

MIL - STD - 961B

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SUPERSEDING

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MILITARY STANDARD

MILITARY SPECIFICATIONS AND ASSOCIATED DOCUMENTS, PREPARATION OF



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MIL-STD-961B

DEPARTMENT OF DEFENSE

Washington, DC 20301

Military Specifications and Associated Documents, Preparation of

1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Director, Defense Materiel Specifications and Standards Office (DMSSO), 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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FOREWORD

This standard contains integrated instructions for the preparation of the following:

- Specifications
- Appendixes
- Indexes
- Revisions
- Supplements
- Amendments
- Notices
- Specification sheets
- Associated detail specifications
- Detail specifications

This standard was written expressly for the writer of military specifications.

The Department of Defense is committed to increased defense contractor productivity and improved acquisition efficiency. Military specifications and associated documents play an important role in this context and must be prepared with this objective in mind. They define requirements. They must allow for the various contractual circumstances and environments that exist and must promote an atmosphere in which appropriate cost, benefit, and risk tradeoffs can be made.

Significant changes have been made to this standard as a result of DoD policy to selectively apply and tailor military standardization documents. These changes reflect the DoD belief that the format, tone, and content of standardization documents are important to cost effective use of these documents.

Proper preparation and use of standardization documents is a difficult task requiring careful analysis and good judgement. The following points highlight areas of policy emphasis, intent, or changes. Areas where actual problems have been encountered on specific documents are also included. They are intended as a "checklist" to assist in document preparation.

Documents should be structured and formatted to categorize requirements as precisely as possible. Requirements that are generally necessary but can occasionally be removed should be written so that they can be tailored out while leaving other requirements unaffected. Requirements that are necessary only in certain instances should be written so that they can be tailored in. There is sufficient flexibility to make adjustments which may be required for a particular document.

Detailed application guidance should be provided in the "Notes" section of each document. The purpose of this guidance is to provide noncontractual information on when and how to use the document. Information such as the following is recommended: (1) how to apply the document to different contract types and different program phases, (2) the source of and flexibility inherent with specific document requirements, (3) guidance on what is required to satisfy document requirements, (4) the extent of government review and approval, and (5) the relationship between the particular document and other related documents in the acquisition process.

A carefully documented, permanent record should be maintained by the specification or document preparing activity of the source and reason behind particular requirements and changes to requirements. The rationale (measurement, testing, judgment, etc.) behind a specific numeric level is one example of what the record should contain. Issues and controversial areas during the coordination process should be noted--it may be desirable to summarize these issues and areas in the "Notes" section of the document and solicit feedback as experience develops. This record should provide a basis for related application guidance and a "history" useful in future document revisions.

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Clear distinction should be made between requirements portions and guidance ("Notes" section) portions of documents. Careful attention to use of the words "should" (guidance language) and "shall" (requirement language) is important.

Requirement statements should be clear and unambiguous. One test to apply in preparing a document is to ask what will a contractor have to do as a result of this requirement. The answer should be apparent to both the government and the contractor.

To the extent possible, requirements should be stated in performance or "what-is-necessary" terms, as opposed to telling a contractor "how to" perform a task.

Care should be taken to avoid unnecessary reference to other standardization documents and document "tiering". References should be justified. When only a portion of another document needs to be referenced, only that portion should be referenced. Allow for tailoring of document references when this is appropriate.

Strong justification and extreme care is necessary when referencing management system or program type documents. These documents lose visibility (and possible tailoring efforts done elsewhere are lost) when categorically imposed in this manner. It is usually more effective to specify these documents or specific portions of them directly in the contract.

Ways to increase the use of commercial products and nongovernment standards which will satisfy government requirements should be an important consideration during document preparation or revision. Efforts to identify possibilities, encourage their use, or reduce impediments to their use should be reflected in standardization document contents.

Data item descriptions should be developed and circulated with standardization documents during the draft coordination stages when applicable.

Documents should allow for contractor systems and contractor data when they will satisfy government requirements.

Contractors should be encouraged, within the document, to propose document application and tailoring modifications with supporting rationale for such modifications.

Feedback on the success or difficulties (benefits and costs) encountered in the application of the document on specific contracts should be encouraged. Contractor/industry and government experience should be directed to the preparing activity or other appropriate offices.

Efforts should be made to encourage and obtain inputs and perspectives outside of a document's normal proponent group (such as the quality, reliability, or packaging communities).

Care should be taken to ensure that industry comments are requested during the draft stages of document preparation and that proper government coordination occurs.

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1. SCOPE

1.1 Scope. This standard establishes the formats, contents, and procedures for the military specification and its associated documents.

1.2 Purpose. The purpose of this standard is to standardize the preparation of military specifications and their associated documents, to ensure the inclusion of essential requirements, and to aid in the use and analysis of DOD standardization documents.

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2. REFERENCED DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified, the following specifications, standards, and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation form a part of this standard to the extent specified herein (see 2.4.1).

SPECIFICATIONS

MILITARY

- MIL-P-116 - Preservation, Methods of.
- MIL-Q-9858 - Quality Program Requirements.
- MIL-I-45208 - Inspection System Requirements.

STANDARDS

FEDERAL

- FED-STD-123 - Marking for Domestic Shipment (Civil Agencies).
- FED-STD-313 - Material Safety Data Sheets, Preparation and the Submission of.
- FED-STD-376 - Preferred Metric Units for General Use by the Federal Government.

MILITARY

- MIL-STD-12 - Abbreviations for Use on Drawings, and in Specifications, Standards and Technical Documents.
- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-280 - Definitions of Item Levels, Item Exchangeability, Models, and Related Terms.
- MIL-STD-414 - Sampling Procedures and Tables for Inspection by Variables for Percent Defective.
- DOD-STD-963 - Data Item Descriptions (DID), Preparation of.

HANDBOOKS

- DOD-HDBK-248 - Guide for Application and Tailoring of Requirements for Defense Material Acquisitions.

2.1.2 Other Government documents and publications. The following other Government documents and publications form a part of this standard to the extent specified herein (see 2.4.2).

- FAR 27 (DOD Supplement) - Data Requirements.
- DOD 5000.19-L, Volume II - DOD Acquisition Management Systems and Data Requirements Control List (AMSOL).
- DDCH 4185.7 - DDC Retrieval and Indexing Terminology (with supplement, DTIC Posting Terms), AD-A068 500.
- SD-1 - Standardization Directory.
- Cataloging Handbook H2-1 - Federal Supply Classification, Part 1, Groups and Classes.
- Cataloging Handbook H6 - Federal Item Name Directory for Supply Cataloging.
- United States Government Printing Office (GPO) Style Manual.
- DOD Thesaurus of Engineering and Scientific Terms (TEST), AD-672 000.

2.2 Other publications. The following documents form a part of this standard to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. The issues of documents which have not been adopted shall be those in effect on the date of the cited DODISS (see 2.4.3).

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AMERICAN NATIONAL METRIC COUNCIL (ANMC)

*ANMC 78-1-78 - Metric Editorial Guide.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

*ANSI/IEEE 260-78 - IEEE Standard Letter Symbols for Units of Measurement.
 *ANSI Y14.5M-1982 - Dimensioning and Tolerancing.
 ANSI Z39.14 - American National Standard for Writing Abstracts.

* DOD Adopted

2.3 Order of precedence. In the event of a conflict between the text of this standard and the references cited herein, the text of this standard shall take precedence.

2.4 Source of documents.

2.4.1 Government specifications, standards, and handbooks. Copies of the referenced federal and military specifications, standards, and handbooks are available from the Department of Defense Single Stock Point, Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120. For specific acquisition functions, these documents should be obtained from the contracting activity or as directed by the contracting activity.

2.4.2 Other Government documents. Copies of other government documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity. The documents listed may be obtained as follows:

- a. Copies of listed documents are available from the Department of Defense Single Stock Point, Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.
- b. Copies of the GPO Style Manual should be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
- c. Copies of the DOD Thesaurus of Engineering and Scientific Terms and the DDC Retrieval and Indexing Terminology may be purchased from the National Technical Information Service, Springfield, VA 22161, or (for DOD activities and DOD contractors) from the Reference Services Branch, Defense Technical Information Center, Cameron Station, Alexandria, VA 22304-6145.

2.4.3 Sources for nongovernment publications. Nongovernment documents are generally available for reference from libraries and technical groups. The documents listed may be obtained as follows:

- a. ANMC: Application for copies should be addressed to the American National Metric Council, 1010 Vermont Avenue NW., Washington, DC 20005.
- b. ANSI: Application for copies should be addressed to the American National Standards Institute Inc., 1430 Broadway, New York, NY 10018.

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3. DEFINITIONS

3.1 Acronyms used in this standard. The acronyms used in this standard are defined as follows:

- a. ABCA - American, British, Canadian, Australian.
- b. AMSDL - Acquisition Management Systems and Data Requirements Control List.
- c. ASCC - Air Standardization Coordinating Committee.
- d. AMSC - Acquisition Management Systems Control.
- e. AStanP - Allied Material Standards Publication.
- f. FAR - Defense Acquisition Regulation.
- g. DepSO - Departmental Standardization Office.
- h. DODISS - Department of Defense Index of Specifications and Standards.
- i. NATO - North Atlantic Treaty Organization.
- j. STANAG - Standardization Agreement (North Atlantic Treaty Organization).

3.2 Amendment. An amendment is a listing of changes to a specification.

3.3 Classification definitions. Where there are no specific commercial classifications available, generic classifications such as "type", "class", "grade", "composition", and "style" are defined as indicated below.

3.3.1 Type. This term implies differences in like items or processes relative to design, model, shape, etc., and is usually designated by Roman numerals, thus "type I", type II, etc.

3.3.2 Class. This term provides additional categorization of differences in characteristics other than that afforded by type classification which does not constitute a difference in quality or grade, but are for specific, equally important uses, and is usually designated by Arabic numerals; thus, "class 1", "class 2", etc.

3.3.3 Grade. This term usually implies differences in quality and is usually designated by capital letters; thus, "grade A", "grade B", etc.

3.3.4 Composition. This term is used in classifying commodities which are differentiated strictly by their respective chemical composition and is designated in accordance with accepted trade practice.

3.3.5 Style. This term is used to denote differences in design or appearance.

3.4 Interchangeable item. For definition, see MIL-STD-280.

3.5 Replacement item. For definition, see MIL-STD-280.

3.6 Substitute item. For definition, see MIL-STD-280.

3.7 Lot or batch. For definition, see MIL-STD-105.

3.8 Specification. A document prepared specifically to support acquisition which clearly and accurately describes essential technical requirements for purchased materiel. Procedures necessary to determine that the requirements for the purchased materiel covered by the specification have been met shall also be included.

3.8.1 Military specification. A military specification covers systems, subsystems, items, materials, or products that are intrinsically military in character or are used in, or in support of, weapons systems and involve an essential system function or interface.

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3.8.2 Coordinated military specification. A coordinated military specification is a document required by more than one military department and which is coordinated with various activities of the interested departments.

3.8.3 Limited coordination military specification. A limited coordination military specification covers items of interest to a single department or activity which is prepared by that department or activity to meet their acquisition need.

3.8.4 "USED IN LIEU OF" limited coordination military specification. A "USED IN LIEU OF" limited coordination military specification is a revision to a coordinated specification required by a military department to meet a need when time does not permit preparation of a coordinated revision.

3.8.5 Detail specification. A detail specification covers all requirements for one or more types of items so as not to require preparation and reference to a general specification for the common requirements. A detail specification is prepared in the six-section format.

3.8.6 General specifications. There are two types of general specifications which are prepared in the six-section format:

- a. A basic specification covering requirements and test procedures which are common to a group of parts, materials, or equipments to be used with either associated detail specifications or specification sheets (not a mixture).
- b. A specification covering requirements or test procedures which are common to a category of equipments that is referenced in other documents as an applicable specification. For example, MIL-E-5400 is a general specification covering requirements for airborne electronic equipment.

3.8.6.1 Associated detail specification. The associated detail specification is an extension of one type of general specification that covers detailed requirements for specific parts, materials, or equipments. The associated detail specification is prepared in the six-section format.

3.8.6.2 Specification sheet. The specification sheet is an abbreviated form of an associated detail specification, with the material presented in graphic or tabular format, not always requiring full sentences.

3.8.7 Nongovernment standard. A nongovernment standard is a standardization document developed by a nongovernment standards body. A nongovernment standards body is a private sector association, organization, or technical society which plans, develops, establishes, or coordinates nongovernment standards. Nongovernment standards adopted by the DOD are listed in the DODISS.

3.9 Metrication. Metrication is the process of changing to the metric system, including the act of developing metric standardization documents or converting current standardization documents to metric units of measurement.

3.9.1 Metric units. Metric units are a system of basic measures defined by the International System of Units based on "Le Systeme International d'Unites (SI)", of the International Bureau of Weights and Measures. These units are described in FED-STD-376.

3.9.2 Soft conversion. A soft conversion is the process of changing a measurement from inch-pound units to equivalent metric units within acceptable measurement tolerances without changing the physical configuration of the item.

3.9.3 Hard conversion. A hard conversion is the process of changing a measurement from inch-pound units to non-equivalent metric units which necessitates physical configuration changes of the item outside those permitted by established measurement tolerances.

NOTE: The term "hard conversion" is in general use in the United States, although it is technically incorrect when applied to specific items because no "conversion" takes place. Instead, a new metric item requiring a new part identification is created to eventually replace the customary item. The new item is often referred to as being in "hard metric".

3.9.4 Hybrid metric item. An item designed and produced using both metric and inch-pound units even though it may be described by only one system of units in standardization documents.

3.10 Rationalization. Rationalization is a planned simplification by reducing the number of item configurations and relating such configurations in a rational manner, usually in a preferred number progression.

3.11 Selective application and tailoring.

- a. Application. The process of reviewing and selecting from available specifications, standards, and related documents those that have application to particular materiel acquisitions and contractually invoking them wholly, or in part, at the most advantageous time in the acquisition cycle.
- b. Tailoring. The process by which individual requirements (sections, paragraphs, or sentences) of the selected specifications, standards, and related documents are evaluated to determine the extent to which they are most suitable for a specific system and equipment acquisition and the modification of these requirements to ensure that each achieves an optimal balance between operational needs and cost (see DOD-HDBK-248 and 4.2.1.)

3.12 Standard sample. A representative sample, provided by, or as directed by, the acquisition activity to illustrate qualities or characteristics that cannot be readily described because test procedures or design data are not available, or because certain qualities and characteristics cannot be definitely expressed, such as the texture of fur, color of cloth, or the grain of wood.

3.13 Hardness critical items (HCI's) and processes (HCP's).

3.13.1 HCI's. HCI's are any items at any assembly level which are mission critical and can be designed, repaired, manufactured, installed, or maintained for normal operation and yet degrade system survivability in a nuclear environment if hardness is not considered.

3.13.2 HCP's. HCP's are processes, specifications, and procedures which are hardness critical, and which, if changed, can degrade nuclear hardness. HCP's must be identified on drawings, specifications, etc.

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4. GENERAL REQUIREMENTS

4.1 General. This section covers general aspects of style, format, and general requirements for preparing a six-section specification. This includes arrangement of contents, paragraphing, numbering, heading, and notes. See figure 1 for a checklist that may be used as a guide in preparation of a specification.

4.2 Coverage. Similar items shall be covered in a single specification to the maximum extent practical. Specifications shall describe the item in a manner which will encourage maximum competition. Insofar as practicable, requirements should be in terms of performance. Requirements will not be specified to a degree of unnecessary exactness or restrictiveness, but will be detailed only to the degree necessary to insure the acquisition of items adequate for the purpose to be covered. Design requirements such as dimensions, materials, composition, physical and chemical requirements, etc., shall be included only to the extent necessary to control design. When other than form, fit, and function interchangeability is essential with respect to reparable items, it is permissible to specify details of design to the extent necessary to insure interchangeability of replacement parts.

4.2.1 Selective application and tailoring of requirements.

- a. Selective application and tailoring of requirements (also called "tailoring") requires careful consideration at the development stage of the individual specification. The concept of tailoring is covered in DOD-HDBK-248 and must be planned and organized by the specification writer. To be a successfully tailorable document, the specification must be written so that it is structured in such a manner that selection or modification of requirements will not create conflict, ambiguity, or result in an incomplete specification when used as a contract document.
- b. In writing the specification consideration must be given to each section to assure that users are made aware of the flexibility available in the use of the document. References, requirements, and quality assurance provisions should be written so they can be tailored for each phase in the acquisition cycle. As appropriate each requirement should stand on its own together with the associated means for verification.

4.2.2 Energy efficiency requirements. When a specification covers products that directly consume energy in normal operation, requirements specifying their energy efficiency shall be included.

4.2.3 Hazardous materials specifications. Specifications that describe products which contain hazardous materials (see 5.3.3.6.2) shall include requirements for the preparation and delivery of Material Safety Data Sheets in accordance with FED-STD-313. FED-STD-313 lists specific FSC's for which Material Safety Data Sheets must be submitted for all items, and additionally provides criteria for judging whether Material Safety Data Sheet submission is required for other materials. Where necessary, Section 6 of the specification will contain a note to the contracting officer to identify activities that need to receive copies of the Material Safety Data Sheets (see 5.3.6.14).

4.3 Data requirements.

- a. New or revised specifications in the FSGs and FSCs prepared to address physical commodities to be purchased shall not normally contain data generating requirements (see DOD-STD-963), except by reference. Referenced data shall be limited to those addressed in existing standards, specifications, and Data Item Descriptions (DID's) listed in the AMSDL. The referenced data requirement shall be located in Section 3, 4, or 5 of the specification, as appropriate, and shall be worded similar to the following example: "When specified in the contract or order, a test report shall be prepared (see 6.2.2)." In section 6 of the specification, provide the information as specified in paragraph 5.3.6.4.

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- b. Specifications shall not contain requirements for the delivery of data. Delivery of any of the data cited in a specification can only be obtained:

- (1) When the data is specified on DD 1423 Contract Data Requirements List (CDRL) in the contract or
- (2) When the CDRL is optional (FAR 27.410-6 (DoD Supplement)), the data is specified in the contract or acquisition documents.

4.3.1 Data Item Descriptions (DID) (DD Form 1664).

- a. The preparing activity of a military specification is responsible for ensuring that all DIDs, for which the specification is the source document, are prepared, revised, coordinated, approved, and submitted for printing and distribution concurrently with the specification.
- b. DIDs are not required to obtain the data necessary for qualification, qualification retention, and maintenance of failure rate for established reliability of commodities nor will such data be listed on the DD Form 1423.

4.3.2 Approval of data requirements. Specifications which originate data requirements are source documents (see DOD-STD-963), and a copy shall be forwarded to the AMSDL office (see SD-1) during coordination for review and assignment of an AMSC number (see 5.2.8).

4.3.3. Rights in data. The acquisition of rights in technical or other data shall not be made through the medium of a specification. See DOD FAR Supplement, Part 27, Subpart 27.4, for procedures for obtaining such rights through appropriate contract clauses.

4.3.4 Use of copyright material. Copyright or patent material shall not be included in a specification without the prior consent of the copyright or patent owner. When such consent is obtainable, a credit line, if requested by the copyright or patent owner, must be placed in the specification close to the material involved.

4.4 Part numbering in specifications. Military specifications shall include a specification-based part numbering system to identify the parts or items covered.

- a. For detail specifications not having associated general specifications, the part numbering system shall be as follows:

M or D 12345 - 1 Example of part number: M12345-1 or D12345-1

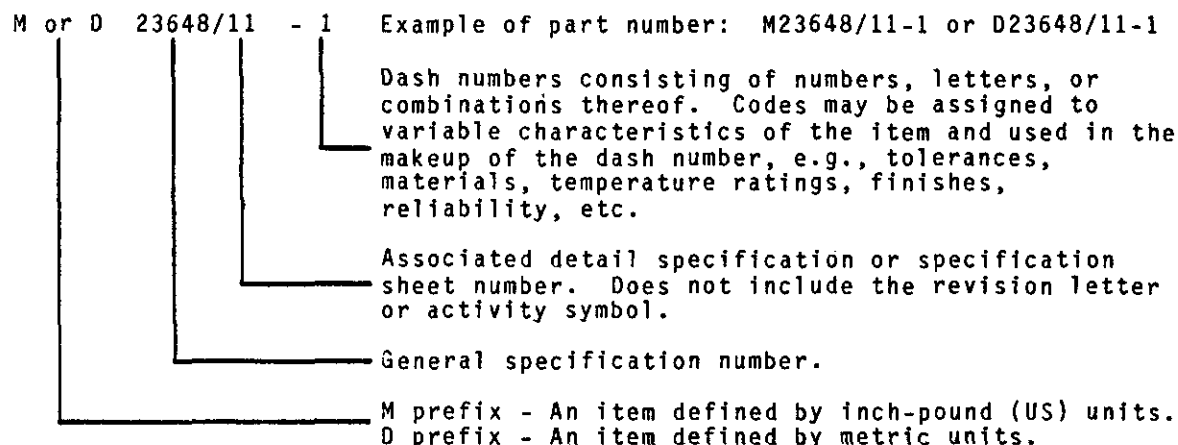
Dash number consisting of numbers, letters, or combinations thereof. Codes may be assigned to variable characteristics of the item and used in the makeup of the dash number, e.g., tolerances, materials, temperature ratings, finishes, reliability, etc.

Specification number. Does not include the revision letter or activity symbol.

M prefix - An item defined by inch-pound (US) units.
D prefix - An item defined by metric units.

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- b. For associated detail specifications or specification sheets, the part numbering system shall be as follows:



Part numbers shall be kept short and shall not exceed 15 characters except for deviations approved in writing by DMSSO. Part numbering shall be uniform for all parts covered by the same specification; uniformity is also preferred for all part numbers within the same group of closely related items. This system shall be used for parts in all military specifications for which part numbers do not already exist when the specifications are revised. It need not be applied retroactively to specifications wherein a part numbering system is already in use; however, the adoption of specification-based part numbers should be considered upon revision of such specification. When using "Used in lieu of" documents, the "00" prefix shall not be included as a part of the part number.

4.5 Bulk material identification. Military specifications for bulk materials shall specify definitive identification numbers for the various commercially available sizes and other sizes as needed. The number will be structured identically to the present part number except that numbers will begin with the letter 'B'. Bulk Material Identification Numbers (BMIN) will be assigned in the same product increments as the items to be stocked. BMIN's will not exceed 15 characters. If it is considered that such a limitation cannot be adhered to, a proposed deviation with detailed justification will be submitted through the DepSO to DMSSO for approval. BMINs shall not be used for parts, subassemblies, equipments, or weapon systems.

4.6 Type designations. If practicable and a definite need has been established, type designations may be used to supplement basic item names in titles of specifications. When used they shall be standardized for a category of equipment, such as communication, electronic, photographic, aeronautical support, aircraft, missiles, engines (rocket, reciprocating aircraft), trucks, etc. Only one type designation will be assigned for items or equipment physically and functionally interchangeable. Type designations will not be used for the purpose of assigning part numbers to components and parts. They will be used for designating the class, grade, or type of an item or equipment for specification purposes only. Existing specifications using type designations will not be amended for the sole purpose of deleting type designations.

4.6.1 Systems for type designations. In standardizing type designations, industrial or commercial systems of designations which have industry wide acceptance and which are acceptable for military use without modification will be adopted without establishing military type designations. In the absence of existing widely accepted type designations, the military specification shall establish the methods or systems of type designations and the methods and procedures for assigning them in a category of items or equipment.

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4.7. Contractual and administrative requirements. A specification shall not include contractual requirements which are properly a part of the contract, such as cost, time or place of delivery, methods of payment, liquidated damages, delivery of data, requirements for submission, approval, and distribution for data, reports, plans, or methods, actions to be taken by the government for accepting nonconforming material, etc. Contractual, administrative, and warranty provisions shall not be made part of the requirements in the specification. Contractual and administrative provisions considered essential for acquisition may be indicated as "ordering data" or "features to be included in bids or in the contract" in section 6 of the specification. MIL-Q-9858 and MIL-I-45208 concerning the administration of the contractor's Quality Program and Inspection System shall not be included in specifications covered by this standard. The specification also shall not prescribe mandatory requirements or instructions for the Government Contract Administration Office (CAO). These include directions relating to quality assurance functions such as inspections, review, certifications, and technical approvals. However, special circumstances may require instructions that involve the CAO. When this is necessary the directions contained in the specification will be coordinated with appropriate contracting authority.

4.8 Classified material. Specifications are working documents and should be designed to avoid unnecessary restrictions in their dissemination. Specifications containing classified information shall be appropriately marked and handled in accordance with security regulations. The title of standardization documents shall not be classified.

4.9 Language style. The paramount consideration in a specification is its technical essence, presented in language free of vague and ambiguous terms, using the simplest words and phrases that will convey the intended meaning. Inclusion of essential information shall be complete, whether by direct statements or reference to other documents. Consistency in terminology and organization of material will contribute to the specification's clarity and usefulness (see 5.3). Sentences shall be short and concise. Punctuation should aid in reading and prevent misreading. Well-planned word order requires a minimum of punctuation. When extensive punctuation is necessary for clarity, the sentence(s) should be rewritten. Sentences with compound clauses shall be converted into short and concise separate sentences.

4.9.1 Capitalization, spelling, etc. Except where Department of Defense requirements differ, the United States Government Printing Office Style Manual shall be used as a guide to capitalization, spelling, punctuation, syllabification, compounding words, and tabular work, etc.

4.9.2 Abbreviations. When using abbreviations, those listed in applicable standards shall be used, except that abbreviations in titles of specifications shall be in accordance with Cataloging Handbook H6. The only other abbreviations employed shall be those in common usage and not subject to misinterpretation. Abbreviations for use in specifications and associated documents shall be in accordance with MIL-STD-12, where applicable. Abbreviations not covered by MIL-STD-12 shall be in accordance with the GPO Style Manual. The first time an abbreviation is used in text, it shall be placed in parentheses and shall be preceded by the word or term spelled out in full: e.g., circuit (ckt), frequency converter (freq conv), maximum working pressure (mwp). The rule does not apply to abbreviations used for the first time in tables and equations. Abbreviations used in figures and tables, but not referenced in the text or in any other portion of the specification, shall be spelled out in a footnote to the applicable figure or table.

4.9.3 Symbols. The only symbols normally used in text are degree ($^{\circ}$), the "+", "-", "±" to express ranges or tolerances, and metric symbols. Other symbols may be used in equations and tables and shall be in accordance with ANSI/IEEE 260-78. Graphic symbols, when used in figures, shall be in accordance with DOD adopted or accepted standards. Any symbol formed by a single character should be avoided if practicable, since an error destroys the intended meaning. Metric symbols need not be spelled out. The symbols for physical quantities (both metric and inch-pounds) often thought of as abbreviations, may be used in accordance with ANMC 78-1-78.

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4.9.4 Proprietary names. Trade names, copyrighted names, or other proprietary names applying exclusively to the product of one company shall not be used unless the item(s) cannot be adequately described because of the technical involvement, construction, or composition. In such instances, one, and if possible, several commercial products should be included, followed by the words "or equal" and a description of required salient features or particular characteristics to assure wider competition and that bidding will not be limited to the particular make specified. The same applies to manufacturer's part numbers or drawing numbers for minor parts when it is impracticable to specify the exact requirements in the specification. The salient features or particular characteristics required to define "or equal" shall be included. The use of "brand name or equal" is discouraged but, when determined to be necessary, shall be supported by written justification and retained in the permanent document file.

4.9.5 Commonly used words and phrases. Certain words and phrases are frequently used in a specification. The following rules shall be applied:

a. Referenced documents shall be cited thus:

- (1) "conforming to . . ."
- (2) "as specified in . . ."
- (3) "in accordance with . . ."

In any case, use the same wording throughout a given document and a series of directly related documents.

- b. "Unless otherwise specified" shall be used to indicate an alternative course of action. The phrase shall always come at the beginning of the sentence, and, if possible, at the beginning of the paragraph. This phrase shall be used only when it is possible to clarify its meaning by providing a reference such as to section 6 of the specification for further clarification in the contract or reference to another paragraph in the specification.
- c. When making reference to a requirement in the specification and the requirement referenced is rather obvious or not difficult to locate, the simple phrase "as specified herein" is sufficient and should be used.
- d. The phrase ". . . to determine compliance with . . ." or ". . . to determine conformance to . . ." should be used in place of ". . . to determine compliance to . . .". In any case, use the same wording throughout.
- e. In stating limitation, the phrase shall be stated thus: "The diameter shall be not greater than . . ." for maximum limit, or "The diameter shall be not less than . . ." for minimum limit.
- f. Capitalize the words "drawing", "bulletin", etc., only when they are used immediately preceding the number of the document. However, specifications, standards, and handbooks will be identified in the text only by their document identifier; thus, MIL-E-000 (not: "specification MIL-E-000").
- g. Use the following prepositional phrases when referencing figure and table information: "on a figure" or "in a table".

4.9.6 Use of "shall", "will", "should", and "may".

4.9.6.1 "Shall". "Shall", the emphatic form of the verb, shall be used throughout sections 3, 4, and 5 of the specification whenever a requirement is intended to express a provision that is binding. For example, in the requirements section, state that "The indicator shall indicate ..." and in the test section, section 4 "The indicator shall be turned to zero, and 220 volts of alternating current shall be applied." For specific test procedures, the imperative form may be used, provided the entire method is preceded by "The following test shall be performed" or related wording. Thus, "Turn the indicator to zero and apply 220 volts of alternating current."

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4.9.6.2 "Will". "Will" may be used to express a declaration of purpose on the part of the Government. It may be necessary to use "will" in cases when simple futurity is required.

4.9.6.3 "Should and may". Use "should" and "may" whenever it is necessary to express nonmandatory provisions. The term "should" is used in the note section, section 6, in lieu of "shall".

4.9.7 Indefinite terms. The terms "and/or", "etc.", "e.g.", and "i.e." shall not be used in specifications. In specifications where definitive, precise language is imperative, indefinite terms have no place.

4.9.8 Use of "flammable" and "nonflammable". The terms "flammable" and "nonflammable" shall be used in specifications in lieu of terms "inflammable", "unflammable", and "noninflammable".

4.10 Use of decimals. Decimals shall be used in documents instead of fractions wherever possible.

4.11 Metric practices. Metric practices shall conform to FED-STD-376. When an existing inch-pound (or non-SI metric) standardization document is revised, a decision shall be made as to whether metrication is appropriate, and if so, how to metricate such a document (refer questions to the DMSSO). In general, the following methods shall be used:

- a. New parallel document. For very complex documents filled with many conversion-susceptible measurements, the logical method is to issue a new SI metric standardization document (with a new DOD number) following the guidance herein. Great care shall be used to assure that the new document is hard metric, and that equivalents are carefully selected. After that, the basic document and the metric document would be revised concurrently, until such time as the inch-pound document is no longer required and is canceled.
- b. Metric appendix. For less complex documents, or for very complex documents where retention of the original document number is considered necessary, a hard metric appendix may be prepared. The basic document would remain in inch-pound units and refer to the appendix for metric information. The appendix shall refer to the basic document for technical features and cite only the metric equivalents, exercising care to assure that equivalents are carefully selected.
- c. Metric notes. For relatively simple documents with only a few measurement units, metrication may be handled by appropriate notes, by one or more footnotes, or by use of conversion tables. In some cases, simply citing the conversion factor(s) will be sufficient; however, great care is required to avoid a mere soft conversion.

4.11.1 Preferred metric units. Unless otherwise specified, the preferred metric units for commonly used quantities shall be in accordance with FED-STD-376. Optimum rationalization shall be achieved in the preparation of standardization documents. Metric sizes will generally be expressed in whole numbers. There shall be no soft conversion of units merely for the sake of conversion.

4.11.2 Dual dimensions. The use of dual dimensions (i.e., both metric and inch-pound measurements) on drawings or other pictorial illustrations to be used in a specification shall be avoided unless it is determined that such usage is beneficial. The use of tables to translate inch-pound units to metric equivalents is acceptable (see figure 16). For text material, when preference is given in the specification to inch-pound units, acceptable metric units may be shown in parentheses. When preference is given to metric units, inch-pound units may be omitted or included in parentheses. In general, where it has long been standard practice to cite metric units alone (such as citing temperatures only in degrees Celsius), inch-pound equivalents may be omitted. A specific repetitive equivalent, for example 1.00 inch (25.4 mm), need be inserted only the first time it appears in each paragraph of a standard.

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4.12 Underlining. Portions of paragraphs shall not be underlined and words or phrases shall not be capitalized for the sake of emphasis with the exceptions noted in 4.13.1. All of the requirements are important in obtaining the desired product or service. Preambles and acquisition notes shall not be underlined. Table and figure titles shall be underlined (see 4.15.1 and 4.16.1).

4.13 Paragraph numbering. Each paragraph and subparagraph shall be numbered consecutively within each section of the specification, using a period to separate the number representing each breakdown.

Example for section 3 of commodities specification:

```
Requirements - - - - - 3.
First paragraph - - - - - 3.1
First subparagraph - - - - - 3.1.1
Second paragraph - - - - - 3.2
First subparagraph - - - - - 3.2.1
Second subparagraph - - - - - 3.2.2
```

Itemization within a paragraph or subparagraph shall be identified by lower-case letters to avoid confusion with paragraph numerals. For clarity of text, paragraph numbering should be limited to three sublevels, unless additional sublevels are unavoidable.

4.13.1 Paragraph identification. Each paragraph and subparagraph shall be given a subject identification. The first letter of the first word in the paragraph and subparagraph identification shall be capitalized. Paragraph and subparagraph identifications shall be underlined.

4.14 Specification identifier and page number. The specification identifier shall be placed on each page, at the upper right corner of the first page and at the upper center of each successive page. On all specifications, except specification sheets, all pages except the first page shall be numbered with consecutive Arabic numbers at the bottom center of each page. On fold-out pages and other pages which must unavoidably be left blank, the page before the blank page shall be numbered with both page numbers, for example, 23/24. Information for page numbering specification sheets is shown in 5.11.7; for amendments in 5.9.11; and for supplements in 5.8.7.

4.15 Tables. A table shall be used when information can thus be presented more clearly than in text. Elaborate or complicated tables shall be avoided. References in the text shall be sufficiently detailed to make the purpose of the table clear. The table shall be restricted to information pertinent to the associated text. The tables shall be placed immediately following or within the paragraph containing the first reference. If space does not permit, the table may be placed on the following page. If tables are numerous or their location would interfere with correct sequencing of paragraphs and cause difficulty in understanding or interpretation, they may be placed in numerical order at the end of the specification and before any figures, appendix, or index. Information included in tables should not be repeated in the text.

4.15.1 Table numbering and title. All tables shall be numbered consecutively throughout the document with Roman numerals in the order of their reference in the text, even if only one table appears in the document, and shall be titled. The word "TABLE" shall be in full capitalization, followed by the Roman numeral and a period followed by the underlined title. The first letter of the title shall be capitalized. Table titles shall be centered above the table and shall be on the same line with the table number. If the title is too long to be typed on one line, the second line shall be aligned with the first letter of the title. If a listing or tabulation appears within a paragraph as an integral part of that paragraph, and obviously does not require a title, the listing or tabulation need not be titled.

4.15.2 Table format. Tables shall be boxed in and ruled horizontally and vertically as necessary to assure clarity of the table contents. Lines may be typed or drawn. The contents of a table shall be organized and arranged to show clearly the significance and relationship of the information. If a table is of such width that it would be impractical to place it in its normal vertical position, it may be rotated counterclockwise 90 degrees. Large tables may be divided and, if possible, printed on facing pages.

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4.15.3 Continuation of tables. If a table is continued to additional page(s), a horizontal line shall not be drawn at the end of the page, unless the table is a group or method type that requires a line of separation between the groups. When lengthy group testing is being documented, the group shall not be split and carried to the next page. The entire group shall be completed on one page. When the table is continued to the next page, the title shall be repeated and a dash followed by the word "Continued" at the end of the title; e.g., "TABLE II. Qualification inspection - Continued." The entire heading shall be repeated at the top of the page on which the continuation is presented. The table shall be closed with a horizontal line when all information has been entered.

4.16 Figures. A figure shall be clearly related to, and consistent with, the text of the associated paragraph. Dimensioning practices for outline drawings shall comply with ANSI Y14.5. (Figures should not be confused with numbered and dated drawings which shall not be an integral part of the specification but shall be incorporated by reference and listed in section 2 of the specification.) The figures shall be placed immediately following or within the paragraph containing the first reference to the figure. If figures are numerous or their location would interfere with correct sequencing of paragraphs and cause difficulty in understanding or interpretation, they may be placed in numerical order at the end of the specification following any tables and before any appendix or index. If the figure is of such width that it would be impracticable to place it in its normal vertical position, it may be rotated counterclockwise 90 degrees.

4.16.1 Figure numbering and title. Figures shall be numbered consecutively throughout the document with Arabic numerals in the order of their reference in the text, even if only one figure is referenced in the document, and shall be titled. Figures added after the highest numbered figure are assigned the next higher Arabic numeral. The word "FIGURE" shall be in full capitalization, followed by the Arabic numeral, a period, and the underlined title. Only the first letter of the title shall be capitalized. Figure titles shall be centered below the graphic and, if possible, shall be on the same line with the figure number. If the title of the figure is too long to be typed on one line, the second line shall be aligned with the first letter of the title.

4.16.2 Continuation of figures. Large figures may be broken and, if possible, printed on facing pages. When a figure is continued on the next page, the number and title shall be repeated below the figure with a dash followed by the word "Continued" at the end of the title.

4.17 Footnotes. Footnotes may be used as indicated below.

4.17.1 Footnotes to text. Footnotes to the text should be avoided. Their purpose is to convey additional information that is not properly a part of the text. A footnote to the text shall be placed at the bottom of the page containing the reference to it. Footnotes shall be consecutively numbered throughout the specification with Arabic numerals. The Arabic numeral shall also be used to identify the reference in the text.

4.17.2 Footnotes to tables. Footnotes may contain mandatory information that cannot be presented as data within a table. Number footnotes separately for each table as they appear in the table. The symbol "1/", "2/", etc. shall be used and shall be placed immediately following a word and preceding a numeral requiring the footnote. Numbered footnotes are listed in order immediately below the table. Where numerals will lead to ambiguity (for example in connection with a chemical formula), superior letters, daggers, and other symbols may be used.

4.17.3 Notes to figures. Notes to figures are numbered separately from textual footnotes within the document. Drafting or dimensional notes are numbered consecutively and placed below the figure and above the title. The word "NOTES:" is typed in the left margin of the figure and the explanatory information is typed in Arabic number sequence under NOTES:. Example:

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.

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4.18 Foldouts. Foldouts shall be avoided except where required for legibility. When foldouts are required, they should be grouped in one place, preferably at the end of the specification (in the same location as figures) and suitable reference to their location shall be included in the text.

4.19 Definitions in specifications. Definitions shall be listed in section 6. When this is done, a parenthetical phrase reference to the applicable paragraph in section 6 shall follow the terms to indicate the existence of a definition, e.g. (see 6. . .). Where standard definitions exist in DOD documents the definition should be quoted word for word with a reference to the source.

4.20 Cross-reference. References to parts within the specification shall be held to a minimum. Cross-reference shall be used only to clarify the relationship of requirements within the specification and to avoid inconsistencies and unnecessary repetition. When the cross-reference is to a paragraph, subparagraph, etc., within the specification, the cross-reference shall be only to the specific paragraph number. The word "paragraph" shall not appear, e.g., (see 3.1.1).

4.21 References to other documents. Referencing is the approved method for including requirements in specifications where this eliminates the repetition of requirements and tests that are adequately set forth elsewhere. References shall be restricted to documents that are specifically and clearly applicable to the specification, that are current and in the case of military specifications, standards, or handbooks, are available from the Department of Defense Single Stock Point (DODSSP). Care shall be taken in writing the specification to indicate in a positive manner the extent to which each referenced document is applicable. The specifications shall also include any special details such as type, or class called for by the referenced document. Reference to paragraph number in other documents shall not be made. The reference shall be to a title, method number, specifically identified requirement, or other definitive designation. Care shall be exercised in referencing to insure that the referenced document has not been canceled or superseded or that the referenced requirement has not been modified or deleted.

4.21.1 Limitation on references. A specification shall not contain anything in conflict with provisions in referenced documents unless it is desirable to make special exceptions to such provisions, in which case the specific provision to which exception is made shall be stipulated. Care shall be taken to avoid unnecessary reference to other standardization documents and document "tiering". It is not intended that other documents be made a part of a specification by reference unless the items, materials, tests, or other services in the referenced documents are required in the quality and detail which these documents are designed to produce. The use of phrases such as "to the extent specified in the contract" or "when required by the statement of work" in imposing referenced documents is to be avoided. The applicability of all documents listed in section 2 of a specification shall be defined in sections 3, 4, or 5, as appropriate. The whole of a listed document shall not be made applicable by reference unless all of its provisions are clearly required. When a document or portion of a document is used as a reference, the extent of its applicability as a requirement or as guidance only shall be specifically indicated. When a reference to a document can be quoted word for word without adversely affecting the technical essence or readability of the specification (normally less than a page in content), it may be quoted without referencing the document in the text and section 2.

4.22 Preparation of manuscripts for reproduction. Manuscripts shall be prepared for reproduction. If composition (typesetting) is required, the approved standardization document manuscript shall be typed either single or double spaced. When photo-offset printing is intended, the standardization document manuscript shall be typed, single spaced on one side only, on white bond paper, or whenever possible, on DD Form 1183 (Proportional Spacer Machine Typing Layout Sheet).

4.23 Reproduction of documents. Preparing activities shall ensure that all applicable standardization documents are dispatched through established channels to the Naval Publications and Forms Center for reproduction and distribution no later than 30 days after the date of approval, or preferably, concurrent with the date of approval.

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5. DETAILED REQUIREMENTS

5.1 General. This section contains detailed format requirements for preparing the sections of a specification as well as the associated documents, namely - supplement, amendment, notice, associated detail specification, and the specification sheet.

5.2 First page information. Drafts of proposed military specifications shall carry the following note at the top of the first page:

NOTE: This draft, dated (date) prepared by (preparing activity), has not been approved and is subject to modification. DO NOT USE FOR ACQUISITION PURPOSES. (Project)

When the preparing activity has assigned an agent the responsibility of preparing the draft, the following note shall be carried at the top of the first page:

NOTE: This draft, dated (date) prepared by (name of agent), as agent for (preparing activity), has not been approved and is subject to modification. DO NOT USE FOR ACQUISITION PURPOSES. (Project)

This note shall be removed from the camera ready master after approval and prior to reproduction.

5.2.1 Heading. Military specifications shall have the heading "MILITARY SPECIFICATION" centered above the title.

5.2.2 Titling the specification. The approved basic or item name of the material, product, or equipment covered by the specification shall be the first part of the title of commodity specifications, specifications for packaging of commodities, or those related to commodities. Item names in titles shall conform to Cataloging Handbook H6. When there is no approved item name, titles for specifications shall be selected on the basis of agreement between standardization and cataloging organizations of the preparing activity. The basic noun in the title shall be in the singular form if the specification covers only one product, and in the plural form if the specification covers more than one product, i.e., various types, grades, classes, sizes, or capacities, etc., except where the only form is plural or where the nature of the product unavoidably requires the plural form. For general specifications the words "GENERAL SPECIFICATION FOR" shall be the closing phrase of the title. When applicable, the word "METRIC", enclosed in parentheses, shall appear after the title and preceding the words "GENERAL SPECIFICATION FOR".

5.2.2.1 Modifiers. The title of the specification shall include, where appropriate, and in addition to the approved basic or item name, the minimum number of parenthetical modifiers as necessary to identify the coverage of the specification and to distinguish it from other specifications covering similar items. Nondefinitive modifiers shall not be used.

5.2.3 Identification of military specifications. Military specifications shall be identified and dated as specified in the following paragraphs.

5.2.3.1 Coordinated military specification identifications. Coordinated military specifications shall be identified by a specification identifier composed of the letters "MIL" or "DOD" followed by a hyphen and a capital Gothic letter (the first letter of the title), and another hyphen and a number (Arabic numbers) (see 4.14). This number is assigned by the preparing activity in accordance with departmental procedures, from blocks of numbers allocated to the departments. Metric specifications shall be identified by the symbol 'DOD' and the word "METRIC" shall be placed in a rectangular box above the specification identifier on the first page.

Examples:

MIL-A-123
28 October 1980

| |
|-----------|
| METRIC |
| DOD-A-456 |

23 April 1980

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- a. The "MIL" symbol shall not be changed to "DOD" on any standardization document that is already numbered.
- b. The "DOD" symbol will be applied to new hard metric documents and other new documents that are usable in a metric environment.
- c. Existing documents already changed to the "DOD" symbol will not revert to the "MIL" symbol.
- d. Exceptions to the above will be considered by the DMSSO on a case-by-case basis.

5.2.3.1.1 Document identifiers for specifications associated with a general specification. As an exception to the numbering system explained in 5.2.3.1, each associated detail specification or specification sheet, which refers to and is dependent upon a general specification for requirements common to the items covered in several related specifications, shall be identified by the general specification identifier (less revision letter or suffix), and with an additional identification in the form of a serial number indicating its position in order of promulgation added after a virgule; e.g., MIL-B-18/25.

5.2.3.1.2 Date of specification. The date of approval shall appear under the specification identifier on the first page only.

5.2.3.2 Limited coordination military specification identification. Limited coordination military specifications shall be identified in the same manner as coordinated military specifications, except that a parenthetical suffix to the specification identifier containing the symbol designation of the preparing activity or service shall be added consistent with the degree of coordination of the document. Dates will be assigned as for fully coordinated documents.

Examples:

| | <u>METRIC</u> | | |
|-----------------|-----------------|--------------------|-------------------|
| MIL-A-12345(ER) | DOD-A-31549(EC) | MIL-W-16878E(NAVY) | MIL-B-34566(USAF) |
| 23 April 1980 | 1 July 1979 | 10 August 1981 | 9 March 1973 |

5.2.3.3 Identification of "USED IN LIEU OF" limited coordination military specifications. A "USED IN LIEU OF" limited coordination military specification bears the same title as the coordinated military specification on which it is based (see 5.2.2). No more than one "USED IN LIEU OF" specification shall be outstanding per department for any coordinated specification. In addition, such a specification shall be clearly identified through four indicators as follows:

- a. The specification number shall be prefixed with two zeros.
- b. The next revision letter and the symbol designation of the preparing activity for the "USED IN LIEU OF" specification (see 5.7).
- c. The notation "USED IN LIEU OF" shall be used instead of "SUPERSEDING" in the supersession information (see example).
- d. The preamble set forth on the first page of the specification, under the title (see 5.2.5.3).

Example:

| |
|------------------------|
| MIL-P-0015280C(SH) |
| 23 April 1980 |
| <u>USED IN LIEU OF</u> |
| MIL-P-15280B |
| 19 August 1975 |

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5.2.4 Supersession. A coordinated standardization document supersedes all prior issues, revisions, and amendments of that document. With concurrence of the Military or Federal Agencies concerned, other documents may also be superseded by a coordinated document which incorporates essential requirements. Thus, the superseding document reflects a degree, or range of coordination equal to or greater than any document which it supersedes. A limited coordination or "Used-in-lieu-of" specification shall not include the term "SUPERSEDING" with respect to an existing coordinated specification in the military series, since coordinated documents remain in effect until canceled or revised with the concurrence of the agencies concerned. A heavy line shall separate the number and date of the superseding document from the supersession data. The word "SUPERSEDING" shall be entered below the separation line, followed by the number and date of the superseded document, indicating that all activities concerned are to use the superseding document. As illustrated elsewhere in this section, the words "USED IN LIEU OF", are used to introduce revision data applicable to the preparing activity and to others at their option. For example:

MIL-B-12345B
 11 August 1973
 SUPERSEDING
 MIL-B-0012345A(SH)
 6 June 1966
 MIL-C-56789B
 20 January 1970

When more than three documents are superseded, or when a specification is superseded in part, or when it is desirable to present special information for clarity, the supersession data and special information should be placed in section 6 of the specification. The following notation should then appear under or in lieu of supersession:

Example: Superseding
 more than three
 documents:

MIL-A-123C
 20 August 1972
 SUPERSEDING
 (See section 6)

Example: Superseding in part:

MIL-A-120C
 20 August 1972
 SUPERSEDING
 MIL-A-12345C (IN PART)
 4 January 1970
 (See section 6)

When a specification supersedes a document of a different number, the cancellation notice for the superseded document should be processed for issuance simultaneously with the superseding document. The approval date of the superseding specification and the cancellation notice should be the same.

5.2.4.1 "Inactive for new design" note. When specifications are made inactive for new design concurrent with a revision action, the following note shall appear below the title and above the preamble on the first page and be boxed for emphasis. Superseding documents for new design shall be noted in the box when applicable.

| | |
|-------------------------------|--------|
| Inactive for new design after | (date) |
| For new design use MIL-X-000. | |

5.2.5 Preambles.

5.2.5.1 Preamble for coordinated military specifications. For coordinated military specifications, the following preamble shall appear immediately under the title to show promulgation by the Department of Defense:

"This specification is approved for use by all Departments and Agencies of the Department of Defense."

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5.2.5.2 Preambles for limited coordination military specifications. For limited coordination military specifications, one of the following preambles, as appropriate, shall appear immediately under the title:

"This specification is approved for use within (Preparing Activity), Department of the (), and is available for use by all Departments and Agencies of the Department of Defense."

"This specification is approved for use within the Department of the () and is available for use by all Departments and Agencies of the Department of Defense."

5.2.5.3 Preamble for "USED IN LIEU OF" specifications. For "USED IN LIEU OF" specifications, the following preamble shall appear immediately under the title:

"This military specification has been prepared by the (Preparing Activity) based upon currently available technical information but it has not been approved for promulgation as a coordinated revision of (document identifier). It is subject to modification. However, pending its promulgation as a coordinated military specification, it may be used in acquisition."

5.2.6 DD Form 1426 note. General specifications and detail specifications in six-section format shall include the following note on the bottom center of the first page immediately above the FSC designation. The note shall be boxed for emphasis.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: (insert name and address of the preparing activity) by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

5.2.7 Designation of federal supply class (FSC), group (FSG), or area assignment on specifications. The specification shall be assigned an FSC or FSG as defined in the Cataloging Handbook H2-1, Part 1 Groups and Classes (or to a standardization area as defined in the Standardization Directory, SD-1). The applicable FSC, FSG, or area assignment, shall appear in the lower right corner of the first page of the specification. The symbol "GP" shall follow the FSG number, (i.e., 59GP) when the FSG number identifies the assignment or project. Specifications covering more than one FSC shall be designated with the applicable FSG or with the appropriate standardization area if more than one FSG is covered. Dual or multiple FSC, FSG, or standardization area designations shall not be used.

5.2.8 AMSC number. The assigned AMSC number will be cited at the bottom left of the first page of the manuscript submitted to the Naval Publications and Forms Center (NPFC) for printing. All new or revised specifications which are in area assignments but do not originate data requirements are not source documents and will bear the notation "AMSC N/A." NPFC will print new or revised area assignment specifications only if they have an AMSC number or the notation "AMSC N/A" on the first page. If a specification in an area assignment is not a source document, the preparing activity of the specification will include a written certification to that effect in the document permanent file.

5.2.9 Distribution statement. Unless classified, all new or revised military and federal specifications, standards, and handbooks prepared by the DOD, will cite the appropriate distribution statement on the line immediately below the FSC, GP, or AREA designation justified to the right hand margin. The distribution statement shall be placed on all coordination drafts, as well as the camera ready copy of the document. Except in special situations where there has been prior coordination with the appropriate DepSO and DMSSO, the statement will be as follows:

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

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5.3 Sectional arrangement of a specification. A specification shall contain six numbered sections, titled and numbered as shown.

1. SCOPE
2. APPLICABLE DOCUMENTS
3. REQUIREMENTS
4. QUALITY ASSURANCE PROVISIONS
5. PACKAGING
6. NOTES

Subject matter shall be kept within the scope of the sections so that the same kind of requirements or information will always appear in the same section of every specification. If there is no information pertinent to a section, the following shall appear below the section heading:

"This section is not applicable to this specification."

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5.3.1 SECTION 1

5.3.1.1 Scope. The statement of the scope shall repeat the item name and its modifiers and consist of a clear, concise abstract of the coverage of the specification and may include, whenever necessary, information as to the use of the item other than specific detailed applications covered under "Intended use" (section 6). This brief statement shall be the beginning paragraph in section 1 of the six-section specification. As applicable, reference may be made to information contained in section 6 (see figure 2). The scope should not contain requirements which should be a part of section 3. If additional information is desired on preparing abstracts, see ANSI Z39.14. Figures will not be included in the scope.

5.3.1.2 Classification. Designation of classification such as types, grades, classes, etc., when applicable, shall be listed under this heading in section 1 and shall be in accordance with accepted industry practice. The same designation shall be used throughout the specification. When more than one type, grade, class, etc., is listed, each shall be briefly defined. When only one (type, grade, or class) is covered, a statement to this effect shall be included in the scope paragraph, and the classification paragraph omitted. The types, grades, classes, etc., shall remain constant from revision to revision of the specification unless a change is necessitated by a valid reason such as a change in industry practice. Where the characteristics of an item change enough to affect interchangeability, delete the original designation and add a new type, grade, class, etc. Whenever it becomes necessary to change the designation without changing the characteristics of the item, a cross reference shall be included in section 6 of the same specification indicating the relationship between the old and new designations. This cross-reference shall remain in section 6 in all successive revisions identifying designations in all revisions since the original designation change. Since such changes require cataloging and other record changes, such changes shall be kept to a minimum.

5.3.1.2.1 Other classifications. If the terms, types, grades, and classes do not serve accurately to classify the differences as indicated above, other terms such as color, form, weight, size, power supply, temperature rating, condition, unit, enclosure, rating, duty, insulation, kind, and variety, etc., are suitable.

5.3.1.2.2 Specification part numbers. When the specification includes a requirement for part numbering, section 1 shall include a paragraph entitled, "Part Number" which will either describe how the part number is constructed or refer to the appropriate associated document or appendix.

5.3.1.3 Classification for reliability level identification. When a specification contains a multilevel reliability requirement, section 1 of the specification shall identify the levels covered. See appendix.

5.3.1.4 Use of international standardization agreement code numbers. In designating the classification by types, grades, classes, etc., the appropriate NATO or other international standardization agreement code numbers shall be included in section 1 whenever the specification requirements are consistent with such an agreement.

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5.3.2 SECTION 2

5.3.2.1 Listing of references. Section 2 is used to list those documents referenced in the specification. Government specifications, standards, adopted nongovernment standards, international standardization documents, handbooks, drawings, and approved publications may be referenced in military specifications. Other nongovernment documents promulgated by nongovernment standards bodies may also be referenced. Government regulations or codes, such as Federal Insecticide, Fungicide, and Rodenticide Act, Drug and Cosmetic Act, Federal Hazardous Substances Labeling Act, Atomic Energy Act, and Department of Transportation regulations shall be referenced in specifications where applicable. Military Activity Regulations (i.e. AR 702-3, Army Material Reliability, Availability, and Maintainability (RAM)) and other documents not readily available from or through the contracting activity shall not be referenced in the specification. Care shall be taken in referencing nongovernment publications to assure the availability of copies and prior approval of the copyright owner. All and only those documents identified and referred to in sections 3, 4, and 5 of the specification shall be listed in section 2 (see figure 3). References shall be confined to documents currently available at the time of issuance of the specification. Figures bound integrally with the specification shall not be listed in section 2 unless they are reduced-size copies of drawings provided in the specification for information only and use of the full size drawings is normally required with the specification.

5.3.2.1.1 Government documents. Referenced Government documents shall be listed by document title and identifier excluding revision letters (unless otherwise specified), or suffix (preparing activity symbols) and the "00" designation for "USED IN LIEU OF". Titles should be taken from the documents rather than an index. Government SPECIFICATIONS, STANDARDS, HANDBOOKS, DRAWINGS, and PUBLICATIONS as applicable shall be listed numerically (except Federal specifications which shall be listed alpha-numerically) under these headings and in individual groups such as Federal, Military, and Departmental activity (such as Naval Air Systems Command, etc.). These listings shall be included under the following subparagraphs:

"2.1 Government documents.

"2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation."

List only those documents that are applicable and tailor 2.1.1 accordingly.

The following types of publications shall be listed (as applicable) in the order shown after 2.1.1:

Federal Specifications
Military Specifications
Federal Standards
Military Standards
Federal Handbooks
Military Handbooks

If a general specification has associated detail specifications or specification sheets not exceeding five in number, the specifications shall be listed by exact title in numerical sequence following the last military specification listed. MS sheet form standards not exceeding five in number are listed in numerical sequence following the last numbered Military Bookform Standard document. For specifications having six or more associated detail specifications, specification sheets, or MS standards, the supplement shall be identified by a note in 2.1.1 following the military specification listing (see 5.8).

"(See supplement 1 for list of associated specifications.)"

For MS standards, a note in 2.1.1 shall follow the Military Bookform Standard listing.

"(See supplement 1 for list of MS sheet form standards.)"

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"2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation."

The following types of publications shall be listed (as applicable) in the order shown after 2.1.2:

Other Government Documents (e.g., Department of Transportation
Specifications, U.S. Department of Agriculture Specifications, etc.)
Drawings
Publications

List only those documents that are applicable and tailor 2.1.2 accordingly. Where detailed drawings referred to in a specification are listed in an assembly drawing, it is only necessary to list the assembly drawing. The following parenthetical source paragraph (tailored accordingly) shall be included at the end of 2.1.2:

"(Copies of specifications, standards, handbooks, drawings, publications, and other Government documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)"

5.3.2.1.2 Nongovernment standards and other publications. Nongovernment standards and other publications including DOD adopted documents not normally furnished by the Government shall be listed in appropriate order (numerically or alpha - numeric) under the headings of the respective nongovernment standards bodies. The document(s) shall be listed by title and identifier, if applicable. Titles should be taken from the document rather than from an index. This listing shall be included under the following subparagraph.

"2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation."

In addition, the following parenthetical source statement shall follow each individual publication, or each group of related publications which may be obtained from a common source:

"(Application for copies should be addressed to the (name and address of the source).)"

The following source paragraph shall be placed at the bottom of the list when applicable.

"(Nongovernment standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)"

5.3.2.1.3 Order of precedence. In order to avoid confusion in the possible conflict between the requirements of the specification and the documents referenced therein, the following statement shall be included:

"2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), 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."

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5.3.3 SECTION 3

5.3.3.1 Requirements. Section 3 of the specification shall state the necessary requirements (materials, physical and performance characteristics, processes, reliability, human factors, marking, workmanship, etc.) for obtaining the product for which the specification is prepared. The requirements shall represent the actual essential needs of the Government to satisfy the intended use and application. Care should be exercised to ensure that the stated essential needs result in acquisition of acceptable quality products at the least life cycle cost to the Government. Requirements shall be described in a manner to encourage competition and to avoid restrictive features which would limit acceptance to one or a relatively few contractors. Requirements should be so worded as to provide a definite basis for rejection when testing and examination of product reveals the product to be unsuitable for the purpose intended. Care should be exercised to avoid unrealistic or ambiguous requirements and those which conflict with referenced documents (see figure 4).

- a. When preparing a general specification, section 3 shall contain all the requirements which are common to the various items, weapons or systems, etc. Where specification sheets are to be prepared, the applicable general specification shall include the following paragraph in section 3:

"3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between the requirements of this specification and the specification sheet, the latter shall govern." (If a specific requirement specified herein is not required for an item, it shall be so indicated on the specification sheet (e.g., "Shock - N/A.")).

Use the title "Associated detail specifications" or "MS sheets" in place of "Specification sheets" when applicable.

- b. When preparing a specification in the six-section format which has no associated detail specifications, specification sheets, or MS sheets, the first paragraph under requirements may be qualification, first article, materials, chemical composition, etc.
- c. When preparing an associated detail specification which references a general specification, section 3 will contain the requirements only for the particular type covered by that specification. If the specification does cover more than one type, class, grade, etc., it should first specify the general requirements for all types, classes, grades, etc. The differentiating requirements may then be specified for the individual types, classes, grades, etc., in the proper sequence. Each requirement should be covered in a separate paragraph. Where one requirement differs for the various types, classes, grades, etc., a separate paragraph immediately following the general requirements shall be devoted to each type, class, grade, etc. When it is necessary to include additional data, descriptive and appropriate headings shall be used and assigned in logical order.
- d. When preparing a packaging specification covering packaging of items or materials, section 3 shall be prepared in the format similar to that prescribed for section 5 of a commodity specification except that the general requirements are stated first.

5.3.3.1.1 Organization of requirements. Care shall be taken to provide for a systematic arrangement of requirements to facilitate design, manufacturing, and inspections as outlined in figure 1.

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5.3.3.1.2 Sequencing of requirements and tests. When possible, for ease of reference, the test paragraphs in section 4 shall be placed in the same sequence as the requirement paragraphs in section 3. This sequence may be in the order the testing is required. But if this is the case, a requirement to this effect must be placed in the first article or qualification inspection paragraph. An example of sequencing of requirements and tests is as follows:

| Requirement | Test |
|----------------------------------|------------------------------------|
| 3.6 Shock | 4.7.1 Shock |
| 3.7 Vibration | 4.7.2 Vibration |
| 3.8 Noise | 4.7.3 Noise |
| 3.9 Electromagnetic interference | 4.7.4 Electromagnetic interference |

5.3.3.2 Qualification. Where qualification of the product has been properly authorized, the requirement for qualification shall be specified in section 3 of the specification. The following statement shall appear in each specification requiring qualification.

"3. Qualification. (Item) furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable qualified products list at the time set for opening of bids (see 4. and 6.)."

5.3.3.3 Reliability. Reliability is the probability of performance (of a given piece of equipment or part) of a specified function without failure under given conditions for a specified period of time. Reliability requirements shall be included in the specification when omission of such requirements could adversely affect product reliability. However, specified performance and design requirements may result in products having the required inherent reliability. In such instances separately stated reliability may not be necessary. The specification preparer must determine which of the two previous circumstances is applicable. Therefore, a statement concerning reliability requirements will normally be included. If terms such as failure rate or mean time between failure are used, the environmental conditions for testing will be clearly identified in section 4 including specific definitions of failure modes (see Appendix).

5.3.3.4 Standard sample. A standard sample is one considered essential to supplement or illustrate certain requirements of the specification. Use of standard samples should be kept to a minimum, since their use can create problems in determining the acceptability of items subsequently produced. Adequate inspection requires that all requirements be made available such as the approved tolerances of dimensions, performance, etc. A standard sample does not provide all this information but must be supported by specification requirements and drawings. The use of the standard sample shall be limited to the illustration of qualities and characteristics that cannot be readily described because detailed test procedures or design data are not available, or because certain qualities and characteristics cannot be definitively expressed, such as the texture of fur, the color of cloth, or the grain of wood. Further, the specification should state the specific characteristics and the degree to which these characteristics are to be observed in the standard sample. When a standard sample is to be furnished, it shall be so stated in section 3. Standard samples are either on view or the means of obtaining standard samples shall be specified in section 6.

5.3.3.5 First article. First article includes preproduction models, initial production samples, test samples, first lots, pilot models, and pilot lots. Where it is essential that a first article be tested for conformance with specification requirements prior to regular production on a contract, the requirement shall be specified in section 3 under the appropriate paragraph identification. Where it is essential to determine a manufacturer's current knowledge and manufacturing ability of survival and safety equipment such as life rafts, life preservers, personnel parachutes, ejection seats, cockpit capsules, protective flight clothing, and oxygen

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breathing equipment, the requirements to perform first article inspection in addition to qualification inspection may be included in specifications for such items. First article inspection is to be performed in connection with production contracts only. The additional inspection shall not be construed as requalification or acceptance of subsequent production items. The following statement shall appear in each specification requiring first article inspection:

"3. First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4. and 6.)."

5.3.3.6 Materials. Requirements for materials to be used in the item(s) covered by the specification shall be stated under this heading, except where it is more practicable to include the information in other paragraphs. Requirements of a general nature shall be first followed by specific requirements for the material. Definitive documents shall be referenced for the material when such documents cover materials of the minimum required quality.

5.3.3.6.1 Toxic products and formulations. Specifications containing references to toxic products and formulations shall require compliance with the requirements of the applicable regulations promulgated by the appropriate Federal regulatory agency or the official abstract governing such products and formulations. Where it is advisable or necessary for the departmental medical service to determine the safety of the material or the health of personnel, the following requirement shall be included in the specification, including those specifications with qualification requirements:

"The material shall have no adverse effect on the health of personnel when used for its intended purpose. Questions pertinent to this effect shall be referred by the contracting activity to the appropriate departmental medical service who will act as an advisor to the contracting agency."

5.3.3.6.2 Hazardous material. Hazardous items are substances, mixtures, materials, components, or equipments which may cause personal injury, property damage, or environmental deterioration through transportation, use or disposal. These items shall be marked in accordance with the requirements of public law and regulations. The marking shall include as applicable: Name of product; quantity; warning symbol; signal word designating degree of hazard; affirmative statement of hazards; precautionary measures covering actions to be followed or avoided; instructions in case of contact or exposure; antidotes and notes to physicians; instructions in case of fire, spill, or leak; instructions for handling and storage; and disposal instructions. Characteristics and operating hazards which require labeling include: toxic, high toxic, irritant, corrosive, strong sensitizer, combustible liquid, flammable, extremely flammable liquid, dangerously reactive, pressure-generation, explosive, magnetic, ionizing radiation, non-ionizing radiation, high voltage, implosion, noise, and etiologic agent. Marking of hazardous materials shall be in conformance with 5.3.5.3.1.3.

5.3.3.6.3 Recycled, virgin, and reclaimed materials. Except when intended use of the item will be jeopardized by the use of reclaimed or recycled materials, in preparing new and revising or amending specifications, preparing activities will insure that:

- a. There is no exclusion to the use of recovered materials.
- b. There is no requirement that an item be manufactured from virgin materials.
- c. Within 1 year from the date of issue by the environmental protection agency of guidelines designating items which are or can be produced with recovered materials, specifications for such products require the use of recovered materials to the maximum extent possible.

5.3.3.7 Design. The major functional characteristics shall be specified. The intended use shall be covered in section 6 of the specification. Detailed design characteristics should be covered in individual paragraphs.

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5.3.3.8 Construction. The specific points of construction shall be included, as applicable. Construction requirements should be related to the physical limitations imposed and the stresses that equipment is expected to withstand.

5.3.3.9 Hardware. Standard military hardware shall be designed into assemblies to the maximum extent possible. This includes mounting hardware when required to be furnished with the product. Selection of the hardware shall be made from existing standards (such as MS, NAS, and AN standards) if possible or from other standards required by contract.

5.3.3.10 Maintainability. Design requirements affecting maintainability of equipment shall be specified and be in accordance with the overall maintainability plan for the systems of which it is a part. The designed level of repair (LOR) will be included along with maintenance accessibility and modular construction requirements, the depth of built-in tests and test points needed, and similar design aspects which are required to meet the operational maintenance environment.

5.3.3.11 Transportability. Any special requirements for transportability shall be specified under this heading.

5.3.3.12 Performance characteristics. General and detail performance characteristics shall be included under this or other appropriate headings specifying what is expected of the commodity or process. Each requirement in section 3 shall have a corresponding test method in section 4. The requirement paragraph should reference the applicable test paragraph; e.g., "(see 4.)".

5.3.3.13 Human factors. The elements of human factors shall be specified as required for systems and equipment. Human engineering requirements for control stations and biomedical requirements such as illumination, acoustical noise, temperature control, and radiation, should be specified under separate headings. Tests or examinations should be specified in section 4 for each human factors requirement.

5.3.3.14 Safety. The requirements for elements of safety for items specified shall implement and conform to the safety standards issued by the Occupational Safety and Health Administration (OSHA) under the Secretary of Labor.

5.3.3.15 Environmental requirements. General and detailed environmental and ecological requirements shall be included under these or other appropriate headings specifying in quantitative terms what is expected of the commodity or process. Test methods will not be cited in section 3 of the specifications as the environmental requirement. Appropriate test methods shall be included in section 4 of the specifications and reference made to the corresponding paragraph in section 3.

5.3.3.16 Hardness critical items (HCI's). HCI's are any items at any assembly level which are mission critical and can be designed, repaired, manufactured, installed or maintained for normal operation and yet degrade system survivability in a man-made hostile environment if hardness is not considered. In preparing and updating military specifications and related documents, preparing activities will insure that nuclear hardness critical features are considered before revising specifications covering items which may potentially be installed on systems designed to withstand the effects of an environment created by a nuclear explosion, i.e., for nuclear survivability.

5.3.3.17 Details of units or parts. The requirements for the individual unit or part of a complete unit shall be specified under appropriate headings. In general, each unit or part shall be covered separately.

5.3.3.18 Chemical and physical properties. Chemical and physical properties such as composition, concentration, degree of acidity or alkalinity, hardness, tensile strength, elongation, specific gravity, etc., should be specified under appropriate paragraph headings.

5.3.3.19 Electromagnetic interference suppression. When required, provision shall be made under the heading for appropriate means of electromagnetic interference suppression in accordance with existing specifications and standards by making appropriate reference thereto.

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5.3.3.20 Dimensions. Dimensions and tolerances shall be specified, as required. If a figure is included showing dimensions and tolerance, the text shall refer to the figure. Where applicable, diameter or thickness shall be specified in decimals which may be accompanied by gage number and name in parentheses. For clothing items where girth sizes are required, size designations should be numerical and may also carry the equivalent adjective rating.

5.3.3.21 Weight. Requirements for weight of the items shall be specified, as required. The weight specified should include all items that make up the complete unit. The weight for each item shall be specified only if justifiable. The weight shall be specified for each type, grade, or class, if applicable.

5.3.3.22 Color. Requirements for color of the item shall be specified using existing standards for color for reference.

5.3.3.23 Finish. Finish shall include such properties as surface roughness, freedom from burrs, corrosion, metallic and nonmetallic coatings and exterior surface of textile products. Color and finish may be combined, where feasible.

5.3.3.24 Identification plate or part number marking. Requirements for identification plate or part number marking shall reference the applicable specifications, standards, or drawings covering markings. When section 3 specifies that certain item marking is to be placed on the unit container, section 5 shall specify the container marking described. When part numbering is a requirement, the section 3 paragraph should reference the section 1 paragraph or the appropriate appendix for a description of the part numbering scheme.

5.3.3.24.1 JAN and J marking. The following paragraph shall be included when JAN marking is required:

"The United States Government has adopted, and is exercising legitimate control over the certification marks "JAN" and "J", respectively, to indicate that items so marked or identified are manufactured to, and meet all the requirements of military specifications. Accordingly, items acquired to, and meeting all of the criteria specified herein and in applicable specifications shall bear the certification mark "JAN" except that items too small to bear the certification mark "JAN" shall bear the letter "J". The "JAN" or "J" shall be placed immediately before the part number except that if such location would place a hardship on the manufacturer in connection with such marking, the "JAN" or "J" may be located on the first line above or below the part number. Items furnished under contracts or orders which either permit or require deviation from the conditions or requirements specified herein or in applicable specifications shall not bear "JAN" or "J". In the event an item fails to meet the requirements of this specification and the applicable specification sheets or associated detail specifications, the manufacturer shall remove the "JAN" or the "J" from the sample tested and also from all items represented by the sample. The "JAN" or "J" certification mark shall not be used on products acquired to contractor drawings or specifications. The United States Government has obtained Certificate of Registration No. 504,860 for the certification mark "JAN"."

5.3.3.25 Anti-counterfeiting. When the product covered by the specification is susceptible to counterfeiting due to its inherent profitability or configuration or when a counterfeit product, if introduced into the system, could adversely affect life, safety, or mission readiness, consideration should be given to including requirements for authenticating that the product is not a counterfeit.

5.3.3.26 Government-furnished property. All property to be furnished by the Government as part of the specification, shall be listed and identified by part number, or stock number. The quantity of each item required for one complete unit shall be listed. Each item entry shall be numbered in order to provide ready reference. The specifications or drawings covering Government-furnished property need not be listed in section 2: Documents listed in section 2 of a specification are not considered Government-furnished property.

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5.3.3.27 Government-loaned property. Property that the Government loans to the contractor for testing or any other purpose and which does not lose its identity by becoming part of the commodity shall be listed under this heading.

5.3.3.28 Selection of alternative materials, constructions, etc. When alternative acceptable materials, constructions, appearance, or other characteristics are stated in specifications without specific provision as to selectivity to be exercised in acquisition, the alternatives are to be considered interchangeable. In such cases, it shall be clearly stated in the specification that the selection of a specific alternative shall be at the option of the contractor.

5.3.3.29 Workmanship. Where applicable, reference to workmanship shall be stated as the last paragraph of section 3, and shall include the necessary requirements relative to the standard of workmanship desired, uniformity, defects, and general appearance of the finished product. This paragraph is intended to indicate as definitely as practicable the standard of quality of workmanship which the product must meet to be acceptable. The requirements shall be so worded as to provide a logical basis for rejection in those cases where workmanship is such that the item is unsuitable for the purposes intended. Generally, no definite tests other than visual examination of workmanship will be applicable to the requirements of this paragraph.

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5.3.4 SECTION 4

5.3.4.1 Quality assurance provisions. Section 4 shall include all inspections (by reference when applicable) to be performed in order to determine that the item or service to be offered for acceptance conforms to the requirements in sections 3 and 5 of the specification (see figure 5).

5.3.4.2 Responsibility for inspection. The Department of Defense concept of quality assurance is predicated on the fact that responsibility rests upon the contractors for controlling product quality and for offering to the military services for acceptance only those items or lots of items that conform to all contractual requirements. See also 4.7 for the complete exclusion of administrative and contractual clauses not properly a part of the specification. Accordingly, the contractor's responsibility shall be clearly stated by including the following statements as the initial paragraphs in section 4:

"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 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

"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."

5.3.4.3 Classification of inspections. Where section 4 of the specification includes inspections applicable to such requirements as qualification, first article or pilot model, a classification of inspections shall be included as the second paragraph of section 4 as illustrated in the following examples:

Example A:

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. Qualification inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

Example B:

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.4).
- b. Quality conformance inspection (see 4.5).

5.3.4.4 Toxicological formulations. When section 3 of the specification specifies a requirement for review of the toxicological product formulations (see 5.3.3.6.1), the following is an example of the statement that shall be included in section 4.

"The contractor shall have the toxicological formulations and associated information available for review by the contracting activity to evaluate the safety of the material for the proposed use."

5.3.4.5 Inspection conditions. The environmental conditions under which all inspections (qualification, first article, quality conformance, etc.) are performed shall be specified as illustrated in the following example:

"4.3 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in (applicable test method document or applicable paragraph(s) in the specification)."

5.3.4.6 First article inspection. When section 3 of the specification specifies a requirement for a first article, section 4 shall include a description of the inspection routine, sequence of the inspections, number of units to be inspected, data required and the criteria for determining conformance to the requirement specified.

5.3.4.7 Qualification inspection. When section 3 of the specification specifies a qualification requirement, section 4 shall include a description of the testing routine, sequence of tests, number of units to be tested, data required and the criteria for determining conformance to the qualification requirement.

5.3.4.8 Retention of qualification. Section 4 shall also include the description of specific actions required for retention of qualification (see figure 5). The nature of the commodity, the industry involved, and the usage of the commodity will determine one of the following actions:

- a. Periodic feedback of test data including frequency of submittal.
- b. Complete requalification testing including frequency. Where multilevel reliability requirements are specified, the inspection provision applicable to qualification shall cover inspection for each level of qualification as well as for periodic qualification reevaluation.
- c. Certification by the manufacturer.

5.3.4.9 Tabulation of examinations and tests. When the tests specified for such qualification inspection requirements differ from the tests specified for quality conformance, the applicable tests shall be presented in tabular form with appropriate reference to corresponding technical requirements and test methods as illustrated in the example shown on figure 5 (see 4.15 for table preparation).

5.3.4.10 Quality conformance inspection. The tests listed in section 4 of the specification to determine conformance with sections 3 and 5 requirements, shall include, when necessary, a measurement or comparison with specified characteristics and checks and tests of the performance and reliability requirements. Where a clearer and better understanding will result, the examinations and tests shall be presented as illustrated in the examples shown on figure 5. Each specification item must meet all sections 3 and 5 requirements. The test methods in section 4 of the specification document are the minimum inspection and test methods to be used to demonstrate compliance to the specification requirement.

5.3.4.10.1 Quality conformance inspection sampling. When it is desirable to specify the sampling procedure to be used by contractors for the performance of quality conformance inspection, the sampling procedure should:

- a. Impose no inspection procedures that are less efficient and effective than would normally be used by the industry.
- b. Clearly identify the sampling plan to be used in the manufacturing process when inspections are to be performed at intermediate points as well as on the end item.
- c. Indicate the Acceptable Quality Level(s) or Limited Quality Protection, as applicable, inspection level, classification of defects, and other requirements as given in MIL-STD-105, MIL-STD-414, or other sampling standards, as appropriate. If nonstandard sampling plans are used, they shall provide valid confidence and quality levels.

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- d. Be capable of assuring compliance with requirements under various conditions of manufacturing or purchasing, e.g., mass or job lot production and large or small lot purchasing.

When inspections are to be based on lots of material, a definition of a lot size(s) shall be furnished in this section, by reference, if applicable. Restrictions concerning the formation of inspection lots such as restricting inspection lots to units of the same type, class, size, and the like shall be specified. Restriction of units forming the lot of those produced from the same heat of steel; from the same shift; or, from the same assembly line, etc., shall also be specified, when applicable.

5.3.4.11 Classification of quality conformance inspections. Quality conformance inspections should be classified into groups A, B, C, or D in accordance with the following groupings, when applicable:

- Group A - Nondestructive inspections of all items produced or all samples from an inspection lot to demonstrate product compliance with contractual requirements. Group A inspection examines characteristics most affected by variations in production processes or skills and functions vital to successful completion of the design mission.
- Group B - Generally nondestructive inspections that are more complex or of a longer duration than group A inspection. Group B inspection examines characteristics more affected by part or equipment quality and less affected by variations in production processes or skills, and functions requiring special fixtures or environments, and tests that are more complex and of longer duration than group A tests. Fewer samples are inspected than for group A inspection and tested articles may be offered for acceptance with little or no refurbishment. Each commodity should be individually evaluated regarding its issue after performing group B and C inspections.
- Group C - Periodic and generally destructive tests of characteristics depending upon product design and materials. Group C inspection consists of more complex tests, usually including simulated service environments, is generally destructive and may require major refurbishment before tested articles can be used by the services. Tests are performed on fewer samples than for group B inspection and are based on production quantities or time period.
- Group D - Destructive tests or tests of long duration that consume all or a considerable portion of design service life. Articles subjected to group D inspection shall not be issued. Tests are performed on few samples based on production quantities or time period.

5.3.4.12 Tabular listing of quality conformance inspection. Where it will lead to a better understanding of their functions, the inspection shall be listed as group A, B, C, or D in tabular form with appropriate references to the applicable requirements, and examination or test methods as illustrated below:

"4.4 Quality conformance inspection. Quality conformance inspections shall be as specified in table II."

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TABLE II. Quality conformance inspection.

| Inspection | Requirement paragraph | Test paragraph |
|------------------------------|-----------------------|----------------|
| Group A | | |
| Dimensions - - - - - | 3.4.1 | 4.4 |
| Visual - - - - - | 3.4.2 | 4.5 |
| Group B | | |
| Barometric pressure - - - - | 3.5 | 4.7.1 |
| Temperature cycling - - - - | 3.8 | 4.7.4 |
| Group C | | |
| Vibration- - - - - | 3.6 | 4.7.2 |
| Salt spray (corrosion) - - - | 3.7 | 4.7.3 |
| Shock- - - - - | 3.9 | 4.7.5 |
| Moisture resistance- - - - - | 3.10 | 4.7.6 |
| Group D | | |
| Life - - - - - | 3.12 | 4.7.8 |

5.3.4.13 Noncompliance. When inspection requirements apply, the following paragraph shall be included in section 4 as part of the quality conformance inspection requirements:

"4. Noncompliance. If a sample fails to pass group C or D inspection, the manufacturer shall notify the qualifying activity and the cognizant inspection activity of such failure and take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which were manufactured with essentially the same materials and processes, and which are considered subject to the same failure. Acceptance and shipment of the product shall be discontinued until corrective action, acceptable to the qualifying activity has been taken. After the corrective action has been taken, group C or D inspection shall be repeated on additional sample units (all tests and examinations, or the test which the original sample failed, at the option of the qualifying activity). Groups A and B inspections may be reinstituted; however, final acceptance and shipment shall be withheld until the group C or D inspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure shall be furnished to the cognizant inspection activity and the qualifying activity."

"Group B" shall be substituted for "Group C" in the standard paragraph for those specifications not containing Group C inspection.

5.3.4.14 Inspection of packaging.

- a. An example of the paragraph to be used for commodity or product specifications containing detailed packaging requirements is as follows:

"4. Inspection of packaging. Except when industrial packaging is specified, the sampling and inspection of the preservation and interior package marking shall be in accordance with groups A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing and marking for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification shown in section 5 and the marking requirements of MIL-STD-129. The inspection of industrial packaging shall be as specified in the contract (see 6.2)."

- b. In instances where the packaging requirements are covered by a reference to a packaging specification, the paragraph shall be worded similar to the following example:

"4. Inspection of packaging. The sampling and inspection of the preservation, packing, and container marking shall be in accordance with the requirements of MIL-S-28786."

5.3.4.15 Classification of defects. When sampling for quality conformance is appropriate, a classification of defects in accordance with the definitions of MIL-STD-105 should be included in section 4, when applicable, for the quality conformance inspections.

5.3.4.16 Numbering of defects. When required for reference purposes in reporting inspection results, the defects in a classification shall be numbered only in accordance with the following:

- 1 through 99 - critical defects
- 101 through 199 - major defects
- 201 through 299 - minor defects

If additional groupings are required, they shall be numbered in the 301, 401, 501, etc., series. If the number of defects in any group exceeds 100, the series should start over with a letter suffix e.g. 101a, 102a, 103a, etc.

5.3.4.17 Methods of inspection. Description of the tests and methods of analysis for first article inspection or qualification, quality conformance, reliability, maintainability, etc., shall be covered in section 4 of the specification to the extent necessary to assure conformance to each requirement in sections 3 and 5 therein and to assure that the tests are properly conducted. These descriptions will either be included under the general heading "Methods of inspection" with reference to methods in other portions of the specification or where appropriate for proper classification of the examinations and tests, under the inspection heading to which the tests apply. The descriptions shall include location and number of tests, testing equipment and materials, testing routine, number of samples to be tested, and criteria for determining conformance to these requirements. Test methods appearing in standards and other appropriate standardization documents shall be included only by reference. However, the various options specified in the applicable test method standards which are required to be specified in the individual equipment specification, associated detail specifications, specification sheets or MS sheets shall be covered.

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5.3.5 SECTION 5

5.3.5.1 Packaging. The requirements for the preservation, packing, and marking shall be included in section 5 of the specification (see 5.3.5.4 and figure 6). The levels of preservation and packing shall conform to the requirements established. The levels of packaging protection shall be adequate, but not better than is necessary, to assure delivery of supplies to the user in a satisfactory condition. To avoid any misinterpretation, when the term "packaging" is used in Government specifications, standards, and related publications (e.g., packaging protection, packaging policies, etc.), it shall only be considered in its broadest sense. Packaging may be defined as the means of providing adequate item protection at minimum cost during shipment, storage, and redistribution operations. Packaging is a generic term that covers all facets of the preparation of the item for shipment and storage including container marking, unitization and transportability requirements. Packaging shall be detailed as level A, level B, level C, or industrial as applicable.

5.3.5.2 Specific requirements. The specific requirements for materials to be used in the packaging of a product or commodity shall be covered in section 5, either directly or by reference to other specifications, drawings, or publications.

5.3.5.3 Inspection. Inspection of the preservation, packing, and container marking of the items or commodities concerned shall be specified in section 4 (see 5.3.4.14).

5.3.5.3.1 Detailed preparation. Requirements may be included by reference to other specifications and applicable standards or, where these do not exist or are not applicable, by detailed instructions. The requirements shall be included with appropriate heading as required, for disassembly, cleaning, drying, preservation, packing, marking, unitization and transportability. These requirements shall be specifically related to each required level of packaging in a manner which will leave no doubt regarding requirements applicable to such level. Detailed packaging requirements should be covered so far as practicable in the following basic categories.

5.3.5.3.1.1 Preservation. The requirements for preservation shall include, as applicable, the application or use of protective measures including appropriate cleaning, drying, preservatives, unit packs (e.g., unit protection methods per MIL-P-116), wrapping, cushioning, blocking, bracing, intermediate containers, and identification marking up to but not including the exterior packs, to adequately prevent deterioration or misidentification of the items. Levels A, B, and C will normally constitute the levels of protection. When it is known that a given item will be used under conditions where level A would be in excess of the requirement for protection and would entail unnecessary costs and where level C would be inadequate, detailed requirements for level B will be included (see 5.3.6.9). When any lower level of preservation or packing is the same as that shown for a higher level, the lower level shall not be indicated.

5.3.5.3.1.2 Packing. The requirements for packing shall cover the exterior shipping container, the assembly of items or packs therein, necessary blocking, bracing and cushioning. Container selection for packing shall provide for use of containers of minimum weight and cube consistent with anticipated storage and shipment hazards. The requirements for levels of packing will be included in the specification.

5.3.5.3.1.3 Marking. Marking shall be in accordance with the requirements of MIL-STD-129 for military levels of protection. Industrial packaging shall be marked as prescribed. Other markings shall be applied as required by other DOD documents governing specific commodities, as well as Federal statutes and regulations, e.g., Federal Hazardous Substance Labeling Act, etc. Anti-counterfeiting considerations should be addressed where appropriate.

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5.3.5.3.1.4 Marking for shipment. Normally marking requirements shall be established by reference to MIL-STD-129. Markings essential to safety and to the protection or identification of the item which are not required by MIL-STD-129 or are required on a "when specified" basis by the standard shall be specified in detail under this heading. When civil agencies (e.g. NASA, GSA, etc.,) are listed in the concluding material, Federal Standard No. 123, Marking for Domestic Shipment (Civil Agencies) shall be designated on a when-specified basis as the marking standard for shipment. When section 3 requires specific item marking on unit packs, the requirements for that marking shall be included in section 5 with reference made to the section 3 requirement.

5.3.5.4 Commodity or product specifications covered by packaging specifications. Some commodity or product specifications are covered by packaging specifications for the particular items or Federal Supply Class included. The following example shall be used to illustrate the proper preparation of section 5 when a commodity specification is covered by a packaging specification.

EXAMPLE: "5. PACKAGING.

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-C-39028."

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5.3.6 SECTION 6

5.3.6.1 Notes. Section 6 shall contain information of a general or explanatory nature, and no requirements shall appear therein (see figure 7). It shall contain information designed to assist in determining the applicability of the specification and the selection of appropriate type, grade, or class of the commodity, additional supersession data, changes in product designation (grades, class, etc.) standard sample (if required), etc. This section shall include the following in the order listed, as applicable:

- a. Intended use.
- b. Ordering data.
- c. Data requirements.
- d. Inspection for first article.
- e. Standard sample.
- f. Qualification.
- g. Definitions (see 4.19 of this standard).
- h. Cross-reference of classifications.
- i. Substitutability data.
- j. Conditions for use of Level B preservation.
- k. Environmental pollution preventive measures.
- l. Government-furnished and Government-loaned property.
- m. Patent notice.
- n. Subject term (key word) listing.
- o. Material safety data sheets.
- p. International interest
- q. Identification of changes.

5.3.6.2 Intended use. Information relative to the use of the item covered by the specification shall be included under this heading. The difference among types, grades, and classes in the specification shall be explained herein. If there are any particular applications for which the item or material is not well adapted, this information also may be included.

5.3.6.3 Ordering data. Under this paragraph shall be listed all the options which must be exercised by the contracting officer in invitations for bids, contracts, or other purchasing documents. Options shall be listed in the sequence in which they appear in sections 3, 4 and 5. Reference shall be made to the part number required and to options identified and stated by section 5 when applicable. When contract data requirements are to be included under this heading, ordering data shall be segregated into "Acquisition requirements" and "Data requirements". Under data requirements, identify the data requirements that are referenced in other sections of the specification and which are to be considered for listing on the DD Form 1423 when delivery is necessary. Data items related to the specification will be identified thereto and listed as such in DoD 5000.19L, Vol II, AMSDL (see 5.3.6.4).

5.3.6.4 Data requirements (see 4.3). When the specification requires the contractor to generate data (e.g., engineering drawings, reports, plans, etc.) the following shall be inserted in section 6 of that specification:

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"When this specification is used in an acquisition and data are required to be delivered, the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 27.410-6 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification are cited in the following paragraphs.

| Paragraph No. | Data requirement title | Applicable DID no. | Option |
|---------------|------------------------|--------------------|--------|
|---------------|------------------------|--------------------|--------|

| | | | |
|--|---|--|--|
| | (Data item descriptions related to this specification, and identified in section 6 will be approved and listed as such in DOD 5000.19L, Vol. II, AMSDL. Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)" | | |
|--|---|--|--|

5.3.6.5 Inspection for first article. If section 3 of the specification specifies a first article inspection, the contracting officer should include instructions in the acquisition document regarding the arrangements for examinations, approval of test results etc., for the first articles. For example:

"6. . . First article. When a first article inspection is required, the item(s) should be (a first article sample), (a first production item), (a sample selected from the first production items) (or it may be a standard production item from the contractor's current inventory as specified in 4.1.2). The first article should consist of (one), (two), etc. unit(s). The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract."

5.3.6.6 Standard sample. If section 3 of the specification specifies a standard sample in accordance with 5.3.3.4, information for obtaining and examining the standard sample (source and address) shall be stated under this paragraph identification.

5.3.6.7 Qualification. Where qualification of a product is a requirement of the specification, information concerning such qualification shall be stated in this section as follows:

"With respect to products requiring qualification, awards will be made only for products which are, at the time set for opening of bids, qualified for inclusion in Qualified Products List (QPL No.) whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is (insert name and address of preparing activity) and information pertaining to qualification of products may be obtained from that activity."

NOTE: Where an agent has been delegated to administer the Qualified Products List for the preparing activity, the following may, at the option of the preparing activity, be substituted for "and information pertaining to qualification of products may be obtained from that activity":

"however, information pertaining to qualification of products may be obtained from (insert name and address of agent)."

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5.3.6.8 Cross-reference. A cross-reference of old to new military classification or part number made by specification revision showing substitutability relationship shall be included. The extent to which new items may be binned with or substituted for prior items shall be stated here.

5.3.6.9 Level B preservation. When level B preservation is incorporated in the specification, the condition under which this level is to be specified shall be explained under this heading. An example of the wording of this paragraph is as follows:

"6. Conditions for use of level B preservation. When level B preservation is specified (see 5.1), this level of protection should be reserved for the acquisition of (name of commodities) for resupply worldwide under known favorable handling, transportation and storage conditions."

5.3.6.10 Environmental pollution preventive measures. Packaging material specifications will include disposability criteria. A paragraph similar to the following should be included.

"6. Disposability. One or more of the following methods shall be used to accomplish disposal of (list material): reuse, recycling, baling, sanitary landfill, composting, incineration, pyrolysis, or sea disposal."

5.3.6.11 Government-furnished and Government-loaned property. When Government-furnished or Government-loaned property is listed in the specification, the following paragraphs shall be added to section 6:

"6. Government-furnished property. The contracting officer should arrange to furnish the property listed in 3. ."

5. Government-loaned property. The contracting officer should arrange to loan the property listed in 3. ."

5.3.6.12 Patent notice. When a specification is prepared to cover a patented item, the specification shall list the patents involved and include the following paragraph.

"6. Patent notice. The Government has a royalty-free license under the following listed patents for the benefit of manufacturers of the item either for the Government or for use in equipment to be delivered to the Government.

US patent number"

In cases where no royalty-free licenses are obtainable, the specification should list the patents together with their expiration date and the statement that the Government does not have a royalty-free license.

5.3.6.13 Subject term (key word) listing. The specification shall contain a listing of subject terms (key words) which would allow identification of the document during retrieval searches. The subject terms are to be compatible with names and terms contained in the Cataloging Handbook, H6, in the DOD "Thesaurus of Engineering and Scientific Terms (TEST)," in the "DDC Retrieval and Indexing Terminology (DRIT)," and in the lexicon which is predominant in the technical field germane to the product. The subject terms are to be listed alphabetically in a single column with the main noun or word first, followed by sequential modifiers separated by commas. Word groups considered to be proper or recognized nouns such as "military specification" should not be separated.

5.3.6.14 Material safety data sheets (see 4.2.3). When the specification describes products containing hazardous materials, the following note shall be added to section 6:

"6. Material safety data sheets. Contracting officers will identify those activities requiring copies of completed Material Safety Data Sheets prepared in accordance with FED-STD-313. The pertinent government mailing addresses for submission of data are listed in appendix B of FED-STD-313."

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5.3.6.15 International standardization agreements. The preparing activity is responsible for implementation of international standardization agreements as they relate to its responsibilities. When specifications reference international standardization agreements as part of their requirements, the following statement shall be added:

"Certain provisions of this specification (identified by paragraph number or similar manner, if appropriate) are the subject of international standardization agreement (insert the ABCA or ASCC number, the NATO, STANAG, AStanP number, or other appropriate documentary reference). When amendment, revision, or cancellation of this specification is proposed which will modify the international agreement concerned, the preparing activity will take appropriate action through international standardization channels including departmental standardization offices to change the agreement or make other appropriate accommodations."

5.3.6.16 Identification of changes from previous issue. Revisions of specifications should include asterisks or vertical lines at the margins of the pages to indicate where changes have been made with respect to the prior issue. The following note should be included in section 6 of the specification:

"6. . . . Changes from previous issue. The margins of this specification are marked with asterisks (or vertical lines) to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue."

If the changes are extensive and too numerous to annotate, the following note should be included in section 6 of the specification.

"6. . . . Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes."

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5.4 CONCLUDING MATERIAL

5.4.1 Concluding material. The following concluding material shall be provided at the end of the document following any tables or figures and before the DD Form 1426.

- a. Preparing activity.
- b. Custodians (applies to coordinated specifications).
- c. Review and user activities (applies to single department or fully coordinated).
- d. Civil agency coordinating activities.
- e. Agent if assigned.
- f. Project number.

5.4.1.1 Activity symbols. The symbols used to identify the preparing activity, custodians, reviewer, and user activities, and other interested activities shall be in accordance with the current issue of SD-1, (Standardization Directory). This information and the project number specified by the assignee activity will be listed as shown in the following example.

Custodians:

Army - AR
Navy - OS
Air Force - 16

Review activities:

Army - AT, CR, ME
Navy - EC, SH, YD
Air Force - 11, 26, 85
DLA - GS

User activities:

Army - MR
Navy - CG, MC
Air Force - 90

Civil Agencies Coordinating Activities: (where appropriate)

AGR - APS
HHS - FEC

Preparing activity:
Navy - OS

Agent:
DLA - GS

(Project MISC-0014)

The preparing activity will list potential review and user activities during specification development from interest as registered in the DOD FSC Listing of DOD Standardization Documents and its cumulative bi-monthly Supplement, the participating activity contacts, cataloging data, and other sources. The preparing activity will confirm the selected level of interest with these activities during coordination.

If an activity is listed as a preparing activity or custodian, they should not designate themselves as a reviewer or user activity, nor should a reviewer indicate user activity interest. If a military department has no interested activity, the department shall be omitted from its sequential order of listing. The listing of review and user activities shall be in alphabetical or numerical order, as applicable.

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5.4.1.2 Standardization Document Improvement Proposal (DD Form 1426). Preparing activities shall include this form as the last sheet of each copy of general specifications, and other specifications in six-section format. It shall not be included on specification sheets, amendments, supplements, and notices. It shall be self-addressed and the document identifier block shall be completed by the preparing activity (see 5.2.6). This form is not required on classified specifications; however, if used, security regulations shall apply (see 4.8).

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5.5 APPENDIX

5.5.1 General. When required, an appendix as set forth in this section, will be included as an integral part of a specification. Normally, there shall be only a single appendix to a specification. Table of contents and cover shall not be used.

5.5.2 Purpose. The appendix is supplementary information at the end of the specification and bound integrally with it (see figure 8). An appendix is used only to specify the details of usage or related processes involving the materials or products which are subject to the general specification, and submittal plans for products requiring qualification. When such additional provisions are applicable to or expected to apply to three or more specifications, these provisions shall be included in a separate document.

5.5.3 Submittal plans. Product submittal plans may be included in the appendix of the applicable specification, when required, to stipulate the number and types of items for submittal for qualification approval:

- a. When samples in varying numbers must be submitted for compliance with grouped test requirements; or
- b. When the testing is performed in various phases such as life tests, nondestructive tests, humidity tests, etc.

These criteria are particularly applicable to items which are available in such a variety of sizes and capacities for each style of item as to require selective sampling from the range of sizes and capacities in order to furnish a statistically significant sample. This will assure an adequate selection without resorting to exhaustive tests of all available items and thus offer a reasonable basis for approval of the entire range of items.

5.5.4 Numbering and titling. The appendix shall begin on the next page following the specification. Identify the upper center of each page with the specification identifier and the word "APPENDIX" two lines below the identifier. When it is essential to include more than one appendix, identification shall be alphabetical (A, B, etc.,). The title shall be located two lines below the word "APPENDIX" on the beginning page only. Sections shall be numbered using decimals and shall be numbered in multiples of ten. The first section (Scope) shall be 10; with sub-sections 10.1, 10.1.1, etc., The second section (Applicable documents) shall be 20; the third 30, etc., Number pages consecutively following the last page of the specification.

5.5.5 Paragraph headings. Paragraph headings beginning with the third section shall be employed as necessary but need not duplicate the structure of the specification of which the appendix is a part.

5.5.6 Scope. An appendix shall have a statement of scope to indicate the coverage and limitations of the appendix to insure its proper application and use. The following shall be included: "This Appendix (is or is not) a mandatory part of the specification. The information contained herein is intended for (compliance or guidance only)".

5.5.7 References. References which may be required and which relate only to the appendix shall be listed in the appendix under the heading "20. APPLICABLE DOCUMENTS" and shall not be referenced in section 2 of the specification. The references shall be listed as specified for section 2 (see 5.3.2) under the following headings:

- 20. APPLICABLE DOCUMENTS.
- 20.1 Government documents.
- 20.1.1 Specifications, standards, and handbooks.
- 20.1.2 Other Government documents, drawings, and publications.
- 20.2 Other publications.

If section 20 is not applicable, indicate as shown below.

20. APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

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5.6 INDEX

5.6.1 Purpose. An alphabetical index may be placed at the end of a specification to permit ready reference to contents. Its use shall be limited to lengthy specifications. If used, an index follows the basic specification or an appendix. The pages are numbered continuously following the last page of the basic specification or appendix, as applicable. The document identifier shall appear in the upper center of each page.

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5.7 REVISIONS

5.7.1 Specification revision. A revision shall be prepared and processed in the same manner as a new document. When a revision is made, the entire contents of the specification shall be analyzed, and brought up to date and into compliance with the requirements of this standard. Revisions can also include inactivation (see 5.2.4.1).

5.7.2 Format. Revisions shall be prepared in the format of a general specification. All paragraphs, figures, tables, and pages shall be renumbered, as necessary, to eliminate all number suffixes and deletions and to establish correct sequence of requirements which were added by amendment.

5.7.3 Notation of revisions. When specifications are revised, and if the changes are not too extensive, asterisks or vertical lines shall be placed at the margin of the page to indicate where changes (additions, modifications, corrections, deletions) have been made with respect to the previous issue. See 5.3.6.16 for note to be included in section 6 of the specification explaining the use or absence of the asterisk or vertical line.

5.7.3.1 Summary sheet for proposed coordinated specification. A summary sheet shall be prepared for a proposed coordinated specification, which shall indicate the significant additions, deletions, corrections, or modifications with respect to the superseded document. When practicable, supporting background information concerning the changes shall be included. The summary sheet shall accompany the proposed draft which is circulated for coordination.

5.7.4 Revision indicators. Revisions of military specifications shall be indicated by a capital Gothic letter following the number and preceding any suffix. Example: MIL-C-17A. The first revision shall be marked with the letter "A" and succeeding revisions shall be indicated by the other letters in alphabetical sequence except that the letters I, O, Q, S, and Z shall not be used. When a coordinated specification supersedes a limited coordination specification having the same number, the first issue of the coordinated specification shall be considered a revision of the limited coordination specification, thus taking the next appropriate Gothic letter.

Example: The first coordinated revision superseding MIL-H-865(SH) would be identified as MIL-H-865A.

If the coordinated revision supersedes a "USED IN LIEU OF" specification of the same number, the two zeros in front of the number and activity symbol following the number shall be dropped and the next appropriate capital Gothic letter shall be added.

Example: MIL-T-005237A(GL) when superseded shall appear as MIL-T-5237B.

5.7.5 Part number revisions. Specification revisions that modify the requirements for items covered to the extent that they are not both physically and functionally interchangeable with those covered by the specification being superseded, shall assign new part numbers to the items. A cross-reference of new part numbers which are substitutable for the preceding part numbers shall be included in the specification. Each generation of substitution data will be retained in the specification for traceability. Revisions which do not affect the interchangeability characteristics of the items covered, shall retain the existing part numbers (see 4.4).

5.7.6 Revised data item descriptions (DID's), DD Form 1664. When a military specification is revised, any DID for which the specification is the source document shall also be appropriately revised.

5.8 SUPPLEMENT

5.8.1 General. A supplement to a military specification is a separately issued document, associated with the applicable specification (see figure 9) and is issued only when the number of associated documents exceeds five in number, in lieu of listing in section 2 of the basic document (see 5.3.2.1.1).

5.8.2 Contents. Supplements are to contain lists of the associated detail specifications, specification sheets, and sheet form standards. An additional cross-reference list such as alphabetical by title may be included to provide a quick reference by subject matter for that family of specifications.

5.8.3 Format. Supplements shall carry the same headings, titles, symbols, specification number and revision, as the general specifications with which they are associated. The word "SUPPLEMENT" followed by the numeral "1" and date of issue shall also be included. Supplement revisions shall be marked with a capital revision letter in alphabetical sequence to identify successive issues of the supplement. Each time the basic specification is revised, the supplement is revised and reverts to "Supplement 1".

5.8.4 Preamble. The following preamble shall be on supplements under the title:

"This supplement forms a part of MIL-0-000, dated _____."

5.8.5 Captions for supplements. Captions such as SPECIFICATION SHEETS, ASSOCIATED DETAIL SPECIFICATIONS, or MS STANDARDS shall head each group of associated documents listed on the supplement.

5.8.6 Concluding material. Supplements shall show the preparing activity symbol, and FSC designation only. The custodian, review activity, and user symbols shall be omitted (see figure 9).

5.8.7 Page numbering and document identification of supplements. The first page shall indicate the total number of pages in the supplement and the page number (i.e., 1 of 6) at the bottom center of the page and shall have the document identifier and date in the upper right corner of the page. Page 2 and all succeeding pages shall be successively numbered with Arabic numerals at the bottom center of the page. The document identifier shall be placed on the second and succeeding pages in the upper center of the page. The word "SUPPLEMENT" and number shall be placed below the document identifier (e.g., SUPPLEMENT 1, 1A, 1B, etc.).

5.8.8 Distribution statement. The appropriate distribution statement shall be placed on the first page on the line immediately below the FSC, GP, or area designation as shown on figure 9.

5.9 AMENDMENTS

5.9.1 Purpose. Amendments to military specifications shall be issued only to make brief or minor changes and to correct errors (see figures 10 and 11). Lengthy changes to specifications shall be accomplished as revisions (see 5.7). When the number of pages in the amendment exceeds 25 percent of the pages of the document, or when the security classification is changed, the document shall be revised.

5.9.2 Format. Amendments shall be prepared in the following format.

5.9.2.1 Document identifier. The document identifier of the amendment shall be the same as the specification with which it is associated. The word "AMENDMENT" followed by a sequentially assigned arabic serial number, and the date of approval shall appear under the document identifier. Amendments shall be numbered consecutively for each specification. Amendment numbers, including those for interim amendments, will be assigned by the preparing activity for the specification. A line shall be placed between the approval date and the supersession data shown.

5.9.2.2 FSC designation. The FSC of the basic specification shall be shown in the lower right corner of the first page of an amendment.

5.9.2.3 Document identifiers for amendments to military specifications. Identification of military specification amendments shall be in the following formats:

a. Amendment to coordinated military specification:

| | | |
|----------------|----|--------------------|
| MIL-C-39029/79 | or | MIL-C-54224C |
| AMENDMENT 1 | | AMENDMENT 2 |
| 10 March 1980 | | 15 April 1980 |
| | | <u>SUPERSEDING</u> |
| | | AMENDMENT 1 |
| | | 8 February 1971 |

b. Amendment to limited coordination specification:

MIL-R-6106/7B(USAF)
AMENDMENT 2
1 May 1980
SUPERSEDING
AMENDMENT 1
12 June 1979

c. Interim amendment to coordinated military specification. (The symbol of the authorizing activity shall be placed immediately following the amendment number.):

MIL-S-19500/241D
INT. AMENDMENT 1(USAF)
20 November 1973

d. Interim amendment superseding an interim amendment:

MIL-S-19500/158F
INT. AMENDMENT 4(USAF)
15 May 1978
SUPERSEDING
INT. AMENDMENT 3(USAF)
22 March 1977
USED IN LIEU OF
AMENDMENT 2
11 October 1973

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5.9.3 Amendment headings and titles. The headings and titles for military specification amendments shall be the same as the specifications with which they are associated.

Example: MILITARY SPECIFICATION

JACKS, TELEPHONE
GENERAL SPECIFICATION FOR

5.9.4 Preambles. All amendments to military specifications shall have a preamble. One of the following preambles shall be used.

5.9.4.1 Amendments to coordinated military specifications:

"This amendment forms a part of _____, dated _____, and is approved for use by all Departments and Agencies of the Department of Defense."

5.9.4.2 Amendments to limited coordination military specifications:

"This amendment forms a part of _____, dated _____, and is approved for use within the (preparing activity), Department of the (_____) and is available for use by all Departments and Agencies of the Department of Defense."

"This amendment forms a part of _____, dated _____, and is approved for use within the Department of the (_____) and is available for use by all Departments and Agencies of the Department of Defense."

5.9.4.3 Interim amendments to coordinated military specifications:

"This interim amendment is approved for use within (Military Department or Activity), with MIL-0-0000 (dated) _____."

5.9.5 Arrangement of text.

5.9.5.1 Preferred arrangement of text. Each individual correction shall be presented separately and the particular page, paragraph, line, table, or figure in which it occurs shall be identified. The page number identifying location of changes shall be centered on the page. The word "PAGE" shall be capitalized and followed by the number. A page number shall be shown only once and shall not be underlined. When changes continue on to another page of the amendment, the successive pages shall be typed as a continuous document. The "PAGE" number shall not be repeated on the following page of the amendment.

5.9.5.2 Alternate arrangement of text. Insertable replacement pages may form a portion of the amendment to a military specification in addition to (or in place of) the sequential listing of individual corrections. In using the insertable replacement page method, both the page being changed and the applicable back-up page must be replaced so that the old page can be removed and the new page inserted. All pages, including pages reprinted without change as back-up pages, shall bear the notation "AMENDMENT (amendment number)" beneath the document identifier at the top of the page. A note "Supersedes page (number) of (either the basic specification or the previous amendment, as applicable) of (date)" shall be placed in the lower left-hand corner of each revised page. Pages reprinted without change shall be marked "Reprinted without change" in the lower left-hand corner. The insertable replacement pages shall be appended to the amendment and shall bear the page numbers of the pages being replaced. The first page of the amendment shall carry a listing of the insertable replacement pages under the following heading (see figure 10):

"The attached insertable replacement pages listed below are replacements for stipulated pages. When the new pages have been entered in the document, insert the amendment as the cover sheet to the specification."

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5.9.6 Verb forms. The imperative form of the verb shall be used in the amendment for indicating the changes to be made in the specification. For example: Delete "2.50" and substitute "2.00".

5.9.7 Deletion of paragraphs. When paragraphs of the specification are deleted by the amendment, the remaining paragraphs in the section need not be renumbered.

5.9.8 Insertion of paragraphs, figures, and tables. When new paragraphs, figures, or tables are added to the specification, they should be numbered in such a way that renumbering of existing paragraphs, figures, and tables is not necessary.

Example:

| <u>Existing:</u> | <u>Added</u> | <u>Existing</u> |
|------------------|------------------|-----------------|
| Table II | Table II-1 | Table III |
| Figure 2 | Figure 2A | Figure 3 |
| Paragraph 5.11 | Paragraph 5.11.1 | Paragraph 5.12 |

5.9.9 Successive (cumulative) amendments. Amendments are cumulative and each successive amendment shall be written to completely supersede the previous amendment.

5.9.10 Successive interim amendments. Except for those requirements that are being changed, each successive interim amendment will consolidate information contained in the previous interim amendment.

5.9.11 Page numbering. The first page shall indicate the total number of pages in the amendment and the page number (i.e., 1 of 3 or 1 of 1) at the bottom center of page. All remaining pages of multipage amendments shall be successively numbered with arabic numerals at the bottom center of page. Insertable replacement pages shall carry the page number of the page being replaced and, for the purpose of page numbering only, shall not be counted as part of the amendment.

5.9.12 Concluding material. The concluding material of the specification shall be shown after the text of the amendment in the same manner as in the basic specification, including the project number for the amendment action. For interim amendments, the preparing activity, review and user activities, if any, of the limited coordination department; and project number shall be listed.

5.9.13 Changes from the previous amendment. An asterisk or vertical line shall be placed in the left margin opposite the change to denote a change from the previous amendment (on figures, the asterisk shall be placed as near the actual change as possible, so that it can be readily identified). The following note shall be added at the end of the amendment preceding the concluding material:

"The margins of this amendment are marked with an asterisk or vertical lines to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment."

5.9.14 Distribution statement. The appropriate distribution statement shall be placed on the first page on the line immediately below the FSC, GP, or area designation as shown on figures 10 and 11.

5.10 NOTICES

5.10.1 Purpose. Notices are used to inactivate for new design, cancel, or reinstate standardization documents. Notices are not used to transmit revisions or amendments. Notices completely supersede all previous notices.

5.10.2 Inactive for new design notice. An inactive for new design notice shall be issued when the item or process is prohibited for use in new design and is used only in existing assemblies or units. Items or processes so designed may be used for new assemblies or units developed for existing design contracts where the inactive item or process is being used for existing designs in the same contract, or in assemblies for existing units or systems required under future contracts. Superseding documents for new design application shall be referenced in the notice when applicable and shall have a different specification number than that of the specification covered by the notice. A precautionary note shall be included as follows: CAUTION "The supersession information is valid as of the date of this notice and may be superseded by subsequent revisions of the superseding document." When a QPL is associated with the "inactive for new design" specification, the following sentence shall be included in the notice: "The QPL associated with this inactive for new design specification will be maintained until acquisition of the product is no longer required whereupon the specification and QPL will be canceled" (see figure 12). Inactive status can also be accomplished in a revision (see 5.2.4.1).

5.10.3 Cancellation notice. A cancellation notice shall be issued when a military specification or specification sheet is no longer required (see figures 13 and 14). The preparing activity will issue a notice of cancellation, coordinating with the custodians, review, and user activities giving the reason for cancellation, and the superseding document, if any.

5.10.4 Reinstatement notice. The preparing activity, or with its permission, another activity, may reinstate a canceled specification by a notice of reinstatement (see figure 15). The notice of reinstatement, with a sequentially assigned Arabic number, will supersede the previous notice of cancellation. If the specification is coordinated, only the custodians and interested activities who have approved the reinstatement shall be shown on the reinstatement notice. If the coordinated document is reinstated for use by a single activity, the activity symbol shall be shown after the specification number and this information should also be reflected in the text. The text for the reinstatement notice shall be as shown on figure 15. Reinstatement notices submitted to Naval Publications and Forms Center for printing and distribution will be accompanied by a copy of the reinstated specification and if applicable, the amended or revised specification. Both shall be suitable for photo-offset reproduction. Reinstated documents will be distributed as attachments to the reinstatement notice including a new DD Form 1426 (see 5.4.1.3).

5.10.5 Format. The format for notices shall be as follows.

5.10.5.1 Document identifier. The document identifier of a notice shall be typed in the upper right corner of the first page. The following elements shall be included with the first letters in alignment (block form):

- a. The document identifier of the specification (associated specification or specification sheet) being inactivated, canceled, or reinstated. The identification of interim military or military "USED IN LIEU OF" specifications includes the activity code designation of the preparing activity.
- b. The word "NOTICE" followed by a sequentially assigned Arabic number shall be placed below the specification number on inactivations, cancellations, and reinstatements.

c. The date of approval.

Example of sequential actions:

1. Inactive for new design notice:

MIL-G-82143(MC)
 NOTICE 1
 18 October 1972

2. Cancellation notice:

MIL-G-82143(MC)
 NOTICE 2
 16 February 1973
SUPERSEDING
 NOTICE 1
 18 October 1972

3. Reinstatement notice:

MIL-G-82143(MC)
 NOTICE 3
 15 April 1976
SUPERSEDING
 NOTICE 2
 16 February 1973

5.10.6 Heading and title. A notice shall carry the same heading and title as the specification. The notice of cancellation, inactivation, or reinstatement shall be enclosed in a box in the upper left-hand corner of the first page (see figures 12, 13, 14, and 15).

5.10.7 Preamble. A preamble is not required.

5.10.8 Concluding material. Concluding material for reinstatement notices shall be in accordance with 5.4. For inactive for new design and cancellation notices, the preparing activity and agent (if applicable) only will be shown.

5.10.9 Distribution statement. The appropriate distribution statement shall be placed on the first page on the line immediately below the FSC, GP, or area designation as shown on figures 12, 13, 14, and 15.

5.11 SPECIFICATION SHEETS

5.11.1 Purpose. A specification sheet is a document associated with a general specification (see 3.8.6.2), covering the unique technical requirements, tests, and packaging requirements for a single style, type, class, grade, or model of an item (or series of items which vary only with respect to value, size, tolerance, material, finish, failure rate, etc.) which are best presented in graphic or tabular form.

5.11.2 Coverage. Specification sheets shall describe the characteristics and performance requirements usually needed by designers and engineers for application of the items in assemblies, and for their acquisition.

5.11.3 Limitations. Specification sheets will not be prepared unless it is known that a family of items differing in style, type, class, grade, model, or similar variables will need individual coverage. Any single specification sheet together with its associated general specification, form a complete acquisition specification for the item(s) covered. Thus, specification sheets shall supplement the referenced general specification. Requirements in the general specification shall not be duplicated in specification sheets. All requirements cited in the general specification are applicable to the associated documents unless otherwise indicated (e.g., shock N/A) on the associated document (specification sheet, associated detail specification, or MS sheet).

5.11.4 Document identifier. The specification sheet is identified in the same manner as an associated detail specification (see 5.2.3.1.1). The specification sheet number shall be assigned by the preparing activity for the general specification which shall also assign numbers for associated limited coordination specification sheets. The document identifier shall be placed in accordance with 4.14.

5.11.5 Date and supersession data. For date and supersession data, see 5.2.3.1.2 and 5.2.4, respectively.

5.11.6 FSC designation. For FSC designation requirement, see 5.2.7.

5.11.6.1 Distribution statement. The appropriate distribution statement shall be placed on the first page on the line immediately below the FSC, GP, or area designation as shown on figure 16.

5.11.7 Page number. The first page only shall indicate the page number and total number of pages in the specification sheet at the bottom center of the page. Example: 1 of 7. The successive pages shall contain the page number only (2, 3, 4, etc.), at the bottom center of the page.

5.11.8 Heading. Each military specification sheet shall have the heading "MILITARY SPECIFICATION SHEET" two lines above the title (see figure 16).

5.11.8.1 Title. Where the specification sheets are for similar items with minor differences from one item to another, the specification sheet titles shall be the same as that of the general specification (excluding the words "GENERAL SPECIFICATION FOR") with an identification of the style, type, class, grade, or model covered, as appropriate. Where it is determined that a specification sheet shall be prepared for components of an assembly which have different basic noun names than the general specification, the specification sheet titles shall reflect the basic noun name of the specific item associated with the general specification. In all cases, the title shall be determined in accordance with the detail instruction in 5.2.2.

5.11.9 Preamble. For preamble requirements, see 5.2.5.

5.11.10 Acquisition note. The following note shall be included below the preamble in both coordinated and limited coordination specification sheets.

"The requirements for acquiring the (item name) described herein shall consist of this specification and the latest issue of (document identifier of general specification)."

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5.11.11 Content. The specification sheet shall consist of dimensional data, if applicable, requirements, tests, or examinations not covered in the general specification. The text shall in most instances cover a number of items differing only in one or two characteristics, such as length, diameter, resistance, capacitance, ohmic value, etc. Only one style, type or model of an item (process) will be covered by a specification sheet. The specification sheet shall contain the description, substitutability data, design features, characteristics, and performance data, as applicable. Presentation shall be in the form of figures, tables, and text. The figure shall normally be placed at the top of the first page and shall be numbered and titled. Figure 16 represents the specification sheet format as applied to the area of electronic parts, but not necessarily the specific content. Requirements cited on a specification sheet should appear in the same sequence shown on the general specification. Requirements in the general specification that are not applicable to the specification sheet shall be noted; (e.g., shock N/A).

5.11.12 Part number. The military part number shall be placed in the specification sheet (see 4.4). NATO Item Identification Number (NIIN), Federal Item Identification Number (FIIN), and National Stock Number (NSN) numbers shall not be included. There are two types of part numbers used. The first type is a nonsignificant part number as shown in the following example:

a. Example of nonsignificant part number.

Part number: M12345/2-(applicable dash number from table I).

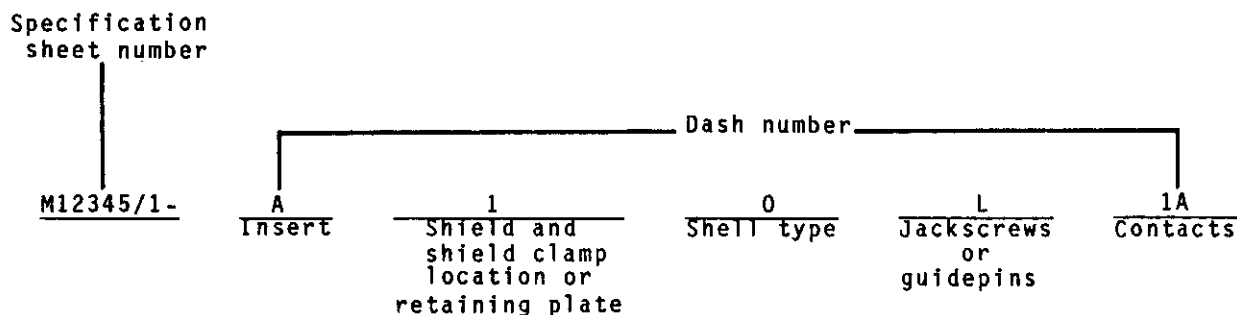
TABLE I. Dash number and operating characteristics.

| Dash number | Figure | Actuating flow increasing GPM max | Deactuating flow decreasing GPM min | Maximum allowable pressure drop | Fluid media |
|-------------|--------|-----------------------------------|-------------------------------------|---|-------------|
| 01 | 1 | 0.45 | 0.3 | 4 lb _f /in ² at 0.3 GPM | I |
| 02 | 2 | 0.85 | 0.5 | 6 lb _f /in ² at 0.7 GPM | I |
| 03 | 3 | 0.55 | 0.45 | 5 lb _f /in ² at 0.5 GPM | II |
| 04 | 4 | 3.10 | 2.7 | 5 lb _f /in ² at 3.0 GPM | II |

The nonsignificant part number M12345/2-02 would be the item shown on figure 2, actuating flow increasing GPM max 0.85, deactuating flow decreasing GPM min 0.5, maximum allowable pressure drop 6 lb_f/in² at 0.7 GPM, and fluid media I.

b. Example of significant (coded) part number (second type).

Part number: Consists of the letter M, the basic number of the specification sheet, and a dash number compiled from the code.



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PART NUMBER CODE:

| <u>Insert</u> | <u>Shield and Shield clamp location or retaining plate</u> | <u>Shell type</u> |
|---------------|--|-------------------|
| A - MS18264 | Shield | 0 - None included |
| B - MS18240 | 1 - Top MS24132 | |
| C - MS18242 | 2 - Side MS24132 | |
| D - MS18244 | 3 - Top MS24133 | |
| E - MS18246 | 4 - Side MS24133 | |
| F - MS19258 | 5 - Top MS18193 | |
| G - MS18250 | 6 - Side MS18193 | |
| H - MS18252 | 0 - None included | |
| J - MS18254 | | |

Jackscrews
or
guidepins

L - Long jackscrews MS18194
S - Short jackscrews MS18195
G - Guidepins MS18197
0 - None included

Contacts: Per MIL-C-12345

1A - 100 percent size 16-16
2A - 100 percent size 16-20

5.11.13 Revision. A revision shall be prepared in accordance with 5.7, except for the notation of revision.

5.11.13.1 Notation of revision. Changes shall be annotated with the current revision letter within a circle adjacent to each change. On page(s) in which the actual change(s) occurs, the revision letter will appear in the body in appropriate relation to the change. At the bottom of the first page will be the notation (for the "A" revision): "(A) denotes changes." These revision letters shall be deleted by subsequent revision. If the changes are extensive, the revision letters and note shall not be used. In this event, the following note will be added at the end of the specification sheet and preceding concluding material: "Revision letters are not used to denote changes due to the extensiveness of the changes." Revisions are prepared when specification sheets are four pages or less or when it is necessary to change the security classification. Specification sheets exceeding four pages may be amended, provided the amendment does not exceed two pages.

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6. NOTES

6.1 Intended use. Specifications conforming to the requirements of this standard are intended for use as military standardization documents and are listed in the DODISS.

6.2 Contractual requirements. To assure complete application of this standard. Invitations for Bids, Requests for Proposals, and contractual statements of work should include all of the requirements stated in section 4, GENERAL REQUIREMENTS, and section 5, DETAILED REQUIREMENTS.

6.3 Data requirements. When this standard is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL), the data requirements identified below will be developed as specified by an approved Data Item Description (DD Form 1664) delivered in accordance with the approved CDRL incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 27.410-6 are invoked and the DD Form 1423 is not used, the data specified below will be delivered by the contractor in accordance with the contract or purchase order requirements.

| Paragraph No. | Data requirement title | Applicable DID no. | Options |
|---------------|------------------------|--------------------|---------|
| 3.8 | Military Specification | DI-MISC-80001 | --- |

(Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

6.4 Subject term (key word) listing.

- Amendments
- AMSC number
- Counterfeit detection
- Data item descriptions
- Distribution statement
- Document identifiers
- Formats
- Hazardous materials
- Metric
- Military specifications
- Notice
- Part numbers
- Preparation of military specifications
- Reclaimed materials
- Recycled materials
- References
- Requirements
- Revisions
- Rights in data
- Specification sheets
- Supersession
- Supplements
- Symbols
- Tailoring of requirements
- Titling
- Toxic products
- Virgin materials

6.5 Changes from previous issue. The margins of this standard are marked with vertical lines to indicate where significant changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations.

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CHECKLIST FOR DRAFTING MILITARY SPECIFICATIONS

The following checklist may be used in drafting military specifications. It is not all inclusive and must be used with caution only as a guide, not as a replacement for instructions in this standard. The subjects in the list must be considered in the development of the specification but should be used only where required. The actual content of a specification depends upon the item covered by the specification and format requirements such as use of detail specifications.

- | | |
|---|--|
| 1. Security classification | 36. Environmental requirements |
| 2. Document identifier (new, revisions, and amendment) | 37. Hardness requirements |
| 3. Heading | 38. Details of units or parts |
| 4. Initial draft note | 39. Chemical and physical properties |
| 5. Title | 40. Electromagnetic interference suppression |
| 6. Preamble | 41. Dimensions |
| 7. Supersession data | 42. Weight |
| 8. FSC, group, or area designation | 43. Color |
| 9. Beneficial comments | 44. Finish |
| 10. AMSC number | 45. Identification plate or part number markings |
| 11. Distribution statement | 46. Anti-counterfeiting |
| | 47. Government-furnished property |
| | 48. Government-loaned property |
| | 49. Tables and table numbering |
| | 50. Figures and figure numbering |
| | 51. Footnotes |
| | 52. Foldouts |
| | 53. Workmanship |
| | 54. All requirements covered by tests in section 4 |
| SECTION 1: SCOPE | |
| 12. Scope | |
| 13. Classification (part numbers, reliability levels, etc), if applicable | |
| SECTION 2: APPLICABLE DOCUMENTS | |
| 14. Government-furnished documents, available and listed in DODISS | |
| 15. Proper sequence of listings | SECTION 4: QUALITY ASSURANCE PROVISIONS |
| 16. Titles and symbols same as on documents | 55. Arrangement and sequencing |
| 17. Other publications (source identified) | 56. Responsibility for inspection and responsibility for compliance |
| 18. Documents referenced in Sections 3, 4, and 5 | 57. Classification of inspection |
| | 58. Toxicological formulations safety clause |
| SECTION 3: REQUIREMENTS | 59. Organization of examinations and tests |
| 19. Paragraph on associated detail speci- fications, MS sheets, or specification sheets | 60. Protection against nuclear radiation |
| 20. Organization and sequencing of requirements and tests | 61. Inspection conditions |
| 21. Qualification clause | 62. First article and initial produc- tion inspections |
| 22. Reliability | 63. Qualification inspection |
| 23. Standard sample (if applicable) | 64. Retention of qualification (if applicable) |
| 24. First article and initial production clauses | 65. Quality conformance inspections |
| 25. Materials (including statement on toxic products and formulations and marking). | 66. Classification of defects |
| 26. Environmental and Clean Air Act | 67. Periodic inspection |
| 27. Recycled material | 68. Noncompliance |
| 28. Design | 69. Inspection of packaging |
| 29. Construction | 70. Test methods for requirements in section 3 |
| 30. Hardware | |
| 31. Maintainability | SECTION 5: PACKAGING |
| 32. Transportability | 71. Packaging level (levels A, B, C, or industrial, as applicable) |
| 33. Performance characteristics | 72. Packaging level (levels A, B, C, or industrial, as applicable) |
| 34. Human factors | |
| 35. Safety | |

FIGURE 1. Checklist for drafting specifications.

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SECTION 6. Notes

73. Marking (includes labeling for packaging containers)
74. Commodities covered by packaging specifications
75. Intended use
76. Ordering data
77. Data requirements
78. First article
79. Standard sample information
80. Qualification
81. Definitions (if applicable)
82. Cross-reference of classification
83. Substitutability data
84. Level B preservation
85. Environmental pollution preventive measures
86. Government-furnished and loaned property
87. Patent notice
88. Subject term (key word) listing
89. Material safety data sheets
90. International Standardization agreements
91. Identification of changes
92. Tables and figures (if grouped at end of specification).
93. Appendix
94. Index

CONCLUDING MATERIAL

95. Preparing activity, custodians, and review and user interest and agent if appropriate
96. Project number
97. DD Form 1426, Standardization Document Improvement Proposal

FIGURE 1. Checklist for drafting specifications - Continued.

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1. SCOPE

1.1 Scope. This specification covers standard studs, bolts, hex cap screws, and nuts in sizes 0.25 inch and over for general, high temperature, and sea-water services

1.2 Classification. Fasteners shall be of the following types and styles, as specified (see 6.2):

TYPES

Studs

- Type I - Full body.
- Type II - Reduced body.
- Type III - Constant strength body.

| | <u>Tap end thread</u> | <u>Nut end thread</u> |
|---------|-----------------------|-----------------------|
| Style a | NC 5 | UNC 3 |
| Style b | NC 5 | UNC 2 |
| Style c | UNC 3 | UNC 3 |
| Style d | UNC 3 | UNC 2 |

- Type IV - Continuous thread.

Bolts

- Type I - Hex bolt.
- Type II - Heavy hex bolt.
- Type III - Heavy hex structural bolt.

Screws

- Type I - Hex cap screw.
(finished hex bolt)

Nuts

- Type I - Hex nut.
- Type II - Hex jam nut.
- Type III - Heavy hex nut.
- Type IV - Heavy hex jam nut.
- Style a - Washer faced.
- Style b - Double chamfered.

FIGURE 2. Example of section 1.

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2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

FEDERAL

| | | |
|----------|---|---|
| Q-F-499 | - | Flux, Brazing, Silver Alloy, Low Melting Point. |
| QQ-B-626 | - | Brass, Leaded and Non-Leaded, Rod, Shaped, Forgings, and Flat Products With Finished Edges (Bar and Strip). |
| QQ-B-654 | - | Brazing, Alloys, Silver. |
| QQ-C-530 | - | Copper-Beryllium Alloy Bars, Rods, and Wire. |
| QQ-S-365 | - | Silver Plating, Electrodeposited, General Requirement for. |
| QQ-S-571 | - | Solder, Tin Alloy, Lead-Tin Alloy and Lead Alloy. |
| QQ-S-637 | - | Steel Bar, Carbon, Cold Finished (Standard Quality Free Machining). |
| TT-S-735 | - | Standard Test Fluids; Hydrocarbon. |
| VV-F-800 | - | Fuel Oil, Diesel. |

MILITARY

| | | |
|-------------|---|--|
| MIL-G-5572 | - | Gasoline, Aviation, Grades 80/87, 100/130, 115/145. |
| MIL-H-5606 | - | Hydraulic Fluid, Petroleum Base, Aircraft, Missile, and Ordnance. |
| MIL-T-5624 | - | Turbine Fuel, Aviation, Grades JP-4 and JP-5. |
| MIL-L-6081 | - | Lubricating Oil, Jet Engine. |
| MIL-L-7808 | - | Lubricating Oil, Aircraft Turbine Engine, Synthetic Base. |
| MIL-C-22520 | - | Crimping Tools, Terminal, Hand or Power Actuated, Wire Termination, and Tool Kits. |
| MIL-F-25656 | - | Fuel, Aircraft Turbine and Jet Engine, Grade JP-6. |
| MIL-C-26074 | - | Coating, Electroless Nickel, Requirements for. |
| MIL-G-45204 | - | Gold Plating (Electrodeposited). |
| MIL-S-45743 | - | Soldering, Manual Type, High Reliability, Electrical, Electronic, Instrument, Communication, and Radar for Aerospace, and Control Systems, Procedures for. |
| MIL-C-55330 | - | Connector, Preparation for Delivery of. |

(See supplement 1 for list of associated specifications)

STANDARDS

FEDERAL

| | | |
|-------------|---|--|
| FED-STD-H28 | - | Screw Thread Standards For Federal Services. |
|-------------|---|--|

MILITARY

| | | |
|--------------|---|--|
| MIL-STD-105 | - | Sampling Procedures and Tables for Inspection, by Attributes. |
| MIL-STD-130 | - | Identification Marking of U.S. Military Property. |
| MIL-STD-414 | - | Sampling Procedure and Table for Inspections By Variables for Percent Defective. |
| MIL-STD-454 | - | Standard and General Requirements for Electronic Equipment. |
| MIL-STD-1344 | - | Test Methods for Electrical Connectors. |

FIGURE 3. Example of section 2.

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2.1.2 Other Government documents. The following other Government document forms a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

Defense Logistics Agency

H4-1 - Federal Supply Code for Manufacturers.

(Copies of specifications, standards, and other Governments documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following document forms a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 484 - General Requirement for Stainless and Heat-Resisting Wrought Steel Product (except wire).

(Application for copies of ASTM publications should be addressed to the American Society for Testing and Materials; 1916 Race Street, Philadelphia, Pennsylvania 19103.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, (except for associated detail specifications, specification sheets or MS standards) 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.

FIGURE 3. Example of section 2 - Continued.

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3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheets. In the event of any conflict between requirements of this specification and the specification sheets, the latter shall govern.

3.2 Qualification. Lead sockets furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.5 and 6.3).

3.3 Material. The material shall be as specified herein. However, when a definite material is not specified, a material shall be used which will enable the sockets to meet the performance requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product.

3.3.1 Socket contacts and terminals. Socket contacts shall be made as specified (see 3.1).

3.3.1.1 Plating. The lead socket contact and the lead socket sleeve and terminal shall be gold plated in accordance with MIL-G-45204 over nickel plating per QQ-N-290. The type, grade and class (thickness) shall be as specified (see 3.1). Gold inlay over nickel is also acceptable. Thickness of the inlay and the gold purity and hardness shall be as specified (see 3.1). Tin or bright acid tin in accordance with MIL-T-10727, type I, a minimum of 180 microinches thick is permitted with copper underplate in accordance with MIL-C-14550, for the lead socket sleeve and terminal. Silver shall not be used as an underplate.

3.4 Design and construction. Sockets shall be of the design, construction and physical dimensions specified (see 3.1). The entry to the socket shall be beveled, chamfered or tapered to facilitate the engagement of the component lead into the socket (see 6.7). The socket contact shall be of beryllium copper per QQ-C-530, QQ-C-533, or QQ-C-576. The lead socket sleeve and terminal shall be of machined one piece construction. The material shall be brass per QQ-B-626. The body shall provide a means of retention to a mounting board as specified (see 3.1).

3.4.1 Temperature rating. Part numbers applicable to tin finishes shall have a temperature rating of -40°C to $+105^{\circ}\text{C}$. Unless otherwise specified (see 3.1), part numbers applicable to gold finish (plating or inlay) contact engagement area shall have a temperature rating of -55°C to $+125^{\circ}\text{C}$.

3.4.2 Wire termination. Unless otherwise specified, wire terminations shall conform to figure 1 and shall be as specified (see 3.1).

3.4.2.1 Solderable terminals. Terminals intended for soldering shall be designed so that there shall be no solder wicking into the lead engagement chamber.

3.4.2.2 Solderless wrap terminals. Type I terminals intended for solderless wrap applications shall conform to the requirements of MIL-STD-1130.

3.4.2.3 Mounting hardware. Mounting hardware shall be selected from AN, NAS, MS, or commercial standards.

3.5 Performance.

3.5.1 Mating force. The maximum mating force shall be as specified (see 3.1 and 4.7.2).

3.5.2 Unmating force. The spring contact within the socket shall hold the test pin with the .5 ounce minimum withdrawal force applied (see 4.7.3).

3.5.3 Socket retention. There shall be no damage or loosening of the socket from the mounting board after the socket retention test (see 4.7.4).

FIGURE 4. Example of section 3.

3.5.4 Contact resistance. The initial contact resistance shall not be greater than 15 milliohms and after the durability and corrosive atmosphere test, the contact resistance shall not be greater than 30 milliohms (see 4.7.5).

3.5.5 Terminal strength (type I only). Testing of terminals shall not result in damaging of the terminal or the socket contact (see 4.7.6.1 through 4.7.6.2).

3.5.6 Vibration. During vibration, there shall be no interruption in continuity greater than 1 microsecond of the test circuit which incorporates mated contacts. There shall be no physical or mechanical damage to the mounted socket contacts. After the test, the sockets shall meet the contact resistance requirement of 3.5.4 and the contact withdrawal force requirement of 3.5.2 (see 4.7.7).

3.5.7 Mechanical shock. During the test there shall be no interruption in continuity greater than 1 microsecond of the test circuit which incorporates mated contacts. There shall be no physical damage to the socket (see 4.7.8).

3.5.8 Socket durability. After 50 insertions and removals, sockets shall show no evidence of cracking or breaking. The socket shall meet the contact resistance requirement of 3.5.4 and the contact withdrawal force requirement of 3.5.2 (see 4.7.9).

3.5.9 Thermal shock. There shall be no evidence of physical damage to the socket. The socket shall be capable of being mated with the maximum test gage without damage to the socket or the gage (see 4.7.10).

3.5.10 Low-level circuit. The socket shall show no electrical discontinuity and the contact resistance requirement of 3.5.4 shall not be exceeded (see 4.7.11).

3.5.11 Corrosive atmosphere. There shall be no evidence of porous plating or exposure of base metal on the contacting surfaces and the contact resistance requirement of 3.5.4 shall not be exceeded (see 4.7.12 and 6.5.1).

3.5.12 Solderability (except type I terminals). Terminations shall withstand the test (see 4.7.13).

3.5.13 Resistance to soldering heat (except type I terminals). Sockets shall withstand the test without damage. There shall be no solder wicking into the lead engagement area (see 4.7.14).

3.5.14 Salt spray. There shall be no visual signs of corrosion or corrosive salts on the base metal (see 4.7.15). The socket shall then meet the requirements of 3.5.10.

3.5.15 Spring contact retention. During testing, the spring contact shall not separate from the socket sleeve (see 4.7.16).

3.6 Marking. Sockets shall be marked in accordance with method I of MIL-STD-1285, and shall include the military part number (see 3.1), the manufacturer's name or code symbol, and date code. The marking shall be on the package.

3.7 Workmanship. Sockets shall meet all design dimensions and intermateability requirements of this specification. Loose contacts, poor molding fabrication, loose materials, defective bonding, damaged or improperly assembled contacts, peeling, or chipping of plating or finish, galling of mating parts, nicks and burrs of metal parts, and post molding warpage will be considered adequate basis for rejection of items being of inferior quality for the purpose intended. Emphasis shall be on the quality of the molded dielectric retention system parts.

FIGURE 4. Example of section 3 - Continued.

4. QUALITY ASSURANCE PROVISIONS

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 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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.

4.1.2 Test equipment and inspection facilities. The manufacturer shall insure that test and inspection facilities of sufficient accuracy, quality and quantity are established and maintained to permit performance of required inspections.

4.2 Classification of inspections. The inspections specified herein are classified as follows:

- a. Qualification inspection (see 4.4).
- b. Quality conformance inspection (see 4.5).

4.3 Inspection conditions and precautions.

4.3.1 Conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of MIL-STD-202.

4.3.2 Precautions. Adequate precautions shall be taken during inspection to prevent condensation of moisture on networks, except during moisture-resistance test.

4.4 Qualification inspection. Qualification inspection shall be performed at a laboratory acceptable to the Government (see 6.3) on sample units produced with equipment and procedures normally used in production.

4.4.1 Sample. The number of sample units comprising a sample of networks to be subjected to qualification inspection shall be as specified in the appendix. The sample shall be taken at random from a production run and shall be produced with equipment and procedures normally used in production. The sample units shall have been subjected to and passed the requirements of group A inspection (see 4.5.1.2). Qualification shall not be granted if group A inspection requirements are not met. Each network style shall be qualified separately (see 3.1).

4.4.2 Inspection routine. Sample units shall be subjected to the qualification inspection specified in table III in the order shown. Sample sizes and extent of qualification for characteristics shall be specified in the appendix.

4.4.3 Failures. Failures in excess of those allowed in table III shall be cause for refusal to grant qualification.

FIGURE 5. Example of section 4.

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4.4.4 Retention of qualification. To retain qualification, the contractor shall forward a report at 6-month intervals to the qualifying activity. The qualifying activity shall establish the initial reporting date. The report shall consist of:

- a. A summary of the results of the tests performed for inspection of product for delivery (groups A and B), indicating as a minimum the number of lots that have passed, the number that have failed, and the group which they failed. The results of tests of all reworked lots shall be identified and accounted for.
- b. A summary of the results of tests performed for periodic inspection (group C), including the number and mode of failures. The summary shall include results of all periodic inspection tests performed and completed during the 6-month period. If the summary of the test results indicates nonconformance with specification requirements, and corrective action acceptable to the qualifying activity has not been taken, action may be taken to remove the failing product from the qualified products list.

Failure to submit the report within 30 days after the end of each 6-month period may result in loss of qualification for the product. In addition to the periodic submission of inspection data, the contractor shall immediately notify the qualifying activity at any time during the 6-month period that the inspection data indicates failure of the qualified product to meet the requirements of this specification.

In the event that no production occurred during the reporting period, a report shall be submitted certifying that the company still has the capabilities and facilities necessary to produce the item. If during two consecutive reporting periods there has been no production, the manufacturer may be required, at the discretion of the qualifying activity, to submit his qualified products to testing in accordance with the qualification inspection requirements and the reason for no production.

4.5 Quality conformance inspection.

4.5.1 Inspection of product for delivery. Inspection of product for delivery shall consist of groups A and B inspections.

4.5.1.1 Inspection lot. An inspection lot shall be as defined in MIL-STD 105 and shall consist of all the networks of the same style, resistance characteristic, and protective inclosure or coating produced under essentially the same conditions and offered for inspection during a period of 1 month.

4.5.1.2 Group A inspection. Group A inspection shall consist of the inspections specified in table IV, and shall be made on the same set of sample units, in the order shown.

4.5.1.2.1 Sampling plan. Subgroup 1 tests shall be performed on 100 percent of the product supplied under this specification. Networks that are out of resistance or capacitance tolerance, or which experience a change in resistance (%R), or capacitance (%C) greater than that permitted, or which do not meet initial requirements for dielectric withstanding voltage, dissipation factor, or insulation resistance of the capacitor shall be removed from the lot. Lots having more than 10 percent total rejects, due to exceeding the specified change limits shall not be furnished on contracts. Statistical sampling and inspection for subgroup 2 shall be in accordance with MIL-STD-105 for general inspection level II. Major and minor defects shall be as defined in table V.

FIGURE 5. Example of section 4 - Continued.

MIL-STD-961B

4.5.1.2.1.1 Manufacturer's production inspection. If the manufacturer performs tests similar to those specified in subgroup 1, table IV as the final step of his production process, the test data generated may be substituted for the group A, subgroup 1 inspection. Authority to make the substitution shall be granted by the qualifying activity only. The following criteria must be met:

- a. Tests conducted by the manufacturer during production shall be clearly identical to or more stringent than those specified for subgroup 1. Test conditions shall be equal to or more stringent than those specified for subgroup 1 tests.
- b. Manufacturer subjects 100 percent of the product supplied under this specification to his production tests.
- c. The parameters measured and the failure criteria shall be the same or more stringent than those specified herein.
- d. The lot rejection criteria is the same or more stringent than that specified herein.
- e. The manufacturer shall make available all information concerning the test procedures and instrumentation used in his production tests. The manufacturer shall also make available to the Government all records of all detail test data resulting from production tests.
- f. Once approved the manufacturer shall not change the test procedures or criteria without prior notification and concurrence by the qualifying activity.

4.5.1.2.1.2 Rejected lots (subgroup 2). Rejected inspection lots may be resubmitted for Government acceptance only if the manufacturer performs 100-percent inspection on networks of the lot for those characteristics which were defective and resulted in rejection of the lot and removes all defective units and resubmits the lot for quality conformance inspection. Resubmitted lots shall be kept separate from new lots, and shall be clearly identified as resubmitted lots. Resubmitted lots shall be inspected using the tightened inspection procedure of MIL-STD-105 and shall not thereafter be tendered for acceptance unless the former rejection or requirement of correction is disclosed.

4.5.1.3 Group B inspection. Group B inspection shall consist of the inspections specified in table VI in the order shown. They shall be performed on sample units that have been subjected to and have passed the group A inspection.

4.5.1.3.1 Sampling plan. The sampling plan shall be in accordance with MIL-STD-105. Unless otherwise specified herein, S-4 inspection shall be used.

4.5.1.3.2 Rejected lots. If an inspection lot is rejected, the manufacturer may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection and shall not thereafter be tendered for acceptance unless the former rejection or requirement of correction is disclosed. Such lots shall be separate from new lots and shall be clearly identified as reinspect.

FIGURE 5. Example of section 4 - Continued.

MIL-STD-9618

TABLE III. Qualification inspection.

| Inspection | Number of sample units | Requirement paragraph | Method paragraph | Number of failures allowed <u>1/</u> |
|--|--------------------------|------------------------------|------------------|--------------------------------------|
| <u>Group I</u> 3/ 4/ Visual and mechanical inspection 2/ 3/ - - - | All sample units | 3.1.3, 3.3.4, 3.26, and 3.27 | 4.6.2 | 0 |
| Thermal shock - - - - - | | 3.7 | 4.6.3 | |
| Power and voltage conditioning - - - - - | | 3.8 | 4.6.4 | |
| DC resistance - - - - - | | 3.9 | 4.6.5 | |
| Dielectric withstanding voltage of the capacitor- Capacitance - - - - - | | 3.18.2 | 4.6.14.2 | |
| Dissipation factor - - - - | | 3.10 | 4.6.6 | |
| Insulation resistance of the capacitor - - - - | | 3.11 | 4.6.7 | |
| | | 3.19.2 | 4.6.15.2 | |
| <u>Group II</u> Solderability - - - - - | 10 | 3.12 | 4.6.8 | 1 |
| Resistance to solvents - - | | 3.13 | 4.6.9 | |
| <u>Group III</u> Resistance temperature characteristic - - - - - | 20 | 3.14 | 4.6.10 | 1 |
| Low-temperature operation - - - - - | 10 high | 3.15 | 4.6.11 | |
| Short-time overload - - - | 10 low | 3.16 | 4.6.12 | |
| Terminal strength - - - - | | 3.17 | 4.6.13 | |
| <u>Group IV</u> Dielectric withstanding voltage - - - - - | 20 | 3.18 | 4.6.14 | 1 |
| Insulation resistance - - | 10 high | 3.19 | 4.6.15 | |
| Resistance to soldering heat - - - - - | 10 low | 3.20 | 4.6.16 | |
| Moisture resistance - - - | | 3.21 | 4.6.17 | |
| <u>Group V</u> Shock (specified pulse) - | 20 | 3.22 | 4.6.18 | 1 |
| Vibration, high frequency - - - - - | 10 low | 3.23 | 4.6.19 | |
| <u>Group VI</u> Life - - - - - | 20 | 3.24 | 4.6.20 | 1 |
| | 10 high | | | |
| | 10 low | | | |
| <u>Group VII</u> High-temperature exposure - - - - - | 20 | 3.25 | 4.6.21 | 1 |
| Low-temperature storage - | 10 critical 4/ 10 low | 3.26 | 4.6.22 | |

1/ Failure of a single resistor or capacitor in one or more tests of a group shall be charged as a single defective.

2/ Marking shall be considered defective if the marking is illegible or incorrect.

3/ Tests need not be performed if group A inspection tests have been performed on the qualification sample.

4/ Nondestructive tests.

FIGURE 5. Example of section 4 - Continued.

MIL-STD-961B

TABLE IV. Group A inspection.

| Inspection | Requirement paragraph | Test method paragraph | Sampling procedure | |
|--|-----------------------|-----------------------|-------------------------|-------|
| <u>Subgroup 1</u> | | | | |
| Thermal shock - - - - - | 3.7 | 4.6.3 | 100-percent inspection | |
| Power and voltage conditioning - - - | 3.8 | 4.6.4 | | |
| DC resistance - - - - - | 3.9 | 4.6.5 | | |
| Dielectric withstanding voltage of the capacitor - - - - - | 3.18.2 | 4.6.14.2 | | |
| Capacitance - - - - - | 3.10 | 4.6.6 | | |
| Dissipation factor - - - - - | 3.11 | 4.6.7 | | |
| Insulation resistance of the capacitor - - - - - | 3.19.2 | 4.6.15.2 | AQL (percent defective) | |
| | | | Major | Minor |
| <u>Subgroup 2</u> | | | | |
| Visual and mechanical inspection - - - - - | 3.1,3.3,3.4,3.27,3.28 | 4.6.2 | 1 | 4 |

TABLE V. Classification of defects.

| Construction: | Requirement | Classification |
|-------------------|--|----------------|
| Body - - - - - | Cracks or holes which could cause probable failure. | Major |
| | Mounting hold, incorrect dimension. | Major |
| Leads - - - - - | Leads broken, crushed or nicked which would cause probable failure in use. | Major |
| | Crushed or nicks at ends which would not cause failure in use. | Minor |
| | Lead spacing incorrect dimensions. | Major |
| Marking - - - - - | Incorrect, illegible marking. | Major |

4.5.1.3.3 Disposition of sample units. Sample units which have passed all the group B inspection may be delivered on the contract or purchase order, provided they are within resistance and capacitance tolerance and meet requirements for visual and mechanical inspection.

TABLE VI. Group B inspection.

| Inspection | Requirement paragraph | Test method paragraph | AQL (percent defective) |
|--|-----------------------|-----------------------|-------------------------|
| Resistance temperature characteristic - - | 3.14 | 4.6.10 | } 2.5 |
| Dielectric withstanding voltage (network)- | 3.18.1 | 4.6.14.1 | |
| Insulation resistance (network) - - - - - | 3.19.1 | 4.6.15.1 | |
| Short-time overload - - - - - | 3.16 | 4.6.12 | |
| Dielectric withstanding voltage of the capacitor - - - - - | 3.18.2 | 4.6.14.2 | |
| Capacitance - - - - - | 3.10 | 4.6.6 | |
| Dissipation factor - - - - - | 3.11 | 4.6.7 | |
| Insulation resistance of the capacitor - - | 3.19.2 | 4.16.15.2 | |

FIGURE 5. Example of section 4 - Continued.

MIL-STD-961B

4.5.2 Periodic inspection. Periodic inspection shall consist of group C. Except where the results of these inspections show noncompliance with the applicable requirements (see 4.5.2.1.4), delivery of products which have passed groups A and B inspections shall not be delayed pending the results of these periodic inspections.

4.5.2.1 Group C inspection. Group C inspection shall consist of the tests specified in table VII, in the order shown. Group C inspection shall be performed on sample units of each style and selected from inspection lots which have passed groups A and B inspections. Group C inspection samples shall be representative of production.

4.5.2.1.1 Sampling plan.

4.5.2.1.1.1 Monthly. Ten sample units of any resistance and capacitance values shall be inspected every month.

4.5.2.1.1.2 Quarterly. Twenty sample units of any resistance and capacitance values shall be inspected quarterly. Ten sample units shall be subjected to the tests of subgroup 1, and 10 sample units shall be subjected to the tests of subgroup 2.

4.5.2.1.1.3 Semiannually. Thirty sample units of any resistance and capacitance value shall be inspected semiannually. Ten samples shall be subjected to the tests of subgroup 1, 10 samples shall be subjected to the tests of subgroup 2, and 10 samples shall be subjected to the tests of subgroup 3.

4.5.2.1.2 Defectives. If the number of defectives exceed the number allowed in table VII, the sample shall be considered to have failed.

4.5.2.1.3 Disposition of samples. Sample units which have been subjected to group C inspection shall not be delivered on the contract or purchase order.

4.5.2.1.4 Noncompliance. If a sample fails to pass group C inspection, the manufacturer shall notify the qualifying activity and the cognizant inspection activity of such failure and take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which are manufactured under essentially the same materials and processes, and which are considered subject to the same failure. Acceptance and shipment of the product shall be discontinued until corrective action, acceptable to the qualifying activity has been taken. After the corrective action has been taken group C inspection shall be repeated on additional sample units (all tests and examinations, or the test which the original sample failed, at the option of the qualifying activity). Groups A and B inspections may be reinstituted; however, final acceptance and shipment shall be withheld until the group C inspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure shall be furnished to the cognizant inspection activity and the qualifying activity.

4.5.3 Inspection of packaging. The sampling and inspection of the preservation, packing, and container marking shall be in accordance with the requirements of MIL-R-39032.

4.6 Methods of inspection.

FIGURE 5. Example of section 4 - Continued.

MIL-STD-961B

5. PACKAGING

5.1 Preservation. Preservation shall be levels A, B, or C, as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Cleaning. Modules shall be cleaned in accordance with MIL-P-116, process C-1.

5.1.1.2 Drying. Modules shall be dried in accordance with MIL-P-116.

5.1.1.3 Preservative application. Preservatives shall not be used.

5.1.1.4 Unit packs. Each module shall be individually unit packed in accordance with submethod IA-8 of MIL-P-116 in a bag or envelope conforming to MIL-B-117, type I, class F, style 1. To avoid capacitor effects, each bag or envelope shall be fabricated from a continuous piece of barrier material. Cushioning shall conform to PPP-C-1842, type III or PPP-C-7951, class 2. Each unit exceeding 30 cubic inches (491.6 cubic centimeters) shall be placed in a supplementary container conforming to variety 2 of PPP-B-566 or PPP-B-676 or the weather resistant class of PPP-B-636.

5.1.1.5 Intermediate packs. Unit packs not exceeding 30 cubic inches in size shall be placed in intermediate containers conforming to variety 2 of PPP-B-566 or PPP-B-676 or the weather resistant class of PPP-B-636. Intermediate containers shall be uniform in size, shape and quantities, shall be of minimum tare and cube and shall contain multiples of five unit packs, not to exceed 100 unit packs. No intermediate packs are required when the total quantity shipped to a single destination is less than 100 unit packs or when supplementary containers are used.

5.1.2 Level B. The level B preservation for modules shall be as specified for level A except that variety 1 of PPP-B-566 or PPP-B-676 or class domestic of PPP-B-636 may be used for the supplementary and intermediate containers specified in 5.1.1.4 and 5.1.1.5 (see 6.2).

5.1.3 Level C. Except as specified herein, the level C preservation for modules shall conform to the MIL-STD-794 requirements for this level. Wrapping and cushioning materials shall be nonstatic generating and noncorrosive and shall not crumble, flake, powder or shed. Unless otherwise specified in the contract (see 6.2), the quantity per unit pack shall be at the option of the supplier.

5.2 Packing. Packing shall be level A, B or C, as specified (see 6.2).

5.2.1 Level A. Modules, preserved as specified in 5.1, shall be packed in wood containers conforming to PPP-B-601, overseas type or PPP-B-621, class 2. Closure and strapping shall be in accordance with the applicable container specification except that metal strapping shall conform to QQ-S-781, type I, finish A. The requirements for level B packing shall be used when the total quantity of a stock numbered module for a single destination does not exceed a packed volume of one cubic foot (0.0283 cubic meter).

5.2.2 Level B. Modules, preserved as specified in 5.1, shall be packed in fiber-board containers conforming to PPP-B-636, class weather resistant, style optional, special requirements. The requirements for box closure, waterproofing and reinforcing shall be in accordance with method V of the PPP-B-636 appendix.

5.2.3 Level C. Modules, preserved as specified in 5.1, shall be packed in fiber-board containers conforming to PPP-B-636, class domestic, style optional, special requirements. Closures shall be in accordance with the PPP-B-636 appendix.

FIGURE 6. Example of section 5.

MIL-STD-961B

5.3 Marking.

5.3.1 Standard marking. In addition to any special or other identification marking required by the contract (see 6.2), each unit, supplementary, intermediate and exterior container shall be marked in accordance with MIL-STD-129. The complete military or contractor's type or part number, as applicable (including the FSCM), shall be marked on all unit, supplementary and intermediate packs in accordance with the identification marking provisions of MIL-STD-129.

5.3.1 Special marking. In addition to the marking requirements of 5.3.1 and regardless of the level or type of packaging specified, all unit, supplementary, intermediate and exterior containers shall be marked as specified for sensitive electronic devices in MIL-STD-129.

5.4 General.

5.4.1 Exterior containers. Exterior containers (see 5.2.1, 5.2.2 and 5.2.3) shall be of a minimum tare and cube consistent with the protection required and shall contain equal quantities of identical stock numbered items to the greatest extent practicable.

5.4.2 Packaging inspection. The inspection of these packaging requirements shall be in accordance with 4.4.10.

FIGURE 6. Example of section 5 - Continued.

MIL-STD-961B

6. NOTES

6.1 Intended use. These connectors are designed for printed wiring board-to-printed wiring board or printed wiring board-to-cable interconnection of miniaturized equipment subassemblies with low-power requirements.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Type, style, material grade, and heat treatment or condition of fasteners (see 1.2, 3.1, 3.2, and tables I, II, and III).
- c. Zinc or cadmium plating, if required (see 3.1 and 6.1.1).
- d. Size, length (for bolts and studs), thread series, and class of fit (see 3.4.1 and 3.4.4.2).
- e. Whether lot A or B is required (see 4.2.1).
- f. Levels of preservation and packing (see section 5).

6.2.2 Data requirements. When this specification is used in an acquisition which incorporate a DD Form 1423, Contract Data Requirements List (CDRL) the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 27.410-6 are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification is cited in the following paragraphs.

| Paragraph no. | Data requirements | Applicable DID no. | Options |
|---------------|--------------------------------|--------------------|---------|
| (a) 4.1.1 | Inspection system program plan | DI-R-4803 | ----- |
| (b) 4.5 | Reports, test | DI-T-2072 | ----- |

(Copies of DID's required by contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

6.3 Supersession data. This specification includes the requirements of MIL-S-1222F dated 9 December 1963, and Interim Amendment-4(SHIPS) thereto dated 31 March 1969; MIL-B-857A(SHIPS) dated 1 June 1956, and Amendment-5 thereto dated 28 February 1969; MS18116(SHIPS) dated 23 May 1969, and MS17980(SHIPS) dated 14 May 1963.

FIGURE 7. Example of section 6.

MIL-C-81580

APPENDIX

PROCEDURE FOR QUALIFICATION INSPECTION

10. SCOPE

10.1 Scope. This appendix details the procedure for submission of samples, with related data, for qualification inspection of coils covered by this specification. The procedure for extending qualification of the required sample to other coils covered by this specification is also outlined herein. This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

20. APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

30. SUBMISSION

30.1 Sample.

30.1.1 Single-type submission. A sample consisting of 151 sample units of each core material, class, and individual inductance value for which qualification is sought shall be submitted. Ten additional sample units shall be submitted for the fungus test if certification is not provided.

30.1.2 Combined-type submission. A sample consisting of 142 sample units of the lowest inductance value and 142 sample units of the highest inductance value for each class covered by a single specification sheet for which qualification is sought shall be submitted. Nine additional samples of any inductance value shall be submitted for group III tests. Ten additional sample units of any inductance value shall be submitted for the fungus test if certification is not provided.

30.2 Description of items. The manufacturer shall submit a detailed description of the coils being submitted for inspection, including the material used for the coil form, encapsulation of molding, type of winding, wire size, insulation, etc.

40. EXTENT OF QUALIFICATION

40.1 Single-type. Qualification shall be restricted to the single "M" part number submitted.

40.2 Combined-type submission. Qualification shall be restricted to all of the inductance values covered on a single specification sheet within the values passing qualification inspection.

FIGURE 8. Example of appendix.

MIL-STD-961B

MIL-F-23419C
SUPPLEMENT 1
17 August 1977MILITARY SPECIFICATION
FUSES, INSTRUMENT TYPE
GENERAL SPECIFICATION FOR

This supplement forms a part of MIL-F-23419C, dated 17 August 1977.

SPECIFICATION SHEETS

MIL-F-23419/1 - Fuse, Instrument Type, Style FM01 (Indicating).
MIL-F-23419/2 - Fuse, Instrument Type, Style FM02 (Indicating).
MIL-F-23419/3 - Fuse, Instrument Type, Style FM03 (Nonindicating).
MIL-F-23419/4 - Fuse, Instrument Type, Style FM04 (Nonindicating).
MIL-F-23419/6(EC) - Fuse, Instrument Type, Style FM06 (Nonindicating).
MIL-F-23419/7(EC) - Fuse, Instrument Type, Style FM07 (Subminiature-High Performance).
MIL-F-23419/8(EC) - Fuse, Instrument Type, Style FM08 (Subminiature-High Performance).

Preparing activity:
Navy - EC

Page 1 of 1
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited. FSC 5920

FIGURE 9. Example of supplement to a general specification.

MIL-STD-961B

MIL-F-93721
 AMENDMENT 3
 14 February 1984
~~SUPERSEDING~~
 AMENDMENT 2
 4 August 1983

MILITARY SPECIFICATION SHEET

FILTERS AND CAPACITORS, RADIO FREQUENCY/
 ELECTROMAGNETIC INTERFERENCE SUPPRESSION,
 GENERAL SPECIFICATION FOR

This amendment forms a part of Military Specification MIL-F-93721, dated 17 December 1981, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 5

* 3.6.6, delete and substitute:

"3.6.6 Capacitor elements (Class S filters only). Capacitor elements used in the construction of Class S filters shall be manufactured and tested to MIL-C-123 as follows:

- a. Capacitors shall meet the applicable requirements of MIL-C-123 except for qualification.
- b. Capacitors shall be manufactured with lot control, in-process controls, and the groups A and B inspections of MIL-C-123. The group B thermal shock test and subsequent life test shall not be performed.
- c. The conditions listed above shall be specified to an approved baseline documentation."

PAGE 19

4.6.3d, delete "30 mA minimum".

PAGE 21

4.6.11, add the following sentence:

"Lead wires specified in accordance with table VII, shall be the smaller of the wire specified per table VII or the actual lead wire size of the filter terminal."

The attached insertable replacement pages listed below are replacements for stipulated pages. When the new pages have been entered in the document, insert the amendment as the cover sheet to the specification.

| <u>Replacement page</u> | <u>Page replaced</u> |
|-------------------------|--------------------------|
| 23 | 23 |
| 24 | Reprinted without change |
| 31 | Reprinted without change |
| 32 | 32 |
| 35 | 35 |
| 36 | 36 |

1 of 2

FSC 59GP

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

FIGURE 10. Example of an amendment (first page).

MIL-STD-961B

MIL-I-2819F
INTERIM AMENDMENT 1(SH)
14 August 1980

MILITARY SPECIFICATION
INSULATION BLOCK, THERMAL

This interim amendment is approved for use within the Naval Sea Systems Command, Department of the Navy, with MIL-I-2819F, dated 7 October 1975.

PAGE 3

3.7, last line: Delete "one hour" and substitute: "two hours".

PAGE 5

4.5.10, line 2: Delete "1/4-inch layer" and substitute: "1/8-inch layer".

Preparing activity:
Navy - SH

(Project 5640-N047)

Page 1 of 1 FSC 5640
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 11. Example of an interim amendment.

MIL-STD-961B

NOTICE OF INACTIVATION
FOR NEW DESIGN

MIL-R-22684/5A(USAF)
NOTICE 1
20 May 1969

MILITARY SPECIFICATION SHEET
RESISTORS, FIXED, FILM, INSULATED
STYLE RL07....TX

This notice should be filed in front of MIL-R-22684/5A(USAF)
dated 7 September 1967.

MIL-R-22684/5A(USAF) is inactive for new design and is no longer used by the Air Force except for replacement purposes.

The Qualified Products List (QPL) associated with this inactive for new design specification will be maintained until acquisition of the product is no longer required whereupon the specification and QPL will be canceled.

Preparing activity:
Air Force - 11

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited. FSC 5905

FIGURE 12. Example of inactive for new design notice.

MIL-STD-961B

NOTICE
OF CANCELLATION

MIL-C-13701B(ME)
NOTICE 1
24 August 1979

MILITARY SPECIFICATION
COMPRESSORS, RECIPROCATING, POWER DRIVEN
(FOR DIESEL ENGINE STARTING)

MIL-C-13701B(ME), dated 31 August 1971, is hereby canceled without replacement.

Preparing activity:
Army - ME

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited. FSC 4310

FIGURE 13. Example of a cancellation notice.

MIL-STD-961B

NOTICE
OF CANCELLATION

MIL-M-45207B(MR)
NOTICE 1
24 October 1979

MILITARY SPECIFICATION
MAGNESIUM ALLOY (K1A), SAND CASTINGS

MIL-M-45207B(MR), dated 25 May 1966, is hereby canceled. Future procurements for this material should refer to the portions of ASTM B-80, Magnesium-Alloy Sand Castings, which pertain to alloy designation K1A (UNS M18010).

(Application for copies of ASTM publications should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia PA 19103.

Preparing activity:
Army - MR

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

FIGURE 14. Example of a cancellation notice with superseding document.

NOTICE
OF REINSTATEMENT

MIL-H-28719
NOTICE 2
13 August 1979
~~SUPERSEDING~~
NOTICE 1
3 September 1976

MILITARY SPECIFICATION
HEADERS, HERMETICALLY SEALED

MIL-H-28719, dated 31 March 1970, is hereby reinstated and may be used for acquisition. The Naval Sea Systems Command (OS) hereby assumes preparing activity responsibility in lieu of the Naval Electronic Systems Command (EC).

(Copies of specifications, standards, drawings, and publications required by contractors in connection with the specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

Custodians:
Army - ER
Navy - OS
Air Force - 85

Preparing activity:
Navy - OS
(Project 5940-1120)

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited. FSC 5940

FIGURE 15. Example of reinstatement notice.

MIL-STD-961B

MIL-R-XXX/XC

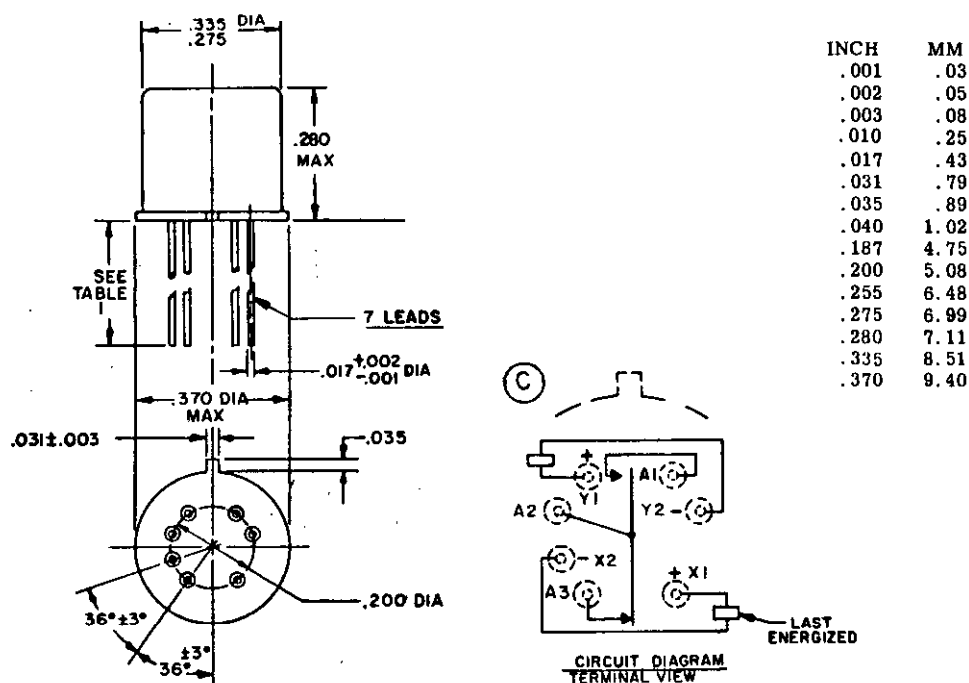
SUPERSEDING
MIL-R-XXX/XB
25 April 1980

MILITARY SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, ESTABLISHED RELIABILITY, SPDT,
LOW LEVEL TO 0.5 AMPERE (LATCHING)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirement for acquiring the relays described herein shall consist of this specification and the latest issue of MIL-R-XXX.



NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is $\pm .010$ (.25 mm).
4. Terminal numbers shown above for reference only. Numbers do not appear on relay.
5. Relays shall have a plus (+) sign placed on the circuit diagram as shown.
6. All leads shall be electrically insulated from the case.
7. Coil symbol optional in accordance with MIL-STD-1285.
8. Circuit diagram shown on part is the terminal view.

FIGURE 1. Dimensions and configuration.

Ⓒ denotes changes

1 of 6

FSC 5945

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

FIGURE 16. Example of a specification sheet.

MIL-STD-961B

MIL-R-XXX/XC

REQUIREMENTS:

Contact data:

Load ratings:

High level (relay case grounded):

Resistive: 0.5 A at 28 V dc.

Inductive load: 0.2 A at 28 V dc with 0.32 henry inductance.

Lamp: 0.10 A at 28 V dc (life test not required).

Low level: 10 to 50 A at 10 to 50 mV dc or peak ac.

Intermediate current: Applicable.

Contact resistance or voltage drop:

Initial (tested at low level): 0.10 ohm maximum.

High level:

During life: Not more than 5 percent of open circuit voltage.

After life: 0.20 ohm maximum.

Low level:

During life: 33 ohms maximum.

After life: 0.15 ohm maximum.

Intermediate current:

During: 1 ohm maximum.

After: 0.20 ohm maximum.

Contact bounce: 1.5 ms maximum (applicable to failure rate level "L").

Contact stabilization time: 2.0 ms maximum (applicable to failure rate levels "M", "P", and "R").

Overload (high level only): Two times rated current.

Coil data:

Rated voltage: See table I.

Maximum voltage: See table I.

Operate voltage: See table I.

Coil resistance : See table I.

Operate time: 1.5 ms maximum over temperature range with rated voltage.

Release time: Not applicable.

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Electrical data:

Insulation resistance: 10,000 megohms minimum at 500 V dc, except the resistance between coil and case at high temperature shall be 1,000 megohms minimum.

Dielectric withstanding voltage:

| | Sea level V rms (60 Hz) | Altitude V rms (60 Hz) |
|---|----------------------------|---------------------------------|
| Between case, frame, or enclosure and all contacts both in the energized and deenergized positions - - - | 500 | 125 All terminals to case |
| Between case, frame, or enclosure and coil(s) - - - - | 500 | |
| Between all contacts and coil(s) - - - - - | 500 | |
| Between open contacts in the energized and deenergized positions - - - - - | 500 | |
| Between contact poles - - - - - | --- | |
| Between coils of dual coil relays - - - - - | 500 | |

Environmental data:

Temperature range: -65°C to +125°C.

Vibration: Applicable.

Shock (specified pulse): MIL-STD-202, method 213, test condition C (100 G).

Magnetic interference: Applicable.

Resistance to soldering heat: Applicable.

Acceleration: Applicable.

Salt spray (corrosion): In accordance with method 1041, MIL-STD-750.

Physical data:

Terminal strength (Method 211, MIL-STD-202):

Pull test: Test condition A, 1 pound pull.

Bend test: Test condition C, 1/2 pound load.

Twist test: Test condition D.

Dimensions and configuration: See figure 1.

Weight: 0.08 ounce (2.27 grams) maximum.

Seal: Hermetic.

Minimum marking: Military part number, J date code, Circuit diagram,
Manufacturers name or source code.

Life test requirements:

High level: 100,000 operations per relay.

Low level: 100,000 operations plus 900,000 mechanical life.

Part number: MXXX/X- (dash number from table I and suffix letter designating failure rate level).

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Ⓒ TABLE I. Dash numbers and characteristics. 1/ 2/

| Dash numbers 3/ 4/ | | | Coil voltage (V dc) | | At 25°C | | At 125°C |
|--------------------------|----------------------------|-------------------------|------------------------|-----|---------------------------------|----------------------------------|----------------------------------|
| Lead length 1.500 min | Lead length .187 ± .010 | Lead length .500 min | Rated | Max | Coil resistance Ohms ±10% | Operate voltage (V dc) max | Operate voltage (V dc) max |
| 013 | 014 | 025 | 5.0 | 6.0 | 61 | 2.5 | 3.5 |
| 015 | 016 | 026 | 6.0 | 8.0 | 120 | 3.5 | 4.5 |
| 017 | 018 | 027 | 9.0 | 12 | 280 | 5.3 | 6.8 |
| 019 | 020 | 028 | 12 | 16 | 500 | 7.0 | 9.0 |
| 021 | 022 | 029 | 18 | 24 | 1,130 | 10.5 | 13.5 |
| 023 | 024 | 030 | 26.5 | 32 | 2,000 | 14.2 | 18 |

- 1/ Relays previously tested or used above 10 mA resistive at 6 V dc maximum or peak ac open circuit shall not be used for low level application.
- 2/ WARNING: When latching relays are installed in equipment, the latch and reset coils should not be pulsed simultaneously. Coils should not be pulsed with less than the nominal coil voltage and the pulse width should be a minimum of three times the specified operate time of the relay. If these conditions are not followed, it is possible for the relay to be in the magnetically neutral position.
- 3/ The suffix letter L, M, P, or R to designate the applicable failure rate level shall be added to the applicable listed dash number. Failure rate level (percent per 10,000 operations): L, 3.0; M, 1.0; P, 0.1; R, 0.01.
Example, 001L - - - 012R.
- 4/ 1.500 leads are inactive for new design.

Qualification inspection: See table II.

Reduced testing: See table III (Sample size - 2 units each coil voltage and 1 unsealed unit). If the relays produced for MIL-R-XXX/XC are similar in construction and design except for the diodes and headers, as applicable, to the relays produced for MIL-R-39016/27, MIL-R-39016/28, or MIL-R-39016/30, then reduced testing for qualification of MIL-R-XXX/XC relays may be performed concurrent with or subsequent to successful qualification of MIL-R-39016/27, MIL-R-39016/28, or MIL-R-39016/30.

FIGURE 16. Example of a specification sheet - Continued.

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③ TABLE II. Qualification inspection and sample size. 1/

| Single submission | Group submission |
|--|---|
| 18 units plus 1 open unit for level L at C = 0 2/ 33 units plus 1 open unit for level M at C = 0 2/ Qualification inspection as applicable | 18 units plus 1 open unit for level L at C = 0 2/ 33 units plus 1 open unit for level M at C = 0 2/ Qualification inspection as applicable 2 units each part number Qualification inspection, Group I |
| MXXX/X-020 MXXX/X-025 MXXX/X-026 MXXX/X-027 MXXX/X-028 MXXX/X-029 | |

1/ For retention of qualification or extension of qualification to lower failure rate levels, all life test data accumulated on MIL-R-39016/27, MIL-R-39016/28, and MIL-R-39016/30 may be used in addition to MIL-R-XXX/X data.

2/ The number of units required for qualification testing will be increased as required in group IV, table II, MIL-R-XXX, if the contractor elects to test the number of units permitting one or more failures.

TABLE III. Qualification inspection (reduced testing).

| Examination or test |
|---|
| 2 units each coil voltage. Group I of qualification inspection table. 1 unsealed sample unit for internal examination |

SUBSTITUTABILITY DATA: See table IV.

③ TABLE IV. Substitutability data. 1/

| Part no. M5757/39- | Substitute part no. MXXX/X 1/ | Part no. MXXX/X- | Substitute part no. MXXX/X- |
|-----------------------|-------------------------------------|---------------------|-----------------------------------|
| 001 | 015 | 001 | 013 |
| 002 | 017 | 002 | 014 |
| 003 | 019 | 003 | 015 |
| 004 | 021 | 004 | 016 |
| 005 | 023 | 005 | 017 |
| 006 | 016 | 006 | 018 |
| 007 | 018 | 007 | 019 |
| 008 | 020 | 008 | 020 |
| 009 | 022 | 009 | 021 |
| 010 | 024 | 010 | 022 |
| 011 | 013 | 011 | 023 |
| 012 | 014 | 012 | 024 |

1/ Dash numbers -013, -015, -017, -019, -021, and -023 are inactive for new design and are for support of existing equipment design only.

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FOR GOVERNMENT LOGISTICAL SUPPORT: See table V.

(C) TABLE V. Cross reference for Government logistical support.

| Part no. M5757/39- | Substi- tute part no. MXXX/X | Support with part no. MXXX/X | Part no. MXXX/X | Substi- tute part no. MXXX/X | Support with part no. MXXX/X | New part no. MXXX/X | Support with part no. MXXX/X |
|-----------------------|---------------------------------------|---------------------------------------|--------------------|---------------------------------------|---------------------------------------|---------------------------|---------------------------------------|
| 001 | 015 | 015 | 001 | 013 | 013 | 025 | 025 |
| 002 | 017 | 017 | 002 | 014 | 025 | 026 | 026 |
| 003 | 019 | 019 | 003 | 015 | 015 | 027 | 027 |
| 004 | 021 | 021 | 004 | 016 | 026 | 029 | 029 |
| 005 | 023 | 023 | 005 | 017 | 017 | 030 | 030 |
| 006 | 016 | 026 | 006 | 018 | 027 | | |
| 007 | 018 | 027 | 007 | 019 | 019 | | |
| 008 | 020 | 028 | 008 | 020 | 028 | | |
| 009 | 022 | 029 | 009 | 021 | 021 | | |
| 010 | 024 | 030 | 010 | 022 | 029 | | |
| 011 | 013 | 013 | 011 | 023 | 023 | | |
| 012 | 014 | 025 | 012 | 024 | 030 | | |

Custodians:

Army - ER

Navy - EC

Air Force - 11

Review activities:

Army - AR

Navy - AS, OS, SH

Air Force - 17, 85, 99

DLA - ES

NASA - NS

User activities:

Army - AL

Navy - MC

Air Force - 19

Preparing activity:

Navy - EC

Agent:

DLA - ES

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FIGURE 16. Example of a specification sheet - Continued.

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APPENDIX

Reliability Level Requirements

10. SCOPE

10.1 Scope. This appendix provides instructions for preparing specifications covering items where reliability level requirements are determined to be an essential part of qualification. Normally, qualification of an item is established for a single level of reliability and quality. However, for certain items, it is necessary to provide qualification at an initial level and for a method of continuous testing which establishes evidences that the item continues to be qualified at the existing level. This appendix is not a mandatory part of the standard. The information contained herein is intended for guidance only.

20. REFERENCED DOCUMENTS

20.1 Government documents. The following documents form a part of this appendix to the extent specified herein.

STANDARDS

MILITARY

MIL-STD-690 - Failure Rate Sampling Plans and Procedures.
MIL-STD-790 - Reliability Assurance Program for Electronic Parts Specification.

(Copies of the standards required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

30. REQUIREMENTS

30.1 Requirements. Where such reliability level requirements are essential as a part of qualification, section 3 shall specify these requirements for each level appropriately cross referenced to the tests contained in section 4 as follows:

"3. Reliability. Reliability of (item name) furnished under this specification shall be established and maintained in accordance with the procedures and requirements specified in MIL-STD-790 and MIL-STD-690 with details specified in 4.1, 4.4, and 4.6. The reliability level is as identified in 1.2."

Life-test sampling plans shall be computed based on a 60 percent confidence level. A 90 percent confidence level may be used where required sample sizes, testing time and costs are reasonable and the industry capability exists. Sampling procedures and requirements for qualification shall be in accordance with MIL-STD-690. Reexamination and retest of the qualified product is usually performed in accordance with 5.3.4.8. However, specific requirements for periodic qualification reevaluation will also be included, as necessary.

30.2 Classification for reliability level identification. When a specification contains a multilevel reliability requirement, section 1 of the specification shall identify the levels covered. Failure rate levels shall be established in accordance with MIL-STD-690. The reliability for each level is identified by a symbol in accordance with the following:

| Failure rate level symbol | Failure rate level (percent per 1,000 hours) |
|------------------------------|---|
| L - - - | 5 |
| M - - - | 1 |
| P - - - | .1 |
| R - - - | .01 |
| S - - - | .001 |
| T - - - | .0001 |

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30.3 Paragraphing and numbering. For an example of established reliability military specification paragraphing and numbering, see figure 17.

30.4 Worksheet for inspection 4. For standard paragraphs and guidance to standard format for section 4, Quality Assurance Provisions, see figure 18.

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1. SCOPE
 - 1.1 Scope
 - 1.2 Classification
2. APPLICABLE DOCUMENTS
 - 2.1 Government documents
 - 2.2 Other publications
3. REQUIREMENTS
 - 3.1 Specification sheets or associated detail specifications
 - 3.2 Qualification
 - 3.3 Reliability
 - 3.4 Materials
 - 3.5 Design and construction
 - 3.6 Circuit configuration
 - 3.7 Contact resistance
 - Requirements are continued in sequence until 3.29 and 3.30 - marking and workmanship respectively.
 - 3.29 Marking
 - 3.29.1 Part number
 - 3.29.2 "JAN" and "J" marking
 - 3.29.3 Remarking when supplying to high FR levels
 - 3.30 Workmanship
4. QUALITY ASSURANCE PROVISIONS
 - 4.1 Responsibility for inspection
 - 4.1.1 Reliability assurance program
 - 4.2 Classification of inspection
 - a. Qualification inspection (see 4.4)
 - b. Verification of qualification (see 4.6)
 - c. Quality conformance inspection (see 4.7)
 - 4.3 Inspection conditions and methods
 - 4.3.1 Conditions
 - 4.3.2 Methods

FIGURE 17. Example of established reliability military specification paragraphing and numbering.

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- 4.4 Qualification inspection
- 4.5 First article (if any)
 - 4.5.1 Sample size
 - 4.5.2 Inspection routine
 - 4.5.3 Failures
 - 4.5.4 FR qualification and lot conformance FR inspections
- 4.6 Verification of qualification
- 4.7 Quality conformance inspection
 - 4.7.1 Inspection of product for delivery
 - 4.7.1.1 Inspection lot
 - 4.7.1.2 Group A inspection
 - 4.7.1.2.1 Sampling plan
 - 4.7.1.2.2 Manufacturer's production inspection
 - 4.7.1.2.3 Rejected lots
 - 4.7.1.3 Group B inspection
 - 4.7.1.3.1 Sampling plan
 - 4.7.1.3.2 Disposition of sample units
 - 4.7.1.3.3 Rejected lots
 - 4.7.2 Periodic inspection
 - 4.7.2.1 Group C inspection
 - 4.7.2.1.1 Sampling plan
 - 4.7.2.1.2 Disposition of sample units
 - 4.7.3 Inspection of packaging
- 4.8 Methods of inspection
 - 4.8.1 Visual and mechanical inspection
 - 4.8.2 Contact resistance
 - 4.8.3 Circuit configuration

Continue tests until last test. (Solderability 4.8.24)
- 5. PACKAGING

FIGURE 17. Example of established reliability military specification paragraphing and numbering - Continued.

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6. NOTES

6.1 Intended use

6.2 Ordering data

6.3 Qualification

6.4 Definitions (if any)

6.5 Substitutability data (if any)

6.6 Changes from previous issue note (when applicable). Changes marked or not marked.

FIGURE 17. Example of established reliability military specification paragraphing and numbering - Continued

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WORKSHEET

SECTION 4

Established reliability Specification

4. QUALITY ASSURANCE PROVISIONS

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 as specified herein. Except as otherwise specified in the contract, the manufacturer may use his own or any other facilities suitable for the performance of the inspection requirements specified herein with approval by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Reliability assurance program. A reliability assurance program shall be established and maintained in accordance with MIL-STD-790. Evidence of such compliance shall be verified by the qualifying activity of this specification as a prerequisite for qualification and continued qualification.

4.2 Classification of inspections. The inspections specified herein are classified as follows:

- a. Qualification inspection (see 4.4).
- b. Verification of qualification (see 4.5).
- c. Quality conformance inspection (see 4.6).

4.3 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of MIL-STD-202.

4.4 Qualification inspection. Qualification inspection shall be performed at a laboratory acceptable to the government (see 6.) on sample units produced with equipment and procedures normally used in production.

(ONE OF THE FOLLOWING SUBPARAGRAPHS SHALL
BE USED WITH QUALIFICATION, WHEN APPLICABLE)

* 4.4.1 Sample size. The number of (components) to be subjected to qualification inspection shall be as specified in the appendix to this specification.

* 4.4.1 Sample size. (Number) (components) shall be subjected to qualification inspection.

4.4.2 Test routine. Sample units shall be subjected to the qualification inspection specified in table III, in the order shown. All the sample units shall be subjected to the

(cross out if n/a)
inspection of groups (list applicable groups). The sample shall then be divided

Check as applicable:

equally into (No.) groups of (No.) units each
as specified in table ____ for groups ____ to ____, inclusive.

The sample units shall then be conditioned
as specified
(spell out conditioning in an enclosure)

and subjected to the inspection for their particular group.

FIGURE 18. Worksheet for section 4 (established reliability specifications).

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4.4.3 Failures. Failures in excess of those allowed in table ____ shall be cause for refusal to grant qualification approval.

4.4.4 Failure rate qualification. Failure rate (FR) qualification shall be in accordance with the general and detailed requirements of MIL-STD-690 and the following details:

- a. Procedure I - Qualification at the Initial FR level/
Level _____ %/1000 hrs) of
 (Corresponding FR percentage)
 FRSP-60 or -90 shall apply. Sample units shall be subject to the
 (Cross out one)
 qualification inspection specified in group ____, table ____, (see 4.4.2).
 The entire life test sample shall be continued on test to 10,000 hours as
 specified in 4.7. ____, upon completion of the 2,000 hour qualification.
- b. Procedure II - extension of Qualification to Lower FR Levels.
 To extend qualification to the R (0.01 percent) and S (0.001 percent) FR
 levels, data from two or more styles of similar construction may be combined
- c. Procedure III - Maintenance of FR Level Qualification.
 Maintenance period ____ of FRSP-10 shall apply. Regardless of the number of
 production lots produced during this period, the specified number of unit
 hours shall be accumulated to maintain qualification (see 4.6.1).

TABLE ____ . Qualification inspection.

| Inspection | Requirement paragraph | Test method paragraph | Number of sample units to be inspected | Number of defectives permitted |
|------------|--------------------------|--------------------------|--|--------------------------------------|
|------------|--------------------------|--------------------------|--|--------------------------------------|

4.5 Verification of qualification. Every six months the manufacturer shall compile a summary of the results of quality conformance inspections and extended failure rate (FR) test data, in the form of a verification of qualification report, and forward it to the qualifying activity within 30 days after the end of the reporting period as the basis of continued qualification approval. In addition, the manufacturer shall immediately notify the qualifying activity whenever the FR data indicates that the manufacturer has failed to maintain the qualified FR level, or the group C inspection data indicates failure of the qualified product to meet the requirements of this specification. Continuation shall be based on evidence that over the six-month period the following has been met:

- a. Verification by the qualifying activity that the manufacturer meets the requirements of MIL-STD-790.
- b. The manufacturer has not modified the design on the item.
- c. The specification requirements for the item have not been amended so far as to affect the character of the item.
- d. Lot rejection for group A inspection does not exceed ____ percent or one lot, whichever is greater.
- e. Lot rejection for group B inspection does not exceed ____ percent or one lot, whichever is greater.
- f. The requirements for group C inspection are met.

FIGURE 18. Worksheet for section 4 (established reliability specifications) - Continued.

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- g. The records of FR tests combined substantiate that the "M" (1.0 percent), or "P" (0.1 percent) FR level has been maintained, or that the manufacturer continued to meet the "R" (0.01 percent), and the "S" (0.001 percent) FR level for which qualified, although the total component hours of testing does not, as yet, meet the requirements of (reference FR qualification, procedure III paragraph).

When group C inspection requirements were not met and the manufacturer has taken corrective action satisfactory to the Government, group C inspection retesting shall be instituted. A summary of the retesting shall be forwarded to the qualifying activity within 30 days after completion of the retest.

4.6 Quality conformance inspection.

4.6.1 Inspection of product for delivery. Inspection of product for delivery shall consist of group(s) ____ inspection. (Note: List the group(s) for inspection required prior to delivery).

(ONE OF THE FOLLOWING INSPECTION LOT PARAGRAPHS SHALL BE USED)

* 4.6.1.1 Inspection lot. An inspection lot shall consist of all (component) of the same (type designation, part no., type, class, etc., (produced under essentially the same conditions, and offered for inspection (at one time or specify period).

* 4.6.1.1 Inspection lot. An inspection lot shall consist of all (component) covered by a single (specification sheet, associated detail specification, MS), produced under essentially the same conditions, and offered for inspection (at one time or specify period).

4.6.1.2 Group A tests. Group A tests shall consist of the tests specified in table ____, and shall be made on the same set of sample units in the order shown.

TABLE ____ Group A inspection.

| Test or inspection | Requirement paragraph | Test method paragraph | AQL (percent defective) | |
|--------------------|-----------------------|-----------------------|-------------------------|-------|
| | | | Major | Minor |

* 4.6.1.2.1 Sampling plan. Statistical sampling and inspection shall be in accordance with MIL-STD-105. The acceptable quality level (AQL) and limiting quality (LQ) where $P = 10\%$ shall be as specified in table _____. At the option of the contractor, numerically lower AQL's may be used as long as the specified LQ is not exceeded numerically. Major and minor defects shall be as defined in MIL-STD-105.

* 4.6.1.2.1 Sampling plan. Statistical sampling and inspection shall be in accordance with MIL-STD-105 for general inspection level II. The acceptable quality level (AQL) shall be as specified in table _____. Major and minor defects shall be as defined in MIL-STD-105.

4.6.1.2.2 Manufacturer production inspection. If the manufacturer performs tests similar to those specified in subgroup ____, table ____, as the final step of his production process, group A inspection, subgroup ____ inspection may be waived and the data resulting from the manufacturer's production tests may be used instead. Authority to waive the subgroups ____ and ____ inspection shall be granted by the qualifying activity only. The following criteria must be complied with:

- Tests conducted by the manufacturer during production shall be clearly identical to or more stringent than that specified for subgroup ____ and _____. Test conditions shall be equal to or more stringent than those specified for subgroup 1.
- Manufacturer subjects 100% of the product supplied under this specification to his production tests.

FIGURE 18. Worksheet for section 4 (established reliability specifications) - Continued.

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- c. The parameters measured and the failure criteria shall be the same or more stringent than those specified herein.
- d. The lot rejection criteria is the same or more stringent than that specified herein.
- e. The manufacturer shall make available all information concerning the test procedures and instrumentation used in his production tests. This data shall be provided as part of the evaluation required for MIL-STD-790. The manufacturer shall also make available to the Government all records of all detail test data resulting from production tests.

Check if applicable:

* 4.6.1.2.3 Rejected lots. If an inspection lot is rejected, the manufacturer may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection and shall not thereafter be tendered for acceptance unless the former rejection or requirement of correction is disclosed. Such lots shall be separate from new lots and shall be clearly identified as reinspected lots.

4.6.1.3 Group B inspection. Group B inspection shall consist of the inspections specified in table ____, in the order shown, and shall be made on sample units which ~~(cross out if n/a)~~ have been subjected to and have passed the group A inspection.

TABLE ____ . Group B inspection.

| Test or inspection | Requirement paragraph | Test method paragraph | AQL (percent defective) | |
|--------------------|-----------------------|-----------------------|-------------------------|-------|
| | | | Major | Minor |

Select one:

* 4.6.1.3.1 Sampling plan. Statistical sampling and inspection shall be in accordance with MIL-STD-105. the acceptable quality levels (AQL) and limiting quality (LQ) where $P = 10\%$ shall be as specified in table ____ . At the option of the manufacturer, numerically lower AQL's may be used as long as the specified LQ is not exceeded numerically. Major and minor defects shall be as defined in MIL-STD-105.

* 4.6.1.3.1 Sampling plan. Statistical sampling and inspection shall be in accordance with MIL-STD-105 for general inspection level II. The acceptable quality levels (AQL) shall be as specified in table ____ . Major and minor defects shall be as defined in MIL-STD-105.

* 4.6.1.3.1 Sampling plan. The sampling plan shall be in accordance with MIL-STD-105 for special inspection level S-____. The AQL shall be ____ percent defective.

4.6.1.3.2 Rejected lots. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

Select one:

* 4.6.1.3.3 Disposition of sample units. Sample units which have passed all the group B inspection may be delivered on the contract, if the lot is accepted and the sample units are still within specified electrical tolerances.

FIGURE 18. Worksheet for section 4 (established reliability specifications) - Continued.

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* 4.6.1.3.3 Disposition of sample units. Sample units which have been subjected to group B inspection shall not be delivered on the contract.

4.6.2 Periodic inspection. Periodic inspection shall consist of group(s) 1/_____. Except where the results of these inspections show noncompliance with the applicable requirements (see 4.-), delivery of products which have passed group 9/_____ shall not be delayed pending the results of these periodic inspections.

* 4.6.2.1 Group C inspection. Group C inspection shall consist of the inspections specified in table _____, in the order shown. Group C inspection shall be made on sample units selected from inspection lots which have passed the groups A and B inspections.

TABLE _____. Group C inspection.

| Test or Inspection | Requirement paragraph | Test method paragraph | Number of sample units for inspection | Number of defectives permitted |
|-----------------------|--------------------------|-----------------------------|---|--------------------------------------|
|-----------------------|--------------------------|-----------------------------|---|--------------------------------------|

MonthlySubgroup 1

Life - -

4.6.2.1.1 Sampling plan.

4.6.2.1.1.1 Monthly (subgroup 1). Test samples shall be selected for each inspection lot produced during a one-month period. These samples shall be accumulated and placed on the life test as specified in 4.7._____, once a month, for the full 10,000 hour life test period. The test sample size shall be determined by the manufacturer so that the unit hours generated meet the maintenance of qualification requirements specified for the qualified failure rate level (see 4.4.4). In any event a minimum of 5 samples shall be selected for each lot. As far as it is practicable the (value, style, etc.) tested during a maintenance period shall be representative of all (value, decade, style, etc.) produced during this period. The accumulated data shall be used for maintenance and extension of failure rate qualification.

4.6.2.1.1.2 (Other periodic inspections).

4.6.2.1.2 Disposition of sample units. Sample units which have been subjected to group C inspection shall not be delivered on the contract.

* 4.6.2.1 Group C inspection. Group C inspection shall consist of the test specified in table _____.

TABLE _____. Group C inspection.

| Test or Inspection | Requirement paragraph | Test method paragraph |
|-----------------------|--------------------------|--------------------------|
|-----------------------|--------------------------|--------------------------|

Life - - -

1/ List the applicable groups such as B, B, and C, C, etc.

2/ List the same groups as listed for "Inspection of product for delivery".

FIGURE 18. Worksheet for section 4 (established reliability specifications) - Continued.

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4.6.2.1.1 Sampling plan. A sample shall be selected at random for each inspection lot that has passed group A inspection. The sample chosen shall be representative of (voltage groups, styles, values, etc.) represented in the lot (see 4.6.1.1). Sampling for quality conformance life test shall be as specified below. The detailed quality conformance procedures of MIL-STD-690, with the following details and exception shall apply:

- a. Lot sampling - 110 samples.
- b. Duration of lot conformance FR test - 250 hours.
- c. Failure criteria - As specified in 3.; 1 failure permitted per lot.
- d. Permissible combination of voltage ratings and case size - As specified in 4.6.1.1.
- e. Disposition of samples and inspection lot - Sample units which have been subjected to group C inspection may be delivered on the contract provided they are 100 percent inspected to verify that they meet all of the requirements listed in table _____. The inspection lot may be shipped upon completion of lot conformance FR test.

Even though the lot has been rejected, those units in the lot which are predesignated for extended life testing shall remain or be placed on test for the full length of time.

4.6.2.1.2 Disposition of sample units. Sample units which have been subjected to group C inspection shall not be delivered on the contract.

4.6.3 Noncompliance. If a sample fails to pass group C inspection, the manufacturer shall notify the qualifying activity and the cognizant inspection activity of such failure and take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which are manufactured under essentially the same materials and processes, and which are considered subject to the same failure. Acceptance and shipment of the product shall be discontinued until corrective action, acceptable to the qualifying activity has been taken. After the corrective action has been taken group C inspection shall be repeated on additional sample units (all tests, or the test which the original sample failed, at the option of the qualifying activity). Groups A and B inspections may be reinstituted; however, final acceptance and shipment shall be withheld until the group C inspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure, shall be furnished to the cognizant inspection activity and the qualifying activity.

4.6.4 Inspection of packaging. Except when commercial packaging is specified, the sampling and inspection of the preservation and interior package marking shall be in accordance with groups A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing and marking for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification referenced in section 5 and the marking requirements of MIL-STD-129. The inspection of commercial packaging shall be as specified in the contract (see 6.2).

4.7 Methods of inspection.

NOTE: Asterisks denote optional use.

FIGURE 18. Worksheet for section 4 (established reliability specifications) - Continued.

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