aviation Maintenance Program

SECNAVINST 5510.30 - Department of the Navy Personnel Security Program Instruction

(Copies of DoN Instructions are available online from the Defense Technical Information Center at http://www.dtic.mil.)

NAVAL AIR SYSTEMS COMMAND MANUAL

NAVAIR 00-25-600 - Technical Manual In-Process Review, Validation, and Verification Guide

(Copies of NAVAIR technical manuals are available online from the Naval Air Technical Data and Engineering Service Command at https://www.natec.navy.mil/.)

2.3 Non-Government publications.The following documents form a part of this document to the extent specified therein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Y14.15 - Electrical and Electronics Diagrams

ANSI Y32.10 - Diagrams, Fluid Power, Graphic Symbols for

(Copies of the documents listed above are available online at http://www.ansi.org/ or from the American National Standards Institute Inc., 25 West 43rd Street, New York, NY 10036.)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME-Y14.5M - Dimensioning and Tolerancing

ASME-Y14.100 - Engineering Drawing Practices

ASME-Y32.2.6 - Graphic Symbols for Heat-Power Apparatus

(Copies of the documents listed above are available online www.asme.org or from ASME Information Central Orders/Inquiries, P.O. Box 2300, Fairfield, NJ 07007-2300.)

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 91 - Graphic Symbols for Logic Functions

IEEE 200 - Reference Designations for Electrical and Electronic Parts and Equipments

IEEE 260.1 - Letter Symbols for Units of Measurement

IEEE 280 - Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering

IEEE 315 - Graphic Symbols for Electrical and Electronic Diagrams

IEEE 315a - Supplement to Graphic Symbols for Electrical and Electronic Diagrams

(Copies of the documents listed above are available from www.ieee.org or IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854-1331.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the 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.

3. REQUIREMENTS

3.1 General. Unless otherwise specified (see 6.2), preparation of technical manuals (TMs), checklists, and the airborne/stores loading publication index shall be in accordance with the instructions and requirements outlined herein. The requirements are applicable for the output of paper technical manuals or for scrollable, linear structured TMs that can be displayed on a Portable Electronic Display Device (PEDD) (see 6.4.8). These scrollable, linear structured TMs are hereafter referred to as Electronic Technical Manuals (ETMs).

3.1.1 Data. Requirements for technical manual data established by this specification shall be prepared as specified in the contract.

3.1.2 ETM. An ETM is a technical manual normally prepared from a linear Standard Generalized Markup Language (SGML) (see 6.4.11) or Extensible Markup Language (XML) (see 6.4.5) document file. The ETM is also displayed on a Portable Electronic Display Device (PEDD) as a scrollable, linear structured document and may employ a combination of an automated intelligent index, prompted dialog boxes, and content-driven logical "NEXT" functions.

3.1.3 Preparation of digital data for electronic delivery. Technical manual and checklist data delivered digitally in accordance with this specification shall be XML-tagged and assembled using the Document Type Definition (DTD) (see 6.4.4). XML tags used in the DTD are noted throughout the text of this specification in bracketed, bold characters (e.g., <**safesum**>), as a

convenience for the TM author and to denote the appropriate tag to be used for this specific information when developing a document instance.

3.1.4 Use of the DTDs. The DTD interprets the technical content and structure for the functional requirements contained in this specification and is mandatory for use. The DTD and associated tag and attribute descriptions, which are XML constructs, may be obtained from the requiring activity (see 6.4.9).

3.1.5 Technical content. Technical content requirements contained in this specification are considered mandatory and are intended for compliance. The content structure for the technical data being developed shall conform to the associated DTD.

3.1.5.1 Technical data differences. TMs and checklists incorporating different models/series numbers, modifications, variations, effectivities, etc., shall cover all differences that affect procedural information by flagging and other means to ensure full coverage.

3.1.6 Development of an XML source file. An XML-tagged source file is composed of the applicable TM technical content in XML-coded ASCII, marked up (tagged) in accordance with the DTD. In order to tag text appropriately, the author inserting the tags shall be familiar with the DTD or shall provide the text file to a person who is experienced with the DTD and who understands the type of documentation being written, especially when content tags are used.

3.1.7 Standard tables. Standard tables are noted throughout the text of this specification in bold and in parentheses (e.g., **(standard table)**). The table head titles and structure of these standard tables shall have no deviations.

3.2 Level of writing. Level of writing shall be clear to an Aviation Ordnance "A" school graduate, or equivalent of the rating, maintaining the equipment.

3.3 Security classification. If classified information is required to satisfy manual requirements stated herein, a classified supplement shall be prepared. The requirements for handling classified material shall be in accordance with DoD 5200.1R, DoD 5220.22-M, SECNAVINST 5510.30, and Executive Order 12958. For guidance on security classification and handling restrictive markings on Compact Disk-Read Only Memory (CD-ROM), refer to MIL-HDBK-9660.

3.4 Types of manuals/checklists. The technical content, style and format requirements provided in this specification are to be used for the preparation of the following types of technical manuals and checklists.

a. Airborne weapons/stores loading manuals <**weapons-loading-manual**>.

b. Airborne weapons assembly manuals (WAM) <**weapons-assembly-manual**>.

c. Armament weapons support equipment (AWSE) configuration manuals <**awse-manual**>.

d. Airborne weapons/stores loading checklists <**weapons-checklist**>.

e. Release and control system checklists <**release-ctrl-sys-checklist**>.

f. Arm/dearm checklists <**arm-dearm-checklist**>.

g. Airborne weapons assembly checklists <**weapons-assembly-checklist**>.

h. Standalone checklists <**standalone-checklist**>.

i. Airborne weapons/stores publication index <**weapons-publication-index**>.

3.5 Arrangement and technical content of manuals. Each manual prepared in accordance with this specification shall be divided into sections. Mandatory section numbers for technical content are noted in parentheses in steps below. Supporting illustrations shall be provided as necessary throughout the manual. The manual shall be arranged as follows:

3.5.1 Airborne weapons/stores loading manuals <**weapons-loading-manual**>.

a. Front matter <**front-weapons-loading**>.

b. Introduction (Section I) <**intro-section**>.

c. Description (Section II) <**desc-section**>.

d. Configuration data (Section III) <**config-data-section**>.

e. Release and control system checks (Section IV) <**release-ctrl-sys-checks-section**>.

f. Common procedures (Section V) <**common-proc-section**>.

g. Specific loading and unloading procedures (Section VI and subsequent) <**loading-unloading-proc-section**>.

h. Glossary <**glossary**>.

3.5.2 Airborne weapons assembly manuals (WAM) <**weapons-assembly-manual**>.

a. Front matter <**front-wam**>.

b. Introduction (Section I) <**intro-section**>.

c. Description (Section II) <**desc-section**>.

d. Configuration data (Section III) <**config-data-section**>.

e. Test and reprogramming (if applicable) (Section IV) <**test-and-reprogramming-section**>.

f. Common procedures (Section V) <**common-proc-section**>.

g. Assembly and disassembly procedures (Section VI and subsequent) <**assem-disassem-proc-section**>.

h. Glossary <**glossary**>.

3.5.3 Armament Weapons Support Equipment (AWSE) configuration manuals <**awse-manual**>**.**

a. Front matter <**front-awse-manual**>.

b. Introduction (Section I) <**intro-section**>.

c. Common procedures (Section II) <**common-proc-section**>.

d. Configuration data (Section III and subsequent) <**config-data-section**>.

e. Glossary <**glossary**>.

3.6 Arrangement and technical content of checklists.

3.6.1 Content of checklist. Except for standalone checklists, all checklists shall be an abbreviated version of procedural information contained in the applicable weapons/stores loading, release and control, or Armament Weapons Support Equipment (see 6.4.2) configuration section of the associated manual. Checklists prepared for aircraft/equipment incorporating different model/series numbers, modifications, variations, effectivities, etc., shall cover all differences that affect procedural information by flagging or other means to ensure full coverage. Standalone checklists shall be more inclusive in their coverage. In-depth procedural information, where required, concerning authorized/recommended AWSE, release and control test procedures, and detailed aircraft/weapons inspection and loading will be provided. Supporting illustrations shall be included in checklists as necessary. In determining the depth of coverage, the following assumptions shall be made:

a. Firefighting equipment is available.

b. The aircraft/equipment is properly serviced and positioned for loading/configuration (wheels chocked and tiedowns installed as required); ready to receive accessory equipment and/or weapon/store.

c. All ground safety devices installed and, as applicable, cockpit ready to receive/remove power.

d. Standard aircraft system checks (other than armament) completed.

e. Aircraft/armament safety precautions complied with.

f. Weapons/stores positioned and secured on approved handling equipment.

g. After loading/unloading, handling and/or safety equipment will be removed from the area.

h. Safety and reliability are of primary importance and will be stressed in all applicable portions of the checklists.

3.6.1.1 Weapons/stores loading checklist content (as applicable) <**weapons-checklist**>.

a. Front matter <**front-weapons-checklist**>.

b. Aircraft preparation/inspection <**aircraft-prep-inspect-check**>.

c. Weapons/stores inspection <**weapons-inspect-check**>.

d. Weapons/stores loading <**weapons-loading-check**>.

e. Postloading inspections <**postloading-insp-check**>.

f. Prior to launch <**prior-to-launch-check**>.

g. After launch <**after-launch-check>**.

h. After landing or ground abort <**after-landing-ground-abort-check**>.

i. Weapons/stores unloading <**weapons-unloading-check**>.

j. Turnaround **<turnaround-check>**.

k. Additional procedures <**additional-proc-check**>.

3.6.1.2 Release and control system checklist content (as applicable) <**release-ctrl-sys-checklist**>.

a. Front matter <**front-load-release-checklist**>.

b. Aircraft preparation <**aircraft-prep-inspect-check**>.

c. Release and control system checks <**release-ctrl-sys-check**>.

d. Postcheck procedures <**postcheck-check**>.

e. Additional procedures <**additional-proc-check**>.

3.6.1.3 Arm/Dearm checklist (as applicable) <**arm-dearm-checklist**>.

a. Front matter <**front-arm-dearm-checklist**>.

b. Prior to launch procedures <**prior-to-launch-check**>.

c. After landing or ground abort procedures <**after-landing-ground-abort-check**>.

d. Turnaround procedures <**turnaround-check**>.

e. Additional procedures <**additional-proc-check**>.

3.6.1.4 Weapons assembly checklist content (as applicable) <**weapons-assembly-checklist**>.

a. Front matter <**front-wam-checklist**>.

b. Applicable sections for weapons/component inspection, assembly and disassembly <**weapons-assembly-check**>, <**weapons-disassembly-check**>.

c. Other sections as needed.

3.6.1.5 Standalone checklist content (as applicable) <**standalone-checklist**>.

a. Front matter <**front-standalone-checklist**>.

b. Aircraft preparation <**aircraft-prep-inspect-check**>.

c. Release and control system check <**release-ctrl-sys-check**>.

d. Postcheck procedures <**postcheck-check**>.

e. Weapons inspection <**weapons-inspect-check**>.

f. Weapons loading <**weapons-loading-check**>.

g. Postloading inspections <**postloading-insp-check**>.

h. Prior to launch <**prior-to-launch-check**>.

i. After launch <**after-launch check**>.

j. After landing or ground abort <**after-landing-ground-abort-check**>.

k. Weapons unloading <**weapons-unloading-check**>.

l. Additional procedures <**additional-proc-check**>.

3.7 Airborne weapons/stores publication index. The airborne weapons/stores publications index will list all the weapons/stores checklists, loading manuals, WAM manuals, and checklists. The content will be arranged in a tabulated listing of loading manuals and weapons/stores checklists, in that order, for each aircraft (see figure 1). Aircraft will be listed in alphanumeric sequence. Issue dates of the basic publications will be included and change numbers and dates with national stock numbers and WEB references will be listed, if applicable. When applicable, a tabulated listing of deleted publications shall follow the index of manuals and checklists. Deleted publications shall be listed in alphanumeric order by aircraft. Front matter for the airborne weapons/stores publication index shall consist of a title page (see figure 2), a point of contact listing (see figure 3) and a table of contents (see figure 4).

3.8 Front matter. Except for the airborne weapons/stores publication index, all manuals and checklists shall contain the following front matter unless otherwise noted below.

a. ETM installation data (ETMs and ETM checklists only), if applicable.

b. CD label and flyleaf data (ETMs and ETM checklists only), if applicable.

c. Content data (ETMs and ETM checklists only), if applicable.

d. Title page <**titlepg**> (see figure 5). The distribution statements and destruction notices appearing on the title pages contained in figure 5 are examples only. The appropriate and latest distribution statements and destruction notices shall be provided by the requiring activity as selected from DoD 5230.24 (see 6.2).

e. List of effective pages <**niep**>, <**niep-checklist**> (Page-based TMs and checklists) or Change summary <**change-summary-info**> (ETMs and ETM checklists) (see figure 6).

f. Promulgation page <**prompg**> (Airborne weapons/stores and WAM manuals only) (see figure 7).

g. Technical Publication Deficiency Report (TPDR) incorporation page <**tpdrpg**> (Manuals only). A technical publication deficiency list shall be prepared, if applicable <**tpd**> **(standard table)** (see figure 8).

h. Table of contents <**toc**> (see figures 9 and 18 through 20). (Page-based TMs and checklists only.)

i. List of content <**loc**> (ETMs and ETM checklists only).

j. "How to Use This ETM" information <**how-to-use-etm-info**> (ETMs and ETM checklists only).

k. Introduction <**intro**> (Checklists only).

l. Required reading <**reqread**> (Checklists only).

m. List of illustrations <**loi**> (Manuals only) (see figure 10).

n. List of tables <**lot**> (Manuals only) (see figure 11).

o. Safety summary <**safesum**> (Manuals, Arm/Dearm and Standalone checklists only) (see figures 12, 17 and 20).

p. Hazardous material warnings <**hmwspg**> (WAM manuals only) (see figure 13).

q. Warnings and cautions <**warnings-cautions**> (WAM checklists only) (see figure 14).

r. Table of aircraft armament switches (Arm/Dearm checklists only) (see figure 15). **<aircraft-arm-switches-table> (standard table)**

s. Additional front matter, if applicable **<additional-info>**. Any additional front matter that may be peculiar to a specific manual (e.g., Air Force emergency procedure data in a standalone checklist).

3.8.1 Introduction (checklists only). The checklist introduction (see figures 16 through 20) shall contain the following information as applicable:

a. A statement that the procedures therein are abbreviations of the appropriate manual (except for standalone checklists).

b. Purpose of the checklist.

c. Other clarifying information concerning utilization of the content therein.

3.8.2 Required reading (checklists only). The required reading section (see figures 16 through 20) shall contain the following information as applicable:

a. A background paragraph clarifying the step/section performance sequence.

b. A list of directives associated with the armament system including Aircraft Service/Airframe Changes, Aviation Armament Changes/Bulletins, Armament Material Changes/Bulletins, Avionics Changes/Bulletins, Accessory Change Bulletins, and Support Equipment Changes/Bulletins. Normally only those directives that must be referenced by number in the checklist text will be listed.

c. Preloading checks.

d. Applicable restrictions.

e. A list of recommended handling/loading equipment, and when applicable, a separate list of test equipment and/or special tools shall be provided (see figures 18 and 20).

f. Applicable manuals for flight authorization shall be listed under the heading "Verified Weapons Loading."

g. Other clarifying information as specified (see 6.2) by the responsible activity (see 6.4.10), when applicable.

3.9 Introduction <**intro-section**>. An introduction shall be prepared for all types of manuals. Checklists shall also contain an introduction, but it shall be part of the front matter (see 3.8.1). The introduction for all manuals, except the airborne weapons/stores publication index, shall contain the following data, as applicable. The introduction for the airborne weapons/stores publication index shall contain the statements and notes shown in figure 21.

a. Purpose <**purpose**>.

b. Scope <**scope**>.

c. Requisitioning and distribution <**req-and-distrib**>.

d. Changes to manual <**changes-to-manual**>.

e. Arrangement of manual <**arrangement**>.

f. Warnings, cautions, and notes <**warning-caution-not**e>.

g. Aircraft effectivities (loading manuals only) <**aircraft-effectivities**>.

h. How to use the manual <**how-to-use**>.

i. Assumptions <**assumptions**>.

j. Reference publications <**reference-pubs**>. A reference publications table shall be prepared. **<reference-pubs-table> (standard table)** (see figure 22).

k. Technical directives <**tech-directives**>. A record of applicable technical directives **<ratd> (standard table)** shall be prepared (see figure 23).

l. Introductory information for illustrated parts breakdown (IPB) data (weapons assembly manual only) <**ipb-intro**>. When (IPB) data is included in the WAM, introductory information

for (IPB) data shall be included in the introduction. The IPB introductory information shall explain the use of the IPB listings and related figures as outlined in 3.9.1

3.9.1 Explanation of IPB data. The IPB explanation shall follow all other introductory information in the WAM introduction. The IPB explanation shall include, but not be limited to, the following:

a. Joint service requirements <**intropara**>. Complete identifying information is required if the IPB is to be used by another service that designates the end item by its own type, model or serial numbers.

b. Index number entry <**intropara**>. Explain the sequencing of index numbers and their use in the IPB illustration.

c. Part number entry. Explain the meaning of a dash (-) or "COML."

d. Description entry. Explain the following entries, if applicable:

(1) Indention to show relationship, numbers and leaders (periods).

(2) Preceding symbols (HCI or ESD).

(3) Manufacturer's code.

(4) Any "make-from" parts shall include specific part number and source for the source stock item.

(a) Appearance in listing, including suppression of the Government and/or prime contractor's codes. When the prime contractor's code is suppressed, the code must be identified in the introduction.

(b) Reference shall be made to the H-4/H-8 catalog series for detailed information.

(5) Conditional acronym or abbreviation (LOX/QEC/MAG).

(6) Method of listing attaching parts.

(7) Parts kits. Method of listing, including indention.

(8) Amplifying information.

e. Units per assembly entry. Any unusual entries.

f. Useable on code entry. Application and Alternate/Equivalent/Redesigned parts.

g. Source, maintenance, and recoverability (SM&R) codes <**intropara**>. An

explanation of SM&R codes, with an appropriate supporting illustration, shall be included. Reference to the specific issue of the NAVAIR instruction to which the end item was provisioned shall be made. Explain the method of provisioning used for multiple applications of identical parts and the specific impact on the listed SM&R codes (e.g., first occurrence coding). In addition, the NAVICP P2300 series publications shall be cited as the source for the most current SM&R code listed in an IPB and if different than the manual, the manual requires an update to reflect any related maintenance instructions.

3.10 Description <**desc-section**>. Descriptive information shall be prepared for the airborne weapons/stores loading and airborne weapons assembly manuals only.

3.10.1 Airborne weapons/stores loading manuals.

a. Introduction.

b. Airframe.

(1) Aircraft external hazards.

(2) Ground safety devices.

(3) External power and grounding.

c. Aircraft armament systems.

(1) Armament system.

d. Component description and location.

(1) Armament system basic controls.

e. Operational description of armament sub-systems.

f. Suspension/accessory equipment.

(1) Parent rack.

(2) Accessory racks.

(3) Launchers.

(4) Adapters.

(5) Other accessories.

g. Mechanical/electrical fuzes.

h. Cartridges and cartridge activated devices.

(1) Impulse cartridges.

(2) Spotting charges.

i. Weapons/stores.

(1) Bombs, retard/nonretard.

(2) Guided bomb units (GBUs).

(3) Cluster bomb units (CBUs).

(4) Firebombs.

(5) Air-laid mines.

(6) MK-60 series mines.

(7) Glide weapons.

(8) Torpedoes.

(9) Pyrotechnics.

(10) Dispensers.

(11) Practice bombs.

(12) Search stores.

(13) Electronic countermeasures (ECM).

(14) Forward firing weapons.

(a) Missiles.

(b) Rocket launchers.

(c) Guns.

(15) Specialized stores.

(a) ECM pods.

(b) Fuel tanks/external baggage container.

(c) Camera.

(d) Cargo pods.

(e) Other.

j. Armament weapons support equipment (AWSE).

(1) Armament support equipment (ASE).

(2) Weapons support equipment (WSE).

(3) Logistics support equipment (LSE).

k. Safety/protective devices/special tools.

(1) Safety devices.

(2) Protective devices.

(3) Special tools.

3.10.2 Weapons assembly manuals. Weapons assembly manuals descriptive data preparation will differ depending on weapon/weapon series to be addressed. At a minimum, this section shall consist of the following:

a. Introduction.

b. Weapon/components.

c. Armament weapons support equipment (AWSE).

(1) Armament support equipment (ASE).

(2) Weapons support equipment (WSE).

(3) Logistics support equipment (LSE).

3.11 Configuration data <**config-data-section**>. The configuration data described in 3.11.1 through 3.11.3 shall be prepared for the airborne weapons/stores loading, WAM, and AWSE manuals.

3.11.1 Airborne weapons/stores loading manuals.

a. Introduction.

b. Aircraft configuration conversion (tables, charts, narrative or combinations thereof).

(1) Installation and removal of accessory suspension equipment (see 6.4.1).

(2) Others, as required.

3.11.2 WAM manuals.

a. Introduction.

(1) Listing of tables defining appropriate AWSE for handling and transporting weapons during assembly and disassembly.

(2) Others, as required.

3.11.3 AWSE configuration manuals. Information for inspecting and configuring each end item of basic mobile support equipment authorized for use with weapons/stores shall be provided. For each trailer/munitions transporter, a section shall be provided for the configuration and authorized adapter. A table shall be provided for the authorization of weapons/stores for transportation and loading. The data shall be arranged in sections in alpha numeric sequence by trailers and munitions transporters being first, followed by powered transporters. Each section shall consist of the following data.

a. Introduction.

b. Special tools and equipment.

c. Equipment preparation/inspection.

d. Configuration.

3.12 Release and control or test and reprogramming checks (as applicable) <**release-ctrl-sys-checks-section**>. Unless otherwise specified (see 6.2), the following release and control or test and reprogramming check information shall be developed for the weapons/stores loading manual and the WAM only.

a. Introduction.

b. How to use this section **<titledpara>**. Presentation shall also include a table **<preloading-checks-table> (standard table)** (see figure 24) that lists each weapon/store or group of weapons/stores which may be loaded on the aircraft and the system checks that shall be performed.

c. Armament weapons support equipment (AWSE).

d. Aircraft preparation (loading manuals only).

e. Preparation (weapons assembly manuals only).

f. Release and control system checks (loading manuals only). Release and control system check procedures shall be prepared as a table **<system-checks-table> (standard table)** (see figure 25).

(1) Jettison system check (emergency, selective wing, etc.).

(2) Normal release system checks (parent rack, bomb rack, wing release, ASE (installed), arming checks, rockets, etc.).

(3) Gun system check (internal, gun pods, crew served).

(4) Missile system check (air-to-ground, air-to-air).

(5) Specialized stores system checks (data pods, ECM, tacts, sonobouys, etc.).

g. Test and reprogramming checks (weapons assembly manuals only).

(1) When applicable, a mission data loading table **<mission-data-loading-table> (standard table)** (see figure 26) or mission data downloading table <**mission-data-downloading-table**> (**standard table**) (see figure 27) shall be provided.

h. Individual system checks (loading manuals only). Individual system check procedures shall consist of the following paragraphs in the order shown.

(1) Test equipment required.

(2) Applicable technical directives.

(3) Check preparation.

(4) Check procedure. Check procedure shall be prepared as a table **<system-checks-table> (standard table)** (see figure 25).

i. Postcheck procedures. Explanation that postcheck procedures must be performed upon completion of the last release and control system check to ensure that the aircraft is returned to a safe condition and ready to load. Explanatory statement shall be followed by procedural step(s) as necessary to accomplish postcheck procedures.

3.13 Common procedures <**common-proc-section**>. The common procedural information described in 3.13.1 through 3.13.3 shall be prepared, as applicable, for the airborne weapons/stores loading, WAM, and AWSE manuals.

3.13.1 Airborne weapons/stores loading manuals.

a. Introduction. Statement that this section contains procedures which are common to more than one section in the manual and which must be performed to complete a safe and reliable weapons/stores loading evolution. These procedures are presented once in this section to avoid repetition and are referenced in other sections.

b. Emergency procedures. A brief paragraph explaining the following:

(1) Firefighting.

(2) Medical.

(3) Security.

c. Aircraft preparation. Sequential presentation of steps, illustrated for clarity, which are common to more than one section of the manual such as procedures for aircraft grounding and parent rack preparation. Presentation shall include a tabulated listing of armament switches and circuit breakers and required positions to safe the system **<arm-control-switches-table> (standard table)** (see figure 28). Steps shall include procedures to ensure that the aircraft is fully prepared to accomplish a complete loading evolution in a safe and reliable manner.

d. Accessory suspension equipment. Sequential presentation of steps, illustrated for clarity, for accomplishing functions which may be common to more than one loading and unloading evolution in Section VI and subsequent sections. Procedures pertaining to aircraft accessory equipment shall be presented first, and procedures pertaining to weapons/stores shall be presented last. Where special test equipment is required, it shall be identified by nomenclature and part number. Sequence of heading presentation is as follows:

(1) MER/TER/BRU-41/42 preparation/inspection.

(a) Swaybrace adjustment.

(b) Safety stop lever positioning/electrical safety pin installation.

(c) Suspension hook release.

(d) MER/TER mode selector setting.

(e) Cartridge installation.

(f) Other.

e. Hoist loading configuration. A brief paragraph defining hoist loading configuration followed by procedural data required to configure hoisting equipment. Sequence of heading presentation is as follows:

(1) Installation.

f. Stray voltage checks. A brief paragraph defining stray voltage check followed by procedural data required to perform the check. Sequence of heading presentation is as follows:

(1) Stray voltage procedures.

g. General fuze handling and safety precautions. A brief paragraph defining general fuze handling followed by safety precautions and procedural data required to handle fuzes. Sequence of heading presentation is as follows:

(1) Fuze procedures.

(2) Electric fuze arming safety switch.

h. Arming wire procedures. A brief paragraph providing general arming wire routing/configuration to include attachment of wire to lugs, proper length and installation of prefabricated or composite wire, followed by procedural data required. Sequence of heading presentation is as follows:

(1) General procedures.

(2) Fabrication of arming wires.

i. Other. Procedural data and/or tables necessary to accommodate yet to be identified common procedures shall be provided, as applicable.

(1) Mission data loading table <**mission-data-loading-table**> **(standard table)** (see figure 26) or mission data downloading table **<mission-data-downloading-table> (standard table)** (see figure 27).

(2) Aircraft/weapons marriage check table <**marriage-check-table**> **(standard table)** (see figure 29).

j. Arming and safety signals listing of standardized arming safety signal illustrations. A table of aircraft arming and safety signals <**aircraft-arm-safety-table**> **(standard table)** shall be included (see figure 30).

k. Authorized armament/weapons handling equipment combinations for handling and loading. A brief paragraph defining equipment compatibilities and use followed by table

depicting all authorized equipment used in loading and transportation. All equipment listed will be illustrated and described in Section II.

3.13.2 WAM manuals.

a. Introduction. Statement that this section contains procedures which are common to more than one section in the manual and which shall be performed to complete a safe and reliable weapons assembly/disassembly. These procedures are presented once in this section to avoid repetition and are referenced in other sections.

b. Emergency procedures. A brief paragraph explaining the following:

(1) Firefighting.

(2) Medical.

(3) Security.

c. Suspension lug installation. A brief paragraph explaining procedural data required for installation of suspension lugs on weapons.

d. Arming wire procedures. A brief paragraph providing general arming wire routing/configuration to include attachment of wire to lugs, proper length and installation of prefabricated or composite wire, followed by procedural data required. Sequence of heading presentation is as follows:

(1) General procedures.

(2) Fabrication of arming wires.

e. Weapons assembly tools/equipment requirements. A brief paragraph referring to table for tool/equipment requirements.

f. Other requirements. Procedural data and/or tables necessary to accommodate yet to be identified procedures.

3.13.3 AWSE configuration manuals.

a. Introduction.

b. Equipment preparation.

c. AWSE marking and weapons positioning.

d. Authorized equipment/equipment combinations for weapons/stores handling and loading.

3.14 Specific weapon/store, group loading and unloading procedures (Loading manuals only) <**loading-unloading-proc-section**>. For each weapon/store or family group authorized for loading into or onto the aircraft, a separate section shall be prepared containing complete loading through unloading procedures. Where procedures are common to a family group of weapons, the series shall be covered as a single weapon in a family group, e.g., Mk 81, Mk 82 and Mk 83 general purpose bombs. Unless otherwise specified (see 6.2) by the requiring activity (see 6.3 and 6.4.9), section sequence and content presentation shall be as follows:

a. Bombs, retard/nonretard.

b. Guided bomb units (GBUs).

c. Cluster bomb units (CBUs).

d. Fire bombs.

e. Air-laid mines.

f. MK 60 series mines.

g. Glide weapons.

h. Torpedoes.

i. Pyrotechnics.

j. Dispensers.

k. Practice bombs.

l. Search stores.

m. Fuel tanks/external baggage containers/starter pods.

n. Electronic countermeasures (ECM).

o. Rocket launchers: Unless otherwise specified by the requiring activity (see 6.2), launcher tube loading procedures shall not be included.

p. Missiles: A separate section will be prepared for each type missile. Unless otherwise specified (see 6.2), all models of each missile will be covered in a single section. Sections shall be sequenced according to mission and numerical designation as follows:

(1) Air-to-air.

(2) Air-to-ground.

q. Guns/gun pods/gun turret systems.

r. Electronic pods.

s. Tactical air launch decoy (TALD).

t. Others.

3.14.1 Introduction. Identification of weapons/stores or a family group of weapons authorized for aircraft loading and for which loading procedures are relatively common. If too numerous, weapons/stores shall be presented in list form. Technical directives applicable to loading shall be listed. A note shall follow the introductory paragraph and precede the listing of weapons/stores and shall be worded as follows:

"NOTE

For specific authorization, refer to appropriate aircraft NATOPS/tactical manual."

a. Armament weapons support equipment (AWSE). A paragraph referring to the applicable table in Section V for armament weapons support equipment. A paragraph of approved/authorized special tools and test equipment shall follow the AWSE paragraph listing special tool(s) (e.g., fuzing tools, rack unloading tools, etc., and if applicable, test equipment).

b. Aircraft preparation/inspection. Sequential listing of steps, illustrated as necessary for clarity, which shall be accomplished to prepare the aircraft for loading. Listing shall consist of those common aircraft preparation procedures presented in Section V and shall be followed by additional steps as may be required to complete preparation of the aircraft for the specific loading evolution.

c. Weapon/store inspection. Sequential listing of steps, illustrated as necessary for clarity, which shall be accomplished to complete an inspection of the weapon/store to be loaded: to include related components (e.g., fuzes, arming devices, etc.) and to ensure weapon/store serviceability and safety. Listing shall consist of those common inspection procedures presented in Section V and shall be followed by additional steps as may be required to complete weapon/store inspection.

d. Weapon/store loading. Under this title the following shall be covered:

(1) Preparation. Sequential listing of steps that shall be performed prior to loading to ensure maximum safety of personnel, equipment and aircraft. Procedures shall ensure that all applicable aircraft controls, switches, circuit breakers, etc., are in an OFF or SAFE position; that all applicable safety devices are installed in the aircraft, accessory equipment, and weapons/stores; and that all weapon explosive components are safed. Steps shall be illustrated as necessary in the interest of safety.

(2) Loading. Sequential listing of steps, illustrated as necessary for clarity, which must be accomplished to complete the loading of a specific weapon/store. Coverage shall include differences between shipboard and shore based operations. Where a particular weapon/store may be loaded with both powered and manually operated equipment, procedures for power equipment shall be presented first. Single weapons/stores loading shall include lifting and attachment of individual weapons/stores to the aircraft suspension equipment. Steps involving safety of personnel and equipment (installation of arming wires, safety pins, breech caps, etc.) shall be illustrated. Where applicable, data such as identification of arming wires, impulse cartridges, etc., shall be presented in tabulated form.

(3) Other. Mission data loading table <**mission-data-loading-table**> **(standard table)** (see figure 26) and aircraft/weapons marriage check table <**marriage-check-table**> **(standard table)** (see figure 29) shall be provided, as applicable.

e. Postloading inspection. Sequential listing of steps that must be accomplished on the aircraft system, accessories, and individual weapon(s)/store(s) following loading to ensure that the weapon/system is operationally ready and in a safe configuration. Steps shall include checks for position of cockpit switches/circuit breakers, installation of accessory safety devices, installation of bombs and fuzes, removal of fuze safety devices, etc.

f. Prior to launch. Under this title, the following shall be covered:

(1) Rearming area. Sequential listing of steps required to prepare a loaded aircraft for launch. Steps shall include, as applicable, removal of safing devices, checks for stray voltage, securing access doors/panels, etc. Sequences of presentation will be as follows:

(a) Rearming area (before engine turnup).

(b) Rearming or arming area (after engine turnup).

(c) Arming area.

g. After landing or ground abort. Statement explaining that these procedures pertain to an aircraft that has returned from a mission with weapons not expended or to an aircraft with loaded weapons as a result of a ground abort. Procedures for safing and turnaround will be included. Under this title, the following shall be covered:

(1) Safing.

(a) Dearming area (before engine shutdown).

(b) Dearming or rearming area (immediately after engine shutdown).

(c) Turnaround. Procedures to relaunch the partially loaded aircraft when the aircraft does not require reconfiguration. Steps shall include all procedures for safing the weapon system for turnaround and only refer to previous steps, checks, or procedures for

reinspection of the weapons/stores, and for reaccomplishment of postloading inspection and prior to launch procedures. Steps necessary to reload the empty station on a partially loaded aircraft, which does not require configuration, shall include complete preparation of the loaded aircraft for subsequent mission. Steps shall refer to previously accomplished procedures as necessary to complete the operation.

h. Unloading. Under this title, the following shall be covered:

(1) Steps that must be performed prior to unloading to ensure maximum safety of personnel, equipment, and aircraft. Procedures shall ensure that all applicable aircraft controls, switches, circuit breakers, etc., are in OFF or SAFE position; that all applicable safety devices are installed in the aircraft, accessory equipment, and weapons/stores; and that all weapon explosive components are safed. Steps shall be illustrated as necessary in the interest of safety.

(2) Mission data downloading table **<mission-data-downloading-table> (standard table)** (see figure 27) shall be provided if applicable.

(3) Steps necessary to unload weapons/stores or family groups from the loaded aircraft. Sequence of presentation by weapon type shall be the same as used in loading procedures. Procedures applicable to more than one weapon rack or aircraft station shall be presented once and cross-referenced for remaining racks/stations. Steps shall be illustrated as necessary in the interest of safety.

3.15 Specific weapons assembly/disassembly procedures (weapons assembly manuals only) <**assem-disassem-proc-section**>. For each weapon or family group, a separate section shall be prepared containing complete weapon assembly/disassembly procedures. Where procedures are common to a family group of weapons, the series shall be covered as a single weapon in a family group. Section sequence will be presented according to numerical sequence of weapons (e.g., AIM-7, AIM-9, etc.). Inspection procedures and inspection criteria for the canning and decanning of the missile shall be included, as applicable. Inspection criteria may be provided in an inspection criteria table **<inspect-criteria-table> (standard table)** (see figure 31). When applicable, illustrated parts breakdown (IPB) data shall be included for each weapon or family group. The IPB shall be included following the weapon assembly/disassembly procedures in each section, as applicable. The IPB shall be prepared in accordance with the requirements provided in 3.15.1.

3.15.1 IPB data prepared as an integral part of each weapon section <**ipb**>. When applicable, IPB data shall be prepared as an integral part of each weapon section of the WAM and shall be included after the last weapon assembly/disassembly procedure. Only those parts necessary to perform the assembly/disassembly procedures shall appear on the illustration and be listed in the group assembly parts list (GAPL). The IPB shall consist of IPB introductory information and IPB figure(s). Each IPB figure consists of an illustration and a related GAPL (see figure 32).

a. IPB introductory information. Introductory information shall include a reference to the IPB data. When usable on codes are needed to reflect multiple application of items in an

individual GAPL, a master usable on code list shall be included. For multi-volume TMs, the introductory information shall include a reference to the IPB introductory information in volume 1 that explains the use of the IPB listings and related figures.

b. IPB illustration. Each illustration shall adequately identify and locate repair parts. Multiple-view and multiple-sheet illustrations may be used. All illustrations shall precede the GAPL and, for greater clarity, be integrated with the maintenance procedures.

c. IPB GAPL. The GAPL <**gapl**> (**standard table**) shall be prepared as a tabular listing of all authorized repair parts for use in the performance of maintenance. Basic top-down breakdown sequence shall not be used in the development of the GAPL data, unless it matches the maintenance task to be performed. The GAPL entries are described in 3.15.1.1 through 3.15.1.8.

3.15.1.1 Index numbers. The index numbers that appear in the associated supporting illustrations shall appear as an entry under the heading "INDEX NO." in numerical sequence beginning with the number 1. Index numbers shall be assigned to all parts listed in the GAPL that have maintenance or supply significance, except as otherwise noted herein. Index numbers shall be first assigned to the GAPL and then applied to the IPB illustrations to maintain the proper sequence in the breakdown. If the same part number is listed more than once in the breakdown, it shall be assigned a different index number for each listing. No index number shall be assigned to an assembly when all detail parts are indexed, unless such assembly is also illustrated completely assembled on the illustration.

3.15.1.2 Index numbers for attaching parts.

a. Normally, index numbers shall be assigned to all attaching parts.

b. Fastening groups used at the same location (for example, a relay attached by multiple nuts, bolts, and washers) need not be individually illustrated or identified by index number, unless maintenance significant. When group callouts are used, they shall contain only one particular size, combination, or group of parts.

(1) Each size, combination, or group of parts shall be listed separately.

(2) If an identical part, appearing at several locations, is attached with different attaching parts, the part shall be indexed separately.

(3) If more than one size or type of attaching part is used at different points on the part being attached, each size (with the pertinent attaching parts such as washer and nut) shall be given a separate index number so that the location of the different sizes and types may be readily identified in the illustration.

3.15.1.3 Part numbers.. All end items, repair parts and items of support equipment provisioned for the applicable maintenance level support of the article shall be listed by part

number. Part numbers assigned to the parts listed shall appear as an entry under the heading "PART NUMBER."

a. Parts not to be listed. The following parts shall not be listed:

(1) Assembly detail parts that are permanently joined together. Parts that lose their identity by being welded or joined to other pieces as a permanent unit. This does not include riveted items provisioned for the applicable maintenance level of the manual.

(2) Items made from bulk stock. Items made from (raw) bulk stock such as lockwire, bonding braid, upholstery cloth, and friction tape.

(3) Structural items. Structural items such as stringers, stiffeners, skin, doublers, and gussets, which serve no purpose in description of parts relationship or specification of significant procured parts, except when required to maintain next higher assembly identity or to identify items having maintenance significance.

(4) Detail parts for consumable items. Details of items SM&R coded for throwaway.

(5) Substitute item. A substitute item is an item which possesses such functional and physical characteristics as to be capable of being exchanged for another under specific conditions or for particular applications and without alteration of the item itself or those adjoining it. Degradation of equipment performance will result when substitute items are used. Unless authorized by the requiring activity (see 6.2), substitute items shall not be listed.

b. Items without part numbers.

(1) Equipment(s) that have not been assigned part numbers, shall have the type or model number placed in the "PART NUMBER" entry. Either the type or model number shall be entered, for example, the one that corresponds to a national stock number (NSN) that has an assigned SM&R code.

(2) If a vendor's part number is listed in the "PART NUMBER" entry, the type number, if applicable, shall be identified in the description.

(3) Parts which have neither a part number nor a type and model number assigned shall have a dash (-) placed in the "PART NUMBER" entry.

(4) Hardware procurable from normal commercial sources that does not have a part number assigned shall be identified by the abbreviation "COML" in the "PART NUMBER" entry. Identifying information such as dimensions, material, and type shall be given after the description to enable replacement procurement from commercial sources.

c. Standard hardware provisioned for lowest level of maintenance usage.

(1) Standard hardware (such as bolts, studs, packing, hose clips, fasteners, clamps, resistors, capacitors, diodes, transistors, gaskets) which are manufactured to conform to the requirements of NAS, JAN, USAF, NAVAIR, AN or MS drawings shall be listed.

(2) When an item of standard hardware has been provisioned at the lowest level of support regardless of multilevel application, only the quantity of hardware required at the applicable level(s) of maintenance covered shall be listed and illustrated.

d. Oversize and undersize parts. When oversize or undersize parts are required and furnished and they are neither interchangeable with, nor within allowable production tolerances of the standard size part, they shall be listed by the part number specified in the contract drawing specification.

e. Matched parts. When two or more parts that would normally be procured as separate items have been machined to fit as a matched set or lapped assembly, or have been matched electronically to meet circuit requirements, the set of items shall be assigned a separate part number.

f. Contractor standard parts. Contractor standard parts shall only be listed when the NSN is assigned to the contractor standard part.

g. Government standard parts. Government standard part numbers shall be listed in the "PART NUMBER" entry. The part number shall be complete, including prefixes and suffixes to the basic number. If more than one Government standard part number is listed on the contractor drawing specification for a single application, the preferred part number shall be listed.

h. Government standard items containing nonstandard detailed parts. Items covered by Government standard drawings that contain repair parts that are not designated by Government drawing numbers shall be listed in organizational level manuals by the Government standard part number when the NSN is assigned to the Government standard item.

i. Altered or source-controlled items. If any Government standard or commercial item is altered, selected, or source controlled because of special fit, tolerance, weight, or reliability of performance, the part number of the activity responsible for the alteration, selection, or source control shall appear in the "PART NUMBER" entry. Repainting, reidentifying, or other insignificant operations shall not be considered alterations, selections, or source controls.

j. Similar assemblies. If right and left, top and bottom, front and rear, or other similar assemblies contain a majority of identical parts, the IPB for the similar assemblies shall be combined and identified in the GAPL.

k. Symmetrically opposite parts. Symmetrically opposite parts shall be listed separately and identified in accordance with the contract drawing specification.

l. Subcontractor or vendor items. Subcontractor or vendor items are defined as items that are used by the manufacturer of the item covered by the IPB exactly as produced by a subcontractor or vendor. Repainting, reidentifying, or other insignificant operations shall not be considered alterations, selections, or source controls. When subcontractor or vendor items are assigned the NSN, the item part number shall be listed in the "PART NUMBER" entry.

m. Redesigned parts. If the design or material of a part is changed to the extent that interchangeability or physical or functional performance is affected, the new part number assigned in accordance with the contract drawing specification shall be listed. The original part shall be omitted if not authorized for continued use. If the original part has continued application, the application shall be indicated in the GAPL.

n. Selected electronic components. If a component board contains detail part(s) which can be replaced from a selection of components of different values, the illustration shall show one part. The GAPL shall list the basic part number without the specific value, for example, "RCO7GF---J." If the selection is to be made after test, a note shall appear after the description of the part, for example, "/Value determined at test/."

o. Alternate parts. An alternate part is defined as a part that is used when a preferable part is not available. Alternate parts shall be listed below the preferred part when assigned an NSN. The specific relationship shall be identified in the GAPL "DESCRIPTION" and "USABLE ON CODE" entries.

p. Equivalent parts. An equivalent part is defined as a part that is used interchangeably with one or more parts, none of which are preferable over the other. Equivalent parts shall be listed below the preferred part when assigned an NSN. The specific interchangeability shall be identified in the GAPL "USABLE ON CODE" entry.

q. Parts kits. When repair parts for the end item or for repairable units within the end item are to be supplied in the form of kits, a part number shall be assigned to each kit in accordance with contract drawing specification requirements.

(1) The kit(s) part numbers shall be placed last in the list of parts of the unit to which it applies and at the same indentation as the unit to which it applies. The kit components listed shall carry the appropriate kit SM&R code.

(2) Contents of the kit shall be listed at one indent below the kit description and shall not be assigned index numbers. Part number, description, quantity per kit, and SM&R code shall be included for each item in the kit.

(3) Lists of supplemental kits shall follow the list of original kits in the same manner as prescribed herein.

(4) Separate illustrations for kits shall not be prepared.

r. Markings.

(1) Decals, metalcals, and vinyl film markings, such as those that provide instructions, which require replacement or must be requisitioned separately, are considered to be parts. The identifying drawing number for each marking shall appear in the "PART NUMBER" entry.

(2) Locations of markings shall be illustrated; however, legible copy of the marking on the illustration shall not be required.

(3) A marking need not be listed or illustrated if:

(a) It is attached to a part or a nonrepairable assembly merely to identify it.

(b) The parts or nonrepairable assemblies are stocked, stored, and issued with the marking attached.

(c) The parts, not the marking, are replaced.

(d) Such markings shall not be requisitioned separately.

(4) When the illustration of a part or nonrepairable assembly seems to be incomplete with the marking omitted, it is proper to show, but not list, the marking.

s. Support equipment.

(1) Support equipment items requiring breakdown. Breakdown of support equipment listed in support of an end item shall be included when:

(a) The support equipment is peculiar to support the end item.

(b) Provisioning documentation dictates repair of the support equipment at the maintenance level coverage of the end item.

(c) A separate publication is not available or has not been authorized.

(2) Logistically nonrepairable support equipment. An illustration, part number, description of the item and units per assembly shall be included for these types of end items.

3.15.1.4 Description. The description as obtained from engineering drawings of the part listed shall be listed as an entry under the heading "DESCRIPTION." Additional specific technical content requirements for parts description are provided in 3.15.1.4 e through 3.15.1.4 ab. The systems, subsystems, equipment, support equipment, components, and parts of the end item shall be indented to show next higher assembly relationship as follows:

a. Indentions to show item relationship. The end item nomenclature shall not be indented and shall be flush with the left margin in the description. Parts that comprise the end

item shall be listed using indentions to show next higher assembly relationship. Runover lines of nomenclature should be indented an additional indention from the first line of nomenclature. Indention should be indicated by leaders (a series of periods or dots) with one leader equal to one indention. Indention to show end item to assembly, subassembly, and detailed part relationships shall be presented as shown in the following example:

END ITEM (FIGURE COVERAGE)
Runover line of nomenclature for End Item (Figure coverage)

. Detailed parts for End Item (Figure coverage)
. ASSEMBLY
(ATTACHING PARTS)
. Attaching parts for ASSEMBLY
---*---
. . Detailed parts for ASSEMBLY
. . SUBASSEMBLY
(ATTACHING PARTS)
. . Attaching parts for SUBASSEMBLY
---*---
. . . Detailed parts for SUBASSEMBLY
. . . SUB-SUBASSEMBLY
(ATTACHING PARTS)
. . . Attaching parts for SUB-SUBASSEMBLY
---*---
. . . . Detailed parts for SUB-SUBASSEMBLY

b. Parts kits.

(1) A statement indicating parts(s) availability shall be included after the description of the item or unit for which the kit is supplied.

(2) The kit(s) part numbers shall be placed last in the list of parts of the unit to which it applies and at the same indentation as the unit to which it applies.

(3) Part kits shall be at the same indention as to the unit to which it applies.

(4) Kit contents shall be at one indent below the kit description.

(5) Lists of supplemental kits shall follow the list of original kits in the same manner as prescribed herein.

c. Listing attaching parts. Attaching parts shall be listed beneath the item to be attached. They shall be listed, preceding any detailed parts of the item, at the same indention as the part they attach. The caption "(ATTACHING PARTS)" shall be placed one indention to the right of the nomenclature of the part to be attached, on the line immediately above the list of attaching parts. The symbol "---*---" shall follow the attaching parts, to separate the list from subsequent

listings of parts. The separation symbol shall have the same indention as "(ATTACHING PARTS)."

(1) If common attaching parts are used for more than one item and each item is assigned a separate index number, the attaching parts heading shall be expanded to so indicate. For example, if two clamps (one indexed -3, the other -4) are attached by one bolt, the correct attaching parts heading is "(ATTACHING PARTS FOR INDEX NUMBERS 3 AND 4)."

(2) If the attaching parts are the same for a number of items and these items are indexed and listed separately one after the other, the attaching parts shall be listed following the last item, and the attaching parts heading shall be expanded to indicate this. For example, if six connectors, each having a different part number with the same attaching parts, are indexed -1 through -6, the correct attaching parts heading is "(ATTACHING PARTS FOR EACH OF INDEX NUMBERS 1 THRU 6)."

d. Nomenclature consistency. Nomenclature of identical systems, subsystems, equipment, support equipment, components, and parts of the end item shall be consistent throughout the GAPL and the manual. The correct nomenclature shall be derived from one of the following sources (listed in the order of precedence):

(1) "AN" nomenclature,

(2) Nameplate nomenclature,

(3) H-6 assigned nomenclature, or

(4) Nomenclature on the drawing from which the item was manufactured.

e. Identifying noun and noun modifiers. The identifying noun should be the first word of the description. Modifiers shall be arranged in the sequence as necessary to indicate specifics, such as function and location, and to maintain consistency of nomenclature. Modifiers shall be added to the description of parts as required to assure positive identification, for example: washer, flat and washer, lock. These modifiers need not appear on the preparing activity drawing.

f. Hardness critical items. When the part is identified as a hardness critical item (HCI), the symbol [HCI] shall precede the nomenclature of the part in the "DESCRIPTION" entry. It is preferred that the symbol be placed within brackets, that is, [HCI]; however, other methods of highlighting the symbol to call attention to its importance are acceptable.

g. Electrostatic discharge (ESD) sensitive parts. When a part is identified as an item subject to electrostatic discharge (ESD), the symbol should precede the first word in the "DESCRIPTION" entry. It is preferred that the symbol be placed within brackets, that is, [ESD]; however, other methods of highlighting the symbol to call attention to its importance are acceptable.

h. Abbreviation "ASSY" or "INSTL". If the item is an assembly or installation, the abbreviation "ASSY" or "INSTL," as applicable, shall follow the noun.

i. Drawing modifiers. The identifying noun or "ASSY" or "INSTL" shall be followed by the modifiers included in the drawing title description, and, when applicable, modifiers such as "upper," "lower," "inner," "outer," "front," and "rear" shall follow.

j. Commercial and Government Entity (CAGE) codes. Manufacturers' CAGE codes (or complete name if no CAGE code has been assigned) and references to other manuals or figures shall follow the description of the item. Manufacturers' CAGE codes shall not be listed for Government standard parts.

k. Dimensions. Where units of measurement are the same, they shall not be repeated with each dimension, for example, "1/8 by 21/32 inch." A zero shall precede the decimal point of decimal values less than one, e.g., "0.5."

l. Capitalization. The entire description may be in upper case letters. As a minimum, the item name shall be in upper case letters and the first letter of the first word immediately following the item name, and the first letter of proper nouns shall be upper case.

m. Abbreviations. Abbreviations shall be held to a minimum. Abbreviations shall be consistent throughout.

n. Leaders. Leaders (a series of periods or dots) shall be used to join the description and the "UNITS PER ASSY" column. When the description requires more than one line, leaders shall only be used on the first line.

o. Tolerances for electrical/electronic parts. Percentages or actual values or allowable tolerances for such items as nonmilitary standard resistors and capacitors shall be given as part of the description, expressed as plus and minus values.

p. Undrilled or untrimmed parts. Parts that require drilling or trimming on installation shall be identified by a notation to that effect in the description.

q. Make from instructions. Most parts source coded MO, MF, MH, or MG require manufacturing instructions in the maintenance section. These parts shall not have "Make From" information in the description column but will reference the applicable maintenance procedures. M-Series parts requiring only length, width or thickness and not requiring special manufacturing instructions shall include the raw bulk stock and final dimensions in the description. The list of raw (bulk) stock shall not be included for parts to be fabricated at depot level (SM&R coded MD).

r. Items using liquid oxygen (LOX). Items using LOX shall be identified by the acronym LOX if hazardous conditions could result from lack of this information. The acronym shall be placed at the far right on the same line containing the nomenclature of the part.

s. Magnetic control items (MAG). Parts requiring test for magnetic inclusion shall be identified by the acronym "MAG" to assist in the identification of such parts when malfunctions could result because of the lack of this information. The acronym shall appear at the far right on the same line containing the nomenclature of the part.

t. Oversize and undersize parts (dimensional differences). When oversize or undersize parts are required and furnished and they are neither interchangeable with, nor within allowable production tolerances of the standard size part, they shall be listed by the part number specified in the contract drawing specification. All dimensional differences shall be included in the description.

u. Similar assemblies.

(1) Peculiar parts notation. Parts peculiar to only one assembly shall be identified by a note in the description.

(2) Different quantity notation. Identical parts that are used in different quantities on the assemblies shall be listed separately and identified by a note in the description.

v. Matched parts (notation and parts listing). When two or more parts that would normally be procured as separate items have been machined to fit as a matched set or lapped assembly, or have been matched electronically to meet circuit requirements, the set of items shall be assigned a separate part number. A notation in the description column shall indicate that the item consists of a matched set or matched pair. The part numbers and nomenclature of the items that make up the set shall be listed in the description.

w. Subcontractor or vendor items (identification and/or drawing number). The descriptions of such items shall include the type, model, or applicable Government specification and the applicable manufacturer's CAGE code. If the manufacturer's CAGE code is not available, the name and address of the manufacturer shall be given. If such items are illustrated on preparing activity specification control or envelope drawings, the specification control or envelope drawing number shall also be listed in the description.

x. Redesigned parts. If the original part has continued application, "Alternate for" or "Use until exhausted," as applicable, shall follow the description of the part.

y. Selected items. If a component board contains a detail part which can be replaced from a selection of components of different values, the description shall contain the basic part number without the specific value, for example, "RCO7GF---J." If the selection is to be made after test, a note shall appear after the description of the part, for example, "/Value determined at test/."

z. References to other manuals. If coverage of the end item is contained in another manual, the applicable end item shall be listed and reference made to the manual. The reference shall appear after the item description in diagonals or parentheses, for example, "/Breakdown, NAVAIR 01-85ADA-4-6/" or "(Breakdown NAVAIR 01-85ADA-4-6)."

aa. References to other figures in the same manual or volumes of the manual. If coverage is contained in another figure, the applicable end item shall be listed and reference made to the figure number.

ab. Next higher assembly references. Necessary reference shall be made to other figures for next higher assemblies. The reference shall appear after the item description in diagonals or parentheses.

3.15.1.5 Units per assembly. The number of units required per assembly, per subassembly, and per sub-subassembly, as applicable, shall be listed as an entry under a heading "UNITS PER ASSY."

a. The entries under "UNITS PER ASSY" shall be aligned with the first line of multiple-line descriptions.

b. If more than one assembly is required, the total of such assemblies shall be indicated.

c. For detailed or subassembly parts of a major assembly, the quantity required for one major assembly shall be indicated.

d. For oversize or undersize parts, the letters "AR" shall be placed in this column to indicate "as required."

e. For items that are listed for reference, the letters "REF" (item found elsewhere in the IPB) shall be placed in the column.

f. Quantities of attaching parts shall be listed per unit (piece) only. For example, if two fittings are required for each preceding assembly and one bolt is required to attach both fittings, the correct listing is as follows:

DESCRIPTION	UNITS PER ASSY
FITTING ASSY, HINGE	2
(ATTACHING PARTS)	
BOLT	1

---*---

3.15.1.6 Usable on code. Usable on codes for assemblies and parts to indicate their specific usability with the end item to which the IPB figure applies shall be listed as an entry under a heading "USABLE ON CODE." Capital letters shall be used to identify the application of the items. If single letters of the alphabet are not sufficient to complete coding, double letters may be used e.g., AA, AB, etc. The letters O and I shall not be used singularly or in pairs. No usable on code shall be used for assemblies and parts that are applicable to all end items.

a. Simple application. When different end item part numbers are identified, each end item will be assigned a code in sequence and that code will be listed for each peculiar item in the parts list. More than one code may be assigned to the same item, e.g., A, B or A, C.

b. Redesigned parts. If the original part has continued application, the applicable model, block numbers, and serial numbers of the items on which the part is usable shall be indicated by usable on codes.

c. Alternate parts. An alternate part is defined as a part that is used when a preferable part is not available. When an item is completely interchangeable but one part is preferable for use, the number of the preferred part shall be listed without a notation in the "USABLE ON CODE" entry and all alternate part numbers shall be listed with an asterisk (*) in the "USABLE IN CODE" entry. When an item is completely interchangeable on certain end items, but one part number is preferable for use, the "USABLE ON CODE" entry will carry the end item identification, with or without an asterisk (*), as applicable.

d. Equivalent parts. An equivalent part is defined as a part that is used interchangeably with one or more parts, none of which are preferable over the other. All equivalent part numbers shall be listed with an asterisk (*) in the "USABLE ON CODE" entry. When a part is interchangeable only on certain end items the "USABLE ON CODE" entry will carry the end item identification in addition to the required asterisk (*).

3.15.1.7 SM&R code. The source, maintenance and recoverability (SM&R) code for every part for which one has been approved by the Government shall be listed as an entry under a heading "SM&R CODE."

3.15.1.8 Work unit code (WUC). When the equipment, assembly, subassembly, or component part has been assigned a WUC, the WUC shall be listed under this entry.

3.15.1.9 Detailed IPB technical content requirements. General guidelines for IPB GAPL and illustration development are provided in 3.15.1 through 3.15.1.8. Additional detailed technical content requirements for GAPL and illustration development are contained in 3.15.1.9.1 through 3.15.1.9.9.

3.15.1.9.1 Nuclear hardness critical items (HCI), (CSI) or (OCI). When survivability considerations are specified and Hardness Critical Items (HCI) are identified on drawings and parts lists, the items must be marked and identified in the "DESCRIPTION" entry of the Group Assembly Parts Lists (GAPL). All changes to or proposed substitutions of HCIs must be evaluated for hardness impacts by the engineering activity responsible for survivability. The

Introduction will include an explanation of the HCI symbol's usage and method of highlighting and other pertinent information as necessary to emphasize uniqueness of HCIs.

3.15.1.9.2 Electrostatic discharge (ESD) sensitive parts. If electronic equipment to be handled, inspected, repaired or assembled is ESD sensitive, the items shall be marked and identified in the "DESCRIPTION" entry of the GAPL. The Introduction will include an explanation of the ESD symbol's usage and method of highlighting and other pertinent information as necessary to emphasize uniqueness of ESD sensitive components.

3.15.1.9.3 Index numbers on illustrations. Index numbers, with leader lines to the parts to which they pertain, shall be used on all IPB illustrations. Index numbers are assigned in accordance with 3.15.1.1. The index numbers on each illustration shall agree with those in the GAPL. Additional nomenclature may be added to these illustrations in order to properly identify parts not listed and indexed in the GAPL in order to properly indicate the relationship of parts to assemblies and to better present the maintenance procedures.

3.15.1.9.4 Attaching parts on illustrations. Each part in a set of attaching parts (such as bolt, washer, or nut) shall be assigned an index number. Sets of attaching parts shall be exploded when the assembly is hidden and sufficiently complex to merit explosion. The total quantity of each item listed in the GAPL shall be identified with index numbers in the illustration. To avoid cluttering an illustration with unnecessary index numbers, large quantity items need not be indexed more than once on the illustration or on each sheet of a multisheet illustration on which the part is shown. However, the location of the items must be obvious in the illustration. For example, multiple size rivets that are shown in various locations on the illustration need only be indexed once for each part number listed in the GAPL.

3.15.1.9.5 Indexing assemblies. Each assembly and subassembly of the end item shall be shown assembled and assigned an index number. Assemblies and subassemblies coded for assembly, manufacture, or repair at the applicable maintenance level shall also be shown exploded in a detail view on the main illustration or in a separate illustration, and index numbers shall be assigned to all detailed parts.

3.15.1.9.6 Items not having a logical maintenance sequence. For items not having a logical maintenance sequence (e.g., circuit card assembly), begin assigning index numbers at the top left-hand corner and continue clockwise.

3.15.1.9.7 Component boards. When a component board or bracket assembly that holds electrical components is presented orthographically, the reference designation may be placed within the view of the part, if space permits. Leader lines may be used to identify reference designations that cannot be placed within the view of the part. When the number of leader lines to indexed parts causes the illustration to become cluttered, the figure may contain a legend adjacent to the artwork or on a separate sheet. The listing shall contain an alphanumerical listing of the reference designations and their associated index numbers. Index numbers for items with reference designations shall be identified using the legend and not on the artwork. Index numbers will be used only to identify items that do not have reference designations.

3.15.1.9.8 Polarity identification. When applicable, the polarity of electronic components shall be identified on the component of all maintenance illustrations.

3.15.1.9.9 Reference designations. Illustrations that depict electrical components should include reference designation after the index number. If an orthographic view is prepared, the reference designation may be placed within the view of the part, if space permits.

3.16 Checklists. Individual weapons/stores loading, release and control and arm/dearm checklists shall be prepared for each model aircraft, as applicable. In addition, checklists shall be developed for each weapon or family group. These checklists shall consist of front matter (see 3.8), introductory data (see 3.8.1) and the technical information described in the following subparagraphs.

3.16.1 Weapons/stores loading checklists <**weapons-checklist**>.

3.16.1.1 Checklist general content. In determining the depth of coverage, the following assumptions shall be made:

a. Firefighting equipment is available.

b. The aircraft/equipment is properly serviced and positioned for loading/configuration (wheels chocked and tiedowns installed as required); ready to receive accessory equipment and/or weapon/store.

c. All ground safety devices installed and, as applicable, cockpit ready to receive/remove power.

d. Standard aircraft system checks (other than armament) completed.

e. Aircraft/armament safety precautions complied with.

f. Weapons/stores positioned and secured on approved handling equipment.

g. After loading/unloading, handling and/or safety equipment will be removed from the area.

3.16.1.2 Checklist specific content. Checklist data shall be divided into unnumbered sections and subsections. For page-based checklists, no more than one section shall appear on a page. Sections shall be titled as follows and shall contain appropriate steps to accomplish the applicable procedures. Procedural information need not be limited to that listed.

3.16.1.2.1 Aircraft preparation/inspection <**aircraft-prep-inspect-check**>. Aircraft preparation/inspection information shall be presented under the assumption that the aircraft armament system configuration and associated equipment is ready for the loading evolution to begin (see figure 33).

a. Verify completion of applicable release and control and release systems checks/tests.

b. Armament controls for the desired position (general reference to switches and positions).

c. Illustrations of pylon/rack/launcher connections when required for clarification.

3.16.1.2.2 Weapons/stores inspection <**weapons-inspect-check**>. Weapon/store inspection information will be presented under the assumption that the weapons/stores are assembled and ready for the loading evolution to begin (see figure 34).

a. Checks for unarmed condition and damage of weapon/store, installation of safety and protective devices, completeness of assembly, availability of accessories, etc.

b. Illustrations may be used to highlight specific inspection or safety items.

c. Applicable weapons/stores preparation peculiar to the aircraft (positioning of bomb fins for aircraft clearance, attachment of ballast bands, etc.).

3.16.1.2.3 Weapons/stores loading <**weapons-loading-check**>**.** The Weapons/Stores Loading sections shall be divided into two subsections titled "Preparation" and "Loading." (See figure 35.) Preparation and loading data shall be provided to ensure accomplishment of the following as applicable:

a. Preparation.

(1) Completion of Weapon Inspection and Aircraft Preparation/Inspection.

(2) Armament controls for the desired position (reference specific switches and positions). The locations and positions of aircraft armament switches shall be prepared as a table **<aircraft-arm-switches-table> (standard table)** (see figure 15).

(3) Single and multiple loading information.

b. Loading.

(1) Lifting, attachment, and alignment of the weapon/store.

(2) Fuze and arming wire installation and umbilical connections. (Illustrations will be used to show specific arming/release wire routing, cable bail hookup, etc., if required for clarification.)

(3) Loading of mission data. Mission data loading shall be prepared as a table **<mission-data-loading-table> (standard table)** (see figure 36).

(4) Data link marriage check. Marriage check shall be prepared as a table **<marriage-check-table> (standard table)** (see figure 37).

(5) Cartridge installation.

(6) Required function checks (launcher continuity, postload preflight test, etc.).

(7) Removal of specific ordnance related safety devices (fuze safety pins, etc.).

3.16.1.2.4 Postloading inspections <**postloading-insp-check**>. Procedures performed by the loading crew during the weapons loading evolution that must be checked to ensure quality assurance shall be included (see figure 38). The following shall be considered:

a. Armament controls for the desired position (general reference to switches and positions).

b. Presence of safety devices.

c. Presence of seal wire/seals on controls.

d. Weapon/store suspension properly accomplished (e.g., sway braces adjusted, ejector foot positioned, etc.).

e. Weapon/aircraft electrical/mechanical connections mated.

f. Weapon safety condition checks.

3.16.1.2.5 Prior to launch <**prior-to-launch-check**>. Prior to launch procedures shall only be addressed within the weapons/stores loading checklist when an arm/dearm checklist is not required for the aircraft platform because of limited weapons capability. Refer to 3.16.4.2 for procedural information to be included in the weapons/stores loading checklist.

3.16.1.2.6 After launch <**after-launch-check**>. Procedures for checks after launch shall be developed (aerial gunner procedures, airborne safing after firing, etc.).

3.16.1.2.7 After landing or ground abort <**after-landing-ground-abort-check**>. After landing or ground abort procedures shall only be addressed within the weapons/stores loading checklist when an arm/dearm checklist is not required for the aircraft platform because of limited weapons capability. Refer to 3.16.4.3 for procedural information to be included in the weapons/stores loading checklist.

3.16.1.2.8 Turnaround <**turnaround-check**>. Turnaround procedures shall only be addressed within the weapons/stores loading checklist when an arm/dearm checklist is not required for the aircraft platform because of limited weapons capability. Refer to 3.16.4.4 for procedural information to be included in the weapons/stores loading checklist.

3.16.1.2.9 Weapons/stores unloading <**weapons-unloading-check**>. Weapons/stores unloading shall be divided into two subsections titled “Preparation” and “Unloading”, (see figure 39). Preparation and unloading data shall be provided to ensure accomplishment of the following as applicable:

a. Preparation.

(1) Armament controls for the desired position (reference specific switches and positions). The locations and positions of aircraft armament switches shall be prepared as a table **<aircraft-arm-switches-table> (standard table)** (see figure 15).

(2) Checks for unarmed condition of weapon/store, installation of safety and protective devices.

(3) Fuze removal, disconnection of all mechanical and electrical connections between weapon and aircraft to prepare weapons for unloading.

(4) Downloading of mission data. Mission data downloading shall be prepared as a table **<mission-data-downloading-table> (standard table)** (see figure 40).

b. Unloading.

(1) Lifting, removal, and lowering of weapons/stores (both single and multiple weapons/stores).

(2) Other procedures required on the aircraft/weapon after downloading.

3.16.2 Release and control system tests checklists <**release-ctrl-sys-checklist**>. Release and control system tests checklists shall cover the operational function checks for the armament systems and subsystems. Separate subsystem checklists shall be provided when required. Basic and subsystem checklists shall provide information in a manner that will not require reference to each other. When subsystem checklists are required, those systems not covered in a subsystem checklist will be grouped into a basic checklist and the word "BASIC" will appear below the title of the checklist on the title page only. The subsystem checklists will have the weapon system designator (e.g., Missiles) appear in place of "BASIC."

3.16.2.1 Specific technical content. Checklist data will be divided into unnumbered sections and subsections. No more than one section will appear on a page. Sections shall be titled as follows and shall contain appropriate steps to accomplish the applicable procedures. Procedural information need not be limited to that listed.

3.16.2.1.1 Aircraft preparation release and control <**aircraft-prep-inspect-check**>. Procedures and steps for the preparation of the aircraft for the required checks shall be developed (see figure 41).

3.16.2.1.2 Individual subsection checks <**release-ctrl-sys-check**>. Refer to figures 42 thru 45. The following shall be included:

a. Verify completion of Aircraft Preparation.

b. Required checks for each system/subsystem (e.g., Weapon Release System, Jettison System, MER/TER Release System, etc.). System/subsystem checks shall be prepared as a table **<system-checks-table-a>** (see figure 43), **<system-checks-table-b>** (see figure 44) or **<system-checks-table-c>** (see figure 45) **(standard tables)**.

c. Requirement to perform postcheck procedures at the completion of all subsystem checks/tests.

d. Illustrations/schematics shall be used when required for clarity.

3.16.2.1.3 Postcheck procedures <**postcheck-check**>. Procedures to verify that the aircraft is returned to a safe condition shall be provided (see figure 46).

3.16.3 Weapons assembly checklists <**weapons-assembly-checklist**>. Weapons assembly checklists shall cover the assembly/disassembly procedures for each weapon or series of weapons.

3.16.3.1 Specific technical content. Checklist data will be divided into unnumbered sections and subsections. No more than one section shall appear on an individual page. Sections shall be titled as appropriate for the weapon and shall contain the procedural steps to accomplish the applicable assembly/disassembly procedures.

3.16.4 Arm/Dearm checklists <**arm-dearm-checklist**>.

3.16.4.1 Arm/Dearm checklists shall cover the operational functions of arming and dearming of weapons and the safing of aircraft weapons systems. The Arm/Dearm checklist shall include a title page and front matter (see 3.8) and shall be divided into unnumbered sections and subsections: Prior to Launch, After Landing or Ground Abort, and Turnaround.

3.16.4.2 Prior to launch <**prior-to-launch-check**>. Prior to launch information shall be divided into Rearming Area (Before Engine Turnup), Rearming Area or Arming Area (After Engine Turnup), and Arming Area information, as applicable (see figure 47). Each type of information shall contain steps to accomplish the following:

a. Rearming Area (Before Engine Turnup). Only those weapons/stores that require procedures to be performed shall be addressed.

(1) Removal of weapon safety devices.

(2) Removal of weapon protective devices.

(3) Cartridge installation or connection of cartridge firing actuator, as applicable, to system peculiarity.

(4) Installation of weapon components.

b. Rearming or Arming Area (After Engine Turnup). Only those weapons/stores that require procedures to be performed shall be addressed.

(1) Performance of stray voltage checks.

(2) Removal of specific ordnance related safety devices (e.g., bomb rack safety pins, etc.).

(3) Performance of weapon reliability checks, if required (e.g., Missile tone/tune check, Missile on aircraft test (MOAT) check, etc.).

c. Arming Area. Only those weapons/stores that require procedures to be performed shall be addressed.

(1) Umbilical connections (e.g., rocket launcher adapter cable).

(2) Rocket motor arming function.

(3) Removal of specific ordnance related devices.

3.16.4.3 After landing or ground abort <**after-landing-ground-abort-check**>. The After Landing or Ground Abort information shall normally be divided into Safing (Dearming or Rearming Area Before Engine Shutdown) and Safing (Dearming or Rearming Area After Engine Shutdown). When required by the responsible activity (see 6.2) or when forward firing ordnance is involved, safing (Dearming Area Before Engine Shutdown) shall also be included. Requirements for emergency dearming procedural information and/or reference to proper authority shall be specified by the responsible activity (see 6.2) (see figure 48). For layout of after landing or ground abort procedures for standalone checklist see figure 49. The information shall provide procedures to accomplish the following as applicable:

a. Safing (Dearming or Rearming Area Before Engine Shutdown). Unless otherwise specified (see 6.2), only minimal essential dearming or safing procedures will be given. Only those weapons/stores that require procedures to be performed will be addressed:

(1) Umbilical disconnections (e.g., rocket launcher adapter cable, gun power cable).

(2) Rocket motor safing function.

(3) Installation of specific ordnance related devices.

(4) Weapons/stores dearming and weapon/aircraft safety; aircraft/weapon made safe for ground handling procedures.

(5) Removal of loose or used umbilicals, lanyards, arming wires, etc., that present a Foreign Object Damage (FOD) hazard.

(6) Armament controls set to desired position (general reference to armament switch positions).

(7) Procedures for safing weapons/aircraft for the purpose of hot refueling of loaded aircraft.

(8) Procedures for unloading weapons/stores, as authorized, with engines turning.

b. Safing (Dearming or Rearming Area After Engine Shutdown). Unless otherwise specified (see 6.2), only minimal essential dearming or safing procedures shall be given. Only those weapons/stores that require procedures to be performed shall be addressed.

(1) Weapon/store dearming and weapon/aircraft safety; aircraft/weapon made safe for ground handling procedures.

(2) Removal of loose or used umbilicals, lanyards, arming wires, etc.

(3) Armament controls set to desired position (general reference to armament switch positions).

3.16.4.4 Turnaround <**turnaround-check**>. Only standard/normal dearming or safing procedures shall be given. If emergency dearming procedures are required to dearm or safe a weapon/store, notification of proper authority shall be specified. Only those weapons/stores that require procedures to be performed will be addressed (see figure 50). For layout of turnaround procedures for standalone checklists see figure 49.

a. Turnaround procedures not requiring reconfiguration shall be used.

b. Dearming/safing procedures required to return the weapon/store and aircraft to the postload condition.

c. Weapons/stores that do not require loading or unloading but require adjustments prior to launch shall be provided for (retorque of ECM magazines or snubber clamps, etc.).

d. Applicable weapon inspection checks shall be entered for loaded stations. Postload and subsequent checks shall be referenced.

e. Adequate preparation of unloaded stations for loading shall be made.

f. Stations to be loaded will be referred to Weapons/Stores Inspection through postload procedures.

g. Prior to launch procedures shall be referenced.

3.16.5 Standalone checklist **<standalone-checklist>**. In the event no loading manual exists for an aircraft platform because of limited weapons capability, all inclusive standalone or combined checklists shall be developed when specified by the requiring activity (see 6.2). The content of the checklists shall include, as applicable, all procedures required to prepare the aircraft for preloading checks, performance of preloading checks, weapon inspection, loading, arm/dearm, and weapon unloading procedures. Information regarding safety of personnel, equipment and aircraft or applicable reference publications/directives shall also be included.

3.16.5.1 Specific technical content. Checklist data shall be divided into unnumbered sections and subsections. No more than one section shall appear on a page. Sections shall be titled as follows and shall contain all the steps to accomplish the applicable procedures. Procedural information need not be limited to that listed.

3.16.5.1.1 Aircraft preparation <**aircraft-prep-inspect-check**>. Procedures and steps for the preparation of the aircraft for the required checks shall be developed (see figure 33).

3.16.5.1.2 Release and control system check <**release-ctrl-sys-check**>. Refer to 3.16.2.1.2 for procedural information to be included in the standalone checklist.

3.16.5.1.3 Postcheck procedures <**postcheck-check**>. Procedures to verify that the aircraft is returned to a safe condition shall be provided (see figure 46).

3.16.5.1.4 Weapons/stores inspection <**weapons-inspect-check**>. Refer to 3.16.1.2.2 for procedural information to be included in the standalone checklist.

3.16.5.1.5 Weapons/stores loading <**weapons-loading-check**>. Refer to 3.16.1.2.3 for procedural information to be included in the standalone checklist.

3.16.5.1.6 Postloading inspections <**postloading-insp-check**>. Refer to 3.16.1.2.4 for procedural information to be included in the standalone checklist.

3.16.5.1.7 Prior to launch <**prior-to-launch-check**>. Refer to 3.16.4.2 for procedural information to be included in the standalone checklist.

3.16.5.1.8 After launch <**after-launch-check**>. Procedures for checks after launch shall be developed (airborne safing after firing, etc.)

3.16.5.1.9 After landing or ground abort <**after-landing-ground-abort-check**>. Refer to 3.16.4.3 for procedural information to be included in the standalone checklist (see figure 49).

3.16.5.1.10 Weapons/stores unloading <**weapons-unloading-check**>. Refer to 3.16.1.2.9 for procedural information to be included in the standalone checklist.

3.17 Glossary <**glossary**>. The glossary shall be prepared and shall include a definition of terms used in the manual.

3.18 Style and format. Unless otherwise noted (see 6.2), general style and format requirements for both paper, page-based TMs and checklists and digitally displayed ETMs, including checklists, are provided in 3.18.1 through 3.18.14.3.5. A Formatting Output Specification Instance (FOSI) (see 6.4.6) is used in conjunction with the applicable DTD (see 3.1.3 and 3.1.4) to produce formatted final reproducible paper copies of the TM. Style sheets are required to provide a standard screen presentation to view ETMs on a Portable Electronic Display Device (PEDD). The approved FOSI and style sheets may be obtained from the requiring activity.

3.18.1 Text development. Text shall be presented in single-column format (see figure 51).

3.18.1.1 Typeface and type size. Typeface, type size and spacing shall be in accordance with best commercial practices for producing the printed page. Type shall be proportionally spaced (non mono spaced). Fonts shall be selected for a balance between readability and economy of space. Setting text in capital letters shall be limited to appropriate uses, such as major headings, acronyms, equipment markings. Typeface and type size requirements for ETMs designed for interactive screen display shall be in accordance with MIL-DTL-87268.

3.18.2 ETM installation data. When ETMs are distributed on a CD-ROM, information on installing the CD-ROM on the computer and launching the ETM shall be prepared. Minimum hardware and software requirements shall be included. The preferred method of operation is to perform a minimal software installation to the display device and access the programmed data from the compact disk (CD) or other distribution media. However, an option to install to the hard drive shall be available. In cases where compressed data is on the CD or medium and must be expanded onto the hard drive, the install routine must determine if sufficient hard drive space is available. All installation routines shall have an uninstall option and when updating to a newer version, shall remove earlier version software/data prior to the installation of updated software/data. This information shall be printed and should be part of the packaging and shipment of the CD-ROM. When ETMs are not distributed on CD-ROM but electronically transferred, any relevant installation data shall become part of a "read me" file.

3.18.3 CD label and flyleaf data. The CD-ROM shall have a label and flyleaf insert that includes the following information, as applicable.

Publication number
Equipment nomenclature
Application
CD number
Version

Data cutoff date
CD creation date
Compression information, if applicable
Copyright information
Distribution statement
Authority notice
Destruction notice
ETM install data (see 3.18.2).

3.18.4 Content data (ETMs only). When more that one ETM is resident on a CD, content data shall appear on the display immediately following the preface information. This content data shall provide the ETM publication number and title of all technical manuals that are contained on the CD. CD content is displayed and shall be scrollable.

3.18.5 Title page information. For page-based TMs, the title page shall not be numbered. For ETMs, title page information shall not be numbered.

3.18.6 List of effective pages (page-based TMs only). The list of effective pages shall be indicated by consecutive capital letters (e.g. "A, B, C, etc.").

3.18.7 Change summary (ETMs only). When a change to an ETM is issued, a change summary shall be provided. The change summary shall be user-invoked from the List of Contents. The change summary shall contain a list of information by paragraph titles that have been changed. A brief description of the major changes shall be provided for each titled paragraph listed. Change summary information is displayed full screen, frame by frame or inside a scrollable area. The paragraph titles listed in the change summary shall be linked to the paragraph containing the changed information. The change summary shall not be numbered.

3.18.8 Table of contents, list of illustrations and list of tables (page-based TMs only). For page-based TMs, pages containing this data shall be numbered with lower case Roman numerals. For ETM checklists, this data shall not be numbered.

3.18.9 List of contents, list of illustrations and list of tables (ETMs only). A List of Contents shall be prepared. The subject matter shall be listed by section title. To facilitate access, primary paragraphs may be indented and listed under each section title. When displayed, the List of Contents shall provide a search capability. All entries in the List of Contents shall be linked to the actual subject matter. A list of illustrations and a list of tables shall appear at the end of the list of contents. All entries in the lists of illustrations and tables shall be linked to the actual subject matter.

3.18.10 "How to Use This ETM" information (ETMs only).

a. Information to familiarize the user with special or unusual features of the ETM shall be prepared. Coverage shall lead the user through the ETM and explain important features of the organization and content. For example, the format is explained, and loading, maintenance instructions, and other pertinent information is explained.

b. Any peculiarities in the basic structure of the ETM shall be described. "How to use" information shall not repeat instructions given within the sections.

c. For all ETMs, the "how to use" information shall include an explanation of how and where parts information is available in the paragraphs and how the parts information is accessed, and if applicable, how the parts can be ordered.

d. An explanation shall be included on how to identify hotspots and how they are used and activated.

e. The "How to Use This ETM" information shall be user-invoked from the List of Contents.

3.18.11 Nomenclature. Nomenclature shall be standardized throughout the manual or checklist. Nomenclature used shall be consonant with applicable source data (engineering drawings, illustrated parts breakdown, etc.), aircraft manuals, weapon manuals and aircraft/weapon paneling. Panel placarded nomenclature, such as switch or indicator light titles and switch positions, when referenced, shall be the same as placarded.

3.18.12 Illustrations. Illustrations shall be used as necessary to aid in the understanding of complex procedures, to present phases which are difficult to describe alone, reducing the amount of text necessary to describe a given component and to highlight details which are significant or related to safety/reliability. Line drawings will be used instead of halftone or continuous tone art. For page-based TMs and checklists, each illustration shall have a figure number. For ETMs and ETM checklists, illustrations may have figure numbers.

3.18.13 References. The use of references in text can create undue hardship and/or confusion for the user of the technical data. It is recognized that use of references is required to avoid inordinate duplication of data; however, references should be kept to a minimum. For ETMs, as a practical consideration, linking should be used and encouraged. Hotspots should be used to link cross-referenced material. Reference shall not be made to coverage contained in other than NAVAIR manuals, except when the manual has been formally assigned a NAVAIR publication number.

NOTE

Commercial or joint usage manuals must be formally reviewed and approved for use prior to use by NAVAIR activities. When approved, the manuals are assigned NAVAIR publication numbers. Information related to review, approval and assigned number status can be provided by the requiring activity. The NAVAIR number is normally added during the next upgrade of the manual and may not be listed on existing copies of the manual. Clarification can be provided by the requiring activity.

3.18.13.1 Maintenance procedures contained in other manuals. Maintenance procedures that are required to complete maintenance tasks that are contained in another maintenance manual shall be referenced by publication number.

3.18.13.2 References to other manuals. References in the text shall be made by the referenced task title as follows:

a. For other publications, reference shall be made by publication number.

b. Reference shall not be made to a paragraph, figure or table number.

c. Reference to another ETM shall be by the ETM publication number and the task title, if necessary.

3.18.13.3 References within a manual. References in the text shall be made by the referenced task title as follows:

a. For page-based TMs, paragraphs, figures and tables by number. For ETMs, paragraphs, figures, and tables by title.

b. Index numbers on illustrations. Detail view identification and sheet numbers shall be added for clarity.

c. Materials such as lubricants, cleaning fluid, or fuel by Government specification number.

d. Government specifications and standards by the basic number unless it is essential to reference a specific revision to the specification or standard. Government specifications and standards shall not be referenced for completion of maintenance tasks.

e. Parts on diagrams by complete reference designation.

f. Switch positions and panel markings by name as marked on the equipment.

3.18.13.4 Mandatory compliance maintenance procedures. Mandatory compliance maintenance practices contained in NAVAIR general series manuals shall be referenced (e.g., Aviation Hydraulics, Aviation Hose and Tube Repair, Cleaning and Corrosion Control, etc.).

3.18.13.5 Frequently used maintenance tasks. Frequently used maintenance tasks, such as applying external electrical or hydraulic power, shall be prepared once as a common maintenance task and linked as a common step in all other maintenance tasks requiring the need of external electrical or hydraulic power. It is not necessary to link supporting graphics to common steps with linked tasks.

3.18.14 Graphics guidelines.

3.18.14.1 Graphics format. All graphics developed in accordance with this specification shall be delivered in one of the three graphic formats: MIL-PRF-28003, Computer Graphic Metafile (CGM); MIL-PRF-28002, Continuous Acquisition Life-Cycle Support (CALS) Raster; or MIL-PRF-28000, Initial Graphics Exchange Specification (IGES). Other commercial graphics formats may be acceptable if approved by the requiring activity (see 6.2).

a. The CGM file format is the preferred graphics file format.

b. All graphics files for a particular TM shall be applied in the same graphics format if practical. Otherwise, files may be delivered in any combination of the allowable formats.

3.18.14.2 Display of illustrations. For ETMs, illustrations shall be displayed on the user's PEDD in accordance with MIL-DTL-87268.

a. If the graphic is scrollable, the user shall have the capability to activate scroll, zoom, or full screen functions to manipulate the graphic whenever the entire graphic exceeds the size of the data pane.

b. The user shall have the capability to scroll the graphic through the use of scroll up, scroll down, scroll left, and scroll right features. Scroll bars shall appear on the display to provide the user with a visual cue that the capability to scroll the displayed information exists.

c. The user shall have the capability to enlarge and reduce the displayed graphical information by activating a zoom feature.

3.18.14.3 Types of graphics. The following types of graphics shall be used in the preparation of TMs and checklists.

a. Line drawings.

b. Engineering drawings.

c. Diagrams.

d. Charts and graphs.

3.18.14.3.1 Line drawings. Line drawings including exploded views, locator views, and detailed views shall be used to support the TM and checklist procedures.

3.18.14.3.2 Engineering drawings. Unless otherwise specified by the requiring activity (see 6.2), engineering drawings should not be used as illustrations. When used:

a. They shall be in accordance with ASME-Y14.100 and shall be modified, as necessary, to meet the content, style, arrangement, legibility, format, and production requirements described in this document and the contract.

b. All unnecessary data that would reduce the comprehension or clarity of the illustration shall be removed.

c. They shall be reduced or redrawn to meet frame size restrictions.

3.18.14.3.3 Diagrams. Diagrams shall be prepared in accordance with the documents listed below.

Subject	Equipment Covered	Document
Abbreviations	All	OPNAVINST 4790.2
Drafting Practices	Mechanical, Electrical, and Electronic	ANSI Y14.15
Engineering Drawing Practices	All	ASME-Y14.100, MIL-DTL-31000, ANSI Y14.15
Graphic Symbols	Electrical and Electronic Mechanical Digital (Logic) Fluid Power	IEEE 315, IEEE 280, ASME-Y32.2.6, IEEE 91, ANSI Y32.10
Subject	Equipment Covered	Document
Reference Designators	Electrical and Electronic	IEEE 200
Unit Symbols	All	IEEE 260.1
Logic	All	IEEE 91
Dimensions and Tolerances	All	ASME Y14.5M

3.18.14.3.4 Charts and graphs. Charts and graphs shall be prepared as illustrations. Instructions shall be provided for use and interpretation of complex graphs.

3.18.14.3.5 Use of color. For ETMs, color may be used when it will enhance the understanding of the data. The use of some colors may not be appropriate for certain environmental conditions. The following color limitations shall apply.

a. For ETMs that may be displayed on a monochrome system, reverse video and/or underlining shall be used for hotspots rather than color.

b. The use and choice of colors shall be as specified by the requiring activity (see 6.2).

3.19 Specific style and format. Unless otherwise noted (see 6.2), specific style and format requirements for both paper, page-based TMs and checklists and digitally displayed ETMs, including checklists, are specified in 3.19.1 through 3.19.3.1.

3.19.1 Airborne weapons/stores loading, WAM, and AWSE manuals. Specific style and format for airborne weapons/stores loading, WAM, and AWSE manuals shall be in accordance with the following requirements.

3.19.1.1 Header and footer data. For page-based TMs, header information for each section page shall bear the section title in the appropriate upper right- or left-hand corner under the publication number, except weapon assembly publications, which shall have the section title so placed on front matter pages only. For ETMs, header and footer information is not required.

3.19.1.2 Sections. The technical data required for the airborne weapons/stores loading, WAM, and AWSE manuals shall be divided into sections. For page-based, paper TMs, section numbers shall be assigned as designated in 3.5 through 3.5.3. Each section shall start on a new right-hand (odd numbered) page. For ETMs, technical data may be divided into unnumbered sections.

3.19.1.3 Paragraphs and paragraph titles.

3.19.1.3.1 Page-based TMs. Paragraphs, paragraph titles and paragraph numbering shall be prepared as shown on figure 51. Where a particular title or paragraph is not applicable, it shall be omitted. Primary (first order) headings shall be all capitals, bold, and stand alone. Secondary (second order) headings shall be all capitals, bold, and followed by text. Subordinate headings (third order) shall be initial capitals, bold, and followed by text. Primary, secondary, and subordinate headings shall be the same font throughout text.

3.19.1.3.2 ETMs. Paragraphs and paragraph titles shall be prepared as shown on figure 51. Where a particular title or paragraph is not applicable, it shall be omitted. Primary (first order) headings shall be all capitals, bold, and stand alone. Secondary (second order) headings shall be all capitals, bold, and followed by text. Subordinate headings (third order) shall be initial capitals, bold, and followed by text. Primary, secondary, and subordinate headings shall be the same font throughout text. Paragraphs shall not be numbered.

3.19.1.4 Procedural steps. Procedural steps shall be Arabic numbered. Lower case alphabetical letters shall be used for substeps. If further subordination is necessary, Arabic numerals in parentheses shall be used.

3.19.1.4.1 Display of procedural steps (ETMs only). There shall be no limit to the number of steps and substeps that can be displayed at any one time. Each step may include a feature that permits the user to acknowledge that individual steps have been performed (e.g., a check box or an icon).

3.19.2 Checklists.

3.19.2.1 Layout.

3.19.2.1.1 Page-based checklists. Content, except tabularized, shall be presented on the page in a head-to-foot (tumble turn) manner. Tabulated procedures shall be presented across the length of the page and backing pages (left to right) in a book turn (right to left) manner. A check off space for each procedural step shall be provided in the right margin of each page.

3.19.2.1.2 ETM checklists. Content shall be presented on the display device in a linear, scrollable manner, including tabular material. A check off space or box for each procedural step shall be provided immediately following the end of the step.

3.19.2.2 Header and footer data. For page-based checklists, each checklist page, except the title page, will have the aircraft model/series number, checklist number, and checklist title, in that order, across the top of the page from the left. Except the title page and "A" page, each page shall have the aircraft model/series number and checklist title in the lower left corner. The publication date, and when applicable, the change number and date will appear in the lower right corner of all pages. For ETM checklists, header and footer information is not required.

3.19.2.3 Header and footer data (Weapons assembly checklists only). Each checklist page will have the checklist number centered at the top of the page. The publication date, and when applicable, the change number and change date will appear in the lower right corner of all pages. For ETM checklists, header and footer information is not required.

3.19.2.4 Page numbering.

3.19.2.4.1 Title page information. For page-based checklists, the title page shall not be numbered. For ETM checklists, title page information shall not be numbered.

3.19.2.4.2 List of effective pages (Page-based checklists only). The list of effective pages shall be indicated by a capital "A".

3.19.2.4.3 Table of Contents, Introduction, required reading and ground support equipment. For page-based checklists, pages containing this data shall be numbered with lower case Roman numerals. For ETM checklists, this data shall not be numbered.

3.19.2.4.4 Technical content data. For page-based checklists, procedural information, including tables and illustrations, shall be on Arabic numbered pages. Blank pages will be accounted for sequentially, but will not have numbers appearing thereon. For ETM checklists, this data shall not be numbered.

3.19.2.5 Numbering procedural steps. Procedural steps shall be Arabic numbered. Lower case alphabetical letters shall be used for substeps. If further subordination is necessary, Arabic numerals in parentheses shall be used.

3.19.2.6 Sections. The technical data required for the checklists shall be divided into unnumbered sections. Checklist section and subsection headings shall be presented in an

established format. Where a particular section, subsection, or paragraph is not applicable, it will be omitted.

3.19.3 Warnings, cautions, and notes. With the exception of weapons assembly checklists, warnings, cautions, and notes shall precede the text to which they apply. When necessary to precede information with a note and a warning or a note and a caution, they shall appear in the sequence as noted. Warnings, cautions, and notes shall not contain procedural information and shall be presented in an established format.

3.19.3.1 Warnings, cautions, and notes for weapons assembly checklists. Indexed numbered warnings and cautions will be a part of the front matter of the weapons assembly checklist (see 3.8.). The warnings and cautions shall appear indexed numbered (e.g., Warning 6 or Caution 4) as part of the step it pertains to. The warning or caution statement shall precede the step that it applies to (e.g., 4. (WARNING 6) Manually open wings to full open and locked position.). Notes will precede the step that they pertain to.

3.20 Revisions, changes, and updates.

3.20.1 Page-based TMs and checklists. When change pages are ordered, the deliverable product for printing and distribution will be a change package. Change pages will be written in the same style and format as the existing manual. There are two types of revisions that can be prepared for a NAVAIR TM: a pickup revision and a complete revision. The requiring activity shall determine the type of revision required (see 6.2).

3.20.1.1 Changed pages. Following the basic issue or a complete revision, change pages shall be numbered beginning with "Change 1." Subsequent change pages shall be numbered consecutively until a complete revision is issued. If a page has been previously changed, the previous change number and date shall be removed and replaced by the current change number and date. The change number and date shall be placed in the lower right corner on all pages affected by the change.

3.20.1.2 Pickup revisions. A pickup revision incorporates the basic issue or latest revision of a manual, all previous change pages, and the new change pages that would require the issuance of an additional revision. Only those updated or added change pages will have the current change number and date. Those pages not affected by the current change shall retain the previous change symbols and change number/date.

3.20.1.3 Complete revisions. A complete revision requires rewrite and reorganization of the technical content of the data. All pages, paragraphs, illustrations and tables shall be renumbered to establish correct sequence. All existing change numbers, change bars, dates and change symbols shall be removed. Change symbols will be inserted only on those pages incorporating new or changed data during the preparation of the complete revision. The revision date shall be assigned by the requiring activity (see 6.2).

3.20.1.4 Change symbols. Changes to text and tables shall be indicated by a change bar. A miniature pointing hand or change bar symbol shall be used for illustrations. All existing

change symbols shall be eliminated from the pages affected by the current change. After removal of previous change symbols, new change symbols shall be inserted highlighting material changed or added during the current change. Changes to title pages, introductory material, indexes, blank space resulting from change requirements, typographical errors, and minor inaccuracies that do not change the meaning of the information do not require change symbols.

3.20.1.5 Supersedure notice. A supersedure notice is always required when a revision is issued and may be required when a TM supersedes other TMs or portions of TMs.

3.20.2 ETMs and ETM checklists. When changes to ETMs are ordered, the deliverable product shall be either an update or a complete revision. The requiring activity will determine the type and frequency of the change required (see 6.2).

3.20.2.1 Revisions. A complete ETM revision requires rewrite of the technical content of the data to ensure that all new data and past updates are included. When applicable, all existing change numbers, change bars, dates, and change symbols will be removed. When required by the requiring activity (see 6.2), a change summary shall be provided (see 3.18.7.). Revisions will be incremental and the frequency of revisions will be defined in the contract (see 6.2). Each revision to an ETM shall be identified by a revision date.

3.20.2.2 Updates. Updates are changes to the initial version of the ETM or to the latest complete revision of an ETM. Updates are issued incrementally as necessary, or as required by the contract (see 6.2). When authorized by the requiring activity (see 6.2), updates shall include change symbols and change dates to inform the user what has changed and where the changes or additional information is located. When required by the requiring activity (see 6.2), a change summary shall be provided (see 3.18.7).

3.20.2.3 Change symbols. When authorized by the requiring activity (see 6.2), change symbols shall be inserted to identify technical changes in text, illustrations, and tables. Changes to title pages, introductory material, indexes, blank space resulting from change requirements, typographical errors, and minor inaccuracies that do not change the meaning of the information do not require change symbols.

a. Text and tabular data. The text and tabular data affected by a change should be indicated by the letter "R" or a change bar in the outer margin.

b. Illustrations. Change symbols for illustrations shall be as follows:

(1) Miniature pointing hand. A miniature pointing hand shall be used to highlight the area containing the changed material.

(2) Change bar. When several changes are made in one area, or the area is congested, a change bar may be used to indicate a general area. The change bar should be placed in such a manner as to clearly indicate the changed area without confusing the user. If an illustration has been extensively changed, a change bar may be placed along the outer margin of the illustration.

3.21 Printing and binding (Page-based checklists and TMs only).

3.21.1 Checklists.

3.21.1.1 Type size. Reproduction type size shall be as specified by the responsible activity (see 6.2). Title and subheading type sizes will be as specified by the responsible activity (see 6.2).

3.21.1.2 Paper stock. Unless otherwise specified in the contract (see 6.2), text and title pages shall be on 20 pound white sulphite stock or its equivalent. Checklist sheets shall be plasticized on both sides with an acrylic emulsion having a minimum thickness of 1/2 mil and a maximum thickness of 2 mils. This coating shall be applied after printing. Trim size of a checklist page shall be 5 by 8 inches.

3.21.1.3 Type page area. Maximum width of text and illustrations shall be 4-1/4 inches (25-1/2 picas) allowing 5/8 inch for binding margin and 1/4 inch for bottom margin. Fold-over or fold-out pages shall not be used.

3.21.2 TMs. Unless otherwise specified in the contract (see 6.2), manuals shall be printed on 60 pound white stock.

3.22 Numbering and titling. Conventional weapons (see 6.4.3), airborne stores, and release and control systems checklists shall be numbered and titled as follows or as specified by the responsible activity (see 6.2).

NAVAIR 01-XXXX-	75-1	RELEASE AND CONTROL (when subsystem checklists are not required)
	-1A1	(Basic under separate cover)
	-1A2	(Subsystem under separate cover)
	-1A3	(Subsystem under separate cover)
	Etc.	
NAVAIR 01-XXXX-	75-2	(TBD)
	-3	BOMBS RETARD/NONRETARD (includes full size practice bombs)
	-4	FIRE BOMBS
	-5	MK 60 SERIES MINE
	-6	MINES
	-6A1	MK 65 MINE
	-7	TORPEDO
	-7A	MK 50 TORPEDO
	-7A1	MK 54 TORPEDO
	-8	PYROTECHNICS
	-9	(TBD)
	-10	TOW (tube-launched, optically tracked and wire-guided)

-11	TALD
-12	ROCKET LAUNCHERS
-14	CBUs
-15	DISPENSERS
-16	PRACTICE BOMBS
-17	AIRCRAFT GUNS
-17A	GUN PODS
-18	FUEL TANKS/STORES
-19	WALLEYE
-19A1	DATA POD
-20	AIM-9
-20A1	INSTRUMENT PACKAGES
-21	AIM-7 (SPARROW)
-22	ECM
-22A2	AN/ALQ-167
-23	TARGET LAUNCHERS
-23A2	BQM-74C
-24	SEARCH STORES
-25	AGM-144 (HELLFIRE)
-26	(TBD)
-27	AN/ALQ 170/ALE-43
-28	CAMERA POD
-29	(TBD)
-30	(TBD)
-32	(TBD)
-33	(TBD)
-33A1	PASE AGM-65
-33A2	PASE AGM-88
-34	LGB/GBU
-35	AIM-54
-36	ALE-37
-37	AN/ARQ-49
-38	AGM-84
-39	FORWARD ARMING AND REFUELING POINT (FARP)
-40	ARM/DEARM

3.22.1 Technical Manual Identification Numbering System (TMINS). TMINS is a numbering system developed in coordination with SYSCOMs in response to the Naval Air Systems Command (NAVAIR) sponsored project to standardize TM numbers and their method of assignment throughout the Navy. The TMINS provides a single, user-oriented number and indexing system that satisfies the requirements of all NAVAIR Systems Commands for identifying, referencing, and requisitioning TMs and changes thereto; facilitates the identification and ordering of TMs by the operating forces and other uses; is compatible with ADP manipulation procedures; and implements a system with the least disruption to TM operations during the transition period. Weapons checklists shall be numbered and titled as follows or as specified by the responsible activity (see 6.2).

A1-XXXXX-LWS	-200	Release and Control Basic
A1-XXXXX-LWS	-210	Release and Control Missiles Air-to-Air
A1-XXXXX-LWS	-220	Release and Control Air-to-Ground/WAT end-to-end
A1-XXXXX-LWS	-260	(TBD)
	-270	BOMBS RETARD/NONRETARD (includes full size practice bombs)
	-280	FIRE BOMBS
	-290	(TBD)
	-300	(TBD)
	-310	AMNS
	-320	MK 60 SERIES MINES
	-330	(TBD)
	-335	PASE BOMBS/CBU/GBU
	-340	(TBD)
	-350	MK 65 MINE
	-360	MINES
	-370	MK 46 TORPEDOES
	-380	(TBD)
	-390	MK 50 TORPEDOES
	-400	MK 54 TORPEDOES
	-410	PYROTECHNICS
	-420	CBUs
	-430	(TBD)
	-440	(TBD)
	-450	PRACTICE BOMBS
	-460	FUEL TANKS STORES
	-470	DISPENSERS
	-480	SEARCH STORES
	-490	TARGET/LAUNCHERS
	-500	(TBD)
	-510	AIM-120
	-520	AIM-7
	-530	AIM-9
	-540	AIM-54

-550	(TBD)
-560	AGM-65
-570	(TBD)
-580	AGM-84
-590	AGM-88
-600	(TBD)
-610	AGM-154A
-620	AGM-114
-630	AGM-119
-640	WALLEYE
-650	DATA PODS
-660	GBUs
-661	PASE GBU
-670	GBU-30 SERIES
-680	ARM/DEARM
-690	FLIR POD
-700	ECM PODS
-710	TACTS POD
-720	ECM
-730	TALD
-740	AN/ALQ 167
-750	ROCKET LAUNCHERS
-760	AIRCRAFT GUNS
-770	GUN PODS
-780	(TBD)
-790	(TBD)
-800	CREW SERVED GUNS

3.22.2 Checklists. Airborne weapons/stores and release and control system checklists that require numbering and titling and are not listed in 3.22 shall be numbered and titled as specified by the requiring agency or responsible activity (see 6.2).

3.22.3 Weapons assembly manuals and checklists. Weapons assembly manuals shall be numbered as NAVAIR 11-140-XX series publications as per the responsible activity (see 6.2). The checklists that support those manuals shall be consecutively numbered, NAVAIR 11-140-XX-1 for the first supporting checklist, NAVAIR-11-140-XX-2 for the second supporting checklist, NAVAIR-11-140-XX-3 for the third supporting checklist, and so on.

4. VERIFICATION

4.1 Verification. Verification shall be conducted as prescribed in the contract (see 6.2). Technical manual NAVAIR 00-25-600 provides guidance on the verification process.

5. PACKAGING

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

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Manuals prepared in accordance with this specification are intended to provide information required to cover aircraft armament configuration, perform functional checkout of weapon release and control systems on the aircraft, and load/unload conventional airborne weapons/stores along with assembly/disassembly of weapons and configuration of airborne weapons support equipment.

6.2. Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.

b. Sequence of presentation of descriptive data, if required.

c. Sequence of coverage for specialized stores, if required.

d. Whether technical manuals, checklist and the airborne/stores loading publication index should be prepared other than as specified within this specification (see 3.1).

e. Appropriate and latest distribution statement and destruction notice (see 3.8d).

f. Other required reading for checklists, when applicable (see 3.8.2g).

g. Whether release and control or test and reprogramming check information should be developed other than as specified (see 3.12).

h. Sequence of specific manual sections and content presentation if other than as specified (see 3.14).

i. Whether launcher tube loading procedures should be included (see 3.14o).

j. Whether all models of each missile should not be covered in a single section (see 3.14p).

k. Whether substitute items should be listed in the IPB Group Assembly Parts List (see 3.15.1.3a (5)).

l. Whether safing (dearming area before engine shutdown) should be included, when required (see 3.16.4.3).

m. Requirements for emergency dearming procedure information and/or reference to proper authority (see 3.16.4.3).

n. If other than minimal essential dearming or safing procedures should be given (see 3.16.4.3a and b).

o. Whether all inclusive standalone or combined checklists should be developed in the event no loading manual exists for an aircraft platform because of limited weapons capability (see 3.16.5).

p. General style and format requirements other than as specified (see 3.18).

q. Other commercial graphics formats that may be acceptable, if approved (see 3.18.14.1).

r. Whether engineering drawings may be used as illustrations (see 3.18.14.3.2).

s. Use and choice of color (see 3.18.14.3.5b).

t. Specific style and format requirements other than as specified (see 3.19).

u. Type of revision for page-based TMs and checklists (see 3.20.1).

v. Revision date for complete revisions (see 3.20.1.3).

w. Type and frequency of changes to ETMs (see 3.20.2).

x. Whether a change summary should be included for ETM revisions (see 3.20.2.1).

y. Frequency of revisions to ETMs (see 3.20.2.1).

z. Frequency of incremental updates to ETMs (see 3.20.2.2).

aa. Whether updates to ETMs should include change symbols and change dates (see 3.20.2.2 and 3.20.2.3).

ab. Whether a change summary should be included for ETM updates (see 3.20.2.2).

ac. Reproduction type size (see 3.21.1.1).

ad. Title and subheading type sizes (see 3.21.1.1).

ae. Whether text and title pages for checklists should be on other than 20 pound white sulphite stock or equivalent (see 3.21.1.2).

af. Whether manuals should be printed on other than 60 pound white stock (see 3.21.2).

ag. Whether conventional weapons, airborne stores, and release and control systems checklists should be numbered and titled other than as specified (see 3.22).

ah. Whether weapons checklists should be numbered and titled other than as specified (see 3.22.1).

ai. Numbering and titling of airborne weapons/stores and release and control system checklists that are not listed (see 3.22.2).

aj. Numbering of weapons assembly manuals and checklists (see 3.22.3).

ak. Verification (see 4.1).

al. Packaging (see 5.1).

6.3 Technical manuals. The requirement for technical manuals should be considered when this specification is applied on a contract. If technical manuals are required, specifications and standards that have been authorized and assigned an Acquisition Management Systems Control (AMSC) number 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 Accessory suspension equipment. Accessory suspension equipment is an item which is required to mate the conventional weapons/stores to the aircraft and which remains as an integral part of the system (e.g., pylon, missile launcher and adapters, bomb release unit, rocket launcher, ejector cartridge, etc.).

6.4.2 Armament weapons support equipment (AWSE). Equipment required to support weapons/stores handling, transportation and loading on aircraft.

6.4.3 Conventional weapons. Conventional weapons include all weapons or weapon components (bombs, rockets, guns, ammunition, pyrotechnics, sonobouys, etc.) which are not normally aircraft inventory items and which do not carry nuclear devices.

6.4.4 Document type definition (DTD). The definition of the markup rules for a given class of documents. A DTD or reference to one should be contained in any SGML or XML conforming document.

6.4.5 Extensible Markup Language (XML). A language for text and database information. Based on the industry standard SGML, XML focuses on the structure and content of information. Text or database elements are “fielded” – assigned tags that identify the kind of information they contain, and how different elements interrelate.

6.4.6 Formatting Output Specification Instance (FOSI). The FOSI interprets the style and formatting requirements of the Output Specification (OS). The FOSI can include font, leading, hyphenation and characteristics, etc.

6.4.7 NAVAIRWARCENWPNDIV, China Lake, CA. Cognizant Field Activity (CFA) responsible for weapons loading issues.

6.4.8 Portable Electronic Display Device (PEDD). An electronic device on which display images can be represented; most often a CRT or a liquid-crystal device.

6.4.9 Requiring activity. The organization of a using military service or that organization delegated by a using service which is responsible for the selection of, and determines requirements for, a specific support element.

6.4.10 Responsible activity. The responsible activity defined as NAVAIRWARCENWPNDIV, Code PST32080, China Lake, CA.

6.4.11 Standard Generalized Markup Language (SGML). A language for document representation that formalizes markup and frees it of system and processing dependencies as defined in MIL-PRF-28001.

6.5 Figures contained in this specification. The figures illustrated in this specification are typical examples intended to illustrate style, format and sample content. They should not be used for interpretation of specific technical contents or exact scale requirements.

6.6 Subject term (key word) listing.

Accessories
Airborne weapons assembly manual
Armament system
Armament weapons support equipment
Conventional weapons
Fuzes
Illustrations
Military specifications
Release and control

6.7 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.

AIRCRAFT	WEAPON	NAVAIR NO.	CHANGES	ISSUE DATE	STOCK NUMBER	WEB PDF
	Rocket Launchers	A1-F18EA-LWS-750		01 MAR 00	0801-LP-025-1560	Web
	Guns	A1-F18EA-LWS-760		01 NOV 99	0801-LP-026-1330	Web
SH-60B	Airborne Weapons/Stores Loading Manual	A1-H60BB-LWS-000		01 MAY 00	0801-LP-029-5540	Web
	Release & Control	A1-H60BB-LWS-200	TMCN	15 JAN 00 16 JAN 00	0801-LP-024-9260 0801-LP-024-9261	
	Mk 46 Torpedo	A1-H60BB-LWS-370		01 MAY 00	0801-LP-029-3490	Web
	Mk 50 Torpedo	A1-H60BB-LWS-390		01 MAY 00	0801-LP-029-3510	Web
	Fuel Tanks	A1-H60BB-LWS-460		01 MAY 00	0801-LP-029-3520	Web
	Search Stores	A1-H60BB-LWS-480		01 MAY 00	0801-LP-029-3530	Web
	Instrumentation Packages (AIS Pods)	A1-H60BB-LWS-530		01 MAY 00	0801-LP-029-3540	Web
	AGM-114 Hellfire	A1-H60BB-LWS-620		01 MAY 00	0801-LP-029-3550	Web
	Penguin	A1-H60BB-LWS-630		01 MAY 00	0801-LP-029-3560	Web
	Arm/Dearm	A1-H60BB-LWS-680		01 MAY 00	0801-LP-029-5490	Web
	Chaff Cartridges	A1-H60BB-LWS-700		01 MAY 00	0801-LP-029-3580	Web
	ECM (ALE-39)	A1-H60BB-LWS-720		01 MAY 00	0801-LP-029-3590	Web
SH-60F	Airborne Weapons/Stores Loading Manual	A1-H60FB-LWS-000		01 OCT 99	0801-LP-029-9240	
	Release & Control	A1-H60FB-LWS-200		01 OCT 99	0801-LP-025-9450	
	Mk 46 Torpedo	A1-H60FB-LWS-370		01 OCT 99	0801-LP-025-8710	
	Mk 50 Torpedo	A1-H60FB-LWS-390		01 OCT 99	0801-LP-021-1430	
	Fuel Tanks	A1-H60FB-LWS-460		01 OCT 99	0801-LP-025-8830	
	Instrumentation Packages (AIS Pods)	A1-H60FB-LWS-530		01 OCT 99	0801-LP-025-8720	
	Sonobuoy/Chaff Launcher	A1-H60FB-LWS-700		01 OCT 99	0801-LP-021-1390	
HH-60H	Airborne Weapons/Stores Loading Manual	A1-H60HA-LWS-000		01 MAR 00	0801-LP-025-2750	Web
HH-60H/J	Release & Control	A1-H60HA-LWS-200		01 JAN 00	0801-LP-027-4080	Web
	Fuel Tanks	A1-H60HA-LWS-460		01 MAR 00	0801-LP-027-4090	Web
HH-60H	Instrumentation Package (AIS Pod)	A1-H60HA-LWS-530		01 MAR 00	0801-LP-027-4110	Web

If Web is indicated, publication can be viewed via the NATEC web at www.natec.navy.mil.

ORDNANCE TECHNICAL HOTLINE: DSN 437-4478, Commercial (760) 939-4478

FIGURE 1. Example of a conventional weapons/stores publication index.

NAVAIR 01-700

AIRBORNE WEAPONS/STORES

MANUALS/CHECKLISTS

PUBLICATION INDEX

THIS PUBLICATION SUPERSEDES
NAVAIR 01-700 OF 1 APR 2000

DISTRIBUTION STATEMENT C: Distribution authorized to U.S. Government agencies and their contractors to protect publications required for official use or for administrative or operational purposes only, determined on 1 July 2000. Other requests for this document shall be referred to Commanding Officer, Naval Air Technical Data and Engineering Service Command, Naval Air Station North Island, P.O. Box 357031, Building 90, Distribution, San Diego, CA 92135-7031.

DESTRUCTION NOTICE: For unclassified, limited documents, destroy by any method that will prevent disclosure of contents or reconstruction of the document.

PUBLISHED BY DIRECTION OF THE
COMMANDER, NAVAL AIR SYSTEMS COMMAND

0801-LP-029-7890

1 JULY 2000

NATEC ELECTRONIC MANUAL

FIGURE 2. Example of a publication index title page.

CONTACTS

Address: Commander
Naval Air Warfare Center
Engineering Bldg 02466
Attn:_____, Code 331000D/PST 32080
China Lake, CA 93555-6100

FAX Nos.: (*DSN number*), COM. (*number*)
E-mail: name@navair.navy.mil

Commercial prefix: (760) 939-
DSN

(*DSN number*)	(*name*) E-mail: (*name*)@navair.navy.mil	Weapons Loading Standardization Team Leader
Aircraft Loading:		
(*DSN number*)	(*name*) E-mail: (*name*)@navair.navy.mil	EA-6B, T-45, F/A-18E/F, Marine Helos
	Vacant (unfunded)	Navy Helos, OV-10, A-4
	Vacant (unfunded)	AV-8, Targets, F/A-18A/B/C/D (Domestic and FMS)
(*DSN number*)	(*name*) E-mail: *(name)*@navair.navy.mil	S-3, P-3, SH-60B/F, HH-60H
(DSN number) Com: (*number*)	(*name*) E-mail: (*name*)@sfwspac.lemoore.navy.mil	F/A-18E/F, JDAM Training
(*DSN number*)	(*name*) E-mail: (*name*) @navair.navy.mil	F-14, A/C System Matrix, AWSE
Release & Control:		
(*DSN number*)	(*name*) E-mail: *(name)*@navair.navy.mil	AV-8, EA-6B, F/A-18E/F
(*DSN number*)	(*name*) E-mail: *(name)*@navair.navy.mil	F-18A/B/C/D, UH-1N, AH-1W, F-14, V-22, VH Helos SH-60B/F, HH-60H
(*DSN number*)	(*name*) E-mail: (*name*)@navair.navy.mil	S-3, P-3, FMS A-7, T-45, C-130
	Vacant (unfunded)	SH-3, SH-2, Test Equipment, Targets
Weapons Assembly:		
(*DSN number*)	(*name*) E-mail: (*name*)navair.navy.mil	Bombs/CBU's/GBU's
(*DSN number*) Com: (*number*)	(*name*) E-mail: (*name*) @crane.navy.mil	Pyro
	Vacant (unfunded)	Missiles and Selected Vehicles
Office Staff:		
(*DSN number*)	(*name*) E-mail: (*name*)@navair.navy.mil	Administrative Officer, Funding, JO Tracking
	Vacant	Office Manager, SALTS, TPDR's and IRAC Tracking
Publishing:		
(*DSN number*)	(*name*) E-mail: (*name*)navair.navy.mil	Editor/Publisher, 01-700

Please call us with your comments, suggestions, and critiques of the system and the Weapons Loading Publications and Checklists.
Remember, this is your product and we strive to make you a satisfied customer.

Note: The above italicized text (within parentheses) shall be replaced with the latest point of contact information which can be obtained from NAVAIR 01-700 or the requiring activity.

FIGURE 3. Example of a publication index point of contact page.

TABLE OF CONTENTS

FIGURE 4. Example of a publication index table of contents.

NAVAIR 01-85AD-75

TECHNICAL MANUAL

AIRBORNE WEAPONS/STORES LOADING MANUAL

NAVY MODELS

A-6 SERIES, EA-6, AND KA-6 AIRCRAFT

THIS PUBLICATION SUPERSEDES
NAVAIR 01-85AD-75 DTD 1 MAY 1989
AND ALL CHANGES THERETO

DISTRIBUTION STATEMENT C: Distribution authorized to U.S. Government agencies and their contractors to protect publications required for official use or for administrative or operational purposes only, determined on 1 May 1992. Other requests for this document shall be referred to Commanding Officer, Naval Air Technical Services Facility, 700 Robbins Avenue, Philadelphia, PA 19111-5097.

DESTRUCTION NOTICE: For unclassified, limited documents, destroy by any method that will prevent disclosure of contents or reconstruction of the document.

Published by direction of Commander, Naval Air Systems Command

0801LP1014570

1 MAY 1992

NATEC ELECTRONIC MANUAL

FIGURE 5. Example of a title page (weapons/stores loading manual).

NAVAIR 11-140-5

TECHNICAL MANUAL

AIRBORNE WEAPONS ASSEMBLY MANUAL

MK 80/BLU SERIES GENERAL PURPOSE BOMBS, MK 77 FIRE BOMBS AND PRACTICE BOMBS

FLEET MAINTENANCE ACTIVITIES

Published by Direction of Commander, Naval Air Systems Command

1 APRIL 1990

0801LP1014571 **Change 1 - 1 July 2000**

NATEC ELECTRONIC MANUAL

FIGURE 5. Example of a title page (weapons assembly manual) - Continued.

NAVAIR 11-140-25

TECHNICAL MANUAL

ARMAMENT WEAPONS SUPPORT EQUIPMENT CONFIGURATION MANUAL

ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE ACTIVITIES

THIS MANUAL SUPERSEDES
NAVAIR 11-140-25 DTD 01 SEP 1995
AND ALL CHANGES THERETO

DISTRIBUTION STATEMENT C: Distribution authorized to U.S. Government agencies and their contractors to protect publications required for official use or for administrative or operational purposes only, determined on 1 March 1999. Other requests for this document shall be referred to Commanding Officer, Naval Air Station North Island, P.O. Box 357031, Building 90, Distribution, San Diego, CA 92135-7031.

DESTRUCTION NOTICE: For unclassified, limited documents, destroy by any method that will prevent disclosure of contents or reconstruction of the document.

Published by direction of Commander, Naval Air Systems Command

0811-LP-0146390

1 MARCH 1999

NATEC ELECTRONIC MANUAL

FIGURE 5. Example of a title page (AWSE configuration manual) - Continued.

NAVAIR 11-104-5-1

AIRBORNE WEAPONS ASSEMBLY

CHECKLIST

BOMBS/FIRE BOMBS/ BOMB FINS/FUZES/ ASSOCIATED COMPONENTS AND PRACTICE BOMBS

This publication supersedes NAVAIR 11-140-5-1 dated 1 June 1997 and all changes thereto.

DISTRIBUTION STATEMENT C: Distribution authorized to U.S. Government agencies and their contractors to protect publications required for official use or for administrative or operational purposes only, determined on 1 July 1999. Other requests for this document shall be referred to Commanding Officer, Naval Air Technical Data and Engineering Command, Naval Air Station North Island, P.O. Box 357031, Building 90, Distribution, San Diego, CA 92135-7031.

DESTRUCTION NOTICE: For unclassified, limited documents, destroy by any method that will prevent disclosure of contents or reconstruction of the document.

PUBLISHED BY DIRECTION OF
COMMANDER, NAVAL AIR SYSTEMS COMMAND

0801-LP-029-7891 1 APRIL 1999

NATEC ELECTRONIC MANUAL

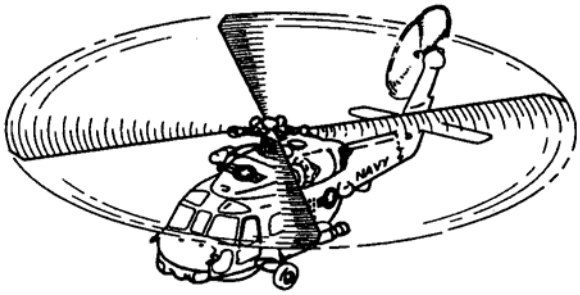
FIGURE 5. Example of a title page (airborne weapons assembly checklist) - Continued.

CHANGE NOTICE

A1-H60BB-LWS-370

Conventional Weapons

CHECKLIST
SH-60B
MK-46



DISTRIBUTION STATEMENT C: Distribution authorized to U.S. Government agencies and their contractors to protect publications required for official use or for administrative or operational purposes only, determined on 1 May 2000. Other requests for this document shall be referred to Commanding Officer, Naval Air Technical Data and Engineering Service Command, Naval Air Station North Island, P.O. Box 357031, Building 90, Distribution, San Diego, CA 92135-7031.

DESTRUCTION NOTICE: For unclassified, limited documents, destroy by any method that will prevent disclosure of contents or reconstruction of the document.

PUBLISHED BY DIRECTION OF THE
COMMANDER, NAVAL AIR SYSTEMS COMMAND

0801LP0293490

1 May 2000
CHANGE 1 1 OCT 00

NATEC ELECTRONIC MANUAL

FIGURE 5. Example of a title page (typical checklist with change) - Continued.

A1-H60BB-LWS-000
List of Effective Pages

LIST OF EFFECTIVE PAGES

Dates of issue for original and changed pages are:

Original .....0 (Incorporates IRAC 1) ..... 1 May 2000
Change .....1 .... 1 June 2000

Insert latest changed pages; destroy superseded pages in accordance with applicable regulations.

NOTE: On a changed page, the portion of the test affected by the latest change is indicated by a vertical line, or other change symbol, in the outer margin of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Total number of pages in this manual is 323, consisting of the following:

Page No.	*Change No.	Page No.	*Change No.	Page No.	*Change No.
Title	0	5-1 - 5-24.	0	(11-10 Blank)	0
A.....	0	6-1 - 6-22.	0	12-1	0
Letter of Promulgation	0	7-1 - 7-20.	0	(12-30 Blank)	0
i-xviii...	0	8-1 - 8-7...	0	13-1 - 13-12	0
1-1 - 1-7 ...	0	(8-8 Blank)	0	14-1 - 14-11	0
(1-8 Blank)	0	9-1 - 9-13.	0	(14-12 Blank)	0
2-1 - 2-66	0	(9-14 Blank)	0	Glossary 1 - Glossary 6	0
3-1 - 3-6 ...	0	10-1 - 10-7	0		
4-1 - 4-55 .	0	(10-8 Blank)	0		
(4-56 Blank)	0	11-1 - 11-9	0		

*Zero in this column indicates an original page.

A

FIGURE 6. Example of list of effective pages (typical manual).

SH-60B A1-H60BB-LWS-370 MK-46 TORPEDO

CHANGES INCORPORATED

Insert latest change pages; destroy superseded pages in accordance with applicable regulations.

Dates of issue for original and change pages are:

Basic ..... 0 (Incorporates IRAC 1) .....1 May 2000
Change.....1 ..... 1 Oct 2000

Total number of pages in this checklist is 26, consisting of the following:

Pg. No.	Chg. No.	Pg. No.	Chg. No.	Pg. No.	Chg. No.
Title	1	1 - 2	0	7 - 15	1
A	1	3	1	16 - 21	0
i - ii	1	4 - 6	0	22 Blank	0

ADDITIONAL COPIES OF THIS PUBLICATION MAY BE OBTAINED AS FOLLOWS:

Procedures to be used by Naval activities and other Department of Defense organizations requiring NAVAIR technical publications are defined in the NAVAL AIR SYSTEMS COMMAND TECHNICAL MANUAL PROGRAM manual, NAVAIR 00-25-100 and Distribution of Aeronautical Technical Publications Instruction, NAVAIRINST 5605.4 series.

When an activity has a continuing requirement for automatic distribution of technical publications, the Automatic Distribution Requirement Listing (ADRL) shall be used. For complete information on distribution, refer to NAVAIR 00-25-100.

1 May 2000
Change 1 1 Oct 00

A

FIGURE 6. Example of list of effective pages (typical checklist) - Continued.

CHIEF OF NAVAL OPERATIONS
OPNAV (OP-50)
DEPARTMENT OF THE NAVY
WASHINGTON, D.C. 20350

1 February 1991

LETTER OF PROMULGATION

1. The Airborne Weapons Assembly Manual provides technical and procedural information for conventional weapons assembly. The information provided in this manual is abbreviated in approved and verified NAVAIR Airborne Weapons Assembly Checklists. The use of the Airborne Weapons Assembly Manual or Airborne Weapons Assembly Checklists is mandatory for all airborne weapons assembly evolutions.

2. The manual and appropriate checklists are continuously monitored and updated to provide operating personnel with the latest verified data. Operating personnel should verify use of the most recently updated manual/checklist by reviewing the Airborne Weapons/Stores Publication Index, issued quarterly.

3. The Airborne Weapons Assembly Manual/Checklists standardize all weapons assembly procedures. They do not provide authorization for flight or tactical doctrine.

4. If there is a conflict between this manual and any other publications, with the exception of paragraph 1-3 of this publication, the provisions of this manual shall prevail until the conflict is resolved by the Commander, Naval Air Systems Command.

J D Taylor

JEREMY D. TAYLOR
Rear Admiral, U.S. Navy
Director, Aviation Plans and Requirements Division

FIGURE 7. Example of letter of promulgation.

A1-H60BB-LWS-000
LIST OF VALID TPDRs

LIST OF VALID TECHNICAL PUBLICATION DEFICIENCY REPORTS (TPDRs) INCORPORATED

ORIGINATOR	TPDR/REPORT CONTROL NO.	LOCATION
HSL-44	55147-97-2001	Section 2, (Pg) 2-34
HSL-44	55147-97-21002	Section 2, (Fig 2-6) Pg 2-35
HSL-46	53916-97-0021	Section 6, (Pg) 6-14
HSL-46	53916-97-0022	Section 7, (Pg) 7-13
HSL-46	53916-97-0012	Section 2, (Pg) 2-9
HSL-46	53916-97-0013	Section 5, Table 5-1
HSL-41	55138-97-0007	Section 5, Table 5-1
HSL-48	55151-98-2015	Section 8, (Pg) 8-5

i

FIGURE 8. Example of list of TPDRs incorporated.

A1-H60BB-LWS-000
Table of Contents

TABLE OF CONTENTS

SECTION **PAGE**

ii

FIGURE 9. Example of table of contents (manual).

NAVAIR 11-140-5-1

TABLE OF CONTENTS

TITLE PAGE

FIGURE 9. Example of table of contents (WAM checklist) - Continued.

A1-H60BB-LWS-000
List of Illustrations

LIST OF ILLUSTRATIONS

FIGURE 10. Example of technical manual list of illustrations.

A1-H60BB-LWS-000
List of Tables

LIST OF TABLES

FIGURE 11. Example of technical manual list of tables.

SAFETY SUMMARY

The following are general safety precautions that are not related to any specific procedures and, therefore, do not appear elsewhere in this publication. These are precautions that personnel must understand and apply during many phases of aircraft rearming. FOLLOW APPROVED AND VERIFIED PROCEDURES.

Explosive accidents are prevented by thorough preplanning, extensive knowledge of ordnance and associated equipment, and careful handling of ordnance. The phrase "The life you save may be your own" applies especially to ordnance handlers. It is the responsibility of each individual to ensure that only safe, approved practices and procedures are followed when handling ordnance.

Safety devices shall always be used and maintained in proper working order.

Changes, modifications, disassembly or additions to ordnance material shall not be made without being approved by proper authority.

No ammunition or explosive shall be used in any store or accessory for which it is not designed/authorized.

Personnel who authorize movement of ordnance material by power shall ensure that an adequate safety switch is maintained in the area.

Personnel must be certified for handling aviation ordnance in accordance with the requirements of current instructions/directives.

Personnel working with or near high voltages shall be familiar with modern methods of resuscitation.

Restrictions specified in loading publications are mandatory and must be adhered to by all personnel.

Weapon tiedown straps shall be maintained on the weapon as long as possible when loading, and installed on the weapon as soon as possible when unloading.

Strict compliance with procedures and precautions in NAVSEA OP 3565/NAVAIR 16-1-529/NAVELEX 0967-LP-624-6010 (Vol 1 and Vol 2) is mandatory when in a HERO environment.

The mechanical latching of weapons on aircraft racks/launchers shall be completed before the engine(s) on that aircraft is/are started unless otherwise specified in loading publications. However, operational commitments may dictate that weapons must be loaded/unloaded while engine(s) are turning. This extraordinary action must have prior approval of type commander.

Ordnance must never be handled in a rough and hasty manner.

Access to safety equipment such as fire alarms, fire fighting equipment, first aid equipment, etc., shall not be blocked at any time.

FIGURE 12. Example of safety summary.

A1-H60BB-LWS-000
Safety Summary

SAFETY SUMMARY (Continued)

Anyone knowing of (a) defective ammunition or other explosive ordnance or defective containers or handling devices, (b) rough or improper handling, or (c) willful or accidental violation of the safety precautions, however slight, shall immediately report the act to his/her immediate supervisor.

All persons who supervise work in connection with the inspection, care, preparation, use, or handling ammunition or explosive shall exercise utmost care that all regulations and instructions are observed.

Do not work beneath a weapon/store unnecessarily.

Protective equipment such as safety eye glasses or eye shields, safety helmet or hats, ear protective devices, gloves, mittens, etc., and safety shoes shall be worn as required to guard against personal injury.

Smoking. Smoking is not permitted in magazines, nor in the immediate vicinity of handling or loading operations involving explosives or ammunition.

Accident Reporting. Prompt reporting of accidents involving ordnance equipment, ammunition, and explosives where material damage or personnel injuries are sustained shall be made in accordance with current instructions. If doubt exists as to the necessity of a report, it shall always be resolved in favor of the report. Report in accordance with OPNAVINST 5102.1, 4790.2 and 8000.16.

Visual inspections of ammunition handling equipment shall be performed before, during and after use.

Improper adjustment of swaybraces can cause inadvertent release or hung weapons and may result in loss of life and/or damage to property.

When loading/handling forward firing ordnance, working in front of or behind will be held to a minimum.

APU/Engine noise can cause permanent damage to the unprotected ear. When APU/Engine is operating, personnel working in this area should wear regulation protective devices.

xviii

FIGURE 12. Example of safety summary - Continued.

NAVAIR 11-140-6.1
HAZARDOUS MATERIAL WARNINGS

WARNINGS APPLICABLE TO HAZARDOUS MATERIALS

1. Warnings for hazardous materials listed in this manual are designed to warn personnel of hazards associated with such items when they come in contact with them by actual use. Additional information related to hazardous materials is provided in OPNAVINST 5100.23, Navy Occupational Safety and Health (NAVOSH) Program Manual, NAVSUPINST 4100.2, Navy Hazardous Material Control Program, and the DOD 6050.5, Hazardous Materials Information System (HMIS) series publications. For each hazardous material used within the Navy, a Material Safety Data Sheet (MSDS) is required to be provided and available for review by users. Consult your local safety and health staff concerning any questions on hazardous chemicals, MSDS, personal protective equipment requirements, and appropriate handling and emergency procedures and disposal guidance.

2. Complete warnings for hazardous materials referenced in this manual are identified by use of an icon, nomenclature, and specification or part number of the material, and a numeric identifier. The numeric identifiers have been assigned to the hazardous materials in the order of their appearance in the manual. Each hazardous material is assigned only one numeric identifier. Repeated use of a specific hazardous material references the numeric identifier assigned at its initial appearance. Numeric identifiers for hazardous materials added as a result of a change will be added to the end of the list provided in the Hazardous Material Warning Sheets (HMWS) and shall not be renumbered to coincide with the order of their appearance in the manual. The approved icons and their application are shown in Explanation of Hazardous Material Icons.

3. In the text of the manual, the WARNING caption will not be used for hazardous materials. Such warnings will be identified by an icon and numeric identifier. The material nomenclature will also be provided. The user is directed to refer to the following corresponding numeric identifier for the complete warning applicable to the hazardous materials.

EXPLANATION OF HAZARDOUS MATERIALS ICONS

CHEMICAL
The symbol of drops of a liquid onto a hand shows that the material will cause burns or irritation of human skin or tissue.

EXPLOSION
The rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources or ignition, or high pressure.

EYE PROTECTION
The symbol of a person wearing goggles shows that the material will injure the eyes.

FIRE
The symbol of a flame shows that a material can ignite and burn you.

POISON
The symbol of a skull and crossbones shows that the material is poisonous or is a danger to life.

HMWS-1

FIGURE 13. Example of hazardous material warnings.

NAVAIR 11-140-6.1
HAZARDOUS MATERIAL WARNINGS

VAPOR

The symbol of a human figure in a cloud shows that vapors of a material present a danger to your life or health

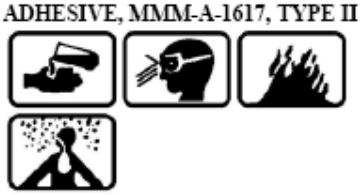
STATIC

The missile contains Electrostatic Sensitive Devices (ESD). Do not touch umbilical connector when protective cap has been removed, or damage to missile may result.

HMWS-2

FIGURE 13. Example of hazardous material warnings - Continued.

HAZARDOUS MATERIALS WARNINGS

INDEX	MATERIAL	WARNING
1	ALCOHOL, ISOPROPYL, TT-I-735 	Isopropyl Alcohol, TT-I-735, is toxic and flammable. Avoid contact with skin and eyes. Use in a well-ventilated area and avoid breathing vapors. May be fatal if swallowed. Keep away from heat, sparks, and flame. Store in a clean, cool, well-ventilated area away from ignition sources and oxidizing agents. Keep containers tightly closed when not in use. Protection: butyl gloves and chemical goggles; faceshield and protective clothing required when splashing is possible or expected; half-mask respirator with organic vapor cartridge required in poorly ventilated areas.
2	PETROLEUM BASE HYDRAULIC FLUID, MIL-H-5606 	Petroleum Base Hydraulic Fluid, MIL-H-5606, is a mild skin, eye and respiratory tract irritant. May contain small quantities of triorthocresylphospate, a toxic substance. There is a slight fire hazard when exposed to heat and flames. Keep container in a cool, dry place away from heat, flames and strong oxidizers. Avoid contact with skin and eyes. Avoid breathing vapors. Wash hands thoroughly after handling. Protection: neoprene gloves, chemical goggles, and faceshield if splashing is possible; use of a respirator with organic vapor cartridge may be required in poorly ventilated areas.
3	DESICCANT, ACTIVATED, MIL-D-3464, TYPE II 	Activated Desiccant, MIL-D-3464, Type II, is an inhalation hazard. If unit pack integrity is broken, handle with care and avoid breathing dust. May contain crystalline quartz, a suspected carcinogen. Protection: none normally required; use dust mask if excessive dusting occurs.
4	WATER-DISPLACING CORROSION PREVENTIVE COMPOUND, MIL-C-81309E, TYPE II, CLASS 1 	Water-Displacing, Corrosion Preventive Compound, MIL-C-81309E, Type II, Class 1, is toxic and flammable. Avoid contact with skin and eyes. Avoid breathing vapors. Keep away from heat, sparks, and flame. Vapor accumulations may explode if ignited. Protection: rubber gloves and chemical goggles; faceshield and laboratory apron required when working with large quantities; half-mask respirator with acid/organic vapor cartridge and mist pre-filter required during spraying operations or in poorly ventilated areas.
5	GENERAL PURPOSE RUBBER BASE ADHESIVE, MMM-A-1617, TYPE II 	General Purpose Rubber Base Adhesive, MMM-A-1617, Type II, is flammable and may affect the central nervous system. Use with adequate ventilation. Protection: rubber gloves, chemical goggles and protective skin compound; half-mask respirator with organic vapor cartridge required in poorly ventilated areas.

HMWS-3

FIGURE 13. Example of hazardous material warnings - Continued.

WARNINGS/CAUTIONS

The following Warnings and Cautions pertain to a specific operation/procedure and are referenced throughout this publication.

WARNINGS:

1. Bombs with more than 56 square inches or one area greater than 15 square inches of thermal coating missing shall not be used afloat.

2. (FMU-139) If safing pin is removed from FMU-139 series fuzes and no red and black striping is visible on gag rod sleeve (sleeve not extended), fuze is safe; slightly depress gag rod sleeve and reinsert safing pin. If safing pin cannot be reinserted, notify proper authority for disposition. If red and black striping is visible on extended FMU-139 series gag rod sleeve, fuze may be unsafe. Do not attempt to depress (reset) gag rod/sleeve or reinsert safing pin. Notify proper authority for disposition.

3. (FMU-152) Armed fuze could cause damage to equipment and possible injury to personnel. If gag rod SAFE/ARM indicator is protruding from the safing pin housing and shows red, consider the fuze armed. Notify proper authority.

4. (MK 376) If the pop-out pin is accidentally allowed to pop out, push the pin all the way back in so that both holes align; then install the safety cotter pin. The buzz you hear when you reset the pop-out pin on MK 376 fuzes is normal. If the pin binds or will not reset, the fuze may be armed. Notify proper authority for disposition.

CAUTIONS:

1. If closure ring wrench is not available, use spanner wrench and exercise care to prevent damage to closure ring and fuze.

2. Do not remove setscrew or lock pin as parts could be damaged.

FIGURE 14. Warnings and cautions (WAM checklist only).

HH-60H A1-H60HA-LWS-800 GAU-17/A

Table 1. Aircraft Armament Switches

LOCATION	SWITCH	POSITION
(If applicable) External Fuselage LH/RH	(AN/ALE-39) ARMED/SAFE LEVERS	SAFE
	(AN/ALE-47) SAFETY PINS	PINS INSTALLED
External ICS/ARM Access Panel	DISABLING SWITCH FOR ARMAMENT SAFETY CIRCUIT	Normal
	AVIONICS WT ON WHEELS BYPASS	NORM, guard closed
Armament Control Panel (ACIP)	(As applicable) ARM or MASTER WEAPON LASER	 OFF (Cover down) OFF (Cover down) OFF (Cover down) OFF (Cover down)
(If applicable) AN/ALE-39 Control Panel	SALVO/FLARE	OFF
(If applicable) AN/ALE-39 CHAFF/FLARE ARMING Panel	ARM/SAFE	SAFE
(If applicable) AN/ALE-47 Control Panel	RWR,JMR,MWS,CMDS JETT PRGM MODE	OFF OFF 1 OFF
Center Overhead Console	BATT EXT PWR	OFF OFF
Overhead Console Circuit Breaker	All armament circuit breakers	Closed (Pushed in)
Gun System Control Panel	MASTER ARM LEFT RIGHT	Cover down SAFE SAFE
Cabin Overhead Console Circuit Breaker	All armament circuit breakers	Engaged (Pushed in)

HH-60H
GAU-17/A 2 1 Mar 2000

FIGURE 15. Example of an aircraft armament switches table (typical).

INTRODUCTION

This checklist contains abbreviated procedures necessary to assemble/disassemble General Purpose, Practice Bombs and Fire Bombs.

REQUIRED READING

Assembly crewmembers may perform several steps simultaneously provided they do not invalidate or interfere with a preceding or subsequent step and safety precautions are strictly observed.

Ensure all components have not reached an expired shelf/service life.

Ensure compliance/incorporation of the following Technical Directives, as applicable:

Technical Directive	Subject
AWB 98 REV. C AMEND 1	Inspection of MK 83 MOD 5 Lot No. C-44-1 and C-44-2 for Tuffseal Leakage
AWB 310 REV. A Conical Fin.	Inspection of BDU-45/B for Non-Compatibility with BSU-33A/B, BSU-33BB

FIGURE 16. Example of introduction and required reading (WAM checklist - typical).

AV-8B A1-AV8BB-LWS-680 ARM/DEARM

TABLE OF CONTENTS

INTRODUCTION

This checklist contains abbreviated Arm/Dearm procedures for all weapons/stores authorized for flight on the AV-8B aircraft. Weapons/stores are grouped in each section by common procedures. Weapons/stores not listed in a particular section have no required procedures to be performed for that particular function.

REQUIRED READING

Due to the unique nature of aircraft arming/dearming, high tempo of operation, high noise environment, and hazards associated with turning aircraft, it is imperative that all Arm/Dearm crewmembers be highly trained and thoroughly familiar with all weapons/stores covered herein.

The term "SAFE racks" or "ARM racks" means rotation of the SAFE/ARM lever (parent rack) or safety stop lever (BRU-42) to the required position.

FIGURE 17. Layout for arm/dearm checklist.

REQUIRED READING (Continued)

The term "Weapon (or Store) safe" means that the Arm/Dearm crewmembers shall inspect the applicable weapon or store to ensure the fuze/arming mechanism is NOT fully or partially armed, all arming wires/lanyards are properly installed, and no components are loose, missing or damaged.

The conditions and location for the Prior to Launch arming procedures specify the earliest in the launch sequence that the procedures may be performed. The conditions and location for After Landing or Ground Abort procedures specify the latest in the recovery sequence that the safing procedures may be performed.

SAFETY SUMMARY

The following safety summary contains general safety precautions that personnel must understand and apply during arming and dearming evolutions. The warnings, cautions and notes listed will not be repeated within the various sections of this checklist.

- Engine nozzles must be aft and engine at ground idle prior to approaching aircraft.
- To the extent possible, the area immediately forward and aft of

FIGURE 17. Layout for arm/dearm checklist - Continued.

SH-60B	A1-H60BB-LWS-370	MK-46 TORPEDO

TABLE OF CONTENTS

INTRODUCTION

This checklist contains abbreviated procedures necessary to load and unload Mk 46 Torpedoes on the SH-60B aircraft.

REQUIRED READING

Loading crewmembers may perform several steps simultaneously provided they do not invalidate or interfere with a preceding or subsequent step and safety precautions are strictly observed.

Ensure compliance/incorporation of the following Technical Directives, as applicable:

1. None.

RESTRICTIONS:

1. Torpedoes carried for Logistic Movement must have arming release wires and static line securely taped to weapon. Preset cable will not be installed. Mk 1/9 arming wire will not be attached to seawater battery.

FIGURE 18. Example of table of contents, introduction, and required reading (loading checklist).

SH-60B	A1-H60BB-LWS-370 TORPEDO	MK-46

REQUIRED READING (Continued)

TEST EQUIPMENT/SPECIAL TOOLS:

1. Rubber swaybrace pads P/N 2159194 (4 per station)
2. Plastic tie wrap P/N 3367-6-0 or equal (2 per station)

This checklist does NOT authorize loading for flight. For specific flight authorization, refer to the Tactical Manual or the NAVAIRSYSCOM message. The procedures in this checklist have been verified for the following weapons:

Mk 46 Torpedo (Warshot)
Mk 46 Torpedo (Exercise)
Mk 46 REXTORP (Ballasted)
Mk 46 REXTORP (Unballasted)

FIGURE 18. Example of table of contents, introduction, and required reading (loading checklist) - Continued.

TABLE OF CONTENTS

INTRODUCTION

This checklist contains abbreviated procedures extracted from the Airborne Weapons/Stores Loading Manual A1-H60HA-LWS-000.

This checklist contains procedures necessary to perform Release and Control Checks and provide a basis for determining a safe and reliable aircraft armament system.

This checklist is presented under the assumption that the aircraft armament system configuration and associated equipment are ready to be checked.

Deleted

REQUIRED READING

Appropriate Release and Control Check sections required for loading should be performed prior to loading. Any time a malfunction occurs, stop the check and report the discrepancy to proper authority. After the malfunction has been corrected, the check must be repeated in its entirety.

FIGURE 19. Example of table of contents, introduction, and required reading (release and control checklist).

REQUIRED READING (Continued)

Release and Control team members must perform all tabularized steps within the tables of this checklist in sequence and no steps may be omitted except as noted herein. Team members may perform several steps simultaneously, provided they do not invalidate or interfere with a preceding or subsequent step and safety precautions are strictly observed. Sequential steps to be completed before or after performance of a table may be performed simultaneously when knowledge and understanding clearly dictate that safety will not be compromised.

Performance of this checklist may require additional actions that do not affect safety or reliability and are not specifically addressed. The team leader shall be qualified on the HH-60H/J aircraft and is the approving authority for such actions.

Deleted

Ensure compliance/incorporation of the following Technical Directives, as applicable:

1. None.

PRELOADING CHECKS:

Weapon/Store	Check Section
Fuel Tank	Jettison System Check
ALE-47	AN/ALE-47 System Check
ALE-39	AN/ALE-39 System Check
GAU-17/A	GAU-17/A Gun System Check
AGM-114 Hellfire Missile	Jettison System Check, Hellfire (AGM-114) System Check

FIGURE 19. Example of table of contents, introduction, and required reading (release and control checklist) - Continued.

MV-22 A1-V22AB-LWS-720 ECM
ALE-47

TABLE OF CONTENTS

INTRODUCTION

This checklist contains procedures necessary to perform specific preloading release and control checks and to safely load and unload the AN/ALE-47 Counter Measures Dispensing System on the MV-22 aircraft.

The Aircraft Preparation and ALE-47 Release System Check sections are presented under the assumption that the aircraft armament system configuration and associated equipment are ready to be checked.

The Weapon Inspection section is presented under the assumption that the weapon is assembled and ready for loading when received by the loading crew.

REQUIRED READING

Release and Control Checks should be performed prior to ALE-47 dispenser loading or prior to the first flight daily. Any time a malfunction occurs, stop the check and report the discrepancy to the proper authority. After the malfunction has been corrected, the Release and Control Check must be repeated in its entirety.

FIGURE 20. Example of table of contents, introduction, and required reading (standalone Checklist).

REQUIRED READING (Continued)

Release and Control and Loading team members must perform all tabularized steps within the tables of this checklist in sequence and no step may be omitted except as noted herein. Team members may perform several steps simultaneously, provided they do not invalidate or interfere with a preceding or subsequent step and safety precautions are strictly observed. Sequential steps to be completed before or after performance of a table may be performed simultaneously when knowledge and understanding clearly dictate that safety will not be compromised.

Release and Control and Loading personnel must be certified in accordance with applicable instructions.

Deviation from this checklist may be authorized by the Operational Commander when necessary and required, provided the deviation authorized does not detract from or interfere with safety and/or reliability.

The sequence and locations for specified for conventional weapon/stores evolutions are based upon normal operations and do not take emergency situations into consideration. In an emergency situation, comply with requirements of local ordnance safety instructions, LHA/LHD/MCS and CV NATOPS, SHORE NATOPS or EOD instructions. The conditions and location for the PRIOR TO LAUNCH arming procedures specify the earliest in the launch sequence that the procedures may be performed. The conditions and location for the AFTER LANDING OR GROUND ABORT procedures specify the latest in the recovery sequence that the safing procedures may be performed.

Position firefighting personnel and equipment in accordance with current directives.

Ensure compliance/incorporation of the following Technical Directives, as applicable:

1. None.

FIGURE 20. Example of table of contents, introduction, and required reading (standalone checklist) - Continued.

REQUIRED READING (Continued)

RECOMMENDED HANDLING AND LOADING EQUIPMENT:

1. Hand carry.
2. AERP 12C Weapons Skid with AERO 9B adapter.

RESTRICTIONS:

1. Release and Control Checks will NOT be performed with weapons loaded on the aircraft.

TEST EQUIPMENT/SPECIAL TOOLS:

1. 5/32-inch Allen wrench.
2. Inch-pound torque wrench.
3. AN/ALM-286 Countermeasures Chaff Dispenser Test Set.

This checklist does not authorize loading for flight. For specific flight authorization refer to the Tactical Manual/Flight Clearance message. The procedures in this checklist have been verified for the AN/ALE-47 Countermeasures Dispensing System.

SAFETY SUMMARY

1. The following are general warnings that personnel must fully understand and apply during aircraft arming and dearming.

WARNING

AIRCREW MUST ENSURE ALL ARMAMENT SWITCHES ARE OFF, SAFE OR NORMAL AND THE PILOT NOT AT THE CONTROLS MUST PLACE BOTH HANDS IN FULL VIEW OF THE SAFETY MAN AT ALL TIMES DURING SAFING, LOADING AND/OR UNLOADING. IF AIRCREW ACTION IS REQUIRED DURING ARM/DEARM, ONLY THOSE SWITCHES REQUIRED FOR SUCH ACTIONS WILL BE ACTUATED. SWITCHES WILL BE PLACED OFF, SAFE OR NORMAL FOLLOWING SUCH ACTIONS.

WARNING

PERSONNEL SHALL NOT APPROACH AN AIRCRAFT TO PERFORM WEAPON SYSTEM CHECKS WHILE AIRCRAFT ROTORS ARE TURNING UNTIL CLEARED TO DO SO BY ARMING/DEARMING SUPERVISOR.

FIGURE 20. Example of table of contents, introduction, and required reading (standalone checklist) - Continued.

SAFETY SUMMARY (Continued)

.

WARNING

AIRCRAFT SHALL BE POINTED IN A DIRECTION WHICH OFFERS THE LEAST EXPOSURE TO PERSONNEL, AIRCRAFT OR STRUCTURE IN THE EVENT OF ACCIDENTAL FIRING.

2. Positioning of the Arming Supervisor (safety man) is MANDATORY for ALL ARM/DEARM evolutions.

FIGURE 20. Example of table of contents, introduction, and required reading (standalone checklist) - Continued.

INTRODUCTION

This index is designed to provide using activities with a guide to ensure that all existing changes/revisions have been incorporated in aircraft conventional weapon loading, release and control, AWSE, and weapon assembly/disassembly checklists and manuals on hand, and that these publications are the most recent available. Requests for automatic distribution quantities should be submitted on Technical Publications Library (TPL) Diskettes to the Naval Air Technical Data and Engineering Service Command (NATEC), Naval Air Station North Island, P.O. Box 357031, Building 90 Distribution, San Diego, CA 92135-7031. Information concerning distribution can be obtained from NATEC via telephone: DSN 735-2357/2570. For Pyro WAM distribution submit requests to Naval Surface Warfare Center (NSWC) Crane, ATTN: Code 4072, 300 Hwy 361, Crane, IN 47522-5001.

Comments and recommendations concerning this publication should be forwarded, via chain of command, to Commander, Naval Air Warfare Center (NAWC), Code PST32080, China Lake, CA 93555-6100, with one copy direct to NAWC, Code PST32080 and one copy to COMNAVAIRPAC/LANT, COMNAVAIRESFOR, and CGFMFPAC/LANT. Correspondents are requested to include the revision date and changes incorporated in their manual or checklist in all correspondence.

Missile/Pyro publications listed herein are not under the NAWCWD Code PST32080 cognizance. The listings are to assist fleet users at the request of Naval Air Technical Data and Engineering Service Command. Technical Publications Deficiency Reports (TPDRs) concerning stock numbers, dates of revisions/changes/rapid action changes, etc., should be directed to the Naval Air Technical Data and Engineering Service (Attn: Code 3.3A78), San Diego, CA. TPDRs concerning the technical content of the publication should be addressed to the Cognizant Field Activity.

NOTES:

1. A National Stock Number (NSN) is assigned to each basic publication and an individual NSN is assigned to each change to facilitate publication updating and reduce cost. **When a basic publication with changes is reprinted (e.g., w/Chg 1 & 2), it will incorporate all changes, revert back to the latest basic or revision date and a new NSN will be assigned**. Reprints of a basic publication without any changes will retain the same NSN.

2. **TMCN** - Technical Manual Change Notice: a change to correct an administrative error in the publishing or printing process. A TMCN will be followed by a formal change during the next scheduled update.

3. The NAWC Code PST32080 serves as an information clearing house for U.S. Navy activities on Airborne Weapons, Stores and related items. Questions, concerns, suggestions, comments, or data can be resolved by calling the Ordnance Technical Hotline; Commercial (760) 939-4478, (DSN) 437-4478.

FIGURE 21. Example of a publication index introduction (typical).

A1-AV8BB-LWS-000
INTRODUCTION

Table 1-1. Reference Publications

Publication Number	Publication Title
NATOPS MANUALS	
A1-AV8BB-NFM-000	NATOPS Flight Manual
A1-AV8BB-NFM-100/(C)	Supplemental NATOPS Flight Manual (Confidential)
A1-AV8BB-NFM-500	NATOPS Pocket Checklist
A1-AV8BB-NFM-600	NATOPS Servicing Checklist
A1-AV8BB-NFM-700	NATOPS Functional Checkflight Checklist
NAVAIR 00-80T-103	NATOPS Conventional Weapons Handling Procedures Manual (ASHORE)
NAVAIR 00-80T-105	CV-NATOPS Manual
NAVAIR 00-80T-106	LHA/LPH/LHD NATOPS Manual
TACTICAL MANUALS	
NTRP 3-22.4-AV8B	Tactical Manual
SAFETY MANUALS	
NAVAIR 00-80R-14	U.S. Navy Aircraft Firefighting and Rescue Manual
NAVSEA OP-4 (Vol 1-2)	Ammunition Afloat
NAVSEA OP-5 (Vol 1)	Ammunition and Explosives Ashore
NAVORD OP 1014	Ordnance Safety Precautions
NAVSEA OP-2165 (Vol 1)	Navy Transportation Safety Handbook for Hazardous Materials
NAVSEA SWO 20-AL-SAF-010/020/030	Transportation and Storage Data for Ammunition, Explosives and Related Hazardous Material
NAVAIR 11-15-8	Toxic Hazards Associated with Pyrotechnic Items
NAVSEA OP 3347	United States Navy Ordnance Safety Precautions
NAVAIR 16-1-529/NAVELEX 0967-LP-624-6010 (Vol 1-2)	Electromagnetic Radiation Hazards
MIL-HDBK-274(AS)	Electrical Grounding for Aircraft Safety
MAINTENANCE MANUALS	
A1-AV8BB-GAI-000	General Aircraft Information
NAVAIR 16-30 ALE39-1	Countermeasures Dispensing System AN/ALE-39 and Countermeasures Dispenser Control C-10936/ALE-39

1-4

FIGURE 22. Example of reference publications table.

Table 1-2. Record of Technical Directives

Directive No.	Issue Date	Title	Purpose of Change	Incorporated in Manual
AFC 223	Jun 85	Improvement of Radio Communications.	Refer to title.	Basic
AFC 286/ YC 873	May 90	Throttle grip modifications, relocates cage/uncage and emergency flaps button.	To increase usability of cage/uncage select switch.	Basic
AFC 241	Jan 87	HUD Video Recording System.	To provide near real-time playback for post-flight debrief, multi-purpose display coverage, and longer run time than existing film camera.	Basic
AFC 339	Jun 91	Mod to Universal ACNIP, QUAL Test	To incorporate modification proposed for universal auxiliary communication, navigation and identification panel (ACNIP).	Basic
AAC 803		Procedures for use of the BRU-41/42 restrictor.	To provide ordnance personnel direction in use of the restrictor on BRU-41/42 bomb racks and eliminates Mk 106 Mod 4 use on these racks.	Basic
AAC 837	Jul 85	LAU-10 Series Rocket Launchers, Retrofit of	Installation of reinforcement strap on LAU-10 B/A, LAU-10 C/A, LAU-10 D/A.	Basic
AAC 838	Jul 85	Modifications of detents on LAU-61A/A and LAU-68B/A.	Refer to title.	Basic
Amendment 1		Rocket Launchers.		
AWC 364	Feb 91	Retrofit of Bomb Clusters Mk 20 Mod 11 and 12 Tactical, Practice and Training Rockeye Weapons with new FMU-104/B Dispenser Proximity Fuze.	To provide instructions to retrofit Mk 20 Rockeye with a FMU-140/B (DP) Fuze.	Basic
NAR 557-90		Loading Restricted to Support and Hoisting by Mechanical Means Only (Mk 83 conical fin)	Refer to title.	Basic
AAC 934	May 94	Practice Bomb Adapter Kit, Modification of	Reduce internal erosion of BRU-41/42 ejector units by adding rubber O-ring to practice bomb kit restrictor.	Basic

FIGURE 23. Example of record of technical directives table.

A1-T45AB-LWS-000
Release and Control System Checks

Table 4-1. Preloading Checks

WEAPON/STORE	SYSTEM CHECKS
Rockets (LAU-68)	Jettison System, Rocket Firing System Check
Practice Bombs (MK 76/BDU-33)	Jettison System, PMBR Release System Check
Baggage Pod	None Required

FIGURE 24. Example of preloading checks table.

Table 4-7. GAU-17/A Gun System Check

STEP	PROCEDURE	RESULT
	NOTE Both left and right guns may be checked simultaneously, by placing the GUN SYSTEM CONTROL panel LEFT and RIGHT switches to SIDE.	
1.	On adapter booster assembly, actuate and hold the last round switch.	
2.	On GUN SYSTEM CONTROL panel, place MASTER ARM switch ON.	
3.	On GUN SYSTEM CONTROL, place LEFT and/or RIGHT switch to SIDE (gun(s) to be checked).	
4.	On gunners gun control unit, press and release ARM light.	ARM light goes on, then off.
5.	On gunners gun control unit, place ARM switch ON.	ARM light goes on.
	CAUTION To reduce the potential for firing pin damage, limit dry cycling as much as possible.	
6.	On gunners gun control unit, press and release LO RATE TRIGGER.	Gun rotates at a slow rate and stops rotating.
7.	Press and hold LO RATE TRIGGER.	Gun rotates at a slow rate.
8.	On gunners gun control unit, press and release HI RATE TRIGGER.	Gun rotates at a fast, then slow rate.
9.	Release LO RATE TRIGGER.	Gun stops rotating.
10.	Release right gun mount from locked position.	
11.	Press and release LO RATE TRIGGER.	Gun does not rotate.
12.	Lock gun right mount back into firing position.	
13.	Press and release LO RATE TRIGGER.	Gun rotates at a slow rate.
14.	On GUN SYSTEM CONTROL, place LEFT and RIGHT switches to SAFE.	On gunners gun control unit, ARM light goes off.
15.	On GUN SYSTEM CONTROL, place MASTER ARM switch OFF.	
16.	On ECUs, place MASTER ARM OVERRIDE switch ON.	GUN SYSTEM CONTROL ARM light goes on.
17.	Press and hold LO RATE TRIGGER.	Gun rotates at a slow rate.
18.	Release last round switch(es).	Gun stops rotating.
19.	Release LO RATE TRIGGER.	
20.	Place MASTER ARM OVERRIDE switch OFF (guard down).	On gunners gun control unit, ARM light goes off.

FIGURE 25. Example of release and control system checks table.

Table 22-1. Mission Data Loading

CHECK STEP	PROCEDURE	RESULT
1.	Connect Memory Loader power cable between utility power jack (nose wheelwell) and J1 of Memory Loader (Figure 22-2).	
2.	Connect W1 cable between SLAM umbilical connector and Memory Loader connector J2.	
	WARNING	
	Prior to applying electrical power cockpit switches and controls must be ready to receive power.	
3.	Connect electrical power to aircraft.	
4.	On GND PWR control panel, position EXT PWR switch to RESET and back to NORM.	
5.	Position NIGHT/DAY switch on Memory Loader as applicable.	
6.	Verify that Memory Loader is loaded with the Mission Data and eight hours have not elapsed since program load. If eight hours have elapsed, return Memory Loader to IMA for programming prior to use.	Time marked on Memory Loader.
	NOTE	
	Step 7 contains a timed sequence. Read entire step before performing.	
7.	Place 5VDC/OFF/28VDC switch to 28VDC.	POWER – ON; IN PROGRESS, VALID/GO, NOT VALID/NO GO – ON for approximately 2 seconds then OFF; IN PROGRESS – ON, VALID/GO, NOT VALID/NO GO – OFF; VALID/GO – ON; IN PROGRESS – OFF.
8.	Set mission code and wing station numbers into thumbwheel switches as directed.	Selected codes.
9.	Momentarily place transfer data switch to TRANSFER DATA.	IN PROGRESS – ON; (2 seconds – 1 minute), VALID/GO – ON; IN PROGRESS – OFF; POWER – OFF.
10.	Place 5VDC/OFF/28VDC switch to OFF.	None.
11.	On GND PWR control panel, set EXT PWR switch to OFF.	
12.	(If applicable) Disconnect and transfer W1 connector to next missile to be programmed.	
13.	Repeat steps 4 through 12 for each additional missile to be programmed.	
14.	Disconnect and remove Memory Loader.	

FIGURE 26. Example of mission data loading table.

A1-F18AE-LWS-000
AGM-84 Series Missiles

Table 22-2. Mission Data Downloading

CHECK STEP	PROCEDURE	RESULT
1.	Connect Memory Loader power cable between utility power jack (nose wheelwell) and J1 of Memory Loader (Figure 22-2).	
2.	Connect W1 cable between SLAM umbilical connector and Memory Loader.	
	WARNING Prior to applying electrical power, cockpit switches and controls must be ready to receive power.	
3.	Connect electrical power to aircraft.	
4.	On GND PWR control panel, position EXT PWR switch to RESET and back to NORM.	
5.	Position NIGHT/DAY switch on Memory Loader, as applicable.	
	NOTE Step 6 contains a timed sequence. Read entire step before performing.	
6.	Place 5VDC/OFF/28VDC switch to 28VDC.	(Memory Loaded) POWER – ON; IN PROGRESS, VALID/GO, NOT VALID/NO GO – ON for approximately 2 seconds then OFF; IN PROGRESS – ON, VALID/GO – ON; NOT VALID/NO GO – OFF; VALID/GO – ON; IN PROGRESS – OFF. (Memory not Loaded) POWER – ON; IN PROGRESS, VALID/GO, NOT VALID/NO GO – ON for 2 seconds; IN PROGRESS – ON for 2 seconds then OFF; VALID/GO – ON or VALID/GO – ON for 2 seconds then OFF.
7.	Set mission code to 888888, station code to 8.	888888/8.
8.	Momentarily place PURGE DATA switch to PURGE DATA.	IN PROGRESS – ON approximately 2 seconds; VALID/GO – ON, IN PROGRESS – OFF.
9.	Place 5VDC/OFF/28VDC switch to OFF.	Power – OFF.
10.	On GND PWR control panel, set EXT PWR switch to OFF.	
11.	(If applicable) Disconnect and transfer W1 connector to next missile to be deprogrammed.	
12.	Repeat steps 4 through 11 for each additional missile to be deprogrammed.	
13.	Disconnect and remove Memory Loader.	

22-16

FIGURE 27. Example of mission data downloading table.

A1-F18EA-LWS-000
Common Procedures

Table 5-1. Aircraft Armament Switches

PANEL	SWITCH	POSITION
MC/HYD ISOL	MC	NORM
NUC WPN SWITCH	NUC WPN	DISABLE (down position)
GND PWR CONTROL	1 2 3 4 EXT PWR	AUTO AUTO AUTO AUTO OFF
LEFT VERTICAL	SELECT JETT JETT (pushbutton)	SAFE off
MASTER ARM CONTROL	MASTER EMERG JETT (pushbutton)	SAFE Yellow/Brass Ring not visible
ECM	DISPENSER AUX REL RWR ECM DECOY JAMMER	OFF NORM OFF OFF (NOTE 1) OFF (NOTE 1) OFF (NOTE 2)
EMERGENCY JETTISON (rear cockpit)	EMERG JETT (pushbutton)	Yellow/Brass Ring not visible
AN/ALQ-167 CONTROL (if installed)	PWR	OFF
ARS CONTROL PANEL (if installed)	PWR STORE HOSE (cutter) HOSE TRANS	OFF OFF SAFE RETR OFF
SPIN RECOVERY CONTROL	IR COOL	(NOTE 3)
COMMUNICATION	WPN VOL control	LOW
FWD/REAR COCKPIT	All other switches	OFF, SAFE, or NORMAL

NOTE

1. 165533 THRU 165544.
2. 165660 AND UP.
3. OFF position without AIM-9L/M or with AIM-9X, and NORM position with AIM-9L/M.

FIGURE 28. Example of armament control switches table (weapons/stores loading manual).

Table 5-5. Data Link Marriage Check

CHECK STEP	PROCEDURES	RESULT
	NOTE This table is written to facilitate both a single and dual aircraft mission. Multiple SLAM ER loadout on a single aircraft will require a Tactical or Test Mission loaded via Memory Unit (MU).	
1.	Connect electrical power.	
2.	(If applicable) Apply cooling.	
	WARNING Prior to applying power, cockpit switches and controls must be ready to receive power.	
3.	On the GND PWR control panel, position EXT PWR switch to RESET and back to NORM Set and hold switches 1, 2, and 3 to B ON for 3 seconds.	
4.	Position the left and right DDI power switches to DAY (allow warm-up time).	After warm-up, indicator display appears.
5.	On the left DDI, press and release MENU pushbutton until BIT pushbutton option is displayed.	
6.	On the left DDI, press BIT pushbutton.	(10A and 12A) BIT display appears. SMS GO comes on when BIT is complete. (13C, 15C and 17C) BIT control display appears. PBIT GO displayed below STORES pushbutton option.
7.	On the right DDI, press and release the MENU pushbutton until STORES pushbutton option is displayed.	
8.	On the right DDI, press STORES pushbutton.	Weapons display appears on right DDI. SAFE is on. (SLAM ER) 1 SLMR TEST then 1 SLMR HOLD or STBY when BIT complete.
9.	On the master arm control panel select A/G.	A/G light comes on.
10.	(Weapon Aircraft) On the right DDI, press SLMR pushbutton.	Box appears around weapon select SLMR with X through it. Box appears around priority station 1 SLMR in wingform display. SLAM ER display appears.
	WARNING A radiation hazard to personnel exists within 48 inches of pod and weapon antenna radome during pod command transmissions.	

5-45

FIGURE 29. Example of marriage check table (weapons loading manual).

Table 5-6. Aircraft Arming and Safing Signals (Continued)

ARMING SIGNALS

SIGNAL		MEANING	RESPONSE
DAY	NIGHT		
4. Arming Supervisor: Raise both hands with fingers pointing to sound attenuators. 	Same as day. Tips of RED banded wands touching sound attenuators.	Arming Crew: Perform missile check.	Pilot: Give arming supervisor "thumbs up" if tone is heard. "Thumbs down" if no tone. Night: Same as signal 3 above.
5. Arming Supervisor: Insert finger of one hand into clenched fist of other hand and give extracting motion. 	Touch tips of RED banded wands in front of body. Then move one wand laterally in a sweeping motion.	Arming crew: Remove bomb rack/pylon safety pins.	Arming Crew: Show pins to arming supervisor and clear immediate area. Night: Same as signal 3 above.
6. Arming Supervisor: Give pilot (a) Thumbs up.  (b) Thumbs down. 	(a) Vertical sweep with RED banded wand. (b) Horizontal sweep with RED banded wand.	Pilot: (a) Aircraft armed and all personnel and equipment clear. (b) Aircraft down for weapons.	Pilot: (a) Acknowledge with similar signal. (b) Acknowledge with similar signal.
7. Arming Supervisor/ Observer: Crossed arms over head, fists clenched. 	Crossed standard RED wands held over head.	Suspend all arming/ safety operations on aircraft.	Suspend arming and await further instructions.

FIGURE 30. Example of arming and safety signals table (weapons/stores loading manual).

A1-F18AE-LWS-000
Common Procedures

Table 5-6. Aircraft Arming and Safing Signals (Continued)

SAFING SIGNALS

SIGNAL		MEANING	RESPONSE
DAY	NIGHT		
1. Safing Supervisor: Hands over head with finger tips touching. 	RED banded wands over head with tips touching.	Pilot/Aircrew: Check all armament switches OFF or SAFE.	Pilot/Aircrew: Raise both hands into view of arming supervisor after checking switch positions. (Hands remain in view during safing).
2. Safing Supervisor: One hand over head; point to safing crewmembers with other hand. 	Same as day but with RED banded wands.	Safing Crew: Safe weapons (as applicable).	Safing Crew: After safing, give safing supervisor "thumbs up" and move clear of aircraft. Night: Vertical sweep with flashlight when safing is complete.
3. Safing Supervisor/ Observer: Crossed arms over head, fists clenched. 	Crossed standard RED wands held over head.	Suspend all arming/ safety operations on aircraft.	Suspend safing and await further instructions.
4. Safing Supervisor: Give pilot "thumbs up". 	Vertical sweep with RED banded wand.	Pilot: Aircraft is safed and crew and equipment are clear.	Pilot: Acknowledge with similar signal.

FIGURE 30. Example of arming and safety signals table (weapons/stores loading manual) - Continued.

Table 7-5. AIM-9M AUR Missile Inspection Criteria

Item	Inspection Point	Inspection Criteria	Disposition
		WARNING AURs AIM-9M-1, AIM-9M-3, AIM-9M-4, AIM-9M-6, AIM-9M-8, NATM-9M-1 and NATM-9M-2 are limited to a total of 10 flight hours when flown on an F/A-18E/F aircraft only. AURs flown more than a total of 10 flight hours could result in AUR breakup. The AURs shall be handled IAW existing directives for Hazard Class 1.1 explosives. All handling equipment shall be serviceable and free of defects which could cause injury to personnel.	
		NOTE AURs AIM-9M-1, AIM-9M-3, AIM-9M-4, AIM-9M-6, AIM-9M-8, NATM-9M-1 and NATM-9M-2 are limited to 10 flight hours on an F/A-18E/F aircraft only. Flight hours accumulated on other aircraft before or after 10 flight hours on an F/A-18E/F aircraft do not apply to the 10-hour limit. Once 10 hours of flight time on the F/A-18E/F aircraft have been accumulated, AURs must be reclassified to Condition Code B. Condition Code B AURs can be flown on other authorized aircraft until the MDD expires or AUR otherwise becomes unserviceable. All inspections are visual only and are required to be completed before any maintenance is performed. No tools are authorized for inspection. Guidance control section (GCS) inspections in this table are for WGU-4A/B, WGU-4C/B, WGU-4D/B, and WGU-4E/B. Bar code labels may or may not be present on GCS; acceptable with or without labels.	
1.	AURs AIM-9M-1, -3, -4, -6, -8, NATM-9M-1, and NATM-9M-2	a. Exceed a total of 10 flight hours when flown on an F/A-18E/F aircraft	a. Restrict AUR from further F/A-18E/F carriage.
2.	GCS (Log Card)	a. MDD expired b. AWC-416 not incorporated	a or b. Reject AUR.
3.	GCS Markings (figure 7-13)	a. Identification markings or serial numbers do not match log card b. Missing	a. Verify data; correct as required. If unable to verify data, reject AUR. b. Replace IAW paragraph 7-29.
4.	GCS Dome Protector Assembly (figure 7-6)	a. Missing b. Assembly damaged to preclude proper operation c. Lanyard missing	a. or b. Obtain serviceable dome protector assembly. c. Replace IAW paragraph 7-30.

FIGURE 31. Example of inspection criteria table (WAM).

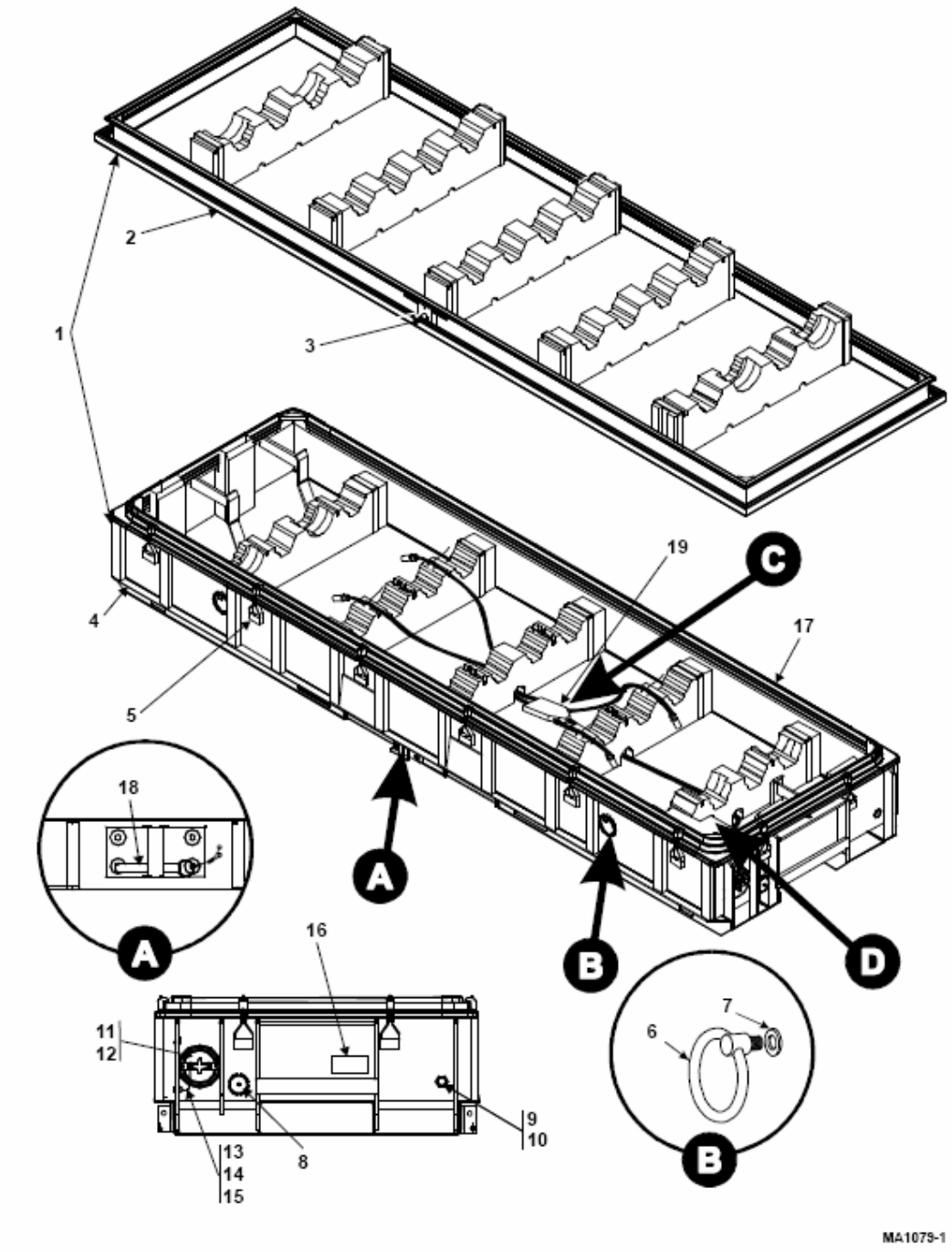


FIGURE 32. Example of IPB Group Assembly Parts List (GAPL).

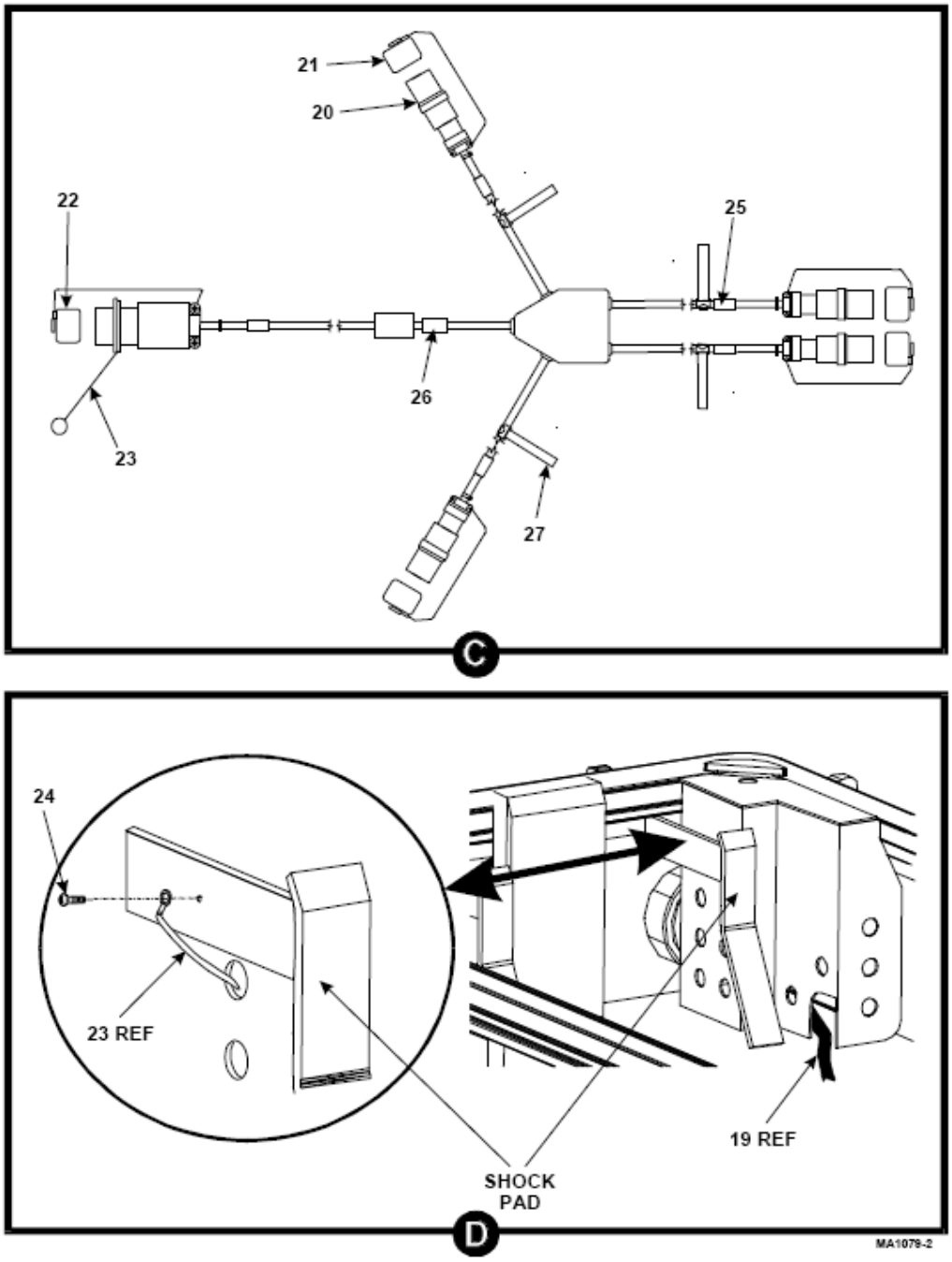


FIGURE 32. Example of IPB Group Assembly Parts List (GAPL) - Continued.

INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SM&R CODE
38-66	2215440-2	CONTAINER, CNU-609/E.....	REF		PAGKK
1	4400-2	• ASSY, CONTAINER	1	ALL	ADG
2	AYA0022	• • ASSY, COVER	1	ALL	ADG
3	AYC0009	• • • KIT, HLU-216 LUG	2	ALL	PAGZZ
4	AYA0023	• • ASSY, BASE.....	1	ALL	ADG
5	AYC0006	• • • KIT, LATCH ASSY.....	16	ALL	PAGZZ
6	48B7385	• • • RING, TIEDOWN	4	ALL	PAGZZ
7	A-A59561-40064	• • • SHIM.....	A/R	ALL	PAGZZ
8	TA-770-10-10R	• • • RELIEF VALVE	1	ALL	PAGZZ
9	TA-356-40	• • • WINDOW, HUMIDITY	1	ALL	PAGGG
10	TA-356-HC-40	• • • • DISC, COLOR CHANGE.	1	ALL	PAGZZ
11	AYC0012	• • • ASSEMBLY, PORT	1	ALL	PAGZZ
12	PEFV007	• • • SEAL, PORT COVER	1	ALL	PAGZZ
13	PPVV053-1	• • • LANYARD.....	1	ALL	MGG
14	M83420/4-001	• • • • ROPE, WIRE..... (ATTACHING PARTS)	A/R	ALL	PAGZZ
15	MS51844-61	• • • SLEEVE, SWAGING..... - - - * - - -	2	ALL	PAGZZ
16	PPVV035	• • • PLATE, NAME.....	1	ALL	XB
17	PEFV008	• • SEAL, RUBBER.....	1	ALL	PAGZZ
18	MS17990C830	• • PIN, QUICK RELEASE	2	ALL	PAGZZ
19	2215701-1	• CABLE, CONTAINER BIT	1	ALL	PAGKK
20	MS9021-025	• • • PACKING, PREFORMED	4	ALL	PCGZZ
21	BP18WCL10	• • • CAP	4	ALL	PAGZZ
22	BP20WOTL10	• • • CAP	1	ALL	PAGZZ
23	670-001U03-29-18-303U	• • • LANYARD ..... (ATTACHING PARTS)	1	ALL	PAGZZ
24	PHBP001	• • • SCREW ..... - - - * - - -	1	ALL	PAGZZ
25	DAT-39-292*	• • • MARKER, ID.....	5	ALL	MGG
26	DAT-40-292*	• • • MARKER, ID.....	1	ALL	MGG
27	168497	• • • STRAP, VELCRO.....	4	ALL	PAGZZ

FIGURE 32. Example of IPB Group Assembly Parts List (GAPL) - Continued.

SH-60B	A1-H60BB-LWS-370	MK-46 TORPEDO

AIRCRAFT PREPARATION/INSPECTION

1. Release and Control System Checks completed ..... ( )
2. Loaded stations - LOCKED .... ( )
3. BRU-14 Configuration:
   - a. Ignition elements removed .... ( )
   - b. Rack electrically connected .... ( )
   - c. Swaybraces retracted/inboard preset .... ( )
     - (1) Present inboard swaybraces as follows:
       - (a) Ensure swaybrace lock nuts up against pylon ..... ( )
       - (b) Adjust jackscrews to a length of one inch. (Measurement is made from bottom of lock nut to top of jackscrew nut) .... ( )
       - (c) After measurement is completed, hold jackscrew In position and tighten lock nut ... . ( )
   - d. Install swaybrace pads .... ( )
   - e. Suspension hooks open .... ( )
   - f. Release unit/rack cocked .... ( )
4. Preset cable installed .... ( )
5. (Inboard stations) Preset cable pullout lanyard attached to fuselage armament bracket .... ( )
6. (Outboard station) Swing arm bracket fully extended; preset cable pullout lanyard attached to forward ring ..... ( )

FIGURE 33. Layout for aircraft/preparation inspection checklist (typical).

SH-60B	A1-H60BB-LWS-370	MK-46 TORPEDO

WEAPON INSPECTION

1. Firing report available ....( )

WARNING SUSPENSION BANDS RELEASE WITH SUFFICIENT FORCE TO SERIOUSLY INJURE PERSONNEL.

WARNING IF OTTO II FUEL LEAKAGE IS DETECTED, NOTIFY PROPER AUTHORITY.

2. Safety bolts and nuts installed ....( )
3. (Warshot/Exercise) No fuel leakage ....( )
4. (If applicable) Mk 1/9 arming wire and two Fahnestock clips available ....( )
5. Torpedo NOT damaged ....( )
6. Remove tape from torpedo openings ....( )
7. Arming, release wires, and static line taped to torpedo .....( )
8. **(Warshot) Exploder (Fig. 1):**
   a. "Ss" indicated in window ....( )
   b. Environmental seal edges NOT raised ....( )
   c. NORMAL/RECOVER switch - NORMAL ... .( )
9. **(Warshot/Exercise) (Fig. 1):**

CAUTION KEEP HANDS CLEAR OF TRANSDUCER WHEN NOSE PROTECTIVE COVER IS REMOVED.

   a. Transducer clean; reinstall cover ....( )
   b. Hydrostatic port clear .... ( )
   c. Water inlet port clear and clean ....( )
   d. Seawater battery dry, snap ring installed... .....( )
10. **(Exercise) (Fig. 1):**
   a. Safety strap installed..... .....( )
   b. Flooding valve; remove label exposing cavity, washer NOT corroded..... .....( )
   c. (If applicable) Dye pot installed, punctured, replace tape ....( )

FIGURE 34. Layout for weapons/stores inspection loading checklist.

SH-60B	A1-H60BB-LWS-370	MK-46 TORPEDO

WEAPON LOADING

A. PREPARATION

1. Aircraft Preparation/Inspection and Weapon Inspection completed .... ( )
2. (If applicable) Power removed .... ( )
3. Aircraft grounded .... ( )
4. Armament switches positioned (Table 1)... ..... ( )
5. Place WEAPON LOADED sign in cockpit . ..... ( )

WARNING SUSPENSION BANDS RELEASE WITH SUFFICIENT FORCE TO SERIOUSLY INJURE PERSONNEL.

NOTE: HOISTING BAND/MK 2/ADU/722/E ADAPTER LOCATION 7-7/8 INCHES FORWARD OF AFT LUG.

6. Position/rig loading equipment; remove safety bolt nuts ( )

B. LOADING

NOTE: (HOIST LOADING) UNBALLASTED TORPEDO IS TAIL HEAVY. PRESSURE MAY BE APPLIED TO NOSE SECTION TO OFFSET TAIL DOWN ATTITUDE.

NOTE: SAFETY BOLTS MUST BE REMOVED IMMEDIATELY PRIOR TO LUG AND RACK HOOK ENGAGEMENT OR AS CLEARANCE PERMITS.

1. (If applicable) Apply downward pressure; raise torpedo; remove safety bolts; raise torpedo; latch suspension hooks..... .... ( )
2. Rack indicates latched .... ( )
3. Ensure hooks support torpedo; lock rack .. .. ( )

FIGURE 35. Layout for weapons/stores loading checklist.

Table 2. Mission Data Loading

STEP		MEMORY LOADER INDICATIONS
NOTE:	Step 1 contains a timed sequence. Read entire step before performing.	
1	Place 5VDC/OFF/28VDC switch to 28VDC.	Power - ON; IN PROGRESS, VALID/GO, NOT VALID/NO GO - ON for approx. 2 seconds then OFF; IN PROGRESS - ON, VALID/GO, NOT VALID/NO GO - OFF; VALID/GO - ON; PROGRESS - OFF.
2	Set mission code and wing station numbers into thumbwheel switches as directed.	Selected codes
3	Momentarily place Transfer Data switch to transfer data.	IN PROGRESS - ON; (2 seconds - 1 minute). VALID/GO - ON, IN PROGRESS - OFF; power - OFF.
4	Place 5VDC/OFF/28VDC switch to OFF.	None.
If further missiles are to be programmed, disconnect W1 connector from missile being programmed and connect to next missile to be programmed, then proceed to Step 1. If no further missiles are to be programmed, remove A/C power and disconnect programmer from missile and aircraft.		

FIGURE 36. Example of a mission data loading table (checklist).

Table 2. SLAM ER Marriage Check

STEP	PROCEDURE	RESULT
	WARNING PRIOR TO APPLYING POWER, FLIGHT STATION SWITCHES MUST BE READY TO RECEIVE POWER.	
1.	(If applicable) Apply power.	Aircraft strobe lights - ON.
2.	Ensure a SLAM ER Mission Brick is loaded.	
3.	AMIB circuit breakers - IN.	
4.	Pilot/COTAC displays - ON.	BIT pattern is displayed.
5.	Pilot/COTAC displays, select - AGM.	
6.	ACDNU - ON.	Stores page is displayed.
	NOTE SLAM ER TEST MUST BE COMPLETE BEFORE PROCEEDING TO STEP 7.	
7.	ACDNU, press and release F5.	
8.	ACDNU, press and release SELECT MISSILE.	
9.	ACDNU, press and release F6.	Video appears.
10.	ACDNU, select POD PWR - ON.	
11.	ACDNU, select MSN ASSN page.	
12.	ACDNU, CH/ID/TTV - Set as required.	
13.	ACDNU, select Pod Mission, toggle as required to match CH/ID with SLAM page.	
14.	ACDNU, press and release F6.	
15.	ACDNU, select FWD ANT.	
16.	ACDNU, select WDL power twice.	Observe momentary toggle of * on ACDNU.
17.	Pilot/COTAC displays.	Verify SLAM ER video messages.

FIGURE 37. Example of a marriage check table (checklist).

SH-60B	A1-H60BB-LWS-370	MK-46 TORPEDO

POSTLOADING INSPECTION

1. Armament switches positioned (Table 1)..... .....( )
2. WEAPON LOADED sign in cockpit..... .....( )
3. Loaded stations - LOCKED..... .....( )
4. Swaybraces adjusted..... .....( )
5. Ignition elements installed, electrically connected.....( )
6. **Inboard stations:**
   a. 42-inch release wire through groove in aft inboard swaybrace pad..... .....( )
   b. Mk 1/9 arming wire connected to tail solenoid and seawater battery lanyard; wire routed through swaybraces and inboard of aft lug and over 42-inch release wire; lanyard cut and deburred.... ....( )
   c. Preset cable connected, slack removed, secured to aft outboard swaybrace..... .....( )
   d. Preset cable pullout lanyard, 42-inch release wire, parachute band release wire and static line attached to snap hook.....( )
   e. Parachute band release wire shortened, cut, bent and deburred.... ....( )
7. **Outboard station:**
   a. 42-inch release wire through groove in aft inboard swaybrace pad ....( )
   b. Mk 1/9 arming wire connected to tail solenoid and seawater battery lanyard; wire routed through swaybraces inboard of aft lug and over 42-inch release wire; lanyard cut and deburred ....( )
   c. Preset cable connected, slack removed, secured to aft outboard swaybrace..... .....( )
   d. 42-inch release wire, parachute band release wire and static line attached to snap hook..... .....( )
   e. Parachute band release wire shortened, cut, bent and deburred ....( )

FIGURE 38. Layout for postloading inspection checklist.

SH-60B	A1-H60BB-LWS-370	MK-46 TORPEDO

WEAPON UNLOADING

A. PREPARATION

1. (If applicable) Power removed ....( )
2. Aircraft grounded ....( )
3. Armament switches positioned (Table 1)... .....( )
4. WEAPON LOADED sign in cockpit ....( )
5. Loaded stations - LOCKED..... .....( )
6. Remove ignition elements..... .....( )
7. (Exercise/REXTORP) Safety strap installed.....( )
8. (Warshot/Exercise) Nose cover installed... .....( )
9. Stabilizer clamp installed ....( )

WARNING

TO PREVENT ACCIDENTAL RELEASE DURING UNLOADING, ALL ARMING, RELEASE WIRES AND STATIC LINE MUST BE TAPED TO TORPEDO.

WARNING

IF BATTERY ARMING LANYARD IS REMOVED, DO NOT REINSTALL. INSTALL TAPE OVER SEAWATER BATTERY PORT. REJECT TORPEDO.

10. Disconnect arming, release wires, and static line from aircraft, tape to torpedo..... .....( )
11. Disconnect torpedo preset cable and pullout lanyard from aircraft and torpedo..... .....( )
12. Position/rig unloading equipment..... .....( )
13. Retract swaybraces ....( )

FIGURE 39. Layout for weapons/stores unloading checklist.

Table 4. MISSION DATA DOWNLOADING

STEP		MEMORY LOADER INDICATIONS
NOTE: Step 1 contains a timed sequence. Read entire step before performing.		
1.	Place 5VDC/OFF/28VDC switch to 28VDC.	(MEMORY LOADED) Power - ON; IN PROGRESS, VALID/GO, NOT VALID/NO GO - ON for approx. 2 seconds then OFF; IN PROGRESS - ON, VALID/GO - ON, NOT VALID/NO GO OFF; VALID/GO - ON, IN PROGRESS - OFF. (MEMORY NOT LOADED) POWER-ON; IN PROGRESS, VALID/GO, NOT VALID/NO GO-ON for 2 seconds; IN PROGRESS-ON for 2 seconds then OFF; VALID/GO-ON or VALID/GO ON for 2 seconds then OFF.
2.	Set mission code to 888888, station code to 8.	888888/8.
3.	Momentarily place PURGE DATA switch to PURGE DATA.	IN PROGRESS - ON approx. 2 seconds; VALID/GO - ON, IN PROGRESS - OFF.
4.	Place 5VDC/OFF/28VDC switch to OFF.	POWER - OFF.
If further missiles are to be deprogrammed, disconnect W1 connector from missile being deprogrammed and connect to next missile to be deprogrammed, then proceed to STEP 1. If no further missiles are to be deprogrammed, remove A/C power and disconnect programmer from missile and aircraft.		

FIGURE 40. Example of a mission data downloading table (checklist).

SH-60B	A1-H60BB-LWS-370	RELEASE & CONTROL

AIRCRAFT PREPARATION

1. Aircraft positioned and grounded ..... ( )
2. Power removed ..... ( )
3. (If applicable) Remove sonobuoy launcher access cover ..... ( )
4. (As applicable) Weapon pylon - disconnect P524, P527 (RH), P344, P347 (LH aft) and 2P344, 2P347 (LH fwd) from associated ignition elements ..... ( )
5. Ignition elements removed ..... ( )
6. Armament control switches and circuit breakers:
   a. (If applicable) Nose Avionics Compartment:
      (1) LASER - DISABLE ..... ( )
      (2) GIMBLE - ENABLE ..... ( )
   b. External ICS/ARM panel:
      (1) DISABLING SWITCH FOR ARMAMENT SAFETY CIRCUIT - NORM ..... ( )
      (2) AVIONICS WT ON WHEELS BYPASS - NORM (cover down) ..... ( )
   c. Overhead Console:
      (1) BATT - OFF ..... ( )
      (2) EXT PWR - OFF ..... ( )
   d. Center/ATO Circuit Breaker Panels:
      (1) All armament circuit breakers - closed (pushed in) ..... ( )
      (2) BACKUP PUMP PWR - open (pulled out) ..... ( )
   e. (If applicable) ACIP (ASQ-165):
      (1) MASTER ARM - SAFE ..... ( )
      (2) TORPEDO SELECT - SAFE ..... ( )
      (3) TORPEDO ARMING - SAFE ..... ( )
      (4) TORPEDO LAUNCH - SAFE ..... ( )
      (5) SONOBUOY LAUNCH - SAFE ..... ( )
   f. (If applicable) ACIP (ASQ-198) (Fig. 1 (-60B), Fig. 2 (CORE B), Fig. 3 (RD)):
      (1) WEAPONS SELECT - OFF ..... ( )
   g. (If applicable) ALE-39 Control Panels (Fig. 4):
      (1) DISP ARM/SAFE - SAFE ..... ( )
      (2) PWR OFF/ON/SALVO FLARE - OFF ..... ( )

FIGURE 41. Layout for aircraft preparation release and control checklist (typical).

SH-60B	A1-H60BB-LWS-370	RELEASE & CONTROL

JETTISON SYSTEM CHECK

CHECK PREPARATION

1. Aircraft Preparation section completed ....( )
2. AN/AWM-54 test set connected as follows (Fig. 5):
   a. P1 of cable assembly W1 connected to J1 of test set .....( )
   b. P2 of cable assembly W1 connected to adapter W16 .....( )
3. Station(s) with fuel tanks installed:
   a. (RH) Disconnect P521 and P522..... .....( )
   b. (LH aft) Disconnect P341 and P342 ....( )
4. Station(s) without fuel tanks installed:
   a. Ensure auxiliary fuel tank connector P381 (LH aft) or P382 (RH) is connected to jumper plug receptacle .....( )

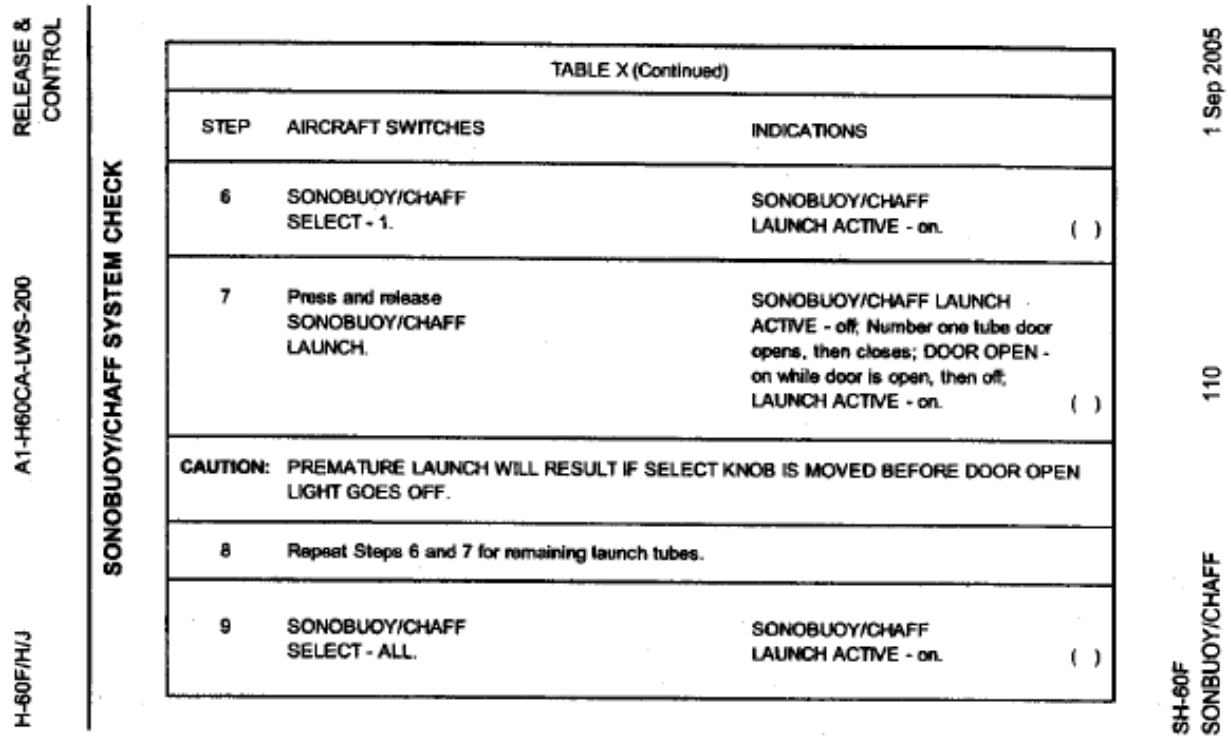
WARNING

PRIOR TO APPLYING POWER, COCKPIT SWITCHES AND CONTROLS MUST BE READY TO RECEIVE POWER.

5. Apply external power ....( )
6. Proceed to Table I (ASQ 165) or Table II (ASQ 198) .....( )

SH-60B JETTISON	7	15 Jan 2000

FIGURE 42. Layout for aircraft preparation for individual subsection check (typical).



RELEASE & CONTROL

A1-H60CA-LWS-200

H-60F/H/J

SONOBUOY/CHAFF SYSTEM CHECK

TABLE X (Continued)

STEP	AIRCRAFT SWITCHES	INDICATIONS
6	SONOBUOY/CHAFF SELECT - 1.	SONOBUOY/CHAFF LAUNCH ACTIVE - on. ( )
7	Press and release SONOBUOY/CHAFF LAUNCH.	SONOBUOY/CHAFF LAUNCH ACTIVE - off; Number one tube door opens, then closes; DOOR OPEN - on while door is open, then off; LAUNCH ACTIVE - on. ( )
CAUTION:	PREMATURE LAUNCH WILL RESULT IF SELECT KNOB IS MOVED BEFORE DOOR OPEN LIGHT GOES OFF.	
8	Repeat Steps 6 and 7 for remaining launch tubes.	
9	SONOBUOY/CHAFF SELECT - ALL.	SONOBUOY/CHAFF LAUNCH ACTIVE - on. ( )

1 Sep 2005

110

SH-60F SONBUOY/CHAFF

FIGURE 43. Layout for individual subsection check.

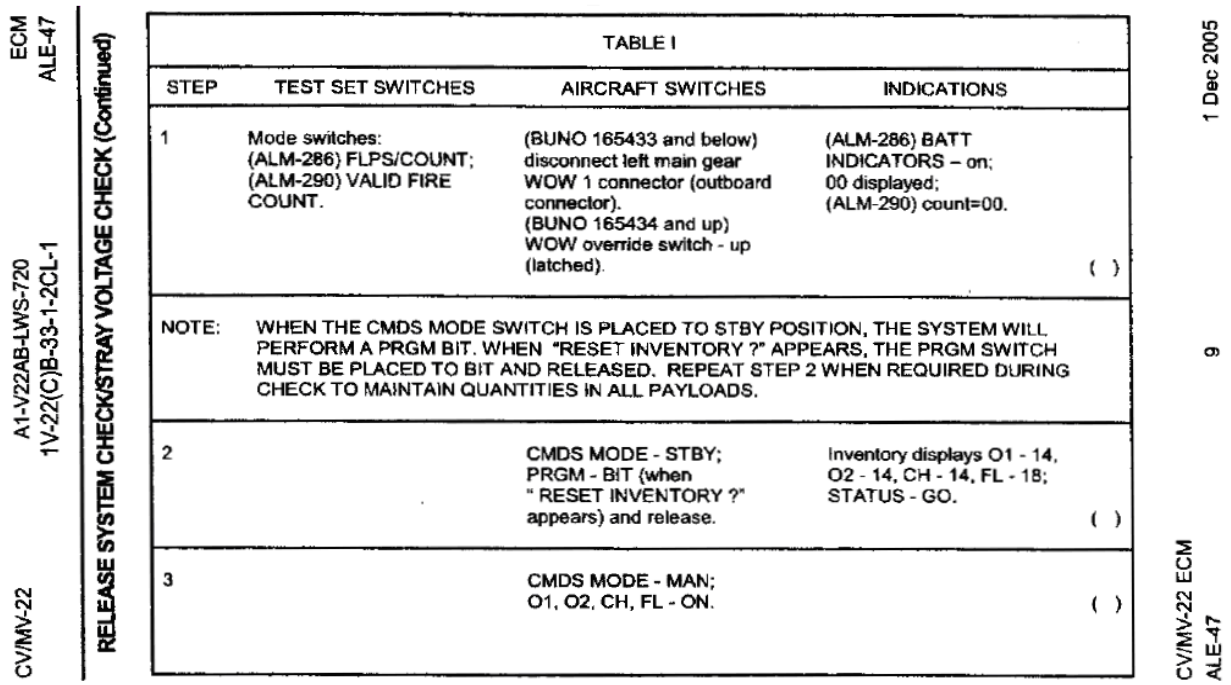


TABLE I

STEP	TEST SET SWITCHES	AIRCRAFT SWITCHES	INDICATIONS	
1	Mode switches: (ALM-286) FLPS/COUNT; (ALM-290) VALID FIRE COUNT.	(BUNO 165433 and below) disconnect left main gear WOW 1 connector (outboard connector). (BUNO 165434 and up) WOW override switch - up (latched).	(ALM-286) BATT INDICATORS – on; 00 displayed; (ALM-290) count=00.	( )
NOTE:	WHEN THE CMDS MODE SWITCH IS PLACED TO STBY POSITION, THE SYSTEM WILL PERFORM A PRGM BIT. WHEN "RESET INVENTORY ?" APPEARS, THE PRGM SWITCH MUST BE PLACED TO BIT AND RELEASED. REPEAT STEP 2 WHEN REQUIRED DURING CHECK TO MAINTAIN QUANTITIES IN ALL PAYLOADS.			
2		CMDS MODE - STBY; PRGM - BIT (when " RESET INVENTORY ?" appears) and release.	Inventory displays O1 - 14, O2 - 14, CH - 14, FL - 18; STATUS - GO.	( )
3		CMDS MODE - MAN; O1, O2, CH, FL - ON.		( )

FIGURE 44. Layout for individual subsection check.

TABLE VII (Continued)

STEP	PROCEDURES: TEST SET SWITCHES	PROCEDURES: AIRCRAFT SWITCHES	INDICATIONS: TEST SET	INDICATIONS: AIRCRAFT	
NOTE:	(AWM-101) PERFORM STEPS 32 AND 33. (AWM-103) PERFORM STEPS 34 AND 35.				
32		HCU press and Release Return switch.	MISSILE TRACK APPLY CCM.	MFD - Attack page displayed; Attack Tableau - MODE [LBL], DES [AUT]: A, missile displayed with track indication, missile type K and laser code A (rail being checked); NO ARM and WOW inhibits displayed; constraints displayed.	( )
33	For the remaining M299 rails to be checked, repeat Steps 13 through 32.				( )

FIGURE 45. Layout for individual subsection check.

SH-60B A1-H60BB-LWS-370 RELEASE & CONTROL

POSTCHECK PROCEDURES

1. Aircraft grounded... ....( )
2. External power applied ....( )
3. Armament control switches and circuit breakers:

NOTE: STATUS OF ACIP SWITCHES CANNOT BE DETERMINED IF POWER HAS BEEN REMOVED.

a. (If applicable) ACIP (ASQ-165):
   (1) MASTER ARM - SAFE ....( )
   (2) TORPEDO SELECT - SAFE ....( )
   (3) TORPEDO ARMING - SAFE..... .....( )
   (4) TORPEDO LAUNCH - SAFE ....(
   (5) SONOBUOY LAUNCH - SAFE ....( )
b. (If applicable) ACIP (ASQ-198):
   (1) MISSILE (CORE B) PWR/ARM, (-60B/RD) POWER - OFF..... .....( )
   (2) MK-50 HEATERS - OFF..... .....( )
   (3) WEAPONS SELECT - OFF..... .....( )
   (4) MASTER ARM - SAFE ....( )
c. External ICS/ARM panel:
   (1) DISABLING SWITCH FOR ARMAMENT SAFET CIRCUIT - NORM ....( )
   (2) AVIONICS WT ON WHEELS BYPASS - NORM (cover down) ....( )
d. Overhead Console:
   (1) BATT - OFF ....( )
   (2) EXT PWR - OFF..... .....( )
e. Center/ATO Circuit Breaker Panels:
   (1) All armament circuit breakers - closed (pushed in) .....( )
   (2) BACKUP PUMP PWR - closed (pushed in) .....( )
f. (If applicable) ALE-39 Control Panels:
   (1) DISP ARM/SAFE - SAFE ....( )
   (2) PWR OFF/ON/SALVO FLARE - OFF .. ..( )

SH-60B
POSTCHECK 122 15 Jan 2000

FIGURE 46. Layout for postcheck procedures (typical).

AV-8B A1-AV8BB-LWS-680 ARM/DEARM

PRIOR TO LAUNCH
REARMING AREA (BEFORE ENGINE TURNUP

A. BOMBS
1. Remove/stow WEAPON LOADED sign.... .....( )
2. Arm rack(s)..... ....( )

B. GUIDED BOMB UNITS (GBUs)
1. Remove/stow WEAPON LOADED sign……..( )
2. Remove detector cover(s) and packing material(s).....( )
3. Remove wing and latch assembly safety pin(s).....( )
4. Arm rack(s)..... ....( )

C. CLUSTER BOMBS (CBUs)
1. Remove/stow WEAPON LOADED sign.... .....( )
2. Arm rack(s)..... ....( )

D. FIRE BOMBS
1. Remove/stow WEAPON LOADED sign.... .....( )
2. Arm rack(s)..... ....( )

E. PYROTECHNICS (SUU-25F/A, MK 58 MLM)
1. Remove/stow WEAPON LOADED sign.... .....( )
2. Arm rack(s)..... ....( )

F. AIM-9 (SIDEWINDER)/AGM-122A (SIDEARM)
1 .Remove/stow WEAPON LOADED sign.... .....( )
2. Secure forward launcher fairing/access door .....( )

G. TACTS/INSTRUMENTATION PODS
1. Remove/stow WEAPON LOADED sign.... .....( )
2. Secure forward launcher fairing/access door .....( )
3. Remove air data probe cover(s) ....( )
4. Remove launcher detent wrench safety pin.....( )

FIGURE 47. Layout for prior to launch procedures (typical).

AV-8B A1-AV8BB-LWS-680 ARM/DEARM

PRIOR TO LAUNCH
REARMING AREA (AFTER ENGINE TURNUP)

NOTE: BOMBS, GBUs, CBUs, FIRE BOMBS, TACTS/INSTRUMENTATION POD, PRACTICE BOMBS, 25MM AIRCRAFT GUN, FUEL TANKS, ECM DO NOT REQUIRE PROCEDURES TO BE PERFORMED IN THE REARMING AREA AFTER ENGINE TURNUP.

NOTE: IF OPERATIONAL CONDITIONS REQUIRE, REARMING AREA PROCEDURES MAY BE PERFORMED IN THE ARMING AREA.

A. AIM-9 (SIDEWINDER)/AGM-122A (SIDEARM)

CAUTION KEEP HANDS CLEAR OF TRANSDUCER WHEN NOSE PROTECTIVE COVER IS REMOVED.

1. Remove dome protector(s) ....( )
2. Perform TONE check on each missile..... .....( )

CAUTION OVERTRAVEL OF THE MK 36 MOD 8/9 OR MK 57 MOD 2 MOTOR SAFE/ARM MECHANISM BEYOND THE ARM POSITION WILL CAUSE DAMAGE TO THE SAFE/ARM MECHANISM.

NOTE: TO ARM MK36 MOD 8/9 OR MK57 MOD 2 MOTOR, DEPRESS "T" HANDLE AND ROTATE 90 DEGREES COUNTERCLOCKWISE.

3. (MK 36 MOD 8/9 or MK 57 MOD 2 motor) Rotate SAFE/ARM mechanism "T" handle to ARM; remove, "T" handle (Fig. 1) ....( )

NOTE: TO ARM MK36 MOD 10/11OR MK 57 MOD 3 MOTOR, PULL OUT HANDLE AND ROTATE 90 DEGREES COUNTERCLOCKWISE.

FIGURE 47. Layout for prior to launch procedures (typical) - Continued.

AV-8B A1-AV8BB-LWS-680 ARM/DEARM

PRIOR TO LAUNCH
ARMING AREA

NOTE: BOMBS, GBUs, CBUs, FIRE BOMBS, TACTS/INSTRUMENTATION POD, PRACTICE BOMBS/LGTR, FUEL TANKS, ECM DO NOT REQUIRE PROCEDURES TO BE PERFORMED IN THE ARMING AREA.

A. PYROTECHNICS (SUU 25F/A)

1. Remove dispenser safety pin..... .....( )

B. AIM-9 (SIDEWINDER)/AGM-122A (SIDEARM)

WARNING DO NOT REMOVE LAUNCHER DETENT HOLDDOWN PIN. PIN REMAINS INSTALLED FOR FLIGHT.

1. Remove launcher detent wrench safety pin(s) .....( )

C. AGM-65 (MAVERICK)

1. Rotate rocket motor standard arming key(s) 90 degrees counterclockwise; remove key(s) .....( )

D. ROCKETS

1. (If applicable) Remove electrical receptacle dust cover .....( )
2. Connect rocket cable to launcher ....( )
3. Remove launcher safety pin and flag assembly (Fig. 3).....( )

E. 25MM AIRCRAFT GUN

1. Open gun safing door ....( )
2. Remove/stow gun safing pin (Fig. 4) ....( )
3. Secure gun safing door; indicator fully retracted .....( )
4. Secure all access doors/panels ....( )

FIGURE 47. Layout for prior to launch procedures (typical) - Continued.

AV-8B A1-AV8BB-LWS-680 ARM/DEARM

AFTER LANDING OR GROUND ABORT DEARMING/ REARMING AREA (BEFORE ENGINE SHUTDOWN)

NOTE: BOMBS, GBUs, CBUs, FIRE BOMBS, PYROTECHNICS, TACTS/INSTRUMENTATION POD, FUEL TANKS, ECM DO NOT REQUIRE PROCEDURES TO BE PERFORMED IN THE DEARMING/REARMING AREA BEFORE ENGINE SHUTDOWN.

A. AIM-9 (SIDEWINDER)/AGM-122A (SIDEARM)

NOTE: LAUNCHER DETENT WRENCH SAFETY PIN MUST BE INSTALLED IN THE DEARMING AREA.

1. Install launcher Detent Wrench Safety pin .....( )

CAUTION MISSILE DOME PROTECTOR COVER MUST BE INSTALLED PRIOR TO ENGINE SHUTDOWN.

2. Install missile dome protector ....( )

B. AGM-65 (MAVERICK)

NOTE: STANDARD ARMING KEY SAFING PROCEDURES MUST BE DONE IN THE DEARMING AREA.

1. Install Standard Arming Key; press arming key inward and rotate key 90 degrees clockwise (Fig. 2) .....( )

C. ROCKETS

1. Install launcher safety pin and flag assembly (Fig. 3).....( )
2. Electrically disconnect rocket cable from launcher.....( )

FIGURE 48. Layout for after landing rearming or ground abort dearming procedures (typical).

AV-8B A1-AV8BB-LWS-680 ARM/DEARM

AFTER LANDING OR GROUND ABORT DEARMING/REARMING AREA (BEFORE ENGINE SHUTDOWN) (Continued)

WARNING (LAU-61/68) THERMAL/RADHAZ BARRIERS ARE REQUIRED FOR SHIPBOARD OPERATIONS. FORWARD BARRIER IS OPTIONAL WHEN USING INERT WARHEADS.

3. (If applicable) Install thermal/RADHAZ barriers .....( )

D. PRACTICE BOMBS/LGTR

NOTE: (EXCEPT LGTR) UNLOADING WITH ENGINE OPERATING MAY BE PERFORMED BUT MUST BE HELD TO A MINIMUM CONSISTENT WITH OPERATIONAL REQUIREMENTS. IF UNLOADING WITH ENGINE OPERATING, PROCEED WITH THE FOLLOWING STEPS.

1. PREPARATION FOR UNLOADING:
   a. Ground aircraft ....( )
   b. Armament switches positioned (Table 1).....( )
   c. Safe racks ....( )
   d. (BDU-33D/B) Install safety block and safety pin.....( )
   e. (MK 106) Install safety pin and cotter pin .....( )
   f. (BRU-42/A) Remove cartridges ....( )
   g. Retract swaybraces ....( )

2. UNLOADING:

   a. Raise weapon until lugs float ....( )
   b. Arm rack ....( )
   c. Release rack; lower weapon..... .....( )
   d. (As applicable) Perform prior to launch procedures .....( )

FIGURE 48. Layout for after landing rearming or ground abort dearming procedures (typical) - Continued.

AV-8B A1-AV8BB-LWS-680 ARM/DEARM

AFTER LANDING OR GROUND ABORT DEARMING/ REARMING AREA (AFTER ENGINE SHUTDOWN)

A. BOMBS

NOTE: THE FMU-130 SERIES ELECTRIC TAIL FUZE DOES NOT USE AN ARMING WIRE. FUZE SAFETY IS DETERMINED BY THE GAG ROD NOT EXTENDED.

1. (As applicable) Weapon(s) safe; arming wire(s) installed ..... ( )
2. Safe rack(s)..... .... ( )
3. Armament switches positioned (Table 1).. ..... ( )
4. (If applicable) Place WEAPON LOADED sign in cockpit..... ( )

B. GUIDED BOMB UNITS (GBUs)

1. Weapon safe; arming wire(s)/cables installed ..... ( )
2. Safe racks .... ( )
3. Install wing and latch assembly safety pin(s)..... ( )
4. Install detector cover(s) and packing material(s)..... ( )
5. Armament switches positioned (Table 1).. ..... ( )
6. (If applicable) Place WEAPON LOADED sign in cockpit..... ( )

C. CLUSTER BOMBS (CBUs)

1. Weapon(s) safe; extractors installed .... ( )
2. Safe rack(s)..... .... ( )
3. (CBU-78) Install thermal battery safety pin; set SD selector to safe .... ( )
4. Armament switches positioned (Table 1).. ..... ( )
5. (If applicable) Place WEAPON LOADED sign in cockpit..... ( )

D. FIRE BOMBS

WARNING MK 13 INITIATOR MUST BE CONSIDERED ARMED IF ARMING VANES EXTEND THROUGH TEAR TOP OR TEAR TAB IS MISSING. NOTIFY PROPER AUTHORITY.

1. (MK 13 Initiators) Tear tops NOT damaged; lanyards installed .... ( )

FIGURE 48. Layout for after landing rearming or ground abort dearming procedures (typical) - Continued.

MV-22 A1-V22AB-LWS-720 ECM
ALE-47

AFTER LANDING OR GROUND ABORT

A. SAFING (DEARMING OR REARMING AREA IMMEDIATELY AFTER ENGINE SHUTDOWN)

WARNING IF ANY COMPONENT IS MISSING, LOOSE, OR DAMAGED, NOTIFY PROPER AUTHORITY.

WARNING IF DECOY ROUND IS PARTIALLY EJECTED, REMAIN CLEAR NOTIFY PROPER AUTHORITY.

1. Install ALE-47 safety pin ....( )
2. Decoy rounds secure in dispenser module.....( )
3. Armament switches positioned (Table 2).. .....( )
4. (If applicable) Place WEAPON LOADED sign in cockpit.....( )

B. TURNAROUND

1. Safing procedures completed ....( )
2. (Dispenser housings to be loaded) Perform Aircraft Preparation through Weapon Loading..... .....( )
3. (Loaded Dispenser housings) Retorque lock studs in an X pattern to 70 ± 5 inch-pounds..... .....( )
4. Perform Postloading Inspection..... .....( )
5. Perform Prior to Launch Procedures ....( )
6. (If applicable) Place WEAPON LOADED sign in cockpit.....( )

MV-22 ECM
ALE-47 23 15 Mar 2001

FIGURE 49. Layout for after landing or ground abort procedures (standalone checklist).

TURNAROUND

A. BOMBS, GBUs, CBUs, FIRE BOMBS, PYROTECHNICS, AIM-9/AGM-122, TACTS/INSTRUMENTATION POD, AGM-65, ROCKETS, PRACTICE BOMBS/LGTR, 25MM AIRCRAFT GUN, FUEL TANKS

1. After Landing or Ground Abort procedures completed.....( )

NOTE: .....UNEXPENDED CARTRIDGES/IGNITION ELEMENTS
.....NEED NOT BE REMOVED, BUT MUST BE
.....ELECTRICALLY DISCONNECTED.

2. (For stations to be loaded) Perform Aircraft Preparation/ Inspection through Weapon/Store Loading .....( )
3. Perform Postloading Inspection..... .....( )
4. Perform Prior to Launch procedures..... .....( )

B. CATM-9 with SNUBBER CLAMP ASSEMBLIES

1. After Landing or Ground Abort procedures completed.....( )
2. Retorque snubber clamp assemblies to 35 in-lbs.....( )
3. Perform Postloading Inspection..... .....( )
4. Perform Prior to Launch procedures..... .....( )

C. ECM (ALE-39)

1. After Landing or Ground Abort procedures completed.....( )
2. Armament switches positioned (Table 1).. .....( )
3. (Dispensers not requiring unloading) Retorque dispenser module to 55±5 in-lbs..... .....( )

NOTE: .....ALL DISPENSER MODULES MUST BE
.....DOWNLOADED IF ECM SYSTEM IS TO BE
.....REPLENISHED.

4. For stations to be loaded:
   a. Download empty/partially expended modules .....( )
   b. Perform Aircraft Preparation/Inspection through Weapon Loading..... .....( )
5. Perform Postloading Inspection..... .....( )
6. Perform Prior to Launch procedures..... .....( )

FIGURE 50. Layout for turnaround procedures (typical).

2-10. The aircraft armament system consists of the following systems: Weapon system, Torpedo system, Sonobuoy system, ECM (AN/ALE-39) system, Missile and Jettison system. The aircraft armament system provides the common circuits, basic controls and components necessary to release weapons or stores.

2-11. COMPONENT DESCRIPTION AND LOCATION.

2-12. The aircraft armament system consists of various basic controls and components. Components and controls used in specific subsystems are contained in the subsystem description.

2-13. **ARMAMENT SYSTEM BASIC CONTROLS.** The SH-60B Series aircraft consists of the following armament system basic controls: Armament Control Indicator Panel (ACIP); Armament Signal Data Converter (ASDC); Caution Advisory Panel; Electronic Control Unit (ECU); External Switch for Armament Safety Circuit; Avionics Weight on Wheels Bypass; Emergency Control Panel; and the Armament circuit breakers. The components location and description are described in the following paragraphs.

2-14. **Armament Control Indicator Panel (Figure 2-3).** There are two armament control indicator panels (ACIP) (ASQ-165 and ASQ-198) located on the lower center console. The ACIPs consist of switches and controls for arming/safing the armament system, auto/manual sonobuoy selection and launch, torpedo programming and launch. The programming and launch functions for aircraft equipped with the Penguin missile system use the ASQ-198 equipped ACIP. The controls, switches, and displays on the ACIPs are pushbutton switches. These pushbutton switches mechanically change position when actuated. Switch positions and indications are listed in table 2-1 or 2-2.

2-15. **Armament Signal Data Converter (ASDC) (Figure 2-3).** The Armament Signal Data Converter (ASDC) is located in the Airborne Tactical Officer's (ATO's) seat well. The ASDC converts ACIP input signals to output signals of the selected system for release and control of torpedoes and sonobuoys.

2-16. **Caution Advisory Panel (Figure 2-3).** The armament portion of the Caution Advisory Panel, on the center instrument panel of the cockpit, consists of ARMAMENT ARMED, LAUNCH/JETT FAIL, and WOW capsules. The capsules will light when an indication or select condition exists on the ACIP or within the armament system.

2-17. **Electronic Control Unit (ECU) (Figure 2-3).** The Electronic Control Unit (ECU) is a microprocessor unit that is programmed to control most of the sonobuoy launcher system operations. The ECU is physically mounted on top of the sonobuoy launcher. An AUTO/MANUAL switch is provided on the ECU front panel. The front panel also provides a fault STATUS display. Faults encountered during system startup or during system self-test will be displayed. If more than one failure exists, the failure messages are cycled at 3-second intervals.

2-18. **External ICS/ARM Access Panel (Figure 2-3).** The DISABLING SWITCH FOR ARMAMENT SAFETY CIRCUIT and the AVIONICS WT ON WHEELS BYPASS switch are both located in the external ICS/ARM access panel. The DISABLING SWITCH FOR ARMAMENT SAFETY CIRCUIT is a momentary, normally off switch that works in conjunction with the Weight-on-Wheels switch and the MASTER ARM switch. This switch provides a means of energizing the launch system for ground test. The AVIONICS WT ON WHEELS BYPASS switch provides a means by which certain avionics equipment may be energized for on-the-ground test.

2-19. **Weight-On-Wheels Switch (Figure 2-3).** The switch in the left stub wing provides a weight-on-wheels signal to the miscellaneous relay panel. The signal is also routed to the aft relay panel. The switch disables the sonobuoy, bomb rack, hoist shear, cargo hook shear, RAST shear, and Magnetic Anomaly Detection (MAD) shear circuits. This prevents inadvertent firing of these systems on the ground.

FIGURE 51. Example of single column format and paragraph heading (manual).

CONCLUDING MATERIAL

Preparing activity:
Navy – AS
(Project TMSS-2006-003)

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