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TEST TECHNOLOGY DEVELOPMENT

FINAL REPORT

MILITARY STANDARDS I

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Prepared for:
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<p>The Military Standards Phase I methodology project was established to investigate the disparities observed during the evaluation of draft technical manuals (DTMs) at USAEPG. The objective of the investigation was to develop a concise and effective method with which to prepare and evaluate technical publications within TECOM and the Army. It was found that the numerous standards available to prepare DTMs contain repetitive requirements. These requirements were found to be either exactly the same or titled the same but contained differing (negating) instructions. The investigation collected and categorized these deficiencies to substantiate the recommendation to revise present DTM preparation and evaluation processes. The final analysis documents the need to not only standardize the 'specifications' but to</p> <p style="text-align: right;">(continued on reverse)</p>			
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eliminate manual methods of evaluating DTM requirements such as grammar, format, style, and readability, replacing this with commercial off-the-shelf software programs. In addition, it is recommended that an expert system 'process' be investigated in the second phase of this project to eliminate skewed evaluation results and assist the preparers of DTM contracts and manuals at the development stage. The hope is that this method will eliminate shortfalls with a primary resource (technical publications) of a system and prevent operational mission failures.



DEPARTMENT OF THE ARMY
 HEADQUARTERS, U.S. ARMY TEST AND EVALUATION COMMAND
 ABERDEEN PROVING GROUND, MARYLAND 21005-5055



REPLY TO
 ATTENTION OF

AMSTE-TC-D (70-10p)

6 MAR 1993

MEMORANDUM FOR Commander, U.S. Army Electronic Proving Ground,
 ATTN: STEEP-TS-M, Fort Huachuca, AZ 85613-7110

SUBJECT: Test Technology Development, Final Report for Military
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1. Subject report is approved.
2. USAEPG is authorized to forward recommended publication changes to organizations responsible for approving/effecting those changes.
3. Point of contact at this headquarters is Mrs. Cyndie McMullen, AMSTE-TC, amstetcd@apg-9.apg.army.mil, DSN 298-1469.

FOR THE COMMANDER:

J. E. KNOX
 Acting Chief, Tech Dev Div
 Directorate for Technology

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FOREWORD

The purpose of this methodology report is to present a means of achieving continuity and balance between standards we use to prepare and evaluate draft technical publications. The Army has always had a need and a requirement for adequate support in the area of technical documentation. This need will become even more important as the Army develops more intelligent systems requiring effective support to increase operational response time. The lack of adequate technical documentation, like any support resource, will eventually render a military system useless.

CONTENTS

The Military Standards Phase I Methodology Report represents an analysis of the current situation. The report recommends that the current number of military standards used to evaluate draft technical manuals be reduced and requirements consolidated. The second phase of the methodology investigation is a proposal to develop an expert system to evaluate and verify draft Army technical manuals.

This report has been developed in accordance with the Test and Evaluation Command (TECOM) Pamphlet 70-15 and consists of the following sections and appendices:

- a. Section 1 is an executive summary of the investigation.
- b. Section 2 contains the details of the investigation.
- c. Section 3 consists of the following appendices:

- Appendix A. Duplication of Requirements
- Appendix B. Differentiating Requirements
- Appendix C. Omissions
- Appendix D. IMAGES VOL II-A vs. MIL-M-63036D
(Revised Version)
- Appendix E. IMAGES VOL II-A vs. MIL-M-63038C
(Revised Version)
- Appendix F. Acronyms
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SECTION 1. SUMMARY

1.1 REQUIRED CAPABILITY. The Military Standards Phase I methodology project was established to investigate the disparities observed during the evaluation of draft technical manuals (DTMs) at the US Army Electronic Proving Ground (USAEPG). The investigation compares the (Army) military specifications available for use in the preparation of DTMs versus the governing evaluation standard, Test Operations Procedure (TOP) 1-2-609, Volume (VOL) II-A. The TOP 1-2-609, Instructional Material Adequacy Guide and Evaluation Standard (IMAGES) was developed in 1978 by the US Army Materiel Command (AMC) and the US Army Test and Evaluation Command (TECOM), and was last updated in 1981.

1.1.1 Test and evaluation personnel at USAEPG observed that DTMs which accompany an item under test frequently failed to meet governing evaluation requirements, IMAGES VOL II-A. One example of this was a DTM that did not meet any of the governing requirements. To explain the failure a review of the evaluation procedures was performed. The evaluation criteria, IMAGES VOL II-A, was cross referenced with the applicable preparation procedures for training devices, MIL-M-82376B, Manuals Technical: Operation and Maintenance Instructions for Training Devices. The results of the review indicated that the requirements were in conflict. It was determined that the evaluation criteria under IMAGES did not apply to a DTM of a training device. The DTM had to be reviewed using the prescribed preparation standard. The conflict precludes adequate evaluation of the DTM as prescribed.

1.1.2 The developer of the training device provided a technical publications contract to the technical evaluator for review. The contract, which was prepared by the government program management office, required the developer to utilize only one military standard, MIL-M-82376, as a reference to prepare the DTM. The oversights are that IMAGES did not contain governing specification requirements from MIL-M-82376, and the technical publications contract did not specify all the necessary standards to prepare the DTM. Also, IMAGES did not stipulate that the DTM technical publications specification takes precedence if a conflict arises. The lack of clear guidance concerning these areas during an evaluation can lead to failure of the DTM.

1.1.3 The failure of a DTM to meet the governing evaluation criteria, however, does not ensure publications will be revised due to contractual agreements and funding. The end result is a final technical manual (TM) that does not equip the soldier in the field with the necessary level of instruction and detail to meet specific mission areas. A substandard TM is then supplemented by additional skill training and on-the-job experience, driving support systems' costs up. Investigation of the current guidance used to prepare and evaluate technical documentation is necessary to develop a more efficient means to support the soldier in the field.

1.2 SHORTFALL. All future equipment and systems developed for the Department of the Army will continue to be effected by increased support costs. The increased support costs are a direct effect of inadequate preparation and evaluation processes for DTMs. The lack of an exclusive authority for both the preparation and evaluation processes leads to errors in training, human factors engineering design, support equipment, and maintenance resources. Ultimately, poorly prepared and evaluated DTMs reach the field impacting the mission readiness of equipment and crew.

1.3 OBJECTIVES. The Army Materiel Command is responsible for the Army Equipment Publications Program. This responsibility includes the development of policies and procedural guidance. To carry out this responsibility the CG, AMC provides overall direction in the development and review of Army equipment publications. As a proponent of AMC, this methodology investigation is intended to improve the concepts and procedures used in presenting information in equipment publications. The improvements discussed in the report are the:

a. Development of a matrix that corresponds equipment publications requirements with military specifications to ensure compliance and reduce the costs of multiple draft publications.

b. Automation of the readability, grammar/style, and format evaluation procedures for equipment publications with the use of validated commercial software.

c. Reduction or consolidation of current military specifications, standards, and handbooks that contain the same or similar procedural guidance.

1.4 PROCEDURES. The investigation is based upon observations made during new equipment and systems tests at USAEPG. The DTMs which accompanied the equipment under test were evaluated by IMAGES as prescribed under DA PAM 700-50. Evaluators of the DTMs observed that requirements listed in the referenced applicable military specifications conflicted with those of IMAGES. In addition, evaluators noted that procedural guidance for DTM requirements between the various specifications differed. A list of the military specifications referenced in IMAGES VOL II-A was compiled and used as the baseline for this investigation, see table 1.

1.4.1 Upon establishment of the baseline, evaluation criteria were formulated to assess the various data to be collected. Two evaluation criteria groups (Group A and B) were selected based on the military specifications, standards, and handbooks reviewed. Group A, consists of military standards that define equipment publications requirements for format, style, grammar, and readability. Group B, consists of military standards that define requirements for equipment operations, maintenance, repair

parts/tools, test equipment, and training devices. Data collection sheets were developed that recorded the differences between the stated requirements in each of the standards under review. The data collection sheets were then used to categorize the recorded differences as follows:

a. Redundant Preparation Procedures. Equipment publication requirements that had the same or similar paragraph title or contained similar preparation instructions and were listed in two or more standards.

b. Different/Conflicting Preparation Procedures. Equipment publications requirements that had the same or similar paragraph title but contained drastically different or conflicting preparation instructions. Special annotation was made of requirements that contradicted between standards.

c. Omission of Preparation Procedures. A requirement that was found in only one of the described standards.

The data collected on the selected military standards are available as a part of this report in the Appendices A, B, and C. Each data element recorded and compared contains the referenced military specification, standard, or handbook number, paragraph title/number, and page. The information per each appendix is provided in detail for proposed changes and consolidation efforts. The amount of information documented and the numerous discrepancies precludes the use of DA Form 2028.

1.4.2 In addition to the discrepancies between military specifications, data was collected on the evaluation procedures IMAGES VOL II-A. An evaluation of a DTM that accompanied equipment to test at USAEPG was performed. The discrepancies noted during the evaluation were reviewed to determine if evaluation scores were effected.

**Table 1. Military Standards Used For
Preparation and Evaluation.**

SPECIFICATION NUMBER AND NOMENCLATURE	DATE	DESCRIPTION
MIL-M-63036D - Manuals, Technical: Operator's, Preparation	May 91	Instructions for the preparation of an operator technical manual, includes instructions for operation and maintenance and lists of support equipment.
MIL-M-63038C - Manuals, Technical: Unit or Aviation Unit, Direct Support, Avia- tion Intermediate, and Gen- eral Support Maintenance, Requirements for	Jun 90	General operations information, refers to operator's manual for some specific procedures. Details one or more levels of maintenance with expanded instructions, includes a MAC and RPSTL.
MIL-M-82376B - Manuals, Technical: Operation and Maintenance Instructions for Training Devices	Mar 90	Provides specific requirements for preparation of manuals that describe the use and operation of training devices; to include their limitations and capabilities.
MIL-STD-335 - Manuals, Technical: Repair Parts and Special Tools List	Jul 84	Identifies spare and repair parts. A significant identifier in the parts manuals is the Source Maintenance Resource (SMR) code assigned thru revising procedures.
MIL-M-38784C - Manuals, Technical: General Style and Format Requirements	Jul 91	Provides a method for evaluating reading grade level of a manual.
MIL-HDBK-63038-1A - Techni- cal Manual Writing Handbook	May 84	Provides general guidelines for the technical writer of TMs. Contains criteria for selecting the best type and amount of TM coverage for military equipment.
MIL-HDBK-63038-2 - Techni- cal Writing Style Guide	May 77	Complements the guidance in the Technical Manual Writing Handbook, MIL-HDBK-63038-1A. Provides emphasis on areas where errors are frequently made.

1.5 RESULTS.

1.5.1 The redundant preparation procedures category contained the most discrepancies. The high redundancy rate indicates that consolidation or reduction of military specifications for the selected requirements is a prime consideration. Although a lower percentage rate was found for conflicting and omitted requirements, standardization of these procedures is indicated to prevent inadequacies in DTMs.

a. Redundant Preparation Procedures. Seventy-one percent of the requirements in Groups A and B contained redundant preparation procedures, see table 2.

b. Different/Conflicting Preparation Procedures. Ten percent of the requirements in Groups A and B contained differing or conflicting procedures, see table 2.

c. Omission of Preparation Procedures. Sixteen percent of the requirements in Groups A and B contained omission of preparation procedures, see table 2.

1.5.2 The evaluation of a DTM was performed using IMAGES VOL II-A. A sample of the types of discrepancies found are provided, see table 3. It was found that IMAGES does not provide instructions on how to use the governing specifications to evaluate DTMs. Rather it emulates the governing specifications in a compiled format for each type of equipment publication. Each IMAGES requirement contains the governing specification procedure and paragraph number verbatim. Referencing material in this manner causes confusion when the military specifications are updated and the evaluation standard remains the same. The data collected on IMAGES is documented in Appendices D and E. Each requirement listed contains the IMAGES requirement followed by the updated military specification requirement. The numerous changes precludes the use of DA Form 2028. The results of DTM evaluations could be greatly improved, if the preparer and evaluator had access to a concise, single standard. A single standard with two sections, a technical writing section and a detailed equipment section, would alleviate evaluator complacency, confusion, and frustration.

Table 2. Redundant, Differing, and Omitted Requirements Matrix Group A

	MIL-M-63036D MANUALS, TECHNICAL OPERATOR'S			MIL-M-63038C MANUALS, TECHNICAL MAINTENANCE			MIL-M-82376B MANUALS, TECHNICAL TRAINING DEVICES			MIL-STD-335 MANUALS, TECHNICAL REPAIR PARTS AND SPECIAL TOOLS LIST		
IMAGES TM REQUIREMENT	R	D	O	R	D	O	R	D	O	R	D	O
General - Use of National Stock Numbers and Part Numbers	X			X								
General - Abbreviations and Acronyms	X 1			X 2			X 3			X 4		
Front Matter - Warning Summary	X			X								
Front Matter - How to Use this Manual	X			X								
Chapter 1 - Introduction	X			X								
Chapter 1 - List of Abbreviations	X 1			X 2			X 3			X 4		
Chapter 4 - Responsibility for Inspection	X			X			X					
Chapter 4 - Responsibility for Compliance	X			X			X					
Chapter 4 - Quality Assurance Provisions	X			X								
Chapter 4 - In-Process Reviews	X			X						X		
Chapter 4 - Validation	X			X						X		
Chapter 4 - Records	X			X								
Chapter 4 - Government Furnished Information	X			X						X		

	MIL-M-63036D MANUALS, TECHNICAL OPERATOR'S			MIL-M-63038C MANUALS, TECHNICAL MAINTENANCE			MIL-M-82376B MANUALS, TECHNICAL TRAINING DEVICES			MIL-STD-335 MANUALS, TECHNICAL REPAIR PARTS AND SPECIAL TOOLS LIST		
IMAGES TM REQUIREMENT	R	D	O	R	D	O	R	D	O	R	D	O
Chapter 4 - Verification	X			X						X		
Chapter 5 - Packaging		X 5			X 6			X 7			X 8	
Chapter 5 - Classified Mate- rial - Marking IAW MIL-M-38784			X			X			X			X

Key: (R) Redundant, (D) Differing, and (O) Omissions

Notes:

- 1 - Same information and use MIL-STD-12, nothing about using a glossary.
- 2 - No reference to MIL-STD-12, explain unusual ones in the glossary.
- 3 - No reference to MIL-STD-12, explain unusual ones in the glossary.
- 4 - Use MIL-STD-12, list uncommon ones alphabetically & explain.
- 5 - Reference to ASTM D3951, AR 380-5, MIL-STD-129, DOD 5220.22-M.
- 6 - Reference to ASTM D3951, MIL-STD-129, DOD 5220.22-M.
- 7 - Reference to MIL-M-38784 says to reference to MIL-P-38790.
- 8 - Reference to MIL-M-38784 says to reference to MIL-P-38790.
- 9 - Two ways to highlight a paragraph heading a subordinate paragraph title.
- 10 - One way to underscore.
- 11 - VAGUE PROCEDURAL STEPS - Needs clarification of types and usage of steps.
- 12 - NON-USE of PROCEDURAL STEPS - follows with MIL-M-63038-1A, but contradicts the allowance of certain steps. Use abbreviations as in MIL-STD-12. May be plural or possessive after the first use.
- 13 - Contains extensive material on illustrations but doesn't list limits.
- 14 - MIL-M-82376B & MIL-STD-335 reference this standard for packaging, but it then refers you to MIL-P-38790 (confusing).

Table 2. Redundant, Differing, and Omitted Requirements Matrix Group B

	Technical Manual Writing Handbook MIL-HDBK-63038-1A			General Style and Format Requirements MIL-M-38784C			Technical Writing Style Guide MIL-HDBK-63038-2		
IMAGES TM REQUIREMENT	R	D	O	R	D	O	R	D	O
Divisions, Titles, Headings, Numbering		X 9			X 10				
Warning, Cautions, Notes		X 11			X 12				
Text Preparation	X			X			X		
Sentences, Paragraphs, Grammar, & Punctuation				X			X		
Use of Shall, Will, and May				X			X		
Abbreviations & Symbols				X			X		
Military Terms to be used IAW JCS PUB-1				X			X		
Electronic Test and Checkout Terminology via MIL-STD-1309				X			X		
Illustration Development	X			X			X		
Use of Human Figure	X			X					
Separation of Colors	X			X					
Foldout Page and Multisheet Illustration Limitations			X 13			X			
Specified Reading Grade Level at 9.						X			
Determination of Overall Grade Level						X			
Instructions for Packaging TMs etc.						X 14			

(Note: The same key and notes from Group A apply.)

**Table 3. Draft Technical Manual
DEP 11-5820-1101-13-1
Evaluation Findings**

SUBJECT	DRAFT TECHNICAL MANUAL PROCEDURE	IMAGES REFERENCE MIL-M-63036A	REVISED REFERENCE MIL-M-63036D
COVER	Has picture of equipment, index with destruction notice, and date manual supersedes. (IMAGES type -10 has no information on destruction notice or date manual supersedes. Shows the information in figures only, nothing in descriptive paragraphs.)	Pg. 10-3, Fig. 1, Cover with index. Fig. 2, Cover without index. Two important features, a front cover as specified and a front cover with a picture of the equipment discussed in the manual. References para. 3.2.1 (changed to 3.2.-1.1)	Pg. 6, Sec. 3.2.1-1. The front cover of an operator TM shall contain as a minimum the following: (1) Pub. number (provided by contracting activity). (2) Pub. title (official nomenclature). (3) NSN. (4) End item code (EIC) [as specified in the Army Master Data File (AMDF)]. (5) Pub. date. (6) Distribution statement (as specified in MIL-M-38784). (7) Suppression notice (revisions only).
WARNINGS	Pgs. a, b, c, d, e, f. First page includes safety procedures followed by four warning pages. (IMAGES type -10 did not indicate safety procedures to be located before, with, or after warning pages.)	Pg., 10-3. To be included only if warning cannot be effectively summarized on front inside cover. (Does not indicate any particular order for the warning pages.) References para. 3.3.3.3, revised ref. para. is 3.2.1.1.4.	Page 7. When warnings cannot be summarized on the inside front cover, warning page(s) shall be prepared instead of a warning summary. Warning page(s) shall include the same data as the warning summary and shall be the first page(s) following the cover. Warning page(s) shall be identified as "a", "b", "c", and so on.

SUBJECT	DRAFT TECHNICAL MANUAL PROCEDURE	IMAGES REFERENCE MIL-M-63036A	REVISED REFERENCE MIL-M-63036D
HOW TO USE THIS MANUAL	<p>Page iii. Indicates that this manual is a guide to help maintain equipment and to pay close attention to all WARNINGS and CAUTIONS in the manual. Nothing on unusual features, no explanations or instructions on this paragraph.</p>	<p>Page 10-8. Purpose. To familiarize the user with any special or unusual features of the manual. For example explain front cover, chapter, or section indexes; explain the format; explain how to use operating, troubleshooting, PMCS, and maintenance instructions, etc. References para. 3.3.1, revised reference para. is 3.2.1.4.</p>	<p>Pg. 9, Sec 3.2.1.4. "How to Use This Manual" information shall be located after the table of contents and before the first chapter of the TM. The title, "HOW TO USE THIS MANUAL," shall be centered at the top of the page. The information shall familiarize the operator with special or unusual features of the manual. Coverage shall lead the user through the TM and explain important features of the organization and content. For example, an explanation of the front cover index and its relationship with the boxed-in portion of the table of contents and the bleeder edges of pages, troubleshooting charts, and maintenance instructions shall be given. How to use information shall not repeat instructions given within the chapters.</p>

1.6 ANALYSIS. A review of the findings indicates that the Government evaluation standard, TECOM TOP 1-2-609 (IMAGES) VOL II-A, is a compilation of most of the preparation standards. These multiple preparation standards contain similar information across the board in both areas of concern, format guidance and detailed operator/maintenance instruction. The primary evaluation standard was found to be a massive reiteration of these many military specifications. A section of IMAGES with its corresponding specification reference is provided as an example of this reiteration. The reiteration includes the referenced specification's paragraph number and verbatim instruction. Because of this verbatim referencing, it was found that the 1981 version of IMAGES VOL II-A is completely out of variance with the current versions of military standards. Most of its referenced specifications have been completely revised while IMAGES VOL II-A has not, making it obsolete. Continuous revision of the specifications causes IMAGES VOL II-A to consistently become superseded. A great percentage (approximately 90%) of the paragraph numbers in IMAGES referenced from the specifications it quotes are no longer viable or related.

1.7 CONCLUSIONS. The current system for preparation and evaluation of technical and equipment publications requires consolidation and reduction. The regulation, AR 25-30, which prescribes policies and mandates procedures for preparing technical manuals (TMs) and all other Army publications, provides specific guidance towards the reduction of publications. The statutory authority for this regulation was derived from Title 44 of the United States Code, the Paperwork Reduction Act, Executive Order, the Code of Federal Regulations and issuances from the Office of Management and Budget (OMB). The regulation provides concise guidance on TM structure and technical content and should be adopted as the Army's principal authorization for TM preparation. The style and format requirements for TM preparation were deregulated in AR 25-30 after its last revision. AR 25-30 also cites the applicable governing specification, MIL-M-38784, for the reading grade level requirement. Although, AR 25-30 provides the necessary instructions to prepare a TM, it lacks a reference list for applicable military specifications as cited for equipment, operations, and maintenance data presentation. To augment the guidance it provides, it is recommended that a supplement be added to the AR with the following reference list, see table 4.

**Table 4. Technical and Equipment Publications
Reference List
for
Detailed Preparation of Requirements**

NOMENCLATURE	TITLE
AR 25-30	The Army Integrated Publishing and Printing Program
<p>(SPECIFICATIONS)</p> <p>MIL-M-7298</p> <p>MIL-M-38784</p> <p>MIL-M-38807</p> <p>MIL-M-63004</p> <p>MIL-M-63005</p> <p>MIL-M-63036</p> <p>MIL-M-63038</p> <p>MIL-M-63043</p> <p>MIL-M-63044</p> <p>MIL-M-82376</p> <p>MIL-M-85337</p>	<p>Manuals, Commercial Off-the-Shelf</p> <p>Manuals, Technical: General Style and Format Requirements</p> <p>Manuals, Technical: Illustrated Parts Break-down, Preparation of</p> <p>Manuals, Technical: Preparation Instructions for Lubrication Orders</p> <p>Manuals, Technical: For Preparation for Shipment of Army Aircraft</p> <p>Manuals, Technical: Operator's, Preparation of</p> <p>Manuals, Technical: Unit or Aviation Unit, Direct Support, Aviation Intermediate, and General Support Maintenance, Requirements for</p> <p>Manuals, Technical: Missile System Equipment Check Procedures</p> <p>Manuals, Technical: Missile System Equipment Unit-Under-Test (UUT) Procedures</p> <p>Manuals, Technical: Operation and Maintenance Instructions for Training Devices</p> <p>Manuals, Technical: Quality Assurance Program; Requirements for</p>

NOMENCLATURE	TITLE
<p>(STANDARDS)</p> <p>MIL-STD-12</p> <p>MIL-STD-100</p> <p>MIL-STD-105</p> <p>MIL-STD-129</p> <p>MIL-STD-209</p> <p>MIL-STD-335</p> <p>MIL-STD-1379</p> <p>MIL-STD-1686</p>	<p>Abbreviations for Use on Drawings, Specifications, Standards, and in Technical Documents</p> <p>Engineering Drawing Practices</p> <p>Sampling Procedures and Tables for Inspection by Attributes</p> <p>Marking for Shipment and Storage</p> <p>Slinging and Tiedown Provisions for Lifting and Tying Down Military Equipment</p> <p>Manuals, Technical: Repair Parts and Special Tools List (RPSTL)</p> <p>Military Training Program</p> <p>Electrostatic Discharge Control Program</p>
<p>(HANDBOOKS)</p> <p>DOD-HDBK-263</p> <p>MIL-HDBK-113</p> <p>MIL-HDBK-275</p> <p>MIL-HDBK-63038-1</p> <p>MIL-HDBK-63038-2</p>	<p>Electrostatic Discharge Control Handbook</p> <p>Lubricants, Power Transmission Fluids, Corrosion Preventatives for Use in Ground Equipment Systems, Guide for the Selection of</p> <p>Guide for Selection of Lubricants, Fuels, and Compounds for Use in Flight Vehicles and Components for Protection of Electrical and Electronic Parts</p> <p>Technical Manual Writing Handbook</p> <p>Technical Writing Style Guide</p>

NOMENCLATURE	TITLE
(ADDITIONAL)	
DOD 5220.22-M	Industrial Security Manual for Safeguarding Classified Information
DLSC H4-1	Commercial and Government Entity (CAGE) United States and Canada, Name to Code
DLSC H4-2	Commercial and Government Entity (CAGE), United States and Canada, Code to Name
AR 95-16	Weight and Balance: Army Aircraft
AR 190-11	Physical Security of Arms, Ammunition, and Explosives
AR 190-13	The Army Physical Security Program
AR 310-50	Catalog of Abbreviations and Brevity Codes
AR 380-5	Department of the Army Information Security Program
AR 380-380	Automation Security
AR 385-6	Regulations for Firing Guided Missiles and Heavy Rockets for Training, Target Practice, and Combat
AR 385-11	Ionizing Radiation Protection (Licensing, Control, Transportation, Disposal, and Radiation Safety)
AR 385-62	Regulations for Firing Guided Missiles and Heavy Rockets for Training Target Practice, and Combat
AR 700-22	Worldwide Ammunition Reporting System (WARS)
AR 746-1	Packaging of Army Materiel for Shipment and Storage
AR 750-1	Army Materiel Maintenance Concepts and Policies
AR 750-43	Test, Measurement, Diagnostic Equipment (TMDE)

NOMENCLATURE	TITLE
<p>(OTHER)</p> <p>DA PAM 700-21</p> <p>DA PAM 738-750</p> <p>DA PAM 738-751</p>	<p>The Army Test, Measurement, and Diagnostic Equipment Register Index and Instructions: Part 1; Nomenclature Index, National Stock Number Index Part 2; Functional Index; TMDE Summary of General Purpose Equipment</p> <p>The Army Maintenance Management System</p> <p>Functional Users Manuals for the Army Maintenance Management System - Aviation</p>

The same reference list should also be added to the TM evaluation procedures cited in DA PAM 700-50 as a supplement. The DA PAM 700-50 currently prescribes, the TECOM TOP IMAGES and corresponding standards under the MIL-M-63000 series as the established procedures. No definitive list of these standards is provided. Further, the IMAGES procedures conflict with the MIL-M-63000 series specifications because it contains direct reference to much earlier versions of these standards. Documentation of these conflicting requirements show that multiple standards and unregulated evaluation methods prevent adequate assessment of TMs and place a logistics burden on the resources of newly developed equipment.

1.8 RECOMMENDATIONS. Recommend IMAGES VOL II-A be completely revamped without the verbatim military references and that DA PAM 700-50 and AR 25-30 be corrected/supplemented to prevent continued conflict between the preparation and evaluation processes. Recommend areas of redundancy within the MIL-M-63000 series of specifications be eliminated and that the reading grade level (RGL) computation be automated. Currently the RGL is calculated through manual methods, as stipulated under the governing specification, MIL-M-38784C. The procedures are time consuming and thwart prompt evaluations. Several commercial off-the-shelf grammar check software packages have been evaluated to find an alternate method. Grammatik version 5 for Windows and version 3 for DOS were found to be the most effective commercial product available. Recommend that AR 25-30, MIL-M-38784C, DA PAM 700-50, and IMAGES reflect that the RGL can be performed with the use of approved commercial software. Finally, it is recommended that an artificial intelligence program be developed to automate and assist the preparers/evaluators of DTMs in the selection of military specification requirements.

SECTION 2. DETAILS OF INVESTIGATION

2.1 BACKGROUND. The evaluation of TMs is accomplished through a process of collecting information on all of the operation and/or maintenance tasks required to support an item of equipment. This information is then organized to make it easy to use and understand. The Logistics Support Analysis Record (LSAR) data base should be used by the developer as a source of information in the preparation of all TMs. If not, the operation and maintenance task analysis; skills evaluation; support item identification, i.e., spares, repair parts, tools, and support equipment requirements, will be inconsistent with TM instruction, which impedes maintenance and mission performance of the end item/system.

2.1.1 Verification of all DTMs is necessary. Verification planning is required by AR 25-30, paragraph 1-24 and is considered a major milestone within the equipment development cycle. Equipment proponents must verify all new or revised publications, to include supplements to commercial off-the-shelf (COTS) manuals in accordance with AMC-P 25-31, paragraph 1-4.a.(1).

2.1.2 Verification can occur either during the logistics demonstration or technical test. Unfortunately, all too often at the logistics demonstration, the DTM cannot be adequately verified because many of the tasks had the maintenance levels changed, the number and types of tools were changed, or several components of the equipment under evaluation were not available, making it impossible to verify specific tasks. When this occurs, the verification of a DTM is delayed until the technical test. Evaluation of a DTM should be performed as an on-going process throughout the entire technical test period. However, the evaluation is then limited to those specific procedures and tasks necessary to verify the equipment performance and not to validate the DTM.

2.1.3 A resource to assist the evaluator of the DTM is then necessary to perform this verification/validation process. Such a resource was developed by TECOM in 1978 for use by its individual test centers during technical tests. TOP 1-2-609, IMAGES, consists of 14 separate volumes, each of which covers a specific type of equipment or system publication (see table 5). These volumes are then governed by one or more military specifications which describe in detail the requirements necessary for each type of TM (see table 6).

Table 5. TOP 1-2-609 (IMAGES) Evaluation Procedures By Volume.

IMAGES VOLUME	NOMENCLATURE	GOVERNING SPECIFICATION(S)
VOL I	Operator's, Organizational, DS and GS Maintenance (ITDT-Flow Chart)	MIL-M-63036 MIL-M-63037
VOL II	Operator's, Organizational, or Aviation Unit, DS or Aviation Intermediate, GS Maintenance (ITDT)	MIL-M-63036 MIL-M-63038
VOL II-A*	Operator's, Organizational, or Aviation Unit, DS or Aviation Intermediate, GS Maintenance	MIL-M-63036 MIL-M-63038 MIL-HDBK-63038-1
VOL III*	Repair Parts and Special Tools List; Components of End Item List, Basic Issue Items List, Additional Authorization Lists, and Expendable Supplies and Materials Lists	MIL-M-63001
VOL IV*	Lubrication Orders	MIL-M-63004
VOL V*	DoD Standard Generator Sets	MIL-M-63010
VOL VI	Telecommunications Equipment (Except Teletypewriters)	MIL-M-63019
VOL VII*	Radar Equipment	MIL-M-63020
VOL VIII*	Teletypewriter Equipment	MIL-M-63021
VOL IX	Photographic, Motion Picture, Sound and Recording Equipment	MIL-M-63024
VOL X	Electronic Test Equipment	MIL-M-63025
VOL XI*	Operator's and Crew Member's Checklist for Aircraft	MIL-M-63029
VOL XII	Weapons, Combat Vehicles, and Fire Control Material	MIL-M-63032
VOL XIII	Missile System Equipment	MIL-M-63046
VOL XIV*	Commercial Equipment	MIL-M-7298

NOTE: An asterisk (*) indicates those volumes of IMAGES maintained by TECOM test centers after the last update of IMAGES in April 1981.

Table 6. IMAGES Governing Specifications.

GOVERNING SPECIFICATION	SPECIFICATION NOMENCLATURE	IMAGES REFERENCE DATE	CURRENT REFERENCE DATE
MIL-STD-335	Manuals, Technical Repair Parts and Special Tools List	OCT 81	JUL 84
MIL-M-38784*	Manuals, Technical General Style and Format Requirements	APR 83	OCT 90
MIL-M-63001F	Manual, Technical Repair Parts and Special Tools List	OCT 81	Cancelled MAR 85 Superseded by MIL-STD-335
MIL-M-63004C	Manual, Technical Preparation of Lubricant Orders	MAY 80	MAY 89
MIL-M-63006B	Manual, Technical Equipment Serviceability Criteria	SEP 71	Cancelled OCT 78
MIL-M-63010A	Manual, Technical DoD Standard Generator Sets	OCT 87	NOV 89
MIL-M-63020A	Manual, Technical Radar Equipment	AUG 86	Cancelled MAR 79 Superseded by MIL-M-63036 MIL-M-63038
MIL-M-63021A	Manual, Technical Teletypewriter Equipment	DEC 69	Cancelled SEP 80 Superseded by MIL-M-63036 MIL-M-63038
MIL-M-63024*	Manual, Technical Photographic, Motion Picture, Sound, and Recording Equipment	FEB 70	Cancelled MAR 79 Superseded by MIL-M-63036 MIL-M-63038
MIL-M-63025*	Manual, Technical Electronic Test Equipment	JAN 70	Cancelled APR 80 Superseded by MIL-M-63036 MIL-M-63038
MIL-M-63029C	Manual, Technical Requirements for Operators Manuals and Checklists for Aircraft	JUL 79	MAR 91
MIL-M-63036D	Manual, Technical Operator's, Preparation of	SEP 89	MAY 91

GOVERNING SPECIFICATION	SPECIFICATION NOMENCLATURE	IMAGES REFERENCE DATE	CURRENT REFERENCE DATE
MIL-M-63037	Manual, Technical ORG, DS, and GS Maintenance (IDT-Flow Chart)	MAY 77	MAY 77
MIL-M-63038C	Manual, Technical Unit or Aviation Unit, DS, Aviation Intermediate, and GS Maintenance, Requirements for	APR 80	JUN 90
MIL-HDBK-63038-1A	Technical manual Writing Handbook	JUN 78	MAY 84
MIL-HDBK-63038-2	Technical Writing Style Guide	MAY 77	MAY 77
MIL-M-63030C	Manual, Technical Preventive Maintenance, Service and Preventive Maintenance Daily	MAY 73	JUL 79
MIL-M-63047	Manual, Technical Pocket Size Manual Operator's, Preparation of	OCT 70	OCT 70

NOTE: An asterisk (*) indicates those STD's superseded by MIL-M-63036, MIL-M-63038, and MIL-HDBK-63038-1.

a. Section 1, Introduction. Provides information on the elements necessary to perform a successful DTM evaluation, i.e., maintenance allocation chart (MAC), equipment qualified military personnel, access to the equipment covered by the publication, an explanation of the evaluation criteria, and instruction on the data collection and reduction procedures.

b. Section 2, General Requirements. Provides general style and format requirements. These requirements are abstracted from the governing specifications, in most instances, verbatim. The evaluator must read all the requirements prior to starting the publications review to ensure familiarity with the content.

c. Section 3, Specific Requirements. Provides categorized requirements for detailed equipment operations and, exact maintenance functions allocated to each level of maintenance support under the MAC. This section consists of several subsections, each of which is a different maintenance support level. The separate support level sections are designed to stand alone because the basic maintenance requirements for each level have been reiterated in each and every section.

d. Section 4, Data Collection Forms. Provides an example of the three data collection forms used to record, summarize, and calculate the quality index value of the weighted deficiencies for each technical publication.

2.1.4 Military Standards Inconsistencies. The original problem of this analysis was the evaluation of one suspected standard (MIL-M-82376A, Operating and Maintenance Instructions for Training Devices, 1 September 1977) with reference to TECOM, TOP 1-2-609, IMAGES VOL II-A (Jan 1981). The original discrepancies noted in 1988 were that the military standard(s) requirements, cited in the TM technical contract, conflicted with that of the TOP. Although a prioritization/precedence status was provided in IMAGES VOL II-A (pg 2-1), indicating that the contractual requirements standards take procedural rights over that of IMAGES, this did not eliminate the confusion. Coordination with the TECOM proponents of test and assessment led to further investigation of other related TM preparation standards. A preliminary review indicated a need for a more comprehensive analysis concerning the number, types, and uses of military standards under the TM preparation and evaluation umbrella.

2.1.5 As a preliminary review, one specific requirement was designated by the test officer as a demonstration to indicate the types of problems that already have occurred due to the replication and changing of standards. The demonstration requirement selected was "Order of Specification Precedence." When reviewing the "Order of specification precedence requirements," it becomes obvious that each Military Standard creates its own "Order of Precedence" or has none at all. The IMAGES VOL II-A conveys its order of precedence clearly enough but when using documents referenced by IMAGES VOL II-A, the "specification precedence

order" becomes garbled. A single strict "order of specification precedence" is a necessity for the evaluator to perform a consistent evaluation. Table 7 displays the confusion that can be encountered by the evaluator in this area.

2.1.6 Requirements which are unnecessarily lengthy and either delay TM evaluations or cause complacency on the part of the evaluator will skew evaluation results. Upon material release/provisioning of a system, military TMs are usually the only documentation received by the end user of the equipment. It is, therefore, one of the most critical elements of support. The general term "technical manual" refers to a series of documents that provide detailed instruction to the end user on the operation and maintenance of the system/equipment.

2.1.7 The purpose of the TM is to provide the military operator and maintenance personnel with all the information and instructions necessary to operate and maintain a highly technical system and/or piece of equipment. A well written and organized TM will contain:

- a. Detailed narrative on use, operation, and maintenance.
- b. Artistic replications of basic operator and maintenance procedures.
- c. Description and use information on support and test equipment (and built-in-test equipment).
- d. References to standard military procedures concerning safety and health hazards.
- e. Precise breakdowns of spare and repair parts to include the maintenance level, type of maintenance tasks, and estimated maintenance task times.

2.1.8 The omission of any one of these items within a TM will greatly impact the intended user's ability to operate or maintain the system during test and evaluation. Especially upon fielding, any omission will ultimately affect the equipment performance and the overall assigned mission.

Table 7. Requirement Order Of Specification Precedence.

SPECIFICATION CROSS REFERENCE TO ORDER OF PRECEDENCE
<p>TOP 1-2-609, IMAGES, (page 2-1):</p> <p>"When a conflict exists between specifications, the order of precedence will be as follows:</p> <ol style="list-style-type: none">a. MIL-M-63036/D, 23 May 1991, Manuals, Technical: Operator's, Preparation of.b. MIL-M-63038C, 13 June 1990, Manuals, Technical: Unit or Aviation Unit, Direct Support, Aviation Intermediate, and General Support Maintenance, Requirements for.c. MIL-HDBK-63038-1A, 15 May 1984, Technical Manual Writing Handbook.d. MIL-HDBK-63038-2, 1 May 1977, Technical Writing Style Guide.e. MIL-M-38784, 29 July 1991, Manuals, Technical: General Style and Format Requirements.f. Other military specifications or standards.g. US Government Printing Office Style Manual."
<p>MIL-M-63036D (page 3):</p> <p>"Order of precedence. In the event of a conflict between the text of this specification and references cited herein, the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained. (Note: The references cited within MIL-M-63036D include: MIL-M-38784 and MIL-M-63038)."</p>
<p>MIL-M-63038C (page 5):</p> <p>"Order of precedence. In the event of a conflict between the text of this specification 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. The general order of precedence follows:</p> <ol style="list-style-type: none">a. MIL-M-63038C.b. MIL-M-38784.c. Other military specifications or standards.d. US Government Printing Office Style Manual."

SPECIFICATION CROSS REFERENCE TO ORDER OF PRECEDENCE

MIL-HDBK-63038-1A (INTRODUCTION Page):

Does not contain specific order of precedence but provides general precedence guidance:

"a. A handbook like this, by its very nature, can treat only a portion of available materials in a general way. Therefore, some of these rules are written in general terms by intention. The detailed TM required to convert a particular item or system must be planned to meet the specific and unique needs of that item or system. This planning, in turn, must consider not only the specification, but also the user's information requirements in the specific situation.

b. Requirements for technical writing style are contained in a companion publication: Technical Writing Style Guide, MIL-HDBK-63038-2.

NOTE: Apply this handbook as required by the technical content specification and contract. Review these documents carefully to determine exactly what methods and techniques are required."

MIL-HDBK-60308-2 (Page 1/1, INTRODUCTION):

Does not contain specific order of precedence, but does provide objective and purpose guidance:

"The Style Guide does not supplant the official specifications nor any of the standard authorities that apply to instructional technical writing. Its rules and suggestions supplement these general-type references by describing specialized applications of established principles, and by making orderly choices among the variations of style found in approved usage."

MIL-M-38784C (page 4):

"Order of precedence. In the event of a conflict between the text of this document and the reference cited herein (except for related associated detail specifications, specification sheets, or military standards), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained."

MIL-STD-335, 15 July 1984, Manuals, Technical: Repair Parts and Special Tools List (Page 2):

"Order of precedence. In the event of a conflict between the text of this standard and the reference cited herein, the text of this standard shall take precedence. (Note: The references cited within MIL-STD-335 include: MIL-M-38784, MIL-M-63036, and MIL-M-63038)."

MIL-M-82376B, 30 MAR 1990, Manuals, Technical: Operation and Maintenance Instructions for Training Devices (Page 4):

"Order of precedence. In the event of a conflict between the text of this document and the reference cited herein (except for related associated detail specifications, specification sheets, or military standards), the text of this shall take precedence. Nothing in this document, however, shall supersede applicable laws and regulations unless a specific exception has been obtained. (Note: The references cited within MIL-M-82376B include: MIL-M-38748 and MIL-M-63038)."

2.2 FINDINGS. The following types of discrepancies were found:

2.2.1 Numerous standards with redundant or similar requirements are a major cause for confusion. The confusion can and does prevent developers of DTMs from providing an adequate source of instruction to the user. Examples of these areas in different standards are as follows:

2.2.1.1 MIL-M-63038C, 13 June 1990, paragraph 3.1.1, page 6. "Combined narrative - RPSTL: The inclusion of a repair parts and special tools list (RPSTL) in a combined narrative - RPSTL manual shall be indicated by adding 'Including Repair Parts and Special Tools List' to the title and '&P' to the publication number."

2.2.1.2 MIL-M-82376B, 30 March 1990, paragraph 30.1, Appendix A, page 78. "General: The inclusion of Repair Parts and Special Tools Lists (RPSTL) in a combined manual such as a type -34 shall be indicated by adding to the number, i.e., -34&P. These lists shall be prepared in accordance with MIL-STD-335 (TM) and shall be included as an appendix in each manual as indicated."

2.2.1.3 MIL-STD-335, 15 July 84, paragraph 1.2, page 1. "Application: This standard is applicable to RPSTL TMs, Appendix RPSTLs, for combined maintenance (narrative) manuals, and appendix RPSTLs for depot maintenance work requirements (DMWR) manuals. Applicable maintenance levels are as follows: Type -20P or Type -20&P, Type -30P or Type -30&P, etc."

2.2.1.4 MIL-M-63038C, 13 June 1990, paragraph 3.1.5.1, page 7. "Reporting Errors and Recommending Improvements: You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended changes to Publications and Blank Forms), direct to: (Address of proponent.) A reply will be furnished to you."

2.2.1.5 MIL-M-82376B, 30 March 1990, paragraph 30.2.1.1, page 79. "Reporting Errors and Recommending Improvements: You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to (address of proponent). A reply will be furnished to you."

2.2.1.6 MIL-HDBK-63038-1A, 15 May 1984, paragraph/pages 20/1 and 20/2. "Error Reporting: You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 directly to (insert name of proponent). A reply will be furnished to you."

2.2.2 Other examples are as follows:

2.2.2.1 MIL-M-82376B, 30 Mar 1990. How to Use This Manual states for the evaluator to see MIL-M-63036. While MIL-M-63036C, 13 Jun 1990, is the same as MIL-M-63036D except that it adds, "How to use information shall include reference to associated RPSTL in conjunction with the Manual."

2.2.2.2 Title Block/Reporting of Errors/Table of Contents.

a. MIL-M-63038C states "see MIL-M-63036," but then adds, "Each manual shall contain a reporting of errors statement and Table of Contents immediately below the Title Block, as illustrated in MIL-M-63036. For combined narrative - RPSTL manuals refer to MIL-STD-335 for format requirements for the RPSTL portion of the Table of Contents."

b. In MIL-M-63036D, the location of the "Table of Contents" requirement appears on page 9, section 3.2.1.3, of the document, while the "Title Block/Reporting of Errors and Recommending Improvements" information appears on page 8, section 3.2.1.2. And finally, MIL-M-82376B states "see MIL-M-63036."

2.2.3 The redundancies and repetition discrepancies, although general in nature, cause difficulty not only on the side of the government agency selecting specifications for the contractor to abide by, but with the independent evaluators and testers later in the development cycle. Examples of similar specification requirements with varying degrees of difference are:

2.2.3.1 MIL-M-82376B, 30 March 1990, paragraph 30.3, page 82, Appendix A. "Front Matter: Unless otherwise specified, front matter will be in accordance with MIL-M-38784."

2.2.3.2 MIL-M-38784C, 29 July 1991, paragraph 3.5, page 31. "Front Matter: Unless otherwise specified, material preceding the first chapter shall consist of the following in the order specified: (For Army)

- a. Cover/Title Page or Abbreviated Title (as applicable).
- b. Warning Page.
- c. Table of Contents.
- d. Foreword/Preface/Introduction.
- e. Safety Summary (as applicable)."

2.2.3.3 MIL-M-63038C, 13 June 1990, paragraph 3.2.1, page 10.
"Front Matter: The front matter shall contain the following elements as applicable:

- a. Cover.
- b. Warning and First Aid Data Page.
- c. Transmittal Sheet.
- d. Title Block/Reporting of Errors/Table of Contents.
- e. How-to-Use-This-Manual Information (when specified)."

2.2.3.4 MIL-M-63038C. Deals primarily with maintenance manuals - "detailed guide."

2.2.3.5 MIL-M-63036. Deals primarily with operators' manuals - "detailed guide."

2.2.3.6 MIL-HDBK-63038-1A. A detailed format guide for all manuals and could be considered a "general section guide."

2.2.3.7 MIL-M-38784C and MIL-M-82376B are both very general and have more simplified instructions. The language in MIL-M-38784C is much more user friendly but the amount of detail necessary to prepare and evaluate a manual is not there. The only use each provides is readability and training device instructions, respectively.

2.3 **ASSESSMENT.** IMAGES VOL II-A was designed and last revised in 1981 (a review/update was done in 1991 but was limited to safety/environmental issues and standards) with the intention of effectively/efficiently evaluating Army DTMs. The major flaw is that it is comprised of numerous documents, many of which cover similar areas. When evaluations are being performed, the repetition between documents and discrepancies in areas within those documents lead to confusion.

2.4 **RECOMMENDATIONS.**

2.4.1 One preparation evaluation standard should be created with the following sections:

- a. General Section (using MIL-M-63038-1A).
- b. Operator Manual Details (using MIL-63036D).
- c. Maintenance Manual Details (MIL-M-63038C).
- d. Training Device Instructions (MIL-M-82376B).
- e. RPSTL Details (MIL-STD-335).

2.4.2 The repetitive areas in each specification should be deleted, decreasing overall volume. The same should be applied to identical criteria in the detailed operation and maintenance instructions and/or preparation guidance. This should then be

taken a step further with the following evaluation elements replaced by a COTS software program: Readability, grammar, publication syntex, sentence structure, etc.

2.4.3 IMAGES was originally designed to alleviate the repetitiveness of these standards. It is also apparent that in the future, the DoD efforts will include a reduction in standards. A reduction in standards will reduce the number of personnel required to maintain and update them.

2.5 SUMMARY. The objective of this methodology investigation was to develop a concise and effective method with which to prepare and evaluate technical publications within the Army. The criteria devised to investigate the many facets of the current issue, regarding the failure of TMs and their contractual development, were very substantive. The alternative approaches were then discussed in the above recommendations. Several avenues are available to the Government to correct the situation, but as always the most cost effective and timely solution will have to outweigh all other considerations. It is apparent then that to conceive a rational means to this continuing dilemma will require a complete restructuring of the present evaluation standard, IMAGES VOL II-A. A concise and purely instructional guide must be developed from what presently exists. Restructuring the document, so that it no longer reiterates or references precisely each specification which governs its use, must be accomplished in order to prevent continuous revision/update whenever the military specifications change. COTS software must be a standard requirement for the areas now performed manually, i.e., grammar, style, and readability. A final recommendation/conclusion is that DoD should develop one set of rules for preparation of technical publication contracts and stipulate that the proponents of these agreements have available to them a single resource to make the correct selection. This will provide detailed guidance and instruction to the developer ensuring that all technical publications contracts contain the correct specifications.

2.6 FUTURE CONCEPTS.

A second phase of this methodology project is proposed to prepare and test an expert systems program that would interact with preparers as well as evaluators. The program would ask questions which would determine whether the requirements necessary to pass an evaluation had been met. Questions passed would be in the form of "were appropriate safety and health hazard warnings provided at the beginning of the TM and throughout those detailed areas where maintenance would be performed?" A question of this nature would call for a yes or no answer. Upon receipt of a "yes" response, the program would enter it as a part of a final report to receive a numeric scoring at the end of the Q & A period. A "no" response would direct the evaluator towards another set of questions such as, if warnings were not provided would omission or lack of cause one or more of the following to occur:

- a. Critical failure to equipment mission performance.
- b. A threat to the safety of the user of the equipment.
- c. A delay in mission performance.
- d. A delay in maintenance and thus a delay in mission performance.
- e. Would not significantly impact personnel or mission.

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SECTION 3. APPENDICES

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APPENDIX A
DUPLICATION OF REQUIREMENTS

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APPENDIX A. DUPLICATION OF REQUIREMENTS

1. WARNINGS.

a. MIL-M-38784C (TM), Page 28, Sec 3.3.10. **WARNINGS, CAUTIONS, AND NOTES:** "Unless otherwise specified, warnings and cautions shall precede the text but follow paragraph headings to which they apply. Notes may precede or follow applicable text, depending upon the material to be highlighted. Warnings, cautions, and notes shall not contain procedural steps nor shall the headings be numbered. When a warning, caution, or note consists of two or more paragraphs, the heading WARNING, CAUTION, NOTE shall not be repeated above each paragraph. If it is necessary to precede a paragraph by both a warning and a note, or a caution and a note, etc., warnings shall precede cautions, which in turn shall precede notes. Warnings, cautions, and notes shall be short, concise, and used only to emphasize important or critical data. Warnings and cautions may be worded positively or negatively and shall state the hazard and result or reason, unless obvious."

b. MIL-HDBK-63038-1A (TM), Page 13/4. **WARNINGS, CAUTIONS, AND NOTES:** "The following rules should be observed:

(1) Warnings and cautions should precede and appear on the same page as the text or procedural steps to which they apply.

(2) Notes may precede or follow applicable text depending on the material to be highlighted.

(3) A note should always precede a procedural step to which it applies.

(4) Warnings, cautions, and notes should not contain procedural steps.

(5) When a warning, caution, or note consists of two or more paragraphs, the heading WARNING, CAUTION, NOTE should not be repeated above each paragraph.

(6) If it is ever necessary to precede a paragraph by both a warning and a note, or a caution and a note, etc., they should appear in the sequence noted, namely, warnings, cautions, and notes.

(7) When several warnings, cautions, or notes appear together, the heading should appear only once. They may be separately identified by the use of 'bullets' (•).

(8) General warnings and cautions should be placed on the inside front cover or a warning page at the front of the manual."

c. MIL-M-63036D (TM), Page 7, Sec 3.2.1.1.3. **WARNING SUMMARY:** "A warning summary shall appear on the inside front cover to provide the operator with important warnings that appear throughout the manual. If the front cover data extend to the inside of the cover, the summary shall appear on the next page immediately after the cover. This summary shall include each general type of warning and symbol used within the manual."

d. MIL-M-63038C (TM), Page 11, Sec 3.2.1.2. **WARNING AND FIRST AID DATA PAGE:** "A warning and first aid data page shall be included and shall:

Provide the user with a summary of all warnings that appear in the manual. Warnings involving the same hazard and repeated in several places throughout the manual shall be summarized and appear only once on the warning page."

2. CONSISTENCY AND STYLE OF WRITING.

a. MIL-HDBK-63038-2 (TM), Page 14/4. **CONSISTENCY:** "Keep nomenclature consistent within publication and within a series of related publications. Don't call an item one name in one portion of a manual and another in some other portion."

b. MIL-HDBK-63038-1A (TM), Page 4/4. **CONSISTENCY:** "Make text consistent in terminology, style, and format. Be consistent with other portions of the Technical Manual. Be consistent in the organization, style, and format of similar publications. But don't be consistent just for consistency's sake, be consistent where it helps the reader."

c. MIL-M-38784C (TM), Page 23, Sec 3.3. **STYLE OF WRITING:** "For maximum clarity and usefulness, there shall be consistency in terminology and organization within the same publication or series of publications. Nomenclature shall be consistent within a publication and throughout parts lists, parts breakdowns, and other directly related publications."

d. MIL-M-38784C (TM), Page 22, Sec 3.3. **STYLE OF WRITING:** "Sentences shall be short and concise."

e. MIL-M-38784C (TM), Page 22, Sec 3.3. **STYLE OF WRITING:** "Punctuation shall be used in a manner which aids in reading and prevents misreading. Sentences shall be rewritten when extensive punctuation is necessary for clarity."

f. MIL-M-38784C (TM), Page 22, Sec 3.3. **STYLE OF WRITING:** "Technical words shall be used only when no other wording will convey the intended meaning."

3. ILLUSTRATIONS, TABLES, AND ARTWORK.

a. MIL-HDBK-63038-1A (TM), Page 15/1. **ILLUSTRATION DEVELOPMENT:** "Style and techniques should be of a quality which will produce illustrations that clearly, adequately, and economically portray the information to be illustrated. Illustrative material should be used to:

(1) Describe an item or idea when this can be done more efficiently and effectively by graphic methods.

(2) Clarify text.

(3) Supplement information which is difficult to describe by text alone.

(4) Call attention to details.

(5) Furnish graphic identification of parts and special tools for critical applications."

b. MIL-M-38784C (TM), Page 41, Sec 3.6. **ILLUSTRATIONS:** "Style and techniques shall be of a quality which will produce artwork that will clearly, adequately, and economically portray the information to be illustrated. Illustrative material shall be used to: describe an item or idea if this can be done more efficiently and effectively by graphic methods; clarify text; present phases difficult to describe by text alone; call attention to details; and furnish graphic identification of parts and tools."

c. MIL-HDBK-63038-2 (TM), Page 16/1, 17/1. **TABLES:** "For purposes of technical manuals, the use of tables makes the material easier to use and understand. Use tables, charts, and other illustrations instead of text in sentence-paragraph format wherever possible. Graphs should be used as tools to reduce the amount of text in a technical manual as frequently as feasible. Graphs should be used wherever possible to replace, supplement, or simplify text in technical manuals. They should be designed for maximum clarity, usability, and understandability."

d. MIL-HDBK-63038-1A (TM), Page 15/10. **MOUNTING:** "All artwork must be mounted. When mounting an illustration, allow at least a 1-1/2 inch margin for crop marks."

e. MIL-M-38784C (TM), Page 46, Sec 3.6.21. **MOUNTING OF ARTWORK:** "Drawings/diagrams/illustrations, needing to be incorporated in a text page manually, shall be securely fastened to a mounting board by a process that will protect the artwork, will not discolor or distort the illustration, and will assure its being free of wrinkles and blisters. The size of the mounting board shall allow for a minimum border of 1-1/2 inches on all four sides of the image area of each illustration to accommodate required external identification markings."

f. MIL-M-38784C (TM), Page 47, Sec 3.6.23. COVERING OF ARTWORK: "All board mounted artwork shall be protected by an inner flap of non-oil tissue or vellum, and an outer flap of heavy paper. The tissue overlay and protective flap shall be cemented or securely taped to the back of the mounting board at the top of the illustration and folded over the face of the illustration."

4. RESPONSIBILITY FOR INSPECTION OR COMPLIANCE.

a. MIL-M-63036D (TM), Page 24, Sec 4.1. RESPONSIBILITY FOR INSPECTION: "Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements."

b. MIL-M-63038C (TM), Page 67-68, Sec 4. RESPONSIBILITY FOR INSPECTION: This paragraph is identical to the above stated manual, word for word, with the exception that the last sentence states "...inspections set forth in the specification..."

c. MIL-M-82376B (TM), Page 34, Sec 4.1. RESPONSIBILITY FOR INSPECTION: This paragraph is identical to the above stated manual, word for word, with the exception that the last sentence states "...inspections set forth in this document..."

d. MIL-M-63036D (TM), Page 24, Sec 4.1.1. RESPONSIBILITY FOR COMPLIANCE: "All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material."

e. MIL-M-63038C (TM), Page 68, Sec 4.1.1. RESPONSIBILITY FOR COMPLIANCE: "All items shall meet all requirements of sections 3 and 5, as specified in the content/format selection summary (appendix) and statement of work. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that

all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements; however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material."

f. MIL-M-82376B (TM), Page 35, Sec 4.1.1. **RESPONSIBILITY FOR COMPLIANCE:** "All items shall meet all requirements of sections 3 and 5 of this document. The inspection set forth in this document shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements; however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material."

5. QUALITY ASSURANCE, REVIEWS, AND VALIDATIONS.

a. MIL-M-63036D (TM), Page 24, Sec 4.2. **QUALITY ASSURANCE PROVISIONS:** "The contractor shall be responsible for quality assurance in the preparation of the TM in accordance with MIL-M-85337 to the extent specified by the contracting activity."

b. MIL-M-63038C (TM), Page 68, Sec 4.2. **QUALITY ASSURANCE PROVISIONS:** "Quality assurance in the preparation of Technical Manuals shall be the responsibility of the contractor and shall be implemented in accordance with MIL-M-85337 to the extent specified by the contracting activity and as detailed herein."

c. MIL-M-63036D (TM), Page 24, Sec 4.4. **IN-PROCESS REVIEWS:** "When specified by the contracting activity, these reviews will be performed by its representatives during the preparation of the TM. The contractor shall support these reviews by providing access to the TM materials and equipment, facilities, or other support as specified by the contracting activity."

d. MIL-M-63038C (TM), Page 68, Sec 4.5. **IN-PROCESS REVIEWS:** "When specified by the contracting activity, these reviews shall be performed by the representatives of the contracting activity during preparation of the equipment publication, primarily as guidance to the contractor and to assure that the publications are written in conformance with contract and specification requirements. Unless otherwise specified by the contracting activity, the review may be conducted at the contractor's facility, at any time during the development of the publication, but normally prior to completion

of the publication. These in-process reviews are not a part of validation or verification and shall not be used to take the place of validation or verification."

e. MIL-STD-335 (TM), Page 15, Sec 5.3.1. IN-PROCESS REVIEWS: "When specified by the acquiring activity, these reviews will be held during the preparation of the RPSTL publication, primarily to provide guidance to the contractor to assure that the publications are prepared in conformance to contract and standard requirements. These reviews may be conducted at the contractor's facility, or at the acquiring activity's facility, at any time during the development of the publication but normally prior to preparation of the final contract deliverable. These in-process reviews are not a part of validation or verification and shall not be used to take the place of validation or verification."

f. MIL-M-63036D (TM), Page 24-25, Sec 4.5. VALIDATION: "The contractor shall validate the technical accuracy and adequacy of all operating and maintenance procedures in the TM in accordance with MIL-M-85337. This validation shall include a complete review of the associated MAC to ensure that all authorized operator or crew tasks are covered in the TM. It shall include a review of all supply items included in the TM to insure that they are authorized for use at the operator/crew level. When specified by the contracting activity, a simulation of performance may be used to avoid destructive testing. Each individual task shall be validated from start to completion in one session. The technical accuracy and content of all drawings, diagrams, schematics, and other material which supports the task shall be validated as part of the task. The contracting activity reserves the right to witness the validation. The contractor shall correct all errors found in the TM during the validation. Minor corrections may be made on the spot and the performance of the task continued. Numerous corrections that disrupt the performance of the task shall be considered major corrections. In the case of any type of major correction, the entire task performance shall be repeated at another time after the corrections have been made to the TM."

g. MIL-M-63038C (TM), Page 69, Sec 4.6.1. VALIDATION: "The draft equipment publication (DEP) shall be validated by the contractor in accordance with the validation schedule. A 100 percent validation of the operating and maintenance procedures shall be performed for technical accuracy and adequacy of content. This requirement shall include a complete review of MAC functions and levels to ensure all allocations are properly included for performance at the designated level of maintenance specified by the TM type designation (e.g., -10, -20, -34). This review shall include a complete survey of applicable SMR coded items to ensure that all items coded for assembly, manufacture/fabrication, replacement, or repair are included in the maintenance manual at the level designated by the SMR code. Particular care must be taken to ensure that the 'complete repair' code

(fourth position of the SMR code) is properly analyzed; this code indicates whether or not an item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair, yet does not preclude some degree of repair which may be accomplished at a lower level of maintenance. These lower level repair parts must be identified and incorporated into the maintenance procedures in the proper level TM as specified by the individual item SMR code. The target audience Reading Grade Level (RGL) cited in the contract shall be validated in conformance with the requirements of MIL-M-38784. Validation of RPSTL shall be performed as specified in MIL-STD-335."

h. MIL-STD-335 (TM), Page 15-16, Sec 5.3.2. VALIDATION: "The manuscript used to prepare the draft RPSTL publication shall be validated by the contractor in accordance with the requirements contained herein. The introductory material and columnar headings shall not be included in the sampling procedure used for the tabular listings."

6. GOVERNMENT-FURNISHED INFORMATION AND RECORDS.

a. MIL-M-63036D (TM), Page 25, Sec 4.5.1. RECORDS: "The contractor shall maintain quality assurance records that contain, at the minimum, the following information: dates of validations, tasks and material validated, method of validation (simulation or actual), findings and applicable remarks, and action taken. The contracting activity reserves the right to examine these records at the contractor's facility."

b. MIL-M-63038C (TM), Page 71, Sec 4.6.1.2. RECORDS: "The contractor shall maintain records showing dates of validation reviews, manuscript material reviewed by task or action, findings with applicable remarks, and action taken. The contracting activity reserves the right to examine these records at the contractor's facility."

c. MIL-M-63036D (TM), Page 25, Sec 4.5.2. GOVERNMENT-FURNISHED INFORMATION: "The contractor shall validate information furnished by the Government along with the rest of the TM. The contractor shall notify the contracting activity if any Government-furnished information is inaccurate, inadequate, or inconsistent with the contents of the TM."

d. MIL-M-63038C (TM), Page 71, Sec 4.6.1.3. GOVERNMENT-FURNISHED INFORMATION: "The contractor is not responsible for the adequacy and accuracy of Government-furnished information provided for inclusion in their manuscript. The contractor shall include a validation that all such Government-furnished information is properly and correctly reflected in the manuscript. The contractor shall be responsible for notifying the contracting activity of any inaccurate or inadequate data or of any data which are inconsistent with the contents of the manuscript."

e. MIL-STD-335 (TM), Page 16, Sec 5.3.2.7. GOVERNMENT-FURNISHED DATA: "The contractor is not responsible for the adequacy and accuracy of Government-furnished data provided for inclusion in the Repair Parts and Special Tools Lists. The contractor shall include in his reviews a validation that all such Government-furnished data are properly and correctly reflected in the RPSTL. The contractor shall be responsible for notifying the Government of any inaccurate or inadequate data or any data which are inconsistent within the content of the RPSTL or with other sources of data."

7. VERIFICATION.

a. MIL-M-63036D (TM), Page 25, Sec 4.6. VERIFICATION: "Unless otherwise specified by the contracting activity, the contractor shall participate in the verification by the Government and shall provide the following support."

b. MIL-M-63038C (TM), Page 71, Sec 4.6.2. VERIFICATION: "Representatives of the contracting activity will verify the contractor's validation, except for PMCS, which must be verified by the option in 4.6.2a, to include verification of logical sequencing. The contracting activity reserves the right to perform verification by one of the methods listed in a through d below. The methods listed are in addition to reviewing the publication for conformance to the requirements of the governing documents and inspecting the contractor's validation records."

c. MIL-STD-335 (TM), Page 16, Sec 5.3.3. VERIFICATION: "Representatives of the acquiring activity will verify the contractor's validation of the material to assure compliance with the validation requirements. In addition to inspecting the contractor's records on the performance of validation reviews, the Government reserves the right to perform verification by either witnessing the contractor's validation or reviewing random samples of the line item entries required by 5.3.2.4."

8. HOW TO USE THIS MANUAL.

a. MIL-M-63036D (TM), Page 9, Sec 3.2.1.4. HOW TO USE THIS MANUAL: "'How to use this manual' information shall be located after the table of contents and before the first chapter of the TM. The title, 'How to use this manual,' shall be centered at the top of the page. The information shall familiarize the operator with special or unusual features of the manual. Coverage shall lead the user through the TM and explain important features of the organization and content. For example, an explanation of the front cover index and its relationship with the boxed-in portion of the table of contents and the bleeder edges of the pages, troubleshooting charts, and maintenance

instructions shall be given. How to use information shall not repeat instructions given within the chapters."

b. MIL-M-63038C (TM), Page 12, Sec 3.2.1.5. HOW TO USE THIS MANUAL: "'How to use this manual' information shall be located after the table of contents and before the first chapter of the TM. The title 'How to use this manual' shall be centered at the top of the page. The information shall familiarize the user with special or unusual features of the manual. Coverage shall lead the user through the TM and explain important features of the organization and content. For example, an explanation of the front cover index and its relationship with the boxed-in portion of the table of contents and the bleeder edges of the pages, troubleshooting charts, and maintenance instructions shall be given. How-to-use information shall not repeat the instructions given within the chapters."

9. APPENDICES FOR REFERENCES AND EXPENDABLE ITEMS.

a. MIL-M-63036D (TM), Page 20, Sec 3.2.8.1. APPENDIX A, REFERENCES: "The publications shall be listed in groups by publication types. When a list of applicable publications (LOAP) is published, this appendix shall reference the LOAP."

b. MIL-M-63038C (TM), Page 41, Sec 3.2.5. APPENDIX () - REFERENCES: "Information contained in this appendix shall be as directed by the contracting activity and shall be grouped by type and according to subject, with group headings numbered as paragraphs."

If there is a List of Applicable Publications, reference shall be made to the LOAP."

c. MIL-M-63036D (TM), Page 23, Sec 3.2.8.4. APPENDIX D, EXPENDABLE AND DURABLE ITEMS LIST: "This appendix shall have two sections: Section I, Introduction, and Section II, Expendable and Durable Items List (tabular listing). The introduction shall be prepared and shall include the applicable information as shown on figure 29. This appendix shall not include illustrations. The list shall be formatted and shall include the applicable information under the headings shown on figure 30."

d. MIL-M-63038C (TM), Page 44, Sec 3.2.8. APPENDIX () - EXPENDABLE AND DURABLE ITEMS LIST: "This appendix shall have two sections, Section I, Introduction, and Section II, Expendable and Durable Items List (tabular listing). The introduction shall be prepared and shall include the applicable information as shown on figure 17. This appendix shall not include illustrations. The list shall be formatted and shall include the applicable information under the headings shown on figure 18."

10. TABLE OF CONTENTS.

a. MIL-HDBK-63038-1A (TM), Page 2/3. **TABLE OF CONTENTS:** "Located in the front of the manual, containing chapter and section title headings plus any major topic areas. Entries within the main table of contents which duplicate the entries in the front cover index should be highlighted with a box."

b. MIL-M-38784C (TM), Page 37, Sec 3.5.6. **TABLE OF CONTENTS:** "A table of contents listing parts, chapters, sections, and paragraphs in the same order and with the exact titles used in the text, with page numbers, shall be placed at the beginning of each publication. Each manual or volume in a set of manuals shall contain its own table of contents."

c. MIL-M-63036D (TM), Page 9, Sec 3.2.1.3. **TABLE OF CONTENTS:** "Each major division of the TM shall appear in the table of contents. Each major division boxed-in on the cover index shall be boxed-in or highlighted in the table of contents. Each volume shall contain its own table of contents and shall reference companion volumes in the same TM series."

d. MIL-STD-335 (TM), Page 6, Sec 5.1.2.1.1. **TABLE OF CONTENTS:** "This table shall reflect the content of the applicable RPSTL and comply with the following requirements:

(1) Section numbers with titles, functional group codes (FGC) with titles, and each index title shall be listed by the same nomenclature and in the same sequence in which they appear in the RPSTL.

(2) Each figure title and each figure parts list title shall appear below their section title and shall be listed in the order in which they appear in the RPSTL.

(3) In a multivolume RPSTL, each volume in the series shall have its own table of contents and shall reference the companion volume(s)."

11. GLOSSARIES.

a. MIL-M-38784C (TM), Page 22, Sec 3.2.9.7. **GLOSSARIES:** "Shall be used in TMs only when the terms are not adequately defined in the text. In the Army, Navy, Air Force, DoD, or standard dictionary, or in the manual's preface/foreword/introduction."

b. MIL-M-63036D (TM), Page 11, Sec 3.2.2.1. **GLOSSARY:** "Unless otherwise specified, the manual shall contain a glossary of terms. The glossary shall include all terms that are not adequately defined in the text or listed in Dictionary of United States Army Terms (AR 310-25)."

c. MIL-M-63038C (TM), Page 46, Sec 3.2.12. GLOSSARY: "If manual contains a number of terms requiring definition, including abbreviations, a glossary shall be included."

d. MIL-M-82376B (TM), Page 32, Sec 3.3.1.10. GLOSSARY: "A glossary shall be prepared in accordance with MIL-M-38784."

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APPENDIX B
DIFFERENTIATING REQUIREMENTS

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APPENDIX B. DIFFERENTIATING REQUIREMENTS

1. PARAGRAPHS AND SUBHEADINGS.

a. MIL-HDBK-63038-1A (TM), Page 1/3. **PARAGRAPHS, ILLUSTRATIONS, TABLES AND CHARTS:** "Primary headings shall be boxed, boldface, larger type size than running text, or underlined and overlined."

b. MIL-M-38784C, Page 20, Sec 3.2.9.5.1.1. **PRIMARY SIDEHEADS:** "They shall begin at the left margin and shall be underscored."

c. MIL-HDBK-63038-1A (TM), Page 1/3. **SUBDIVISIONS OF PARAGRAPHS:** "If a title is used, it should be underscored or italicized."

d. MIL-M-38784C, Page 21, Sec 3.2.9.5.1.2. **SUBORDINATE PARAGRAPHS:** "The first letter of the first word and of each principal word shall be capitalized, and the title shall be underscored."

2. WARNINGS.

a. MIL-HDBK-63038-1A (TM), Page 13/2. **WARNINGS, CAUTIONS, AND NOTES:** "The text of warnings and cautions should contain the following information, ordinarily in the order indicated. 1-The steps to be taken to avoid or minimize the hazard. 2-Corrective or first-aid actions to be taken if the hazard materializes. To be effective all warnings, cautions, and notes should be placed at the point where they apply. For example, placing the warning, caution, or note just before the procedural step to which it applies is the most logical action. In the rules observed states: 1-Warnings and cautions should precede and appear on the same page as the text or procedural steps to which they apply. 2-Warnings, cautions, and notes should not contain procedural steps."

b. MIL-M-38784C, Page 28, Sec 3.3.10. **WARNINGS, CAUTIONS AND NOTES:** "Warnings, cautions, and notes shall not contain procedural steps nor shall the headings be numbered."

3. PACKAGING.

a. MIL-STD-335 (TM), Page 17, Sec 5.4. **PACKAGING:** "When packaging negatives, a sheet of tissue paper shall be inserted between each of the negatives, or each negative shall be placed in a negative envelope, as specified by the acquiring activity. Negatives shall then be packaged in the same manner as prescribed for reproducible copy. All other packaging requirements shall be in accordance with MIL-M-38784."

b. MIL-M-63036D (TM), Page 26, Sec 5. PACKAGING AND MARKING: "Unless otherwise specified by the contracting activity, the packaging and packing of TMs and associated TM products shall conform to ASTM D3951 (for unclassified) and AR 380-5 (for classified). Packages shall be marked in accordance with MIL-STD-129 and ASTM D3951, as applicable, and shall include the appropriate technical manual number and publication date. All classified material shall be safeguarded, packaged, and marked in accordance with DoD 5220.22-M."

c. MIL-M-63038C (TM), Page 72, Sec 5. PACKAGING AND MARKING: "Unless otherwise specified by the contracting activity, the packaging and packing of technical manuals (TMs) and associated TM products shall conform to ASTM D3951. Packages shall be marked in accordance with MIL-STD-129 and ASTM D3951, as applicable, and shall include the appropriate TM number and publications date. All classified material shall be safeguarded, packaged, and marked in accordance with DoD 5220.22-M."

d. MIL-M-82376B (TM), Page 35, Sec 5.1. PACKAGING: "Packaging, packing, and marking for shipment shall be in accordance with MIL-M-38784C." MIL-M-38784C has nothing on packing requirements, but refers you to MIL-P-38790. See also Appendix C - Omissions.

4. HUMAN FIGURES.

a. MIL-HDBK-63038-1A, Page 6/18, 6/19, 6/20 . HUMAN FIGURES: Has minimal text addressing the use of Human Figures. References the inappropriate use of human figures. Has good pictorial examples.

b. MIL-M-38784C, Page 44, Sec 3.6.14. USE OF HUMAN FIGURES: Much more detailed (good text). Says nothing about the inappropriate use of human figures. Also no pictorial examples. "Where it is necessary to illustrate an operation, procedure, or installation, illustrations may include a human figure or parts of the body. Jewelry shall not appear in any illustration. The human figure shall not be permitted to obscure details of the equipment necessary for a complete understanding of its operation. The human figure shall be clothed as designated by the acquiring activity. A cross section of races and sexes shall be used."

5. INDEX.

a. MIL-HDBK-38784C (TM), Page 22, Sec 3.2.9.8. ALPHABETICAL INDEX: "Should be required when: (1) Required by the technical content specifications. (2) The manual size exceeds 35 pages. (3) Otherwise needed to enable the manual user to quickly locate any needed information."

b. MIL-M-38784C (TM), Page 22, Sec 3.2.9.8. INDEX: "Unless otherwise specified, an alphabetical index shall be

prepared when the number of titled paragraphs in a publication exceeds 100. When specified an index shall be prepared regardless of the number of paragraphs."

c. MIL-M-63036D (TM), Page 24, Sec 3.2.9. **ALPHABETICAL INDEX:** "The manual shall include an alphabetical index prepared in accordance with MIL-M-38784C."

d. MIL-M-63038C (TM), Page 46, Sec 3.2.13. **ALPHABETICAL INDEX:** "Unless otherwise specified by the contracting activity, each TM shall include an alphabetical index prepared in accordance with MIL-M-38784C."

e. MIL-M-82376B (TM), Page 32, Sec 3.3.1.11. **INDEX:** "An index is required when a manual exceeds 100 paragraphs. The index shall be prepared in accordance with MIL-M-38784C."

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APPENDIX C
OMISSIONS

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APPENDIX C. OMISSIONS

The following necessary requirements, cited in other standards, are omitted from MIL-HDBK-63038-1A and MIL-HDBK-63038-2:

1. MIL-M-38784C, Page 26, Sec 3.3.2. GRAMMATICALLY PERSON AND MOOD: "The second person imperative mood shall be used for procedures, i.e., 'Remove test set from carrying case.' Third person indicative mood shall be used for description and discussion, i.e., 'When switch A is in the ON position, lamp (34) lights.'"
2. MIL-M-38784C, Page 26, Sec 3.3.3. READABILITY: The following statement is only in this manual, "Unless otherwise specified, the Reading Grade Level (RGL) shall be nine."
3. MIL-M-38784C, Page 60, Sec 4.4. VALIDATION OF READABILITY: This section tells in lengthy detail how to calculate the Overall Grade Level (OGL) and Grade Level (GL) of the text in a manual. This is the only manual that provides this information.
4. MIL-M-63038C (TM). SECURITY CLASSIFICATION MARKINGS: This manual does not have any reference to Security Classification Markings in a manual. MIL-M-63036D (page 5), MIL-M-82376B (page 5), and MIL-STD-335 (page 14) each have a statement on this which refers you to MIL-M-38784. (The directions are actually on pages 9 and 10 of the MIL-M-38784C.)
5. MIL-M-38784C (TM), Page 65, Sec 5. PACKAGING REQUIREMENTS: "Unless otherwise specified, the material furnished in accordance with this specification shall be packed in accordance with the requirements of MIL-P-38790."
6. MIL-M-38784C (TM), Page 14, Sec 3.2.4.1. FOLDOUT PAGE AND MULTISHEET ILLUSTRATION LIMITATIONS: FOLDOUT PAGES: "Foldout pages shall be prepared only when approved by the acquiring activity. Multisheet illustrations should be used where possible, in lieu of foldouts, when usability will not be affected. Foldout-foldup pages are not permitted. If approved by the acquiring activity, foldout pages may be prepared for the 4 by 8, 5-1/2 by 7, 5 by 8 and 8-1/2 by 11 inch manuals. Foldout pages shall not be used in the 4 by 5-1/2, 4-1/2 by 7, or 17 by 11 inch manuals. Numbering of foldouts shall be in accordance with 3.2.2.2.2.6 and 3.2.2.2.2.7. Unless otherwise specified, foldouts shall meet the following requirements:
 - a. All foldout pages shall be prepared for printing on one side only.
 - b. Full blank aprons (see 6.3.1) shall be used.
 - c. Foldout pages shall not be spliced.

d. Foldout pages shall fall at the end of the manual. When specified, foldout pages shall fall at the end of chapters or be interspersed within text pages. When foldout pages fall at the end of the manual, such pages shall follow the last chapter, appendix, or index, whichever forms the last portion.

e. Maximum foldout page sizes and maximum printable area for foldout pages shall be as follows: (gives all sizes)."

NOTE: This extent of information on limitations is only in this manual. MIL-HDBK-63038-1A has extensive material on illustrations, with plenty of text and examples of illustrations, but does not include the above information.

7. MIL-M-38784C (TM), Page 37, Sec 3.5.6. **TABLE OF CONTENTS:**
"Volume 1 of the first manual of the set shall contain a complete table of contents covering the entire set." (No other manual states this.)

APPENDIX D
IMAGES VOL II-A VS. MIL-M-63036D (REVISED VERSION)

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APPENDIX D. IMAGES VOL II-A VS. MIL-M-63036D (REVISED VERSION)

RECOMMENDED REVISIONS

1. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-1 SEC: B1 PARA: B1.1

STATES: **Scope:** Contains the basic required information, with no subtitles. Has no information on figures and examples.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 1 SEC: 1 PARA: 1.1-1.4

STATES: **Scope:** More detailed description of the required information with the following titles: 1-1 Scope, 1-2 Applicability, 1-3 Limitations, 1-4 Figures/Examples.

2. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-1 SEC: B2 PARA: B2.1

STATES: **Applicable Documents:** States to reference to Appendix A for list of documents: 1- Forms, 2- Field manuals, 3- Technical forms, 4- Misc. Publications. The proper documentation of applicable documents of this issue should be listed under these headings.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 2 SEC: 2 PARA: 2.1

STATES: **Applicable Documents:** "Applicable documents are listed as follows:

- 2.1 Government Documents
 - 2.1.1 Specifications and Standards
 - 2.1.1.1 Military Specifications
 - 2.1.1.2 Military Standards
 - 2.1.2 Other Government Documents, Drawings, and Publications
- 2.2 Non-Government Standards and Other Publications
- 2.3 Order of Precedence"

3. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-2 SEC: B3 PARA: B3.1.5.2

STATES: **Level of Coverage:** "Sufficient information shall be included in procedures and illustrations so that personnel with minimal experience can operate and maintain the equipment safely and efficiently. The manual shall be written for the user in accordance with the target audience description and Reading Grade Level (RGL) provided by the procuring activity. When specified by the procuring activity, the manual will include identification of specific crewmembers and their assigned tasks [e.g., crew drill procedures normally found in the associated Field Manuals (FMs)]."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 3 SEC: 3 PARA: 3.1.3

STATES: **Level of Coverage:** "The information provided in the operator's TM shall be directed to the least experienced personnel expected to use it. The reading grade level shall be the level specified by the contracting activity and evaluated in accordance with MIL-M-38784. When applicable, specific crewmembers shall be identified with their tasks."

4. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-2 SEC: B3 PARA: B3.1.6

STATES: **Content:** "The operator's manual shall contain the following information as applicable:

Front Matter	
How-To-Use	(When specified by procuring activity)
Chapter 1	Introduction
Chapter 2	Operating Instructions
Chapter 3	Maintenance Instructions
Chapter 4	Maintenance of Auxiliary Equipment
Chapter 5	Ammunition
Appendix A	References
Appendix B*	Components of End Item (COEI) and Basic Issue Items (BII) Lists
Appendix C*	Additional Authorization List (AAL)
Appendix D*	Expendable Supplies and Materials List (ESML)
Index	

*In a combined operator and higher category maintenance manual (i.e., a -12, -13, or -14), these appendices will always be C, D, and E, respectively; the Maintenance Allocation Chart (MAC) is always in Appendix B of any manual containing organization category maintenance. For format of combined manuals, refer to page 3-1 of Manual Outline Matrix.

Appendices A, B, C, and D will always be addressed in the TM. The minimal requirement is for the appendix alpha character and its title to appear.

If two or more sequentially listed appendices do not apply, they may be grouped and addressed by appendix alpha character and title on a single page.

An explanatory statement will be used to explain nonapplicability of the appendices."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 5 SEC: 3.2 PARA: 3.2

STATES: **Content:** "The operator's TM will consist of the following:

- a. Front matter.
- b. Chapter 1, Introduction.
Section I, General information.
Section II, Equipment description.
Section III, Principles of operation.
- c. Chapter 2, Operating instructions.
Chapter index (when specified).
Section I, Description and use of operators controls and indicators, or summary of operations (SI manuals only).
Section II, Preventive maintenance checks and services.
Section III, Operation under usual conditions.
Section IV, Operation under unusual conditions.
Section V, Functional checks (when specified).
- d. Chapter 3, Maintenance instructions.
Chapter index (when specified).
Section I, Lubrication instructions.
Section II, Troubleshooting procedures.
Section III, Maintenance procedures.
- e. Chapter 4, Maintenance of auxiliary equipment (when applicable).
- f. Chapter 5, Ammunition (when applicable).
- g. Chapter 6, Foreign ammunition (NATO) (when applicable).
- h. Appendix A, References.
- i. Appendix B, COEI and BII lists.
- j. Appendix C, AAL items.

k. Appendix D, Expendable and durable items list.

l. Appendix E, Stowage and sign guides (for COEI, BII, and AAI items) (when applicable).

m. Appendix F, On-vehicle equipment loading plan (when applicable).

n. Appendix G, Lubrication instructions (when applicable).

o. Index."

5. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-3 SEC: B3 PARA: B3.2.1

STATES: **Cover:** Gives two figures of front covers, one with index, one without index. Also may have illustration of equipment or may not have illustration of equipment on the front cover. Reference to MIL-HDBK-63038-1.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 6 SEC: 3.2 PARA: 3.2.1.1.1, 2

STATES: **Cover:** 3.2.1.1.1 Detailed description of front cover illustration. When an illustration should be used, how it should be drawn. 3.2.1.1.2 Detailed description of front cover index. Gives appropriate location and how to separate titles.

6. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-8 SEC: B3.2 PARA: B3.2.3.1

STATES: **Reporting errors and recommending improvements:** Except for pocket size and manuals of fewer than eight pages, reporting errors and recommending improvements can be made.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 8 SEC: 3.2 PARA: 3.2.1.2

STATES: **Title block/reporting errors and recommending improvements:** Gives location and figure example of each type of TM and the various areas to send: 1) Unclassified, 2) Pocket size, 3) Classified. Also contains brief statement on distribution.

7. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-8 SEC: B3.2 PARA: B3.2.3

STATES: No information pertaining to companion volumes of a series of volumes.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 9 SEC: 3.2 PARA: 3.2.1.3

STATES: **Table of contents:** "Each volume shall contain its own table of contents and shall reference companion volumes in the same TM series."

8. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-8 SEC: B3.3 PARA: B3.3.1

STATES: **(How to use this manual) Purpose:** Shows example paragraph after description.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 9 SEC: 3 PARA: 3.2.1.4

STATES: **How to use this manual:** Does not have an example paragraph following the description.

9. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-12 SEC: B3.4 PARA: B3.4.1.5

STATES: **Warranty information:** Only pertaining to equipment under warranty.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 10 SEC: 3.2 PARA: 3.2.2.1g

STATES: **Warranty information:** "When the equipment is covered by a warranty technical bulletin (WTB), reference shall be made to the WTB. If a warranty is not applicable or only partially applicable, a statement to that effect shall be put in this paragraph. When a WTB is not published, pertinent warranty information shall be provided."

10. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-12 SEC: B3.4 PARA: B3.4.1.7

STATES: **List of abbreviations:** "Abbreviations in agreement with MIL-STD-12."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 11 SEC: 3 PARA: 3.2.2.1i

STATES: "A list of abbreviations consisting of all abbreviations, acronyms, signs, or symbols used in TM shall be included."

11. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-12 SEC: B3.4 PARA: B3.4.1.8

STATES: **Glossary:** "If the manual contains a number of terms requiring definitions, a glossary shall be included."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 11 SEC: 3 PARA: 3.2.2.1j

STATES: **Glossary:** "The manual shall contain a glossary of terms not defined in text or AR 310-25."

12. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-12 SEC: B3.4 PARA: B3.4.2.1

STATES: **Equipment characteristics, capabilities, and features:** "This information shall be restricted to abbreviated descriptions of characteristics, general capabilities, special features, and limitations of the end item, noting equipment type, portability, mobility, special operational and environmental features, and remote control features. Individual major components shall not be addressed, since they are described in paragraph B3.4.2.2."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 11 SEC: 3.2 PARA: 3.2.2.2a

STATES: **Equipment characteristics, capabilities, and features:** "This paragraph shall contain a summary of the equipment description in either narrative or tabular format. The summary shall include the general characteristics, capabilities, and features of the equipment. As applicable, the description

shall show the equipment's relationship to other major components of the end item. Special limitations, environmental features, and operational features shall be included."

13. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-15 SEC: B3.4 PARA: B3.4.2.3

STATES: **Differences between models:** "Significant differences between equipment models or units of the same model that affect operator actions shall be described and the extent of interchangeability shall be indicated. These differences shall be related explicitly to equipment model, part number, or serial number ranges in such a manner that an operator can clearly identify any equipment configuration. When model or unit differences exist but have no effect on operation or maintenance actions, either throughout the manual or in a given portion, this fact should be so stated, and a common nomenclature should be established."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 12 SEC: 3.2 PARA: 3.2.2.2c

STATES: **Differences between models:** "When the TM covers more than one model, configuration, or differences of the same model that affect the operator, the differences shall be clearly identified. Identification shall be made by text, table, illustrations, or whatever method is most simple and effective for the specific application."

14. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-23 SEC: B3.5 PARA: B3.5.2

STATES: **Section II - Preventive maintenance checks and services (PMCS):** This section will identify and describe PMCS procedures and format in the TM to include: PMCS introductory material, special PMCS instruction, PMCS general requirements, and PMCS basic format chart.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 13 SEC: 3.2 PARA: 3.2.3.3

STATES: **Section II, Preventive maintenance checks and services (PMCS):** "This section shall contain a PMCS table with checks and services that are based on reliability centered maintenance (RCM), as prescribed in AMC-P 750-2. The table shall contain only those checks and services authorized to the operator by the Maintenance Allocation Chart (MAC) under 'inspection' and 'service' functions. For SI manuals, the PMCS table shall begin

with system level checks (if applicable), then proceed to reference the end item manuals for the system functional check. The table shall have an introduction which explains to the user its purpose and how to use it." The PMCS section will include illustrations, special instructions, and format requirements.

15. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-23 SEC: B3.5 PARA: B3.5.2.1

STATES: **PMCS Introductory material:** The opening paragraph will contain statements similar to these: 1- Before you operate, 2- While you operate, 3- After you operate, 4- If equipment fails to operate.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 13 SEC: 3.2 PARA: 3.2.3.3.1

STATES: **Introduction to PMCS table:** The first paragraph will contain an explanation of the purpose and use of PMCS table.

16. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-23 SEC: B3.5 PARA: B3.5.2.1

STATES: **PMCS procedures:** "Subsequent paragraph(s) of the introduction shall, minimally, contain explanatory information on the following: (1) Simplified statement of the purpose of the PMCS table. (2) Short explanation of the purpose of the service intervals and use of the PMCS table. (3) Special instructions, when applicable. (4) Explanation of the 'Equipment is Not Ready/Available If' column. (5) Instructions for reporting and correcting deficiencies. (6) Instructions for removal of assemblies or equipment in order to perform PMCS."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 13 SEC: 3.2 PARA: 3.2.3.3.1b

STATES: **PMCS procedures:** This paragraph will explain each column of the table and any general checks and services.

17. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-27 SEC: B3.5 PARA: B3.5.2.2c

STATES: **Special instruction:** "'Before operation' checks should be limited to those required for consecutive application by an assigned operator/crew. A statement substantially as follows will be included in the heading of all PMCS tables to

obtain increased inspections when items are first assigned to an operator/crew, or when operation is resumed after a period of nonuse: Perform weekly as well as before operations PMCS if: (1) You are the assigned operator and have not operated the item since the last weekly. (2) You are operating the item for the first time."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 14 SEC: 3.2 PARA: 3.2.3.3.3(3)

STATES: **Special instructions:** "A statement such as the following shall be included when applicable: When a check and service procedure is required for both weekly and before intervals, it is not necessary to perform the weekly procedure during the same week in which the before procedure was done."

18. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-27 SEC: B3.5 PARA: B3.5.2.2d

STATES: **Special instruction:** "Leakage definitions for operator/crew PMCS shall be classified as follows:

CLASS I Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

CLASS II Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.

CLASS III Leakage of fluid great enough to form drops that fall from item being checked/inspected."

Also includes "CAUTION" paragraph for Classifications.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 14 SEC: 3.2 PARA: 3.2.3.3.3a(4)

STATES: **Special instructions:** "When the equipment contains fluids, such as lubrication oil or hydraulic fluid, leakage criteria shall be included in the introduction to the PMCS and referred to in the NOT MISSION CAPABLE IF column."

19. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-28 SEC: B3.5 PARA: B3.5.2.3

STATES: **PMCS general requirements:** "The content of PMCS will be based upon the principles of reliability centered maintenance (RCM) logic. The checks and services shall be presented in tabular format."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 14 SEC: 3.2 PARA: 3.2.3.3.3c

STATES: **Arrangement of procedures:** "PMCS procedures shall be arranged in a logical sequence so that a minimum amount of time and motion is used without crewmembers interfering with each other. Check and service procedures shall be grouped according to their intervals. Procedures done first or most frequently, such as 'before' checks and services, shall appear before 'during' and 'after' checks and services. Unless otherwise specified by the contracting activity, intervals beyond weekly shall not be used in the operator's PMCS table. Intervals determined by operation, such as hours of operation, shall be expressed in the applicable units of measure. Reference to other procedures shall not be made. Each procedure shall stand alone. When more advantageous to the user, intervals shall be subgrouped by crewmember(s)."

20. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-28 SEC: B3.5 PARA: B3.5.2.3e

STATES: AAL item or TOE/MTOE item(s) must be included in end item PMCS incorporated under group heading "AUXILIARY EQUIPMENT" in the "ITEM TO BE INSPECTED" or "PROCEDURE" column, as applicable.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 15 SEC: 3.2 PARA: 3.2.3.3.3e

STATES: "Warnings, cautions, and notes shall appear in the PMCS table as prescribed by MIL-M-38784."

21. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-28 SEC: B3.5 PARA: B3.5.2.3.1a

STATES: **Item number column:** "Checks and services shall be numbered in chronological order regardless of interval, unless otherwise specified by the procuring activity. An explanation

shall be included that this column shall be used as a source of item numbers for the 'TM Number' column on DA Form 2404, in recording results of PMCS."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 15 SEC: 3.2 PARA: 3.2.3.3.3f

STATES: **Item No. column:** "Unless otherwise specified by the contracting activity, item numbers shall be assigned to procedures in consecutive numerical order."

22. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-28 SEC: B3.5 PARA: B3.5.2.3.1b

STATES: **Interval columns** (Indicates checks and services to be done): Represented with dots in appropriate column "B", "D", "A", "W", and "M". Other columns may be added as required.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 15 SEC: 3.2 PARA: 3.2.3.3.3f

STATES: **Interval column:** "The interval column shall indicate when the checks and services are to be done. The intervals shall be represented by complete words such as: 'Before' for before operation; 'During' for during operation; and 'After' for after operation. See section 6 for definitions of these intervals."

23. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-33 SEC: B3.5 PARA: B3.5.2.3.1c

STATES: **Item to be inspected column:** Items listed will be divided into groups indicating portion of equipment of which they are a part, e.g., "front," "left side," "engine." Under these items, item to be inspected will be identified as "bumper," "gas can," or "front axle."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 15 SEC: 3.2 PARA: 3.2.3.3.3f

STATES: **Location, item to check/service column:** This column shall contain the name of the item(s) to be checked. When appropriate, location of the item within the equipment will be provided, underlined, and appear above the item name.

24. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-33 SEC: B3.5 PARA: B3.5.2.3.1d

STATES: **Procedures column:** This column will contain a brief description of the procedure by which the check is to be performed. It will contain information required to accomplish the checks and services to include appropriate tolerances, adjustment limits, and instrument and gage readings.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 15 SEC: 3.2 PARA: 3.2.3.3.3f

STATES: **Procedure column:** Contains all the same requirements of the IMAGES Version, but has added the following: "The procedure shall begin with an action word and shall be stated in the second person imperative mood."

25. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-33 SEC: B3.5 PARA: B3.5.2.3.1e

STATES: **Equipment is not ready/available if:** Column contains information that causes equipment to be classified as not ready/available because of inability to perform. "An entry in this column will: (1) Identify conditions that make the equipment not ready/available for readiness reporting purposes. (2) Deny use of the equipment until corrective maintenance has been performed."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 15 SEC: 3.2 PARA: 3.2.3.3.3f

STATES: **Not fully mission capable if:** "Entries shall identify the faults of equipment, determined by the checks and services procedures, that will prevent the equipment from being fully mission capable."

26. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-37 SEC: B3.5 PARA: B3.5.3.3

STATES: **Operating procedures:** "Operation instructions shall include misfire procedures, hang fire procedures, etc., applicable to ammunition."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 16 SEC: 3.2 PARA: 3.2.3.4.3

STATES: **Operating procedures:** "These procedures must explain how the equipment is operated in conjunction with ancillary and auxiliary equipment and show integration with other equipment, as applicable."

27. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-37 SEC: B3.5 PARA: B3.5.3.6

STATES: **Operating instructions on decals and instruction plates:** "Operating instructions or caution/warning decals and plates shall be illustrated in the manual, and their locations shall be shown."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 16 SEC: 3.2 PARA: 3.2.3.4.4

STATES: **Decals and instruction plates:** "Decals and operating instruction plates located on the equipment, essential for operation, shall be clearly illustrated so that all data are legible. Related warning and caution decals and plates shall be included. An illustration(s) shall be used to show the location of all applicable decals and plates."

28. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-38 SEC: B3.5 PARA: B3.5.4

STATES: **Section IV - Operation under unusual conditions:** "Preventive or protective measures beyond operator's capabilities shall be referenced to higher level maintenance facilities."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 17 SEC: 3.2 PARA: 3.2.3.5

STATES: **Section IV, Operation under unusual conditions:** These instructions will include protective and preventive measures to be taken for operation under unusual conditions including special operating instructions for each expected condition.

29. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-38 SEC: B3.5 PARA: B3.5.4.2

STATES: **Fording:** "The instructions shall include special procedures required before, during, and after fording the equipment."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 17 SEC: 3.2 PARA: 3.2.3.5.2

STATES: **Fording and swimming:** "As applicable, procedures for fording and swimming the equipment shall be provided."

30. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-38 SEC: B3.6 PARA: B3.6

STATES: **Chapter 3 - Maintenance instructions:** Accurately presents operator instruction needed to keep equipment in good running order.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 18 SEC: 3.2 PARA: 3.2.4

STATES: **Chapter 3, Maintenance instructions:** Will cover sections on lubrication, troubleshooting, and corrective maintenance.

31. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-38 SEC: B3.6 PARA: B3.6.1

STATES: **Section I - Lubrication instructions:** "This section shall begin with an alphabetical index of the section contents if reference to this section is included in front cover index. This section shall reference the lubrication order (LO) or contain the lubrication instructions if a separate LO is not prepared. If lubrication instructions are provided here and not in a separate LO, a statement that instructions are mandatory shall be included."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 18 SEC: 3.2.4 PARA: 3.2.4.2

STATES: **Section I, Lubrication instructions:** "This section shall contain one of the two following statements: a. Lubrication Not Required. b. Lubrication instructions are in Appendix G of this TM. All lubrication instructions are mandatory."

32. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-39 SEC: B3.6 PARA: B3.6.2

STATES: **Section II - Troubleshooting procedures:** "This section shall contain instructions to allow the operator to efficiently troubleshoot the equipment." Other types of formats of troubleshooting are presented in MIL-HDBK-63038-1 and may be used when authorized. "The development of troubleshooting procedures and the style shall be in a manner most usable and within the technical competence of the target audience, operator/crewmember."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 18 SEC: 3.2.4 PARA: 3.2.4.3

STATES: **Section II, Troubleshooting procedures:** The requirement remained the same except for the following: For systems with SI manuals, troubleshooting will begin in the SI manual until the fault or symptom can be isolated to a specific component. The information will be presented by simplified illustrations, charts, tables, or diagrams in the format most suitable for the equipment.

33. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-39 SEC: B3.6 PARA: B2.6.2.1a

STATES: **Guidelines:** "The instructions shall be based upon symptoms which may be observed by the operator during PMCS as well as during normal operation of the equipment. Tests and inspections shall be listed in logical sequence for each malfunction."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 18 SEC: 3.2.4 PARA: 3.2.4.3a

STATES: **Arrangement of procedures:** "The procedures shall be arranged so that the most probable malfunctions appear first. When the equipment contains several major components, the troubleshooting procedures shall be grouped by major components."

34. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-42 SEC: B3.6.2 PARA: B3.6.2.3

STATES: **Symptom index:** The index is located in the front of the troubleshooting section to assist the operator in locating the correct troubleshooting procedure. Entries will be symptoms observable during normal operation and during PMCS.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 19 SEC: 3.2.4 PARA: 3.2.4.3c

STATES: **Malfunction index:** This index will precede the table listing all malfunctions the operator may observe. They shall be listed in the same order that they appear in the table.

35. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-42 SEC: B3.6 PARA: B3.6.3

STATES: **Section III - Maintenance procedures:** When specified, this section will begin with an alphabetical index and may contain the following topics as applicable: introduction, inspection, checks/adjustments/alignments, removal and installation, disassembly and assembly, repair, cleaning, and test.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 19 SEC: 3.2.4 PARA: 3.2.4.4

STATES: **Section III, Operator's maintenance procedures:** The revised version of this standard added the following: "Procedures shall be preceded with an introduction and step-by-step procedures, presented in the order in which they should be done, and supported by illustrations. Procedures shall include functions, such as inspect, test, install, replace, disassemble and assemble, repair, clean, adjust, lubricate, and align."

36. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-48 SEC: B3.9 PARA: B3.9

STATES: **Appendix A - References:** "The list of references shall include only those publications available to and required by the operator/user. If a list of applicable publications (LOAP) is published, this appendix shall consist of a reference to the pertinent LOAP."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 20 SEC: 3.2 PARA: 3.2.8.1

STATES: **Appendix A, References:** The revised standard added the following: "The appendix shall have an introduction or scope paragraph to provide a brief statement(s) concerning its use and content. Publications shall be listed in groups by publication types. The source shall be provided, if a non-Government publication. The complete name of publication and number shall be used."

37. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-53 SEC: B3.10 PARA: B3.10.1

STATES: **Appendix B - Components of end item and basic issue items:** "The total package comprising an operational end item consists of that configuration of an end item defined by the top engineering drawing component list and the basic issue items. This appendix shall list components of end item and basic issue items for use as an aid in identifying what must accompany an end item when it is issued, transferred between property accounts, or turned in."

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 20 SEC: 3.2 PARA: 3.2.8.2

STATES: **Appendix B, Components of end item (COEI) and basic issue items (BII):** "This appendix shall consist of two lists: the Components of End Item List and the Basic Issue Items List. Section I of the appendix shall be the introduction to both lists. Section II shall consist of the COEI listing and illustrations of the items, as necessary. Section III shall consist of the BII listing and illustrations, as necessary."

38. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-55 SEC: B3.10 PARA: Fig. 33c

STATES: **Column (3):** The last line for each item indicates the FSCM followed by part number. FSCM = Federal Supply Code for Manufacturer.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 21 SEC: 3.2 PARA: 3.2.8.2.1c

STATES: **Column (3):** The last line below the description is the Commercial And Government Entity Code (CAGEC) and the part number.

39. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-55 SEC: B3.10 PARA: Fig. 33c

STATES: If item needed differs for different models of this equipment, the model is shown under the "Usable On" heading in this column.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 21 SEC: 3.2 PARA: 3.2.8.2.1c

STATES: When the equipment comes in different models or configurations and usable on codes have been assigned, statements similar to the following will be included:

"If the item you need is not the same for different models of the equipment, a usable on code will appear on the right side of the description column on the same line as the part number."

40. CURRENT REQUIREMENT: IMAGES VOL II-, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-55 SEC: B3.10 PARA: Fig. 33d

STATES: **Unit of measure (U/M):** Indicates the measure used in performing the actual operation/maintenance function. The measure is expressed by a two-character alphabetical abbreviation.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 21 SEC: 3.2 PARA: 3.2.8.2.1d

STATES: **Unit of issue (U/I):** Indicates how the item is issued for the National Stock Number in column two.

NOTE: The Latest Version, MIL-M-63036D continues with more appendices listed as follows. All give detailed description of requirements.

- 3.2.8.5 Appendix E, Stowage and decal/data plate guide
- 3.2.8.6 Appendix F, On-vehicle equipment loading plan
 - a. Illustrations
 - b. Listings
- 3.2.8.7 Appendix G, Lubrication instructions

NOTE: The Latest Version, MIL-M-63036D continues with the following headings with descriptions:

- 4. Quality assurance provisions
 - 4.1 Responsibility for inspection
 - 4.1.1 Responsibility for compliance
 - 4.2 Quality assurance provisions
 - 4.3 Contracting activity inspection
 - 4.4 In-process reviews
 - 4.5 Validation
 - 4.5.1 Records
 - 4.5.2 Government-furnished information
 - 4.6 Verification
- 5. Packaging
 - 5.1 Packaging and marking
 - 5.2 Marking
 - 5.3 Classified material
- 6. Notes
 - 6.1 Intended use
 - 6.2 Acquisition requirements
 - 6.3 Data requirements
 - 6.4 Technical manuals acquisition
 - 6.5 Verification responsibility
 - 6.6 Definitions
 - 6.6.1 After operation checks
 - 6.6.2 Before operation checks
 - 6.6.3 Contracting activity
 - 6.6.4 During operation checks
 - 6.6.5 Fully mission capable
 - 6.6.6 Monthly checks
 - 6.6.7 Operator
 - 6.6.8 System integration SI manual
 - 6.6.9 Technical manuals
 - 6.6.10 Warning
 - 6.6.11 Weekly checks
 - 6.7 Subject term (key word) listing
 - 6.8 Changes from previous issue

APPENDIX D - IMAGES VOL II-A VS. MIL-M-63036D (REVISED VERSION)
(CONTINUED)

RECOMMENDED DELETIONS TO IMAGES DUE TO REVISIONS

1. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-9 SEC: B3.4 PARA: B3.4.1.3

STATES: **Hand receipt (HR) manuals:** Contains information on Hand Receipt Manuals.

2. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 10 (MIL-M-63036A)

PAGE: 10-15 SEC: B3.4 PARA: B3.4.2.2

STATES: **Location and description of major components:** "In addition, any major component, including on-board spares, which must be removed from the end item and separately packaged for transportation, will also be separately listed by NSN in Appendix B of the operator's manual."

RECOMMENDED ADDITIONS TO IMAGES DUE TO REVISIONS

3. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 13 SEC: 3.2 PARA: 3.2.3.3.1c

STATES: **Special information paragraphs:** "These paragraphs shall contain any special information such as cleaning agents, lubrication, and fluid leakage information that is necessary for the user to know before doing PMCS."

4. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 13 SEC: 3.2 PARA: 3.2.3.3.2

STATES: **Equipment illustration:** First page after introduction consists of an illustration of equipment, to show order of checks and services.

5. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 17 SEC: 3.2 PARA: 3.2.3.5.4

STATES: **Nuclear, biological, and chemical (NBC) decontamination procedures:** These general NBC procedures should be performed until facilities are available.

6. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 17 SEC: 3.2 PARA: 3.2.3.6

STATES: **Section V, Functional checks:** "For SI manuals and when specified by the contracting activity for non-SI manuals, this section shall contain all operational checks that must be performed to confirm that the system/equipment is fully operational."

7. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 19 SEC: 3.2 PARA: 3.2.7

STATES: **Chapter 6, Foreign ammunition (NATO):** "When specified by the contracting activity, this chapter will be included. When applicable, this chapter shall be in accordance with the requirements of 3.2.6."

8. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 22 SEC: 3.2 PARA: 3.2.5.2.2b

STATES: **Listing:** "When on-board spares apply, there shall be a break in the text of the listing and a new heading 'ON BOARD SPARES' shall be used. A listing of the on-board spares shall appear in the same format as required for the basic COEI list."

9. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63036D

PAGE: 22 SEC: 3.2 PARA: 3.2.8.2.4

STATES: **Stowage location:** This will be located in the description column.

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APPENDIX E
IMAGES VOL II-A VS. MIL-M-63038C (REVISED VERSION)

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APPENDIX E. IMAGES VOL II-A VS. MIL-M-63038C (REVISED VERSION)

RECOMMENDED REVISIONS

1. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-1 SEC: D3.2.1 PARA: D3.2.1.1

STATES: **Cover:** Prepared IAW MIL-M-38784, with the following additional requirements as directed by procuring activity: (1) IAW MIL-HDBK-63038-1. (2) Equipment illustration. (3) Metric conversion table covering applicable units.

REVISED REQUIREMENT: MIL-M-63038C (REVISED VERSION)

PAGE: 11 SEC: 3.2.1 PARA: 3.2.1.1

STATES: **Cover:** Prepared IAW MIL-M-63036D to include the following: (1) IAW MIL-M-63036 to reflect and access only major divisions/titles listed in table of contents. (2) Equipment illustration. (3) A metric conversion table covering applicable units.

2. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-3 SEC: D3.2.1 PARA: D3.2.1.4

STATES: **Table of contents:** "All manuals shall contain a table of contents IAW the handbook and as specified by procuring activity."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 11 SEC: 3.2.1 PARA: 3.2.1.4

STATES: **Title block/Reporting of errors/Table of contents:** Illustrated in MIL-M-63036. For narrative RPSTL manuals, refer to MIL-STD-335 for requirements.

3. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-3 SEC: D3.2.2 PARA: D3.2.2

STATES: **How to use this manual:** Prepared IAW MIL-HDBK-63038-1. "Any peculiarities in the basic arrangement of the manual shall be described." Includes reference to and how to use the RPSTL in conjunction with the manual.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 12 SEC: 3.2.1 PARA: 3.2.1.5

STATES: **How to use this manual:** Gives examples and more information with more explicit instructions.

4. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-3 SEC: D3.2.3 PARA: D3.2.3

STATES: **Chapter 1 - Introduction:** "For technician orientation purposes, this chapter shall begin with an illustration that provides a full external view of the equipment with major external components labeled. Applicable illustrations shall normally be placed on left-hand page facing the beginning of the chapter."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 12 SEC: 3.2.2 PARA: 3.2.2

STATES: **Chapter 1 - Introduction:** "Chapter 1 shall begin with an illustration that provides a full external view of the equipment with major external components labeled. Normally, this illustration shall be placed on left-hand page facing the beginning of the chapter. In addition, to familiarize the user with the equipment, this chapter shall include a physical description of the components the user is likely to interface with."

5. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-6 SEC: D3.2.3 PARA: D3.2.3.1

STATES: **Section I - General information:** Does not provide a list of areas covered in the section as the Latest Version does. This version goes into detail beginning with 3.2.3.1.1 SCOPE.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 12 SEC: 3.2.2 PARA: 3.2.2.1

STATES: **SECTION I - General information:** Lists the titles of headings for this section, also paragraph numbers for quick access.

6. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-7 SEC: D3.2.3 PARA: D3.2.3.1.2

STATES: **Maintenance forms, records, and reports:** "This paragraph shall contain the following statement: 'Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management Systems (TAMMS).'"

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 13 SEC: 3.2.2 PARA: 3.2.2.1.2a

STATES: **Maintenance forms, records, and reports:** "This paragraph shall contain the following statement: 'Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, The Army Maintenance Management Systems (TAMMS); DA Pam 738-751, Functional Users Manual for the Army Maintenance Management System-Aviation (TAMMS-A); or AR 700-138, Army Logistics Readiness and Sustainability.'"

7. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-7 SEC: D3.2.3 PARA: D3.2.3.1.5

STATES: **Quality assurance (quality control) (QA/QC):** "When specified by the procuring activity, a paragraph shall be included which will reference any pertinent QA/QC technical manual or will include appropriate QA/QC information."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 14 SEC: 3.2.2 PARA: 3.2.2.1.5

STATES: **Quality assurance (QA):** "If QA information is not referenced but is not included in the TM, this paragraph shall state that the text of each quality assurance procedure paragraph or step in the TM is preceded (and highlighted) by the addition of "(QA)" and the abbreviation QA shall be explained either in the title of the paragraph or in the text. For aircraft maintenance manuals, refer to FH 1-511."

8. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-7 SFC: D3.2.3 PARA: D3.2.3.1.7

STATES: **Reporting equipment improvement recommendations (EIRs):** Mail an SF-368 (Quality Deficiency Report), insert address of proponent activity.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 14 SEC: 3.2.2 PARA: 3.2.2.1.7

STATES: **Reporting equipment improvement recommendations (EIRs):** Mail an SF-368 (Product Quality Deficiency Report), insert address specified in DA Pam 738-750.

9. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3, TYPE 20 (MIL-M-63038B)

PAGE: 20-7 SEC: D3.2.3 PARA: D3.2.3.1.8

STATES: **Warranty information:** No reference to a Warranty Technical Bulletin (WTB). Warranty starts on date found on DA Form 2410 or DA Form 2408-16.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 14 SEC: 3.2.2 PARA: 3.2.2.1.8

STATES: **Warranty information:** Manual use - with and without - a Warranty Technical Bulletin (WTB). Warranty starts on date found in block 23, DA Form 2408-9.

10. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3, TYPE 20 (MIL-M-63038B)

PAGE: 20-12 SEC: D3.2.3 PARA: D3.2.3.2.6

STATES: **Safety, care, and handling:** "A safety, care, and handling paragraph, when required, shall be included on general precautions and safety regulations. For ammunition manuals, a paragraph shall be included to comply with AR 385-62. A reference to TM 9-1300-206 shall be made for general ammunition care, handling, and safety." Does not include manuals covering equipment with radioactive parts or components.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 15 SEC: 3.2.2 PARA: 3.2.2.1.9

STATES: **Safety, care, and handling:** Shall comply with AR 385-62. A reference to TM 9-1300-206 shall be made for general ammunition care, handling, and safety. "A paragraph shall be included to comply with Nuclear Regulatory Commission provisions, and references to applicable ARs and safety documents on radioactive materials shall be included." Information will be provided throughout the technical manual.

11. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-8 SEC: D3.2.3 PARA: D3.2.3.2

STATES: **Section II - Equipment description and data:** "This section shall include a paragraph referencing the equipment data in operator's instructions. Reference may be made to material in other publications provided they are available to organizational maintenance personnel."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 17 SEC: 3.2.2 PARA: 3.2.2.2

STATES: **Section II - Equipment description and data:** "This section may include references to material in other publications, provided they are available to unit/aviation unit maintenance personnel."

12. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-12 SEC: D3.2.3 PARA: D3.2.3.2.4

STATES: **Equipment data:** "Performance data, including numerical and other specification-related data applying to organizational maintenance functions, shall be provided. The equipment data shall summarize the specific capabilities and limitations of the equipment. Metric and other equivalents shall be included, where appropriate, IAW MIL-HDBK-63038-1" (latest being MIL-HDBK-63038-1A).

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 19 SEC: 3.2.2 PARA: 3.2.2.2.4

STATES: **Equipment data:** "Performance data, including numerical and other specification-related data applying to unit/aviation unit maintenance functions shall be provided. The equipment data shall summarize the specific capabilities and limitations of the equipment and other critical data needed by manual user for maintenance of equipment. Vehicle and cargo space dimensions and metric and other equivalents shall be included, where appropriate."

13. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038C)

PAGE: 20-12 SEC: D3.2.3 PARA: D3.2.3.2.5

STATES: **Equipment configuration:** "For equipment which can be configured several different ways, depending on the specific mission to be accomplished, information on various possible configurations shall be provided. Each system provided in each configuration shall be listed in paragraph or chart form. When used, the chart shall be broken down by systems. Each system shall be broken down by equipment and components. Equipment and components used in more than one system shall be listed under each system of which they are a part. Abbreviations used in the configuration columns shall be explained. Remarks column shall be used to indicate peculiarities in equipment/component due to geographical location or special application, and any other additional, pertinent information about units within a configuration."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 19 SEC: 3.2.2 PARA: 3.2.2.2.5

STATES: **Equipment configuration:** "For equipment which can be configured several different ways, information on the various possible configurations shall be provided."

14. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038C)

PAGE: 20-12 SEC: D3.2.3 PARA: D3.2.3.3

STATES: **Section III - Principles of operation:** "Only information pertinent to organizational maintenance shall be included.

a. Only absolutely essential information shall be provided which a maintenance technician must know to do the overall job properly.

b. Description of components and assemblies which are not maintained at organizational maintenance shall be included only where absolutely necessary for clarity or continuity.

c. For multi-system equipment, principles of operation shall be organized so the first paragraph of the section contains an explanation of the end item as an integrated whole."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 19 SEC: 3.2.2 PARA: 3.2.2.3

STATES: **Section III - Principles of operation:** Same as in the IMAGES Version, except paragraph c is expanded as follows: "Within each end item explanation, there shall be an explanation of the appropriate components; and within each component explanation, there shall be an explanation of the appropriate assemblies. Further breakdowns below the assembly level shall be included as appropriate."

15. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-19 SEC: D3.2.4 PARA: D3.2.4.1.1

STATES: **Common tools and equipment:** Has only the following paragraph under this title: "For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit unless otherwise specified by procuring activity."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 22 SEC: 3.2.3 PARA: 3.2.3.1.1

STATES: **Common tools and equipment:** Has three paragraphs including: "For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100, as applicable to your unit."

16. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-19 SEC: D3.2.4 PARA: D3.2.4.1.2

STATES: **Special tools, TMDE, and support equipment:** Makes reference to the RPSTL and Maintenance Allocation Chart pertaining to organizational maintenance.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 23 SEC: 3.2.3 PARA: 3.2.3.1.2

STATES: **Special tools, TMDE, and support equipment:** Makes reference to the RPSTL and Maintenance Allocation Chart pertaining to unit maintenance or aviation unit maintenance.

17. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-20 SEC: D3.2.4 PARA: D3.2.4.2

STATES: **Section II - Service upon receipt:**

a. Organizational maintenance category technician to ensure that the equipment will be adequately inspected, serviced, and operationally tested before it is subjected to its normal use.

b. This paragraph not in Latest Version MIL-M-63038C, but is in IMAGES Version as follows: "As a general rule, this section shall not duplicate information in other sections, but shall reference the applicable summary and detailed procedures. Where special service upon receipt procedures are required, they shall be in the form of summary and detailed procedures IAW MIL-HDBK-63038-1."

c. For complex equipment, the following divisions should be used as applicable: (1) Site and Shelter Requirements. (2) Service upon Receipt of Materiel. (3) Installation Instructions. (4) Preliminary Servicing and Adjustment of Equipment. (5) Circuit Alignment.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 23 SEC: 3.2.3 PARA: 3.2.3.2

STATES: **Section II - Service upon receipt:** "This section shall provide or reference the procedures required for unit maintenance or aviation unit maintenance level users to ensure that the equipment will be adequately inspected, serviced, and operationally tested before it is subjected to its normal everyday use." Latest Version has the same five divisions as listed above in IMAGES Version, paragraph c, plus: "(6) Electrostatic Discharge Control Standards (3.2.2.1.9c) and (7) Nuclear Hardness Survivability Requirements (3.2.2.1.11)." All seven divisions include the paragraph number for easy reference.

18. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-21 SEC: D3.2.4 PARA: D3.2.4.2.1.2

STATES: **Shelter requirements:** "Whenever the equipment will normally be housed in a permanent or semipermanent shelter (other than a military truck, van, or transportable shelter) during use, the manual shall state:

- a. Amount of floor and wall space required.
- b. A plan for a typical layout.

- c. Required weight capacity of the building floor.
- d. Dimensions required for installed equipment.
- e. Total weights that the floor must support and the area in square feet over which the total weight will be distributed, if several different types of equipment are installed.
- f. Environmental conditions (e.g., venting).

Architectural and engineering data on beam sizes, lengths, bending moments, and required supports shall not be included."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 25 SEC: 3.2.3 PARA: 3.2.3.2.1.2

STATES: **Shelter requirements:**

"a. When the equipment will normally be housed in a permanent shelter during use, or in a semipermanent shelter (other than a military truck, van, or transportable shelter), the manual shall state:

- (1) Amount of floor and wall space required.
- (2) A plan for a typical layout.
- (3) Total weights that the floor must support and the area in square feet over which the total weight will be distributed.
- (4) Environmental conditions (e.g., venting).

b. Architectural and engineering data on beam sizes, lengths, bending moments, and required supports shall not be included."

19. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-21 SEC: D3.2.4 PARA: D3.2.4.2.2

STATES: **Service upon receipt of materiel:** "Service upon receipt procedures ... shall cover topics in 3.2.4.2.2.1 through 3.2.4.2.2.3."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 25 SEC: 3.2.3 PARA: 3.2.3.2.2

STATES: **Service upon receipt of materiel:** "Service upon receipt procedures shall be provided to cover the following topics: Unpacking (3.2.3.2.2.1), Checking unpacked equipment (3.2.3.2.2.2), Processing unpacked equipment (3.2.3.2.2.3)."

20. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-21 SEC: D3.2.4 PARA: D3.2.4.2.2.1

STATES: **Unpacking:** "When such instructions are required, they shall be step-by-step and normally shall be illustrated."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 26 SEC: 3.2.3 PARA: 3.2.3.2.2.1d

STATES: **Unpacking:** "When instructions are required, they shall include manhour requirements, by MOS, and total manhours required for unpacking the equipment. Instructions shall be step-by-step and normally shall be illustrated."

21. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-23 SEC: D3.2.4 PARA: D3.2.4.2.2.2c

STATES: **Checking unpacked equipment:** Paragraph c indicates to "check to see whether the equipment has been modified."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 26 SEC: 3.2.3 PARA: 3.2.3.2.2.2

STATES: **Checking unpacked equipment:** Includes special instructions for condition check, to include checks of pallets, containers, boxes, and markings. Statements shall be included verbatim. No paragraph c regarding modified equipment.

22. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-23 SEC: D3.2.4 PARA: D3.2.4.2.2.3

STATES: **Deprocessing unpacked equipment:** "Complete instructions for deprocessing the unpacked equipment shall be included."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 26 SEC: 3.2.3 PARA: 3.2.3.2.2.3

STATES: **Processing unpacked equipment:** "Complete instructions for processing unpacked equipment shall be included, provided they do not conflict with any warranty provisions."
Adds five subparagraphs.

23. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-24 SEC: D3.2.4 PARA: D3.2.4.2.3.4

STATES: **Cable diagrams:** Includes paragraph e, "If controls must be preset before units can be interconnected, detailed instructions shall be given. Provide instructions when special techniques or connections are required."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 27 SEC: 3.2.3 PARA: 3.2.3.2.3.4

STATES: **Cable diagrams:** Does not include a paragraph on preset controls.

24. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-25 SEC: D3.2.4 PARA: D3.2.4.2.3.5

STATES: **Installation of plug-in items:** "Diagrams showing the location of items which are not installed in the equipment when received shall be included or referenced."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 29 SEC: 3.2.3 PARA: 3.2.3.2.3.5

STATES: **Installation of plug-in items:** "Diagrams showing the location of items which are not installed in the equipment when received shall be included or referenced. Step-by-step instructions shall be provided whenever special techniques or connections are required."

25. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-25 SEC:D3.2.4 PARA: D3.2.4.2.3.7

STATES: **Van and shelter installation:** "Information should be provided only to the extent required for organizational maintenance."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 29 SEC: 3.2.3 PARA: 3.2.3.2.3.7

STATES: **Van and shelter installation:** "Information shall be provided only to the extent required for unit/aviation unit maintenance."

26. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-26 SEC: D3.2.4 PARA: D3.2.4.2.4b

STATES: **Preliminary servicing and adjustment of equipment:** Paragraph b(4) cautions against damaging transistors.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 30 SEC: 3.2.3 PARA: 3.2.3.2.4b

STATES: **Preliminary servicing and adjustment of equipment:** Paragraph b(4) cautions against damaging transistors, diodes, and other electrically sensitive items. The Latest Version adds, electrostatic discharge control standards as paragraph b(16).

27. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-27 SEC: D3.2.4 PARA: D3.2.4.2.5

STATES: **Circuit alignment:** "These instructions shall include instructions covering circuit alignment procedures to be performed (D3.2.4.2.5.3)."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 31 SEC: 3.2.3 PARA: 3.2.3.2.5

STATES: **Circuit alignment:** Same instructions as in IMAGES Version; however Latest Version adds, "including any variations required for different installation options and modes of operation."

28. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-27 SEC: D3.2.4.3 PARA: D3.2.4.3

STATES: **Section III - Equipment check procedures:** Paragraph b, "Schematic diagrams and supporting functional explanations shall be limited to the data absolutely required to perform the check procedures. Normally, this is limited to block and functional diagrams supported by functional explanations of inputs, outputs, and specific electrical values required to be measured when performing the check procedures."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 31 SEC: 3.2.3 PARA: 3.2.3.3

STATES: **Section III - Equipment check procedures or equipment/user fitting instructions:** Paragraph a(1), "Schematic diagrams and supporting functional explanations shall be limited to the data essential for performance of the check procedures. Normally, this is limited to block and functional diagrams supported by functional explanations of inputs, outputs, and specific parametric values required to be measured when performing the check procedures." Adds the following as paragraph b, "When specified by the contracting activity, this section shall include equipment/user fitting instructions for personal use equipment."

29. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-27 SEC: D3.2.4 PARA: D3.2.4.4

STATES: **Section IV - Preventive maintenance checks and services (PMCS):** The content of PMCS will be based upon the principles of reliability centered maintenance (RCM) logic.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 31 SEC: 3.2.3 PARA: 3.2.3.4

STATES: **Section IV - Preventive maintenance checks and services (PMCS):** This section will be IAW MIL-M-63036.

30. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-28 SEC: D3.2.4 PARA: D3.2.4.4.1

STATES: **Item number column:** "An explanation shall be included that this column shall be used as a source of item numbers for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 31 SEC: 3.2.3 PARA: 3.2.3.4

STATES: **Para c of PMCS 3.2.3.4:** "The explanation for the Item No. column shall detail how the item numbers are used when recording results of the PMCS on DA Form 2404, Equipment Inspection and Maintenance Worksheet."

31. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-31 SEC: D3.2.4 PARA: D3.2.4.5

STATES: **Section V - Troubleshooting:** "This section shall contain those checks and corrective actions which will isolate defects which can be corrected by performance of maintenance allocated to the organizational maintenance technician by the Maintenance Allocation Chart (MAC) and shall be prepared IAW MIL-HDBK-63038-1."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 32 SEC: 3.2.3 PARA: 3.2.3.5

STATES: **Section V - Troubleshooting:** "This section shall contain those checks and corrective actions required to isolate defects which can be corrected by performance of maintenance allocated to the unit maintenance or aviation unit maintenance manual user by the Maintenance Allocation Chart (MAC). Troubleshooting procedures shall begin with a fault/symptom and should lead to single fault isolation; however, if the corrective action indicated for a fault must be performed at a higher maintenance level, the unit mechanic shall be told to 'notify support' level of maintenance."

32. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-31 SEC: D3.2.4 PARA: D3.2.4.6

STATES: **Section VI - Maintenance procedures:** "This section shall contain maintenance procedures which are the responsibility of the organizational maintenance technician as authorized by the Maintenance Allocation Chart (MAC) and Source, Maintenance, and Recoverability (SMR) coded items. The maintenance procedures shall be prepared in the form of summary and detailed procedures, IAW MIL-HDBK-63038-1. When applicable, maintenance instructions shall reference or contain all procedures required for care and handling of ammunition."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 32 SEC: 3.2.3 PARA: 3.2.3.6

STATES: **Section VI - Maintenance procedures:** "This section shall contain maintenance procedures which are the responsibility of the unit maintenance or aviation unit maintenance manual user as authorized by the Maintenance Allocation Chart (MAC) and Source, Maintenance, and Recoverability (SMR) coded items. Headings for procedures/tasks shall be identified by the same functional group titles and codes as those used in the applicable MAC and RPSTL. When applicable, maintenance instructions shall reference or contain all procedures required for care and handling of ammunition, radioactive components, or ESD sensitive items. As appropriate, reference shall be made to the RPSTL appendix for replacement parts and any special tools required, to the expendable and durable items list appendix for expendable and durable items, and to the ammunition appendix for appropriate information on use, maintenance, and handling of equipment." Adds three more paragraphs: "c. Instructions for corrosion/fungi prevention and control (CPC). d. National stock numbers and part numbers shall not be used in illustrations of technical manuals. e. Aviation maintenance manuals shall reference applicable procedures in TM 55-1500-204-25/1."

33. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-31 SEC: D3.2.4 PARA: D3.2.4.6.2

STATES: **Maintenance:** IMAGES Version does not list nondestructive testing inspection, assembly, or test/inspection as maintenance procedures. (The Latest Version includes them.)

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 33 SEC: 3.2.3 PARA: 3.2.3.6.2

STATES: **Maintenance:** Latest Version does not list reassembly or test procedures as maintenance procedures. (IMAGES Version includes them.)

34. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-33 SEC: D3.2.4 PARA: D3.2.4.6.2.1

STATES: **Servicing (filling):** Shows instructions being covered, one of them is oxygen (the only gas listed).

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 33 SEC: 3.2.3 PARA: 3.2.3.6.2.1

STATES: **Servicing:** Shows instructions being covered, gases listed are oxygen/nitrogen/other gases.

35. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-34 SEC: D3.2.4 PARA: D3.2.4.6.2.2

STATES: **Ground handling:** "Ground handling shall be presented in concise form giving the following: Paragraph b(6), Methods of hoisting the equipment or equipment sections by means of hoisting slings, including instructions with diagram showing hoisting points and attachment of slings. Paragraph b(7), Method of sling loading equipment, supplemented with diagrams showing sling points, equipment requirements, and attaching points, will be described in concise detail. Special precautions to be observed to prevent damage to the equipment or its components shall be stated."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 35 SEC: 3.2.3 PARA: 3.2.3.6.2.2b

STATES: **Ground handling:** Paragraph b(6) indicates methods of hoisting should be IAW MIL-STD-209. Paragraph b(7) indicates methods of sling loading should be IAW MIL-STD-209.

36. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-35 SEC: D3.2.4 PARA: D3.2.4.6.2.3

STATES: **Operational check:** Has two paragraphs: Techniques and methods required, and reference operator's instructions.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 35 SEC: 3.2.3 PARA: 3.2.3.6.2.3

STATES: **Operational checks:** Has three paragraphs: Techniques and methods required, reference operator's instructions, and, when so specified in 3.2.3(b)4, include a corrective procedures column to provide a means of referencing troubleshooting procedures as required.

37. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-35 SEC: D3.2.4 PARA: D3.2.4.6.2.4

STATES: **Inspection of installed items:** "The purpose of the inspection is to determine if the item is damaged or incomplete to the extent that it should be replaced/repaired."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 35 SEC: 3.2.3 PARA: 3.2.3.6.2.4

STATES: **Inspection of installed items:** "The purpose of the inspection is to determine if the item is damaged, deteriorated, or incomplete to the extent that it should be replaced/repaired."

38. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-35 SEC: D3.2.4 PARA: D3.2.4.6.2.5

STATES: **Cleaning:** Does not include paragraph c, indicating warning and cautions whenever incompatible chemicals or cleaning compounds are used.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 36 SEC: 3.2.3 PARA: 3.2.3.6.2.7c

STATES: **Cleaning:** Paragraph c, "Warnings and cautions shall be provided whenever incompatible chemicals or cleaning compounds are used or mixed. Identify whether the danger is to personnel or equipment and state the effect (e.g., gas, fumes, caustic, fire)."

39. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-35 SEC: D3.2.4 PARA: D3.2.4.6.2.6

STATES: **Removal:** "Instructions shall be provided in the logical removal sequence prescribed by the Functional Group Code (FGC), with illustrations as required. When applicable, instructions shall be included for checking and recording gear wear patterns, backlash, tagging shims, and separating and indexing parts for the assembly."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 36 SEC: 3.2.3 PARA: 3.2.3.6.2.5

STATES: **Removal:** The Latest Version adds, "ESD protective control measures."

40. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-36 SEC: D3.2.4 PARA: D3.2.4.6.2.8

STATES: **Inspection - acceptance/rejection criteria:** "Detailed inspection requirements shall be provided to include acceptance/rejection information sufficient to determine that new, repaired, and used components, assemblies, and subassemblies conform to the wear limits, fits, and tolerances established."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 37 SEC: 3.2.3 PARA: 3.2.3.6.2.3

STATES: **Inspection - acceptance/rejection criteria:** The Latest Version adds, "ESD control protective measures and corrosion prevention and control procedures shall be provided."

41. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-36 SEC: D3.2.4 PARA: D3.2.4.6.2.9

STATES: **Repair or replacement:** "Essential instructions shall be provided for repair or replacement to restore an item to a completely serviceable/operational condition." Continues with paragraphs a and b.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 37 SEC: 3.2.3 PARA: 3.2.3.6.2.10

STATES: **Repair or replacement:** The Latest Version adds paragraph c, "ESD standards; ESD sensitive items, plus protective and control measures; and CPC procedures shall be identified."

42. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-36 SEC: D3.2.4 PARA: D3.2.4.6.2.11

STATES: **Painting:** Reference is made to TB 746-93-2, plus similar ones.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 38 SEC: 3.2.3 PARA: 3.2.3.6.2.12

STATES: **Painting:** Reference is made to TM 55-1500-345-23, TM 55-1500-204-25/1, plus ones similar to both versions.

43. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-36 SEC: D3.2.4 PARA: D3.2.4.6.2.12

STATES: **Lubrication:** "Pertinent general lubrication instructions shall be referenced or provided."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 38 SEC: 3.2.3 PARA: 3.2.3.6.2.13

STATES: **Lubrication:** The Latest Version adds paragraph c, "Lubricant types and abbreviation for flight vehicles and components shall be as specified in MIL-HDBK-275; and for ground equipment systems, lubricants, functional fluids, preservatives, and specialty products shall be IAW MIL-HDBK-113."

44. SOURCE: IMAGES

PAGE: 20-37 SEC: D3.2.4 PARA: D3.2.4.6.2.13d

STATES: **Reassembly:** Paragraph d, "Instructions such as 'Reverse the disassembly procedure' shall not be used unless otherwise specified by the procuring activity."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 39 SEC: 3.2.3 PARA: 3.2.3.6.2.14d

STATES: **Assembly:** Paragraph d, "Instructions such as 'reverse the disassembly procedure' shall not be used." Adds a paragraph e, "ESD standards, ESD sensitive items (to include protective and control measures for the items), and CPC procedures shall be identified."

45. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3, TYPE 20 (MIL-M-63038B)

PAGE: 20-37 SEC: D3.2.4 PARA: D3.2.4.6.2.14

STATES: **Test procedures:** Indicates test procedures only.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 39 SEC: 3.2.3 PARA: 3.2.3.6.2.15

STATES: **Test/inspection:** Procedures for testing and inspecting. Adds, "Measurement criteria and tolerances shall reflect the TDME available to the user."

46. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3, TYPE 20 (MIL-M-63038B)

PAGE: 20-37 SEC: D3.2.4 PARA: D3.2.4.6.2.15

STATES: **Installation:** Paragraph b, "Instructions such as 'reverse the removal procedure' shall not be used unless otherwise specified by the procuring activity."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 39 SEC: 3.2.3 PARA: 3.2.3.6.2.16

STATES: **Installation:** Paragraph b, "Instructions such as 'reverse the removal procedure' shall not be used." Adds paragraph c, "Peculiar requirements for lockwiring, installing cotter pins, ESD protective/control measures, CPC instructions, and similar operations shall be included, with applicable references to the expendable and durable items list."

47. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3, TYPE 20 (MIL-M-63038B)

PAGE: 20-38 SEC: D3.2.4 PARA: D3.2.4.6.2.18

STATES: **Placing in service:** "This could include removal of an item from storage and preparation for installation on an end item."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 40 SEC: 3.2.3 PARA: 3.2.3.6.2.19

STATES: **Placing in service:** "This shall include instructions for removal of an item from storage and preparation for installation on an end item, if applicable." Also adds, "Final servicing checks, calibration, leak checks, electrostatic discharge procedure, and operational checks shall be included as applicable."

48. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-38 SEC: D3.2.4 PARA: D3.2.4.7

STATES: **Section VII - Preparation for storage or shipment:** This section shall provide special instructions as required.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 40 SEC: 3.2.3 PARA: 3.2.3.7

STATES: **Section VII - Preparation for storage or shipment:** Paragraph b adds, "ESD protective/control measures, and shipping instructions, including use of special design reusable containers."

49. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-39 SEC: D3.2.7 PARA: D3.2.7

STATES: **Appendix B - Maintenance allocation chart (MAC):** "LSA Output Report 04, Maintenance Allocation Summary, will be used when available as source data for the final approved MAC."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 41 SEC: 3.2.6 PARA: 3.2.6

STATES: **Appendix () - The maintenance allocation chart (MAC):** "LSA Output Report 04, Maintenance Allocation Summary, and LSA 20 report will be used when available as source data for the final approved MAC."

50. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-39 SEC: D3.2.7 PARA: D3.2.7.4

STATES: **MAC entries:** Paragraph a, "The end item group number shall be numbered '00'." Paragraph b, "Entries shall be brief, general descriptions without stock or part numbers, if possible, in order to minimize need for subsequent change; however, entries shall contain positive identification."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 42 SEC: 3.2.6 PARA: 3.2.6.2

STATES: **MAC entries:** Paragraph a, "The end item group shall be numbered '00' or its equivalent 'AA'." Paragraph b, "Entries shall be item names and where applicable type designators, without stock or part numbers, if possible, in order to minimize need for subsequent change; however, entries shall contain positive identification." Adds paragraph g, "Exception is authorized for ammunition MACs to permit use of maintenance function headings that better describe or identify ammunition peculiar maintenance functions. The headings used and their definitions shall be included in the appropriate ammunition technical manual(s)." (Adds definitions at the end of page in footnote format (not in the IMAGES Version).

51. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-40 SEC: D3.2.7 PARA: D3.2.7.4

STATES: **MAC introduction:** "The introduction to the maintenance allocation chart shall be prepared IAW figure 19 (sheets 1-4), as applicable."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 43 SEC: 3.2.6 PARA: 3.2.6.4

STATES: **MAC introduction:** "The introduction to the maintenance allocation chart shall be prepared IAW figure 15 (sheet 1-4) or figure 16 (sheets 1-7) as applicable. Figure 16 is an example of the aviation MAC as required for use in aviation maintenance manuals."

52. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-40 SEC: D3.2.7 PARA: D3.2.7.5

STATES: **MAC format:** "The maintenance allocation chart shall appear in the format shown in figure 19 (sheet 5), as applicable.

a. For explanation of data to be listed in columns of this chart, refer to figure 19 (sheet 2-4), as applicable.

b. The group number shall be entered in the column 1, the nomenclature of the spare (component/assembly) shall be entered in column 2, and the maintenance function shall be listed in column 3 of the MAC.

c. Column 4 of the maintenance allocation chart shall be divided into five subcolumns for the standard format, one for each category of maintenance.

(1) The work time figure (para d below) must appear in the subcolumn for the maintenance category authorized to perform the maintenance function listed in column 3. The work time figure will be entered in one or more subcolumns, as necessary, to indicate the individual maintenance work time required by each maintenance category (e.g., in a case where the organizational repair task takes less time than the direct support repair task on the same component/subassembly, the O subcolumn would show a work time figure and the F subcolumn would show a work time figure).

(2) It must be recognized that a component/assembly showing complete repair in the 4th position of the SMR code as authorized at direct support may have repair parts allocated with an O in the 3d position of the SMR code indicating that these items are authorized for replacement at organizational category to repair a reparable assembly/component authorized for complete repair at direct support category.

d. The work time figure(s) used in column 4 shall be developed under conditions corresponding to those that would be considered normal for TOE units operating in the field (refer to AR 750-1). This is not applicable to the depot category.

(1) The skill levels used to obtain the work time figure(s) shall approximate those found in typical TOE units.

(2) The active repair time specified is the average aggregate time to restore an item (subassembly, assembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions.

(3) This time includes troubleshooting time, preparation time (includes disassembly/assembly time), and quality assurance/quality control time in addition to the time required to perform specific maintenance functions (e.g., remove and install) identified for the tasks authorized in the maintenance allocation chart.

(4) This time may be the established time standard developed through LSA, or it can be derived from a calculation of a statistically weighted time estimate, incorporating the optimistic (a), most likely (m), and pessimistic (b) estimates for the work to be accomplished using the formula: $t = \frac{a+4m+b}{6}$

(5) This work time shall be carried to one decimal place (tenths of hours)."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 43 SEC: 3.2.6 PARA: 3.2.6.5

STATES: **MAC format:** "The maintenance allocation chart shall appear in the format shown in figure 15 (standard) (sheet 5) or figure 16 (aviation) (sheet 8), as specified on selection summary sheets.

a. For explanation of data to be listed in columns of this chart, refer to figure 15 (sheets 3&4) or figure 16 (sheets 6&7) as applicable.

b. The group number shall be entered in column 1, the nomenclature of the spare (component/assembly) shall be entered in column 2, and the maintenance function shall be listed in column 3 of the MAC.

c. Column 4 of standard maintenance allocation chart shall be divided into four main headings, one for each level of maintenance (i.e., Unit, Direct Support, General Support, and Depot). Column 4 of the aviation maintenance allocation chart shall be divided into three main headings (i.e., AVUM or unit, AVIM or intermediate, and Depot).

d. A work time figure must appear in the subcolumn for the maintenance level authorized to perform the maintenance listed in column 3.

(1) The active repair time specified shall be the average aggregate time to restore an item (subassembly, assembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions and shall include troubleshooting time, time to accomplish preliminary and follow-on tasks, preparation time, and quality assurance/quality control time in addition to the time required to perform the specific maintenance function authorized in the MAC.

(2) This time shall be the established time standard developed through LSA, or it shall be derived from the calculation of a statistically weighted time estimate, incorporating the optimistic (a), most likely (m), and pessimistic (b) estimates for work to be accomplished using the formula: $t = \frac{a+4m+b}{6}$

6

53. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-41 SEC: D3.2.8 PARA: D3.2.8

STATES: **Appendix C - Repair parts and special tools list**
(RPSTL): "If this appendix is required by procuring activity, it shall be prepared IAW MIL-M-63001."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 44 SEC: 3.2.7 PARA: 3.2.7

STATES: **Appendix () - Repair parts and special tools list**
(RPSTL): "If this appendix is required by the contracting activity, it shall be prepared IAW MIL-STD-335."

54. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-48 SEC: D3.2.9 PARA: D3.2.9

STATES: **Appendix D - Expendable supplies and materials list:** "This list shall be prepared IAW MIL-M-63036."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 44 SEC: 3.2.8 PARA: 3.2.8

STATES: **Appendix () - Expendable and durable items list:** "This appendix shall have two sections, Section I Introduction and Section II Expendable Durable Items List." Includes applicable information shown in an example, does not include illustrations.

55. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-48 SEC: D3.2.10 PARA: D3.2.10.3

STATES: **Appendix E - Illustrated list of manufactured items:** "This appendix shall include simplified line drawing illustrations for each item authorized to be manufactured/fabricated by organizational maintenance personnel."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 45 SEC: 3.2.9 PARA: 3.2.9

STATES: **Appendix () - Illustrated list of manufactured items:** "This appendix shall include simplified line drawing illustrations for each item authorized to be manufactured/fabricated by unit maintenance or aviation unit maintenance personnel."

56. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-48 SEC: 3.2.10 PARA: 3.2.10.3

STATES: **Manufactured items illustrations - format and content:** Orthographic projection drawings (line drawings) in clear, simple, complete format will be used.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 45 SEC: 3.2.9 PARA: 3.2.9.3

STATES: **Manufactured items illustrations - format and content:** "Line drawings in clear, simple, complete format shall be used." The Latest Version adds paragraph e(4), "When applicable, reference shall be made to the associated RPSTL TM, or RPSTL appendix (for combined manuals)."

57. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-50 SEC: 3.2.11 PARA: 3.2.11

STATES: **Appendix F - Torque limits:** "This appendix, when required by the procuring activity, shall list standard torque values as shown in figure 21 and shall provide general information and methods for applying torque. Special torque values and sequences shall be indicated in the maintenance procedures for applicable components."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 46 SEC: 3.2.10 PARA: 3.2.10

STATES: **Appendix () - Torque limits:** "When specified by the contracting activity, this appendix shall be included to provide applicable torque values expressed in metric terms, data as to bolt grade markings and their proper identification, and specific torque sequencing requirements as applicable."

58. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE: 20-50 SEC: 3.2.13 PARA: 3.2.13

STATES: **Alphabetical index:** "When manual has more than 35 pages or 50 paragraphs, an alphabetical index shall be prepared IAW MIL-HDBK-63038-1."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 46 SEC: 3.2.13 PARA: 3.2.13

STATES: **Alphabetical index:** "Unless otherwise specified by contracting activity, each TM shall include an alphabetical index prepared IAW MIL-M-38784."

APPENDIX E - IMAGES VERSION VS. LATEST VERSION OF MIL-M-63038
(CONTINUED)

RECOMMENDED ADDITIONS TO IMAGES DUE TO REVISIONS

1. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 11 SEC: 3.2.1 PARA: 3.2.1.2

STATES: **Warning and first aid data page:** Summary of warnings should not be repetitious of others, should be unique. Add appropriate instructions that would ensure safety.

2. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 11 SEC: 3.2.1 PARA: 3.2.1.3

STATES: **Transmittal (change) sheet:** Cover major changes to equipment and manual, including instructions on how user can identify changed material.

3. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 16 SEC: 3.2.2 PARA: 3.2.2.1.10

STATES: **Corrosion prevention and control:** Corrosion problems should be reported so problems can be corrected and improvements can be made to prevent future problems.

4. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 17 SEC: 3.2.2 PARA: 3.2.2.1.11

STATES: **Nuclear hardness:** "All hardness critical processes/steps shall be marked IAW MIL-M-38784 and the following statement shall be included, 'All hardness critical paragraphs in this manual are marked with the symbol HCP...'"

5. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 17 SEC: 3.2.2 PARA: 3.2.2.1.12

STATES: **Security measures for electronic data:** "This paragraph shall include instructions for handling, loading, scrubbing, overwriting, or unloading classified electronic data under usual or unusual conditions. Instructions shall meet the requirements of AR 380-5 and AR 380-380 as pertain to automation security."

6. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3, TYPE 20 (MIL-M-63038B)

PAGE: 20-9 SEC:D3.2.3 PARA: D3.2.3.2.2

STATES: **Location and description of major components:** "Only information pertaining to organizational maintenance shall be included."

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 18 SEC: 3.2.2 PARA: 3.2.2.2.2

STATES: **Location and description of major components:** "Only information pertaining to unit/aviation unit maintenance shall be included." The Latest Version adds a new paragraph b, "Normally, this information shall be included under equipment characteristics, capabilities, and features. If a separate paragraph is required for location and description of major components, information shall not duplicate information in 3.2.2.2.1" (Equipment characteristics, capabilities, and features).

7. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 40 SEC: 3.2.3 PARA: 3.2.3.6.2.20

STATES: **Testing:** "Instructions shall be provided to test the performance of components, assemblies, and subassemblies prior to installation in the end item."

8. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 41 SEC: 3.2.3 PARA: 3.2.3.7.2

STATES: **Aviation ground support equipment manuals:** "Shall reference TM 55-1500-204-25/1 for general technical information on preparation for storage or shipment."

9. CURRENT REQUIREMENT: IMAGES VOL II-A, SEC. 3,
TYPE 20 (MIL-M-63038B)

PAGE:20-38 SEC: D3.2.5 PARA: D3.2.5

STATES: **Aircraft phased maintenance checklist:** "Phased maintenance checklists for Army aircraft are published as separate technical manuals as specified by the procuring activity and prepared IAW MIL-M-63014." This is not in MIL-M-63038C.

10. CURRENT REQUIREMENT: NONE.

REVISED REQUIREMENT: Latest Version, MIL-M-63038C

PAGE: 41 SEC: 3.2.4 PARA: 3.2.4

STATES: **Appendices:** "Shall be identified alphabetically throughout the document in the order of their reference in the text."

APPENDIX F
ACRONYMS

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APPENDIX F. ACRONYMS

AI - Artificial Intelligence
AMC - Army Materiel Command
AMDF - Army Master Data File
CAGEC - Commercial and Government Entity Code
COEI - Components Of End Item
COTS - Commercial Off The Shelf
CPC - Corrosion Prevention Control
DA - Department of the Army
DEP - Draft Equipment Publication
DMWR - Depot Maintenance Work Requirements
DoD - Department of Defense
DTM - Draft Technical Manual
EIR - Equipment Improvement Recommendation
EIC - End Item Code
ESD - Electro Static Discharge
FGC - Functional Group Codes
GL - Grade Level
HCP - Hardness Critical Paragraphs
IAW - In Accordance With
IMAGES- Instructional Material Adequacy Guide and Evaluation Standard
JCS - Joint Chiefs of Staff
LOAP - List Of Applicable Publications
LSAR - Logistics Support Analysis Record
MAC - Maintenance Allocation Chart
MOS - Military Occupational Specialty
MTOE - Modified Table of Organization and Equipment
NSN - National Stock Number
OGL - Overall Grade Level
PMCS - Preventive Maintenance Checks and Services
QA - Quality Assurance
QC - Quality Control
RCM - Reliability Centered Maintenance
RGL - Reading Grade Level
RPSTL - Repair Parts and Special Tools List
SMR - Source, Maintenance and Recoverability
TAMMS - The Army Maintenance Management System
TAMMS-A- The Army Maintenance Management System-Aviation
TECOM - Test and Evaluation Command
TM - Technical Manual
TMDE - Test, Measurement, and Diagnostic Equipment
TOP - Test Operations Procedure
USAEPG- US Army Electronic Proving Ground
WTB - Warranty Technical Bulletin

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APPENDIX G
DISTRIBUTION

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APPENDIX G. DISTRIBUTION

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