```
NOT MEASUREMENT
SENSITIVE
```

MIL-PRF-87929B(USAF)
1 March 96
SUPERSEDING
MIL-M-87929A(USAF)
5 June 1991

PERFORMANCE SPECIFICATION

MANUALS, TECHNICAL, OPERATION AND MAINTENANCE INSTRUCTIONS IN WORK PACKAGE FORMAT (FOR USAF EQUIPMENT)

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

1. SCOPE.

1.1 Scope.   This performance specification covers the detailed requirements for preparation of equipment Operation and Maintenance (O&M) Technical Manuals (TM) in Work Package (WP) and Subordinate Work Package (SWP) formats. Manuals, using the WP and SWP concept described within this specification, are intended for use at Intermediate and Depot levels on all equipment and at Organizational level for equipment not using the MIL-M-83495 maintenance manual concept. In addition to "paper" delivery, this specification provides for electronic delivery of data by using the Document Type Definitions (DTD) contained in Appendixes A through L. The type(s) of manual(s) to be prepared, as specified by the acquiring activity, are as follows:

  a.   Maintenance Manuals.

    (1)   Intermediate Maintenance Manuals.

    (2)   Depot Maintenance Manuals.

    (3)   Combined Maintenance Manuals.

    (4)   On-Condition Maintenance Manuals.

  b.   Operation and Maintenance Instruction Manuals.

  c.   Special Manuals.

  d.   Checklists.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Det 2, HQ ESC/AV-2, 4027 Col Glenn Hwy, Suite 300, Dayton, OH 45431-1672; by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A   **AREA TMSS**

Distribution Statement A.   Approved for public release; distribution is unlimited.

MIL-PRF-87929B(USAF)

1.2   Detail.   The level of detail contained in this performance specification is necessary to comply with the requirements of the Continuous Acquisition and Life-cycle Support (CALS) system.

2.   APPLICABLE DOCUMENTS.

2.1   General.   The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 4 and 5 of this specification, whether or not they are listed.

2.2   Government documents.

2.2.1   Specifications, standards, and handbooks.   The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

    Military

        MIL-PRF-5096   Manuals, Technical: Inspection and Maintenance Requirements; Acceptance and Functional Check Flight Procedures and Checklists; Inspection Work Cards; and Checklists; Preparation of

        MIL-PRF-38807   Manuals, Technical: Illustrated Parts Breakdown, Preparation of

STANDARDS

    Military

        MIL-STD-681   Indentification Coding and Application of Hookup and Lead Wire

        MIL-STD-38784   Manuals, Technical: General Style and Format Requirements

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

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

PUBLICATIONS

    Air Force Technical Manuals

        00-25-203   Standards and Guidelines for the Design and Operation of Clean Rooms and Clean Work Stations

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

2

MIL-PRF-87929B(USAF)

2.3   Order of precedence.   In case of conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3.   REQUIREMENTS.

3.1   General requirements.   The general manner of preparation shall be in accordance with MIL-STD-38784.

3.1.1   Abbreviations.   The requirements of MIL-STD-38784 are applicable.

3.1.2   Size of manuals.   Work package manuals shall be prepared in the 8½ by 11 inch sizes only.

3.2   Categories of manuals.

3.2.1   Maintenance manuals.   Maintenance manuals shall contain detailed procedures such as disassembly, cleaning, inspection, repair, rework, major overhaul, assembly, test, etc. Procedures shall be provided for all parts, subassemblies and assemblies coded (Source, Maintenance, and Recoverability [SMR] code) for repair. Specific data shall be provided to adequately describe acceptable repairs, including specifications for materials to make repairs. The manuals shall include only the level of maintenance authorized by the users maintenance concept and authorized support equipment. Depot maintenance manuals shall cover complete major repair and overhaul procedures. The type(s) of manuals to be prepared shall be specified by the acquiring activity (see 6.2).

3.2.1.1   Intermediate maintenance manual.   The intermediate maintenance manual shall contain repair instructions required for maintenance and repair of removed equipment at base level activities.

3.2.1.2   Organizational maintenance manual.   Organizational maintenance on installed equipment will normally be covered in the weapon system (e.g., aircraft, missile, communications station, etc.) maintenance manual. When specified, organizational manuals shall be produced in accordance with this specification.

3.2.1.3   Depot maintenance manual.   The depot maintenance manual shall contain instructions required for depot repair and overhaul of equipment, modules, and component parts. The acquiring activity shall specify whether the manual shall be developed to support horizontal or vertical disassembly and assembly maintenance concept (engines and missiles only).

3.2.1.4   Combined maintenance manual.   When specified, Intermediate and Depot maintenance manuals may be combined, depending on size and complexity of the equipment. Instructions that are beyond intermediate maintenance capability, due to authorized support equipment, tools, or skills, shall be identified as depot only. If duplication of material is required, it shall be in accordance with MIL-STD-38784 and may only be duplicated to preserve WP/SWP integrity or clarity.

3.2.1.5   On-condition maintenance instruction manual (engines only).   When specified, on-condition maintenance instructions shall be provided for conditional or unscheduled maintenance required for repair and/or replacement of parts, components, modules, assemblies, and subassemblies necessary to restore equipment to a serviceable condition. This manual shall contain those procedures developed to gain quick access to areas requiring maintenance rather than

MIL-PRF-87929B(USAF)

following the total disassembly and assembly process. A maintenance sequence diagram of maintenance requirements shall be provided. This diagram shall provide a step-by-step manner in which the equipment will be disassembled and reassembled for repair and/or preventive maintenance. It shall graphically represent the required removal/installation sequence for each equipment component/assembly. Specific test procedures and limits shall be provided.

3.2.1.6   Manual set.   When specified by the acquiring activity, based on the number of assemblies or complexity of the equipment, the maintenance manual may be prepared as separate manuals for each major assembly.

3.2.1.7   Accessories.   When specified by the acquiring activity, manuals shall be prepared for major accessories. Suitable reference shall be made in the maintenance manual to applicable accessory technical manual identification numbers. This shall be done in tabular form, cross referencing part number and nomenclature to technical manual identification number.

3.2.2   Operation and maintenance instruction manual.   Operation and maintenance instruction manual(s) shall contain, as applicable, but not be limited to, the following: General system information, receiving and handling, servicing, operation, inspection, maintenance, preparation for shipment and storage, limits, difference data, and illustrated parts breakdown (see 3.5).

3.2.3   Special technical manuals.   Certain equipment requiring operation and maintenance instructions that have unique characteristics, unusual support requirements, and other uncommon considerations shall require additional specific information. This peculiar or unique information shall be included in standard manuals and associated technical WPs as described in Appendixes B thru L (see 3.6). Examples of this type of operation and maintenance procedures are Aircraft Engine Testing and Trending Procedures, Parachute Packing Procedures, Specialized Storage and Maintenance Procedures for Conventional Components/AUR Munitions and CMBR Agents, and ATE Operator Test Procedures Manual. If conflicts exist between the guidance of the standard WPs and the guidance contained in the special technical manuals appendixes, the special technical manual appendix guidance shall take precedence.

3.3   General WP/SWP requirements.

3.3.1   WP description.   Each WP prepared shall be an independent, task/process oriented unit, using a minimum amount of references. Only essential information shall be provided. Text shall be factual, concise, comprehensive and readily understandable to personnel with a minimum of training and experience in the area where the data will be used. Technical phraseology or symbols that require specialized knowledge shall not be used unless no other word or phrase will convey the intended meaning.

3.3.2   WP coverage.   Work packages may cover such subjects as alphabetical index (for a manual), foreword (to a manual), theory of operation, operating instructions, troubleshootingor fault isolation, alignment, disassembly, assembly, cleaning, inspection, and repair. Each WP shall contain the minimum number of pages required to complete the coverage of the functional task. WPs and SWPs shall always begin on a right-hand page.

3.3.3   SWP description.   A WP may be subdivided into SWPs. This division shall be used when one division by WP is not sufficient to maintain a logical sequence of data, for clarity, or to isolate specific maintenance level requirements of a combined manual. SWPs shall always begin on a right-hand page.

MIL-PRF-87929B(USAF)

3.3.4   Numbering of WP/SWPs.   WP/SWP numbers shall be in Arabic numerals, beginning with the number 001 00. The Alphabetical Index WP shall always be the first WP in the manual and assigned the number 001 00. Foreword WP shall always be the second WP in the manual and assigned the number 002 00. Master List of Special Tools, Test Equipment, and Consumables shall always be the third WP in the manual and assigned the number 003 00. The fourth and subsequent WPs in the manual shall be numbered 004 00 through 997 00 as required. The last two digits of the WP number shall identify the SWPs. SWPs shall be numbered 01 through 99, as required. There shall be one space between "WP" or "SWP" and the WP number, e.g., SWP 007. There shall be two spaces between the WP number and SWP number, e.g., SWP 007 05. The WP/SWP number shall be immediately below the TM identification number on each page.

3.3.4.1   Numbering of added WP/SWPs.   Addition of new WP/SWPs within the manual (that cannot be logically added at the end of the sequence) shall be avoided whenever possible. When such additions are required, numbering of the added WP/SWPs shall be as shown in the following examples:

   a. A new WP added between existing WP 027 00 and WP 028 00 would be numbered 027A 00.

   b. A new SWP added between existing SWP 036 12 and 036 13 would be numbered 036 12A.

   c. A new SWP added between existing SWP 017A 14 and 017A 15 of a previously added WP would be numbered 017A14A. This method of numbering utilizes the two (2) blank spaces that normally separates the three (3) digit WP number from the two (2) digit SWP number, yet sustains the seven (7) digit field allowed for the overall WP/SWP number.

3.3.5   Numbering of figures, tables, and pages.   Figures, tables, and pages shall each be numbered consecutively, within each WP or SWP, using Arabic numerals.

3.3.6   Numbering of added material.   Numbering of added material within a WP/SWP shall be in accordance with the requirements of MIL-STD-38784.

3.3.7   Assignment of WP/SWP titles.   Titles shall be assigned with full consideration of the effect they may have on easy, rapid access to data. The name of the object or equipment shall precede the modifier. A title such as Compressor Inlet Variable Vane Control and Cylinder may cause the reader unnecessary time in attempting to retrieve the information needed. A more effective title would be Control and Cylinder, Variable Vane, Compressor Inlet.

3.3.8   Text content.   Collectively, the WP/SWPs shall provide all essential information required to operate, maintain, and support the equipment for which these manuals are prepared. Text shall be complemented by appropriate illustrations to the extent necessary for complete coverage and understanding. Emphasis shall be placed on the specific steps of the maintenance procedures to be followed, the results which may be expected or desired, and the corrective measures required when such results are not obtained. Procedures requiring a team of specialists for accomplishment of maintenance tasks shall have the tasks of these individuals designated separately in sequence of required accomplishment. Use of warnings, cautions, and notes shall be in accordance with MIL-STD-38784.

MIL-PRF-87929B(USAF)

3.3.8.1   Paragraphs.   Paragraphs shall be consecutively numbered in accordance with MIL-STD-38784 except chapter number prefix shall be omitted. Paragraph titling shall be in accordance with MIL-STD-38784 except only primary sideheads must be titled.

3.3.8.2   Nomenclature.   Nomenclature shall be in accordance with of MIL-STD-38784. Consistency shall be maintained between nomenclature in text, callouts on illustrations on the first occurrence of an equipment item, and the nomenclature in Illustrated Parts Breakdown (IPB) manuals. Nomenclature corresponding to that appearing on the equipment in decals, engraved legends, nameplates, or other markings shall be repeated verbatim on the first occurrence. On subsequent occasions, if there is no other name with which it might be confused, the nomenclature may be shortened. For example, the external main power switch may be called the power switch if no other switch has been mentioned or illustrated on the same illustration. Simple identifying nomenclature may be provided for attaching parts in both pictorial callouts and text, such as lower attaching bolts. All hardware items involved in a task shall be specifically mentioned. Terminology that conveys the purpose, function or nature of an item that is irrelevant to the task requirement shall not be used. For example, the unified fuel control cable quadrant need not be called such in an instruction to insert a rig pin. The presence of an illustration showing the location of the unit enables the instruction to be written simply: "Insert rig pin in quadrant," or "Insert rig pin." Modifiers are required only when one or more items of the same object nomenclature are acted upon in the same task.

3.3.8.3   References.   The requirements of MIL-STD-38784 and those below apply:

a.   Information contained in the foreword WP shall not be duplicated in other maintenance WPs or SWPs. When required, theory shall be referenced under "Referenced Material Required" (see 3.4.3.6.1). Normally, theory shall not be referenced in text.

b.   Replacement or repair instructions on testing and troubleshooting fault logic diagrams, or in fault logic text shall not be listed as reference material in the WP or SWP but shall be referenced in one of the following methods:

   (1)   On the fault logic diagram.

   (2)   In the fault logic text.

   (3)   In tabular form in the WP or SWP.

c.   References to manuals prepared in WP format shall be by publication number and WP number. For example; "Refer to TO 2J-XXX-X WP 012 00," or "Perform operational checkout of the Rear Compressor Variable Vanes (TO 2J-XXX-X, WP 231 00)."

d.   References within the same manual shall be by WP or SWP number: For example, "Remove main oil pump (WP 223 00)," or "Install oil pressure transmitter (SWP 223 07)."

e.   Reference material shall be included under "Reference Material Required" within the following guidelines:

   (1)   Publications (other than technical manuals prepared in WP format) required to complete the task, or support discussion presented, shall be listed by title and publication number.

   (2)   WPs and SWPs required to complete the task or support discussion, shall be listed by title, publication number, WP/SWP title and WP/SWP number. When two or more

MIL-PRF-87929B(USAF)

WP/SWPs are referenced in the same manual, repetition of the manual title and publication number shall not be required if they are listed consecutively.

    f.   WPs shall be complete within themselves without excessive cross-reference to one another. Self-contained, task-oriented, work packages with minimum references are preferred. Material may be extracted from other publications, but only the specific information required by the user to perform a specific function shall be included.

    g.   Reference to equipment, its parts or components, shall be by type designation, standard nomenclature, reference designation, or figure and index number as applicable. The principle noun in names of items shall be consistent throughout the manual. Reference to part numbers, after the first callout, shall be held to a minimum.

    h.   Electrical and electronic reference designations shall be in accordance with MIL-STD-38784.

    i.   Reference to chassis wiring color shall be in accordance with MIL-STD-681. Chassis wiring in equipment which does not conform to MIL-STD-681 shall be explained in the manual

3.3.9   <u>Illustrations</u>.   Illustrations and foldouts shall be in accordance with MIL-STD-38784.

3.3.9.1   <u>Line art</u>.   All illustrations shall be line art, utilizing illustration techniques such as two dimensional, cutaway, or exploded views.

3.3.9.2   <u>Procedural illustrations</u>.   Step-by-step sequential illustrations shall be included as required for clarity depicting special tool usage and mechanical operations. Procedural illustrations shall depict the actual sequence of significant events to perform a task. It is not necessary to illustrate each step of a procedure such as removal of screws with an ordinary screwdriver, or lifting of a cover after the screws have been removed. The illustrations shall include brief instructions as required, tool numbers, dimensions and other pertinent information.

3.3.9.3   <u>Exploded views</u>.   Exploded views of the equipment shall be in accordance with MIL-STD-38784.

3.3.9.4   <u>Repair illustrations</u>.   Pictorial displays shall depict all information necessary to support a repair procedure.

3.3.9.5   <u>Inspection illustrations</u>.   Illustrations shall support inspection limits by clearly showing all points of limits. Access and inspection openings shall be indicated by index number and a tabulation of the equipment or parts for which access is provided. Illustrations shall not show limit values but shall show reference callouts with leaders to the point of clearance.

3.3.9.6   <u>Illustration keys</u>.   Legends or tables applicable to partial page illustrations shall, whenever possible, appear on the same page. If adequate room is not available, or for a full page illustration, the information shall appear on a facing or following page. If the legend or table, exceeds the allowable space, it may be continued on a second page.

3.3.10   <u>Diagrams</u>.   Foldouts shall be in accordance with MIL-STD-38784. The manual shall include diagrams and associated data necessary for maintenance personnel to:

    a.   Understand the makeup and function of each component, power, control, and signal circuit, and of each mechanical system.

MIL-PRF-87929B(USAF)

    b.   Trace each circuit and mechanical system.

    c.   Accomplish general and specific troubleshooting on inoperative or malfunctioning circuits or mechanical systems.

3.3.10.1   <u>Explanatory text</u>.   The foreword WP shall contain an explanation of the diagrams used in the manual as to their content and proper use. This shall include the working relationship to material in other WP/SWPs, how to locate a particular diagram, an explanation of the wiring identification system used on the diagrams, when applicable, and any other information considered essential for proper understanding and use.

3.3.10.2   <u>Symbols</u>.   Symbols shall be in accordance with MIL-STD-38784.

3.3.10.3   <u>Schematic diagrams</u>.

3.3.10.3.1   <u>Schematic diagram general requirements</u>.   Where the equipment's nature, relative complexity, and number of components make it feasible, a single schematic diagram shall be prepared to cover all signal circuits, power circuits, and control circuits. When a single diagram is infeasible, a separate diagram shall be prepared for each item of equipment. Any circuits left in "midair" and picked up on other diagrams and which terminate with a plug, terminal strip, or jack, shall show a composite plug grouping. Each lead shall be extended through the plug, terminal strip, or jack, and labeled to indicate the necessary designator of the first connection within the other component, or other significant point of termination.

3.3.10.3.1.1   <u>Interconnections</u>.   When the equipment obtains information from, or supplies information to other items of equipment of a system, diagrams shall be provided showing all required interconnections, unless this information is not contained in a system manual. If provided by a system manual, reference shall be made to that manual.

3.3.10.3.1.2   <u>Circuits</u>.   Power circuits, control circuits and signal flow within a particular circuit(s) or functional loop(s) shall be identified.

3.3.10.3.2   <u>Schematic diagrams for equipment</u>.   A schematic diagram of an item of equipment shall show the following:

    a.   Subassemblies shall be indicated by a series of broken lines.

    b.   For each detail part, identification shall be by reference designations.

    c.   For each detail part, the principal electrical characteristics expressed in actual values (ohms, microfarads, microhenrys, etc.) shall be tabulated next to the diagram and indexed by reference designation to applicable points on the diagram when sufficient space is not available on the diagram itself. Values normally shall be expressed as numbers, omitting the unit of measurement (such as ohms). However, a general note shall state which units are used.

    d.   Wave shapes, duration, and amplitude of voltages at designated test points throughout the circuit and at interconnecting points within the equipment or systems, under normal test conditions and other specified conditions, shall be indicated on the schematic diagram of the component.

MIL-PRF-87929B(USAF)

3.3.10.3.3   Overall schematic diagrams.   If separate component diagrams are not provided, the overall equipment schematic shall show the information identified in 3.3.9.3.2. In addition, diagrams shall show interequipment circuits with the connections and terminals properly numbered. Items of equipment shall be indicated by a series of broken lines.

3.3.10.3.4   Power and control schematics.   Separate schematic diagrams to show the power and control circuits, when it is infeasible to show such information on the overall schematic diagram, shall be prepared as follows: each power circuit and each control circuit with its relationship to the signal circuits using a combination of blocks, schematics, or pictorial diagrams; tolerances of power distribution associated with each power and control circuit.

3.3.10.3.5   Module schematic diagrams.   Schematic diagrams of electronic modules, when shown separately, shall be arranged to indicate signal flow progressing from left to right. Where possible, an equivalent block/logic diagram of the module circuitry shall be placed on the schematic to aid in interpreting the schematic.

3.3.10.4   Logic diagrams.   When feasible, overall operation of the equipment shall be shown by conventional logic diagrams. Current equipment utilizing solid state and integrated circuit devices is understood and troubleshooting is accomplished by means of logic diagrams rather than detailed schematics.

3.3.10.5   Waveform diagrams.   Waveform diagrams shall be provided, if required, in support of maintenance tasks and the information is not provided on functional or schematic diagrams. These diagrams shall show the waveforms and nominal values, as seen in an oscilloscope of a type listed in WP 003 of the manual, at designated points for normally functioning equipment or systems. Operating conditions and switch positions shall be noted at the time of each indication.

3.3.10.6   Terminal voltage diagrams.   Voltages to ground, or identified points for all sockets and terminal points of individual circuits shall be shown on terminal voltage diagrams. These diagrams shall provide measurements between various subassemblies, assemblies, and detail parts of a component or equipment of a system. Voltages between terminals shall be shown if significant. All pin numbers shall be shown. The ohm-per-volt rating of the voltmeter and its voltage scale shall be indicated. The type of voltage (ac or dc) and critical voltages and frequencies shall be stated, showing allowable tolerances. The power supply, if any, and all control settings shall be noted.

3.3.10.7   Terminal resistance diagrams.   Resistance to ground, or to other identified points for all socket terminals and terminal points of individual circuits shall be shown on terminal resistance diagrams. Preparation shall be essentially the same as for terminal voltage diagrams.

3.3.10.8   Combination diagrams.   Combinations of the information required by 3.3.9.3 through 3.3.9.7 shall be shown on a single diagram, where feasible.

3.3.10.9   Interconnection cable diagrams.   These diagrams shall show the cabling or connections for the system, equipment, or component. Interconnections between components or equipment shall be indicated by either a diagram or a table. Where applicable, a complete internal wiring diagram of each junction box, indicating the relationship to the external wiring circuits, shall be provided.

3.3.11   Test point identification.   Test point identification shall be incorporated on schematic wiring diagrams, tables, charts, and illustrations. Test point identification will not be required for equipment with self-test capability, equipment designed to be tested by an automatic checkout

system, and equipment designed with critical test points accessible at front panel connectors. Where the design of the equipment includes built-in test capability, tests performed using this capability shall be identified but not outlined in detail. Any function requiring the participation of maintenance personnel, or interpretation of test results, shall be included in detail. Instructions required to determine the operability of the design built in test circuits and components, fault isolation and repair instructions, shall be included. Symbols shall be as marked on the equipment, or as they appear on applicable engineering drawings. Voltages, waveforms, etc, should be placed adjacent to the test point and if required may be in tabular form. Indiscriminate use of test points shall be avoided; for example, test point identification shall normally be restricted to signal tracing test points and voltage and continuity check points. The following test point identification system shall be used:

3.3.11.1   Major test points.   A star-enclosed Arabic numeral, ☆, is used to identify and designate the test points used in checking the overall functions of, and localizing trouble to individual components, or groups of components. Major test points are identified on schematic wiring diagrams, tables, charts, and illustrations by use of the Arabic numerals 1, 2, 3, etc, enclosed in a star; but shall be referred to in the text as test point 1, test point 2, etc. Typical examples of major test points are:

  a.   The input terminals for the supply source voltage.

  b.   The high voltage output terminals of the equipment's power system.

  c.   The signal input terminals of the equipment.

  d.   The signal output terminals of the equipment.

  e.   The major points of power or voltage distribution within the equipment.

3.3.11.2   Secondary test points.   An encircled capital letter, Ⓐ, is used to identify and designate the test points used in isolating causes of subnormal performance within a specific assembly or subassembly of the equipment. Secondary test points are identified on schematic wiring diagrams, tables, charts, diagrams, and illustrations by use of capital letters, A, B, C through Z; AA, AB through AZ; BA, BB through BZ, etc, enclosed in a circle; but shall be referred to in the text as test point A, test point B, etc. Typical examples of secondary test points are:

  a.   Circuit supply voltage terminals.

  b.   Signal output points used in checking the gain of a stage or group of stages.

3.3.11.3   Minor test points.   An encircled capital letter and Arabic numeral, Ⓐ1, is used to identify and designate the test points used in isolating causes of abnormal indications within a specific circuit of the equipment. Minor test points are identified on schematic wiring diagrams, tables, charts and illustrations by use of a capital letter and Arabic numeral, Al, A2, etc, enclosed in a circle; but shall be referred to in the text as test point Al, test point A2, etc. Different letters shall be assigned to each component. Typical examples of minor test points to be so designated are:

  a.   Specific voltage and resistance check points.

  b.   All other points used in checking for trouble in a specific circuit.

MIL-PRF-87929B(USAF)

3.3.11.4   <u>Assignment of symbols</u>.   Test point identification symbols on the schematic wiring diagrams shall be assigned consecutively throughout the composite equipment. Once assigned, a symbol shall not be reassigned to another test point. An explanation of the use of test points shall appear in the Foreword WP of the manual.

3.4   <u>Arrangement</u>.   Appendix A provides the DTD for electronic delivery of the standard WP manual.

3.4.1   <u>Manual arrangement</u>.   The technical manual(s) shall be arranged in the following order:

    a.   Front Matter (see 3.4.1.1).

    b.   Alphabetical Index (WP 001 00) (see 3.4.3.1).

    c.   Foreword (WP 002 00) (see 3.4.3.2).

    d.   Master lists of special tools, test equipment, and consumables (WP 003 00) (see 3.4.3.3).

    e.   Technical procedures WP/SWPs (see 3.4.3.6).

    f.   Illustrated Parts Breakdown (when applicable) (see 3.4.3.4).

    g.   Difference data sheets (when applicable) (Last WP of manual) (see 3.4.3.5).

3.4.1.1   <u>Front matter</u>.   The front matter of the manual, or first manual in a manual set, shall be as follows:

    a.   Title page. In accordance with MIL-STD-38784.

    b.   List of Effective Pages (listing only the front matter pages for that manual). In accordance with MIL-STD-38784.

    c.   Verification Status Page (when applicable). In accordance with MIL-STD-38784.

    d.   Numerical Index of Effective Work Packages (see 3.4.1.1.1).

3.4.1.1.1   <u>Numerical Index of Effective Work Packages (see Figure 1)</u>.

    a.   The title "NUMERICAL INDEX OF EFFECTIVE WORK PACKAGES" shall be centered below the margin data.

    b.   The following note shall be placed below the title.

<div align="center">NOTE</div>

Only those work packages and subordinate work packages assigned to this manual are listed in this index, therefore WP/SWP numbers may not be sequential.

    c.   In Change 1 and subsequent changes to the manual, the following shall be added to the note required by subparagraph (b), above: "Insert Change No_____, work packages and subordinate work packages, dated_____. Dispose of superseded work packages and subordinate work packages. If changed pages are issued to a work package or subordinate work package, insert the changed pages in the applicable work package or subordinate

<div align="center">11</div>

MIL-PRF-87929B(USAF)

work package. The portion of the text affected in a change or revised WP or SWP is indicated by change bars in the outer margin of each column of text. Changes to illustrations and diagrams are indicated by pointing hands or shaded areas."

    d.   The following column heads shall be placed below the applicable statements required by b. and c. above:

Numerical Index of Effective Work Packages

WP/SWP No.	Change No.	Model Application	Title

      (1)   The Model Application column shall be used only if more than one equipment model is covered by the manual.

      (2)   A numerical listing of each WP/ SWP assigned to the manual shall be placed below the applicable column heads. Deleted WPs and SWPs shall be accounted for by the entry "Deleted" and the applicable change number listed in the Change Number Column following the applicable WP/SWP number.

      (3)   The title of each WP/SWP shall be included in the Title column.

3.4.2   <u>Manual set arrangement</u>.   When a manual set is prepared, the primary manual of the set shall contain complete front matter as described in 3.4.1.1. All other manuals of the set shall contain the following abbreviated front matter and applicable technical procedure WP/SWPs.

    a.   Title page. In accordance with MIL-STD-38784.

    b.   List of Effective Pages. (listing only the front matter for that manual) In accordance with MIL-STD-38784.

    c.   Verification Status Page (when applicable). In accordance with MIL-STD-38784.

    d.   Numerical Index of Effective Work Packages. (For that manual only.)

3.4.3   <u>WP/SWP arrangement</u>.

3.4.3.1   <u>Alphabetical index WP</u>.   The alphabetical index shall always be the first WP in the manual or of the first manual of a set. The alphabetical index shall be prepared in accordance with the following (see Figure 2):

    a.   The first page of the index shall be the title page consisting of:

      (1)   Technical Manual Identification Number. As assigned to overall manual.

      (2)   WP/SWP Number. As assigned to individual WP/SWP.

      (3)   Title. Shall include, "WORK PACKAGE" or "SUBORDINATE WORK PACKAGE" as applicable; Type of WP/SWP; Procedures covered.

      (4)   Effectivity.

12

MIL-PRF-87929B(USAF)

        (5)   List of Effective WP pages.

    b.   Include level of maintenance codes (intermediate, depot) for combined manuals (see 3.2.1.3).

    c.   List all WP/SWPs in alphabetical order by title, and WP/SWP number. (Also list applicable TO number when manual set is used.) The listing may begin on the bottom of the title page if this will not crowd the information.

3.4.3.2   <u>Foreword WP</u>.   The Foreword WP shall always be the second WP of the manual, or of the primary manual of a manual set. The first page of the WP shall be the title page consisting of the requirements found in 3.4.3.1 a. The Foreword WP shall contain, but not be limited to, the following (see Figure 3):

    a.   Table of contents. In accordance with MIL-STD-38784.

    b.   List of illustrations. In accordance with MIL-STD-38784.

    c.   List of tables. In accordance with MIL-STD-38784.

    d.   Foreword/Preface/Introduction requirements of MIL-STD-38784.

    e.   Purpose and scope of the maintenance manual or set.

    f.   Structure of the manual or set.

    g.   Type of coverage contained in each manual (for manual set).

    h.   Scheme of indexing, e.g. the methodology used to breakout the manuals/WPs/SWPs.

    i.   Procedures for locating specific information.

    j.   Procedures and other relevant information that may increase the usability of the manual set.

3.4.3.2.1   <u>General information</u>.   General information to be used by maintenance personnel to further their understanding of the equipment, assemblies/modules, and related systems shall be provided. A brief description shall reflect the equipment's purpose and main features. The integration of all components and accessories into an operational system shall be explained. Appropriate illustrations or exploded views shall be provided. Information such as cylinder numbering system, compressor stages, combustion chamber arrangement, etc., shall be depicted. Major assemblies, sections, modules, and accessories, shall be depicted and appropriately described, as necessary, to facilitate understanding. If the manual covers more than one model, significant differences shall be explained. A table of leading particulars listing the following type information shall be included:

    a.   Fuse complement by component: Quantity, type, rating.

    b.   Power requirements: Voltage, type, frequency, tolerance.

    c.   Location and function of operating and adjustment controls used in normal operation.

    d.   Other significant features: For example; length of stroke, operating pressure, displacement, duty cycle, inlet and outlet connection sizes, and direction of rotation.

3.4.3.2.2   <u>Maintenance concept</u>.   The maintenance concept shall contain explanations of "Operation and Maintenance", "Intermediate/Depot Maintenance", "On-Condition Maintenance",

13

MIL-PRF-87929B(USAF)

horizontal and/or vertical maintenance (e.g. engines), and other relevant information. When applicable the narrative shall include definitions of unusual terms and abbreviations.

3.4.3.2.3   Environmental control.   When applicable, environmental control (clean room) information required for maintenance or overhaul of equipment shall be specified.

3.4.3.2.4   Warranty provisions.   When applicable, equipment/ hardware warranty provisions shall be included. Only those provisions that affect or limit equipment operation, maintenance, or repair procedures shall be stated. For example, if a unit contains a power supply which is under warranty, a statement similar to the following would be used: "Power supply PS2 is a warranted item. During the warranty period, maintenance of the power supply is limited to removal and replacement of the input filters or the complete power supply." Inclusion of warranty provisions in no way alleviates the requirement for repair procedures which will be used after expiration of the warranty.

3.4.3.3   Master list of special tools, test equipment, and consumables WP.   This WP shall always be the third WP of the manual, or of the primary manual of a manual set. The first page of the WP shall be the title page consisting of requirements in 3.4.3.1 a. This WP shall list all special tools, test equipment, and consumables required for the work described within the manual or manual set. Such items shall be selected from the list of tools and test equipment approved by the Government by means of Support Equipment (SE) listings, provisioning conferences, Engineering Change Proposals (ECP), and procurement documents. Standard types of tools, such as screwdrivers and pliers shall not be listed. Standard types of test equipment, such as voltmeters and tube testers shall be listed. When a contractor cannot obtain an approved list, a manual shall show the contractor's recommended special tools and test equipment. However, these recommendations shall be changed promptly to conform to the official Government list as soon as such information is provided to the contractor.

3.4.3.3.1   Master list of special tools.   The list of special tools shall be arranged in the following format.

Master List of Special Tools

Part (Tool) No.	CAGE Code	Figure & Index No.	Nomenclature	Use

   a.   Part (tool) number.   Tools shall be listed in alphanumeric sequence by part (tool) number.

   b.   Contractor And Government Entity (CAGE) code or manufacturers name and address if code is not available.

   c.   Figure and index number.   The figure and index numbers that appear in other WPs, or this WP, of the manual, shall be shown.

   d.   Nomenclature.   Nomenclature shall be in accordance with the requirements of MIL-STD-38784.

   e.   Use.   The purpose of each tool shall be stated. If the use is described in any part of the manual, reference to the applicable WP will suffice.

MIL-PRF-87929B(USAF)

3.4.3.3.2   Master list of test equipment.   The list of test equipment shall be arranged in the following format.

Master List of Test Equipment

Type Designation	CAGE Code	Figure & Index No.	Nomenclature	Use

a.   Type designation.   Test equipment shall be listed in alphanumeric sequence by type designation, using the AN type designation, if assigned. If an alternate item of test equipment can be used, its AN type designation, if assigned, or the commercial or manufacturer's designation shall be listed immediately following the item for which it is an alternate, and be identified as an alternate in the use column.

b.   CAGE code, or manufacturers name and address if code has not been assigned.

c.   Figure and index number.   The figure and index numbers that appear in other WPs, or this WP, of the manual, shall be shown.

d.   Nomenclature.   Nomenclature shall be in accordance with the requirements of MIL-STD-38784.

e.   Use.   The purpose of each item of test equipment shall be stated. If the use is described in any part of the manual, reference to the applicable WP will suffice.

3.4.3.3.3   Master list of consumables.   Consumable materials and expendable items shall be listed. All chemicals shall be grouped separately at the beginning of the list. The list shall be in tabular form, in alphabetical order by nomenclature, as follows:

Master List of Expendable Items and Consumable Materials

Nomenclature	Specification/ Part No.	CAGE Code	Use	Reference

a.   Nomenclature in accordance with MIL-STD-38784.

b.   The military, Government, or commercial specification number, or part number shall be shown.

c.   (If part number is shown) CAGE Code, or manufacturer's name and address if code has not been assigned.

d.   The use of the item, e.g., cleaning electrical contacts, paint touch-up, conformal coating, etc.

e.   The WP/SWP and paragraph(s) where the item is used.

3.4.3.3.4   Master list of containers.   When applicable, stocklisted reusable containers shall be listed in tabular format giving: Figure No., container application and part No., number of units contained, dimensions, cube, weight loaded, and weight empty. Illustrations of the containers shall follow the table.

15

MIL-PRF-87929B(USAF)

3.4.3.3.5   Repair of special tools and test equipment.   When specified, instructions shall be provided for maintenance, inspection, repair and test of special tools and test equipment unless coverage is contained in other manuals.

3.4.3.3.6   Local manufacture tools/equipment.   Instructions shall be included which explain how to order drawings for local manufacture tools/equipment. When specified, instructions for local manufacture of tools/equipment shall be included. These instructions shall include all data necessary for fabrication of the tool/equipment and shall include items such as parts required, procedures for fabrication and treating, special processes, etc.

3.4.3.4   Illustrated Parts Breakdown (IPB) WP.   When specified, an IPB WP shall be prepared and shall be numbered 998 00. The first page of the WP shall be the title page consisting of requirements in 3.4.3.1 a. Format and contents of the IPB WP shall be prepared in accordance with MIL-PRF-38807.

3.4.3.5   Difference data WP.   The difference data WP (when applicable) shall be numbered 999 00. The first page of the WP shall be the title page consisting of requirements in 3.4.3.1 a. Use, format and contents of difference data sheets shall be in accordance with requirements of MIL-STD-38784.

3.4.3.6   Technical WP/SWP.   The first page of each technical WP/SWP shall be the title page consisting of requirements in 3.4.3.1 a. In addition, the following information, applicable only to that WP, shall be provided (see Figure 4). The information shall continue on page 2, 3, etc., as required.

    a. Table of contents.   In accordance with MIL-STD-38784 except that only primary and first subordinate paragraphs shall be listed, regardless of inclusion of an index.

    b. List of illustrations.   In accordance with MIL-STD-38784.

    c. List of tables.   In accordance with MIL-STD-38784.

    d. Reference material required.

    e. Applicable TCTOs.

    f. Consumable materials.

    g. Applicable support equipment.

    h. Illustrated support equipment.

    i. Table of limits (when applicable).

    j. Foreword.

    k. Safety summary.   In accordance with MIL-STD-38784.

    l. Technical procedures.

3.4.3.6.1   Reference material required.   All documents referenced in the WP, that are required to accomplish the task(s), shall be listed by document number and title.

3.4.3.6.2   Applicable TCTOs.   All TCTOs pertinent to the WP shall be listed. TCTOs that have been completed and rescinded shall be removed from the list at the next change to the WP.

MIL-PRF-87929B(USAF)

3.4.3.6.3   Consumable materials.   Consumable materials, including expendable items, required within the WP shall be listed by nomenclature, specification/part number, and CAGE code. Chemicals shall be grouped separately at the beginning of the list.

3.4.3.6.4   Applicable support equipment.   Applicable test equipment and special tools used in the WP shall be listed by part number, CAGE code, and nomenclature/type designation.

3.4.3.6.5   Illustrated support equipment.   Test equipment and special tools not illustrated in use, within the WP, shall be illustrated. Standard tools and test equipment need not be illustrated.

3.4.3.6.6   Table of limits.   When applicable, each technical WP/SWP shall have a table(s) of limits including all clearances, backlashes, end-plays, spring pressure, etc., arranged in numerical sequence by reference number. The table of limits shall be supported by an illustration(s) to show clearly all points of limits. Illustrations shall not show limit values, but only reference numbers with leaders to the point of clearance. The table(s) shall be cross-referenced to the figure on which the reference number is located. The table shall be arranged as follows:

Dimensional Limits

Reference Number	Figure Number	Description	New Minimum/Maximum	Replacement Minimum/Maximum

3.4.3.6.7   Foreword.   The foreword shall contain a brief description of the WP technical content.

3.4.3.6.8   Technical procedures.   Technical procedures, for accomplishing the specific tasks required by the WP/SWP shall be included (see Figure 4).

3.4.3.6.8.1   Warhead data.   When applicable, procedures shall include any special instructions required for "high explosive" and "incendiary" type warheads.

3.4.3.6.8.2   Arming/dearming procedures.   When applicable, procedures for arming/dearming of rocket motors and munitions shall be included.

3.4.3.6.8.3   Contingency procedures.   When applicable, procedures shall contain instructions pertaining to special flight evaluation configurations, such as installation of a telemetry unit, and other procedures which may be required. The WP shall also contain step-by-step procedures for each emergency condition that may occur during assembly, handling, servicing, or maintenance, and instructions for assembly and inspection at a forward base under heavy engagement.

3.5   Technical WP/SWP development.   The task development phase of technical manual preparation is critical because it will reflect the arrangement and alignment of the technical information. Based on maintenance requirements identified in the Logistics Support Analysis (LSA) or approved maintenance plan, all tasks and support data shall reflect end item operation, inspection, fault isolation, and maintenance criteria at the appropriate level(s) of maintenance. Task analysis is the most appropriate method of establishing a matrix of task requirements and sequence of task actions. The depth and scope of task analysis depends on hardware sophistication and the magnitude of effort defined in the LSA or approved maintenance plan. Therefore, this specification does not designate the specific technical WP/SWPs to use but instead designates the coverage of the information. WP/SWP breakdown shall correspond to the level and type of maintenance, tasks to be

17

MIL-PRF-87929B(USAF)

performed, etc. Figure 5 illustrates how the WP/SWP breakdown can vary depending on equipment and maintenance complexities.

    a.   For example, a technical manual structure of typical technical WPs, with appropriate SWPs may be as follows:

        (1)   Receiving and Handling WP

            (a)   Unpacking

            (b)   Receiving inspection

            (c)   Handling

            (d)   Assembly

            (e)   Checkout

        (2)   Servicing WP

        (3)   Operation WP

            (a)   Equipment fault isolation (troubleshooting)

            (b)   Operator inspection

            (c)   Operator maintenance and servicing

        (4)   Inspection WP

            (a)   Periodic and special inspection

            (b)   Visual inspection

            (c)   Sampling inspection

            (d)   Nondestructive inspection

            (e)   In-process inspection

        (5)   Maintenance WPs

            (a)   Theory of operation

            (b)   Preparation for maintenance

            (c)   Fault isolation (troubleshooting)

            (d)   Disassembly

            (e)   Cleaning

            (f)   Corrosion prevention

            (g)   Lubrication

            (h)   Repair and replacement

            (i)   Assembly

            (j)   Servicing

            (k)   Testing

            (l)   Operational checkout

MIL-PRF-87929B(USAF)

       (m)   Follow-on maintenance

       (n)   On-condition maintenance

       (o)   Accessory maintenance

       (p)   Scheduled maintenance

       (q)   Programmed depot maintenance

   (6)   Preparation for Shipment and Storage WP

       (a)   Preservation and packing

       (b)   Closing and sealing

       (c)   Shipping and storage

   (7)   Storage Inspection WP

b.   The above WP/SWP arrangement is typical. Ideally, each WP/SWP in the manual shall be an independent, self-contained data unit. The writer may be required to group some tasks and divide others into WP/SWPs of suitable length. Actual WP/SWP arrangement, when appropriate:

   (1)   May or may not include all subjects or categories of tasks.

   (2)   WPs may be combined.

   (3)   WPs may be broken out into two or more WPs.

   (4)   WPs may be divided into SWPs.

   (5)   SWPs may become WPs.

   (6)   SWPs may be combined.

   (7)   Additional SWPs may be developed.

c.   Division or selection of coverage shall depend on the equipment covered, operational modes, complexity of maintenance actions, and maintenance level(s) covered. Regardless of the actual WP/SWP breakdown, logical sequence of task requirement occurrence shall be followed.

3.5.1   Receiving and handling.   Receiving and handling procedures shall include instructions for unpacking, inspecting components and assemblies, and checkout of the equipment.

3.5.1.1   Unpacking.   Unpacking procedures shall include instructions for unpacking of the equipment. When applicable, procedures shall also be included for retention and storage of serviceable packaging materials and shipping containers.

3.5.1.2   Receiving inspection.   Receiving inspection shall contain procedures for inspection of inner package, identification of contents, correct marking, quantities, and possible damage to the equipment.

3.5.1.2.1   Inspection or damage criteria.

MIL-PRF-87929B(USAF)

3.5.1.2.1.1 <u>Inspection or damage terms</u>. Inspection or damage criteria shall be preceded by a glossary of damage/inspection terms in the following format:

<u>Term</u>   <u>Definition</u>

3.5.1.2.1.2 <u>Inspection or damage requirements</u>. Inspection or damage requirements shall be in the following format:

Item	Inspection (Inspect for the Following Defects)	Disposition

3.5.1.3 <u>Handling</u>. Procedures for proper handling of the equipment shall be furnished in the most logical order. Procedures shall include, but not be limited to, the following:

   a.   Hoisting and moving procedures.

   b.   Hoist points, push points, jack points.

   c.   Positioning points.

   d.   Load capacity of handling equipment, if critical.

   e.   Mooring attachments and methods.

   f.   Special, or unique, features or limitations that must be considered to preclude safety hazards to personnel or damage to equipment.

3.5.1.3.1 <u>Propellant characteristics and safety precautions</u>. Instructions shall contain all essential information concerning propellants that are used in the equipment. Physical characteristics of each propellant that is used shall be given, with emphasis on those characteristics which serve as identifying or distinguishing points. All necessary safety precautions that must be observed in handling and using propellants, covering, but not be limited to, such items as clothing, fire, contamination, containers, cleaning, and neutralizing, shall be given. Any danger signals shown by the propellant shall be explained fully and complete instructions given as to proper steps to take to avoid mishap. First aid action to be taken, in event of accident in handling propellants and oxidizers, shall be given.

3.5.1.3.2 <u>Drop criteria</u>. When applicable, component drop criteria shall be included in the following format:

Component Drop Criteria

Item	Packaged/Unpackaged	Drop Distance	Required Action

3.5.1.4 <u>Assembly</u>. Applicable instructions and illustrations for assembly of parts into major subassemblies, and final assembly of subassemblies to form a complete end item of equipment, including accessory units, shall be provided. Appropriate tests for operation of a subassembly prior to final assembly shall be provided, including applicable safety precautions to be observed. Extent of coverage for assembly, rigging, and adjustment shall depend upon the complexity of the equipment and required operations.

MIL-PRF-87929B(USAF)

3.5.1.5   Checkout.   Checkout, or functional checks, shall be provided for determining the operational suitability of the equipment, its components, and systems. Procedures shall be provided for individual components, assemblies, and overall equipment as required. All equipment components and sections, repaired or replaced shall be inspected before and after installation.

3.5.2   Servicing.   Servicing information regarding capacities, pressures, and types of servicing fluids, as applicable, shall be provided. The specific location of each filler cap and servicing point shall be provided.

    a.   Lubricating requirements shall be diagrammed when necessary to ensure complete understanding (see Figure 6).

    b.   Attachment of accessories and special wiring connections shall be illustrated.

    c.   Leveling requirements, if applicable, including specific points where the leveling instrument shall be placed during this operation.

    d.   Other procedures necessary to prepare the equipment for operation.

3.5.3   Operation.   Operating procedures shall include principles and instructions for operating the equipment. Illustrations, wiring, and system diagrams, shall be used when necessary for a complete understanding of the subject. Complete operating instructions shall include, but not be limited to, the following:

    a.   Safety precautions.

    b.   Purpose and use of operating controls.

    c.   Purpose and use of all indicating instruments.

    d.   Equipment start-up procedures.

    e.   Equipment normal operating procedures.

    f.   Equipment emergency operating procedures.

    g.   Accessory equipment operating procedures, including installed emergency equipment.

    h.   Equipment shut down procedures, normal and emergency.

3.5.3.1   Operator maintenance and servicing.   Operator maintenance and servicing instructions shall be provided. Components which require lubrication by the operator shall be identified and illustrated. The type and amount of lubricants and fluids shall be included. This information shall cover temperature ranges and other environmental conditions for which the equipment was designed. Types and specification numbers of the lubricants and fluids shall be included in the "List of Consumables."

3.5.3.2   Operator inspection.   All periodic inspections which are to be performed by the operator shall be included in a table, as shown in 3.5.4.1.2. Inspection periods shall be expressed in miles, hours of operation, or maximum periods of time that may elapse between inspections.

3.5.3.3   Equipment fault isolation and correction.   The most common malfunctions which are likely to occur during equipment operation, a statement of probable causes(s), and a satisfactory

MIL-PRF-87929B(USAF)

remedy for each cause shall be included in tabular format as shown. This information shall be provided in the sequence of probability of occurrence.

Fault Isolation and Corrective Action

Trouble	Probable Cause	Corective Action

3.5.4   Inspections.   Procedures shall include the required inspection methods, equipment and instructions for inspection of parts within the scope of the manual. Inspection instructions shall encompass failures, wear, damage, corrosion, leakage, aging, burning, malfunctioning, deformation, and deterioration that can be expected to occur during service or storage of the equipment. Allowable service limits and adequate standards for determining when parts should be repaired or replaced shall be included. Illustrations shall be used wherever necessary to augment inspection procedures. Connector pin location diagrams shall be provided when pin numbers cannot otherwise be located. Accordingly, definitions, illustrations, and limitations of descriptive terms, such as "scoring," "galling," etc., shall be included. Procedures shall be included for performing special inspections required when the equipment has operated beyond permissible limits.

3.5.4.1   Periodic and special inspection.   Types of inspection requirements are classified as Periodic and Special.

    a.   Periodic Inspection.   This is a repetitive type of inspection to be accomplished on days of calendar time (30, 90, 180, etc.), operational hours or cycles, with the interval of time to be designated by the acquiring activity.

    b.   Special Inspection.   These inspections supplement other inspections and are accomplished because of specific circumstances or events. All special inspections shall be event oriented only.

3.5.4.1.1   Stating requirements.   Each inspection requirement shall specifically state what condition is to be sought or the operation required to obtain a desired condition. The format for stating inspection requirements shall be by noun (nomenclature), as used in applicable maintenance manuals, for the condition(s) to be sought. Normally, more than one major item shall not be stated in the same requirement. If a requirement appears in more than one portion of the manual and the intended scope of the requirement is the same for each inspection, each entry must be worded exactly the same. Further, the man-minute data, when included, shall also be identical. When magnetic particle, X-ray, or fluorescent penetrant inspection is required, a statement to this effect shall be included as a part of the requirement. In no case shall the statement of an inspection requirement explain procedures for removal of equipment or correction of trouble found as the result of inspection. The following type items shall not be included in the inspection requirements:

    a.   Luxury items that do no harm if they fail.

    b.   Items of a housekeeping nature.

    c.   Checking for continuance of a static condition.

3.5.4.1.2   Inspection requirements.   Inspection requirements shall be presented in the following format. Instructions for entries to each column follow:

MIL-PRF-87929B(USAF)

Periodic/Special Inspection Requirements

Inspection Requirements	Type of Inspection Periodic | Special	Applicability	Man-Minutes

3.5.4.1.2.1   Inspection requirements column.   Each requirement shall be stated concisely but completely and shall state specifically what condition is to be sought. The inspection requirements shall be grouped according to system, subsystem, end items or similar functional categories. The applicable system nomenclature and code number (two digit; i.e., System 11, 23, 56, BA, MA) shall be entered preceding each group.

   a.   Preparation steps and special tools shall not be shown. This requirement is contained in the WP, technical manual or checklist that is referenced for each inspection requirement.

   b.   Each inspection requirement entry shall reference the WP, technical manual or checklist that covers the requirement, as applicable.

3.5.4.1.2.2   Type of inspection column.   Each type of inspection column shall be completed as follows:

   a.   Periodic.   The interval of time shall be placed opposite each applicable inspection requirement in the "Periodic" Column. The basic time interval shall be established by the acquiring activity.

   b.   Special.   In the "Special" Column, the condition or circumstance governing each applicable requirement shall be inserted. All special inspections shall be event oriented only.

3.5.4.1.2.3   Applicability column.   This WP may apply to all models of a certain series and may, therefore, contain inspection requirements that are not applicable to the specific equipment configuration to be inspected. When this situation is encountered, only those requirements that are applicable, as indicated by the Applicability Column, should be accomplished. Entries made in the column shall show the applicable model or, when applicable, by Air Force Base (i.e. VAFB, DMAFB, LAFB).

3.5.4.1.2.4   Time required column.   The time in man-minutes required to accomplish each inspection requirement shall be entered.

3.5.4.2   Visual inspections.   When applicable, procedures shall be prepared for visual, external inspection of the equipment. The information shall include purpose and conditions under which the inspections will be made. Equipment limits and specific information for interpretation of the equipment condition shall be given.

3.5.4.3   Sampling inspections.   When applicable, certain inspections may contain procedures using sampling procedures; inspections shall consist of the usual inspections for defects, and other mechanical and electrical tests, as applicable. Defects shall be separated into critical defects, major defects and minor defects. The inspection requirement shall also contain the number of allowable defects, how to handle and dispose of rejected items, and sampling charts.

MIL-PRF-87929B(USAF)

3.5.4.4   Nondestructive Inspection (NDI).   Requirements for special inspections by nondestructive methods, such as borescope, radiographic, magnetic particle, ultrasonic, eddy-current, X-ray, or liquid penetrant, shall be as specified in 3.6.5 unless covered in a separate manual.

3.5.4.5   In-Process inspection.   When applicable, assembly or reassembly procedures shall include in-process inspections that must be accomplished at those stages where further assembly would prevent access to perform the required inspection.

3.5.5   Maintenance.

3.5.5.1   Theory of operation.   Theory of operation shall consist of a functional narrative written to provide the technician a thorough understanding of the equipment to support operation, fault detection and isolation (diagnostic), and maintenance. Schematic diagrams shall be used to support this text. This narrative shall completely describe the:

   a.   Equipment operation.

   b.   Equipment data flow.

   c.   Equipment monitoring systems (electrical, mechanized and manual).

   d.   Equipment mechanized systems.

   e.   Contribution made by the mechanical, electrical, fluid and other elements of the system.

   f.   System interfaces.

3.5.5.1.1   Functional divisions.   When the functional divisions defined on the master block diagram are sufficiently complex, further division is necessary. In this case, intermediate and functional diagrams shall be provided to show the transition between major divisions on the master functional diagram. Additionally the subordinate functional diagrams necessary to describe the theory of operation shall be included. Intermediate functional diagrams shall be prepared as necessary by dividing each functional block on the master diagram into discreet single page subfunctional diagrams.

3.5.5.1.2   Subfunctions.   As necessitated by equipment complexity, block diagrams shall be prepared to further show the subfunctions of the equipment.

3.5.5.1.3   Composite.   The composite of the functional diagrams shall be constructed to provide the user the clearest explanation of theory and understanding of the maintenance requirements of the equipment and accessories. Basic theory of operation, shall be excluded; however, special or unique features shall be explained and illustrated.

3.5.5.1.4   Description of system tie-in of equipment and accessories.   The integration of all equipment and accessories into an operational system shall be explained unless provided in another manual. When a system uses inputs from a different system or provides output to a different system, input sources and output destinations shall be explained and shall be shown in block diagrams. The explanation may be a narrative description, diagrams, or a combination of narrative description and diagrams of the tie-in of the equipment and accessories of the system.

3.5.5.2   Preparation for maintenance.   Instructions shall contain procedures prior to inspection, repair, and replacement of parts specifically tailored to the level of maintenance to which the manual

24

applies. Procedures shall include, but not be limited to, removal of equipment from shipping container, installation into stands/fixtures, and depreserving. When appropriate, references to TO 00-25-203, "Standards and Guidelines for the Design and Operation of Clean Rooms and Clean Work Stations" shall be made. If references are not appropriate, specific limits for temperature, humidity and particle control shall be provided.

3.5.5.2.1   Extreme weather maintenance.   Any special procedures or processes required under extreme temperature and humidity conditions within the limits established by the design specification, shall be included.

3.5.5.2.2   Proprietary processes.   Proprietary processes shall be identified. When a Government activity must be certified to apply a proprietary process, the conditions shall be stated.

3.5.5.2.3   Prefunctional check (electrical).   Information shall be included to assure no short circuits exist prior to testing. The following note may be included. "NOTE: It is not necessary to perform the following prefunctional checks unless reported deficiency of equipment to be repaired indicates an internal short circuit exists." Procedures for manually testing electronic and electromechanical equipment shall also be provided when applicable.

3.5.5.2.4   Required conditions.   Certain functions are dependent on the equipment being in a given condition. When required conditions can be obtained by performing other maintenance instructions, these instructions shall be indicated as prerequisite to the task. An example of a required condition is "Aircraft Safe for Maintenance."

3.5.5.3   Fault isolation (troubleshooting).   The instructions shall contain procedures for performance testing and for locating and identifying the cause of the fault. Wherever possible this shall be done on a unit basis. However, where it is necessary to combine two or more items of equipment into a system or portion thereof, instructions for performance testing, and location and identification of the fault cause(s) shall be covered. In either case, the instructions shall be as follows:

3.5.5.3.1   Analysis.   A fault isolation guide shall be provided in a logical step-by-step troubleshooting sequence which relates Support Equipment (SE) and/or component indications to specific detail parts or circuits which are most likely to have caused the problem and specifying the necessary adjustment, repair or replacement. A clearly defined path must be evident from the fault description to its probable cause and correction. The path must lead the technician to a definite and positive conclusion. A "closed loop" situation shall be avoided under all circumstances.

3.5.5.3.2   Bench test setup (when applicable).   Figures shall be presented illustrating the suggested bench test setup showing:

   a.   Details of intercomponent connections.

   b.   Connections between test equipment and equipment or component under test for each procedure.

3.5.5.3.2.1   Identical test setup.   When a number of separate procedures utilize identical test setups, one figure illustrating the setup shall be presented once, and not repeated. Appropriate reference to the figure number will suffice for each procedure. If a cable, hose, or line is to be connected to more than one connection during the procedure, an asterisk or other symbol shall be

placed at the unconnected connector(s) on the test setup diagram to indicate that connection instructions will be given in the appropriate step of the test procedure.

3.5.5.3.3   Circuit analysis (detailed).   Data shall provide input, internal, and output signal flow and the functions of assemblies, subassemblies, and detailed parts of the equipment in normal operating condition. Signal and voltage levels may be given to clarify operation. Schematic diagrams of partial circuits or stages may be prepared for clarity.

3.5.5.3.4   Test equipment.   Instructions essential for proper use of test equipment in diagnosing trouble within a specific item of equipment shall be included within each procedure.

3.5.5.3.4.1   Cable fabrication.   When cable assemblies are required for bench test setup, but are not supplied, instructions shall be provided for fabricating interconnecting cable assemblies from spares and bulk supplies. The part number, drawing number, and manufacturer or designer for each part of the cable assembly shall be shown, as well as identification of wires, connectors, pin connections, and letters or other designators.

3.5.5.3.5   Test data.   Test values and acceptable tolerances shall be given for each test as applicable.

3.5.5.4   Disassembly.   Instructions shall be given for the disassembly of the equipment into assemblies, subassemblies, components, and parts as required. Special tools to be used, precautions to be observed, critical dimensions to be recorded, shall be prescribed. All hardware items which are to be removed shall be specified by name. Instructions shall be included for matching, marking, or labeling for installation, any component(s) which could be installed incorrectly. This includes any cables, hoses, or lines which are disconnected during removal of an item if any possibility of incorrect installation exists. Special hardware items (nonstandard fasteners, brackets, or fittings slightly different from others in the same assembly) shall be specified by their identifying characteristics (i.e., longer, thicker, plastic). These characteristics shall also appear as a callout on the illustration. When appropriate, instructions shall be included to retain items for reinstallation and to record position of items removed, such as number of shims at each attaching point.

3.5.5.4.1   Repair kits.   When repair parts for the equipment are to be supplied in the form of kits, the following note shall be placed at the conclusion of the disassembly instructions:

<div align="center">"NOTE</div>

Certain repair parts for components covered in this publication are supplied in the form of kits. Refer to the applicable Illustrated Parts Breakdown (IPB) for details. Maintenance activities shall replace all parts, regardless of condition, which are removed during disassembly, with like parts furnished in the kit. Therefore, instructions for inspection, cleaning, and rework of the used parts have been omitted. If any parts in the kit must be inspected, cleaned, or tested prior to installation, instructions for performing these requirements are included in this WP. An installed part which is not defective need not be removed solely for the purpose of replacement by a corresponding kitted part."

3.5.5.5   Cleaning.   Instructions shall describe any special cleaning methods required. The type of cleaning shall be specified, such as using a liquid, brushing away dust, blowing out with compressed air; if the latter, air pressure required shall be indicated. Requirements for special ventilation or

controlled environment shall be indicated. Precautions to be observed shall be listed. Instructions for after cleaning relating to the preservation of metal parts and surface treatment (such as paint touch-up) shall be provided. Cleaning instructions in connection with nondestructive inspection methods shall be included. Special tools, jigs, fixtures, necessary during cleaning shall be indicated. General cleaning instructions shall be omitted.

3.5.5.6   <u>Corrosion prevention</u>.   Instructions shall, when applicable, specify use of approved corrosion preventive compounds, neutralization, or other protection on parts and components. Materials and methods for touch-up or repainting shall be included as applicable.

3.5.5.7   <u>Lubrication</u>.   All parts which require lubrication shall be identified. The type of lubricant to be used, and frequency of application shall be specified. Tabular format is recommended.

3.5.5.8   <u>Repair and replacement</u>.   Comprehensive instructions shall be provided for necessary repair and replacement operations to restore the equipment to a serviceable condition. Repair methods shall be specified for the correction of all deficiencies and conditions considered reparable within the scope of the level of maintenance to which the manual applies. Specific data shall be provided to adequately describe acceptable repairs, including material specifications when pertinent to making repairs. Application and operation of special tools and test equipment shall be described.

3.5.5.8.1   <u>Piping and clamping</u>.   Detailed instructions shall be provided for proper routing, connection, and clamping of tubes, cables, and hardware unless covered elsewhere.

3.5.5.8.2   <u>Fabrication</u>.   Instructions shall be included for local fabrication of all component parts source coded as "local manufacture."

3.5.5.9   <u>Assembly</u>.   Detailed step-by-step instructions shall be included for assembly of component parts into major subassemblies to form a complete end item. Assembly instructions to include all pertinent assembly criteria such as clearances, backlash dimensions, special torque values, peculiar safety wiring, end play and similar data, shall be provided. Appropriate tests for operation of a subassembly prior to final assembly shall be provided, including safety precautions to be observed. Instructions for rigging, adjustment and alignment, when required, shall be included in logical sequence. All corrosion preventive compounds, special lubricants, and other consumables required for assembly shall be specified. Any inspections, lubrications, or adjustments, which must be performed prior to mating of subassemblies (which cannot be accomplished at a later point in the assembly) shall be identified. Instructions for requirements shall be integrated into the procedure, as applicable. Assembly instructions, such as "Reverse the Disassembly Sequence", shall not be used except on very simple items. Reference to the applicable procedure for checkout of the item shall be made at the end of the assembly instructions.

3.5.5.9.1   <u>Marking and stenciling</u>.   Methods and materials for replication of stenciling, marking, and decalcomania which may have been damaged or obliterated, or to indicate overhaul, shall be provided.

3.5.5.9.2   <u>Installation of hardware</u>.   All hardware items which are to be installed shall be specified by name. Instructions shall refer to any items which were retained during removal and to any record of item position. No items shall be installed which must be immediately removed in required subsequent function or follow on task.

MIL-PRF-87929B(USAF)

3.5.5.10   Servicing.   Instructions shall include procedures for checking, replenishing, sampling and priming of fuel, lubrication, and hydraulic systems. Capacities, with allowance for expansion, government specification number and grades for fuels, oils, and fluids shall be given.

3.5.5.11   Testing.   Instructions shall be included for aligning, adjusting, testing, and calibrating the equipment after reassembly. Test point, test values and acceptable tolerances shall be given for each test, as applicable. Corrective action shall also be described for failures of equipment to meet the necessary tests. This may be in the form of a troubleshooting table, if appropriate, showing trouble, probable causes, and remedy. As far as possible, the corrective actions shall specify adjustments which can be made without disassembling the equipment.

3.5.5.12   Operational checkout.   Operational checkout functions required after maintenance shall be included. All primary equipment and test set turn-on and warm-up procedures shall be included. If procedures are extensive and are outlined in detail elsewhere, they shall be referenced. If obvious, immediate and simple corrective actions, as indicated by certain no-go conditions, shall be included in the procedures. If a no-go condition in an operational checkout can be corrected by an adjustment procedure requiring less than two pages, such procedures may be incorporated into the operational checkout as a task of the checkout.

3.5.5.12.1   Follow-on maintenance.   If, upon completion of a maintenance action, further maintenance is required to return the equipment to operational readiness, it shall be termed "Follow-on maintenance." References to applicable TM/WPs must be provided as a part of the function to return the equipment to the required condition/configuration.

3.5.5.13   On-condition maintenance.

3.5.5.13.1   Equipment assembly/disassembly.   Instructions shall contain procedures preliminary to inspection, repair and replacement of parts during on-condition maintenance. Procedures shall include both dismantling into major sections for further maintenance and final assembly of major sections prior to operational check.

3.5.5.13.2   Assembly/disassembly of major sections and subassemblies.   Instructions shall contain procedures necessary to complete dismantling, inspection, repair, and assembly of major sections/subassemblies during on-condition maintenance.

3.5.5.14   Accessory maintenance.   Instructions shall contain step-by-step procedures for removal and installation of individual accessories from assembled equipment. Instructions shall be provided for inspections, adjustment, troubleshooting, minor repair, on-condition maintenance (when applicable), and testing. When it is necessary to provide data, each accessory shall be treated as a separate entity and complete instructions shall be provided. For accessories having separate TMs covering maintenance, suitable reference shall be made to applicable accessory TM number. This shall be done in tabular form, cross-referencing part number and nomenclature to publication number.

3.5.5.15   Scheduled maintenance.   Maintenance required by operational event (i.e., hours, cycles, temperature, counts, calendar time) shall be covered.

3.5.5.15.1   Replacement schedule.   This schedule lists units of operating equipment that are to be replaced periodically and specifies how often they are to be replaced. Replacement intervals are

MIL-PRF-87929B(USAF)

indicated by operational event. Replacement shall be accomplished during the inspection period occurring nearest to the replacement time specified in this schedule.

3.5.5.15.1.1   Contents.   The replacement schedule shall contain a listing of those items of equipment to be replaced at the expiration of an interval of calendar time. Where this is not feasible, replacements should be accomplished by operational event or at the occurrence of a specific condition. The replacement components shall be segregated according to the major items on which usage data shall be maintained. This shall be accomplished by identifying the major items in the nomenclature and part number column. This shall be followed with a listing of all time change components contained within the major item.

3.5.5.15.1.2   Format.   Entries to the Replacement Schedule shall be as follows:

Replacement Schedule

Replacement Frequency	System No.	Nomenclature Part No.	Quantity	Man-Minutes

    a.   Replacement frequency.   The replacement frequency of each item shall be entered in this column. Replacement frequencies shall be listed in calendar time and aligned with scheduled inspections. If replacement frequencies for noncalendar life items cannot be converted to calendar time, the replacement frequencies shall be stated by operational event.

    b.   System no.   The system code number (reference applicable work unit code manual) to which the major item and subordinate replacement items apply, shall be entered in this column.

    c.   Nomenclature and part no.   The nomenclature and part number of the major item and each replacement item shall be entered. Replacement components under the major item shall be indented.

    d.   Quantity.   The quantity of the item, as applicable, shall be entered.

    e.   Man-minutes.   The time in man-minutes required to replace the item, including time required to gain access to the item, shall be entered.

3.5.5.16   Programmed Depot Maintenance (PDM).   When applicable, data shall be included to enable repair activities to determine when components, assemblies, and subassemblies require maintenance or repair, or when they shall be completely overhauled. Processing instructions shall be included to cover inspection, the extent of disassembly necessary, and the detailed mandatory parts replacement information applicable to time replacement and forced removal components.

3.5.5.16.1   Inspection tables.   Tables shall be included for textual presentation of inspection data in a tabular format. The tables shall contain the following headings:

Inspection Table

Inspect	Max Serviceable Limits	Max Repairable Limits	Corrective Action

29

MIL-PRF-87929B(USAF)

3.5.6   Preparation for shipment and storage.   Procedures shall be provided for any maintenance requirements (i.e., purging, draining, servicing, sealing) prior to packaging.

3.5.6.1   Preservation and packing.   Procedures shall be provided for preserving the equipment and preparing for storage. Procedures shall also be provided for packing the equipment/ components in appropriate containers, and shall include applicable shipping and storage instructions. Dimensions and weight of the shipping and storage container with equipment and/or modules packed for shipment shall be given. Information shall be provided for the prevention, recognition, and elimination of corrosion. Specific instructions shall be provided for equipment concerned with reference to general series manuals as necessary.

3.5.6.1.1   Special packing.   When applicable, packing shall be accomplished in accordance with Special Packaging Instructions (SPI) and reference shall be made to the applicable SPI. Components shall be packed in original containers, when possible, utilizing shipping plugs/caps as required. Explosive components of the missile are packed in accordance with TO 00-85-series technical orders and shall be referenced. Show all shipping and storage containers in tabular format. Receiving inspections shall be in accordance with 3.5.1.2. Acquiring activity shall identify container marking requirements.

3.5.6.2   Closing and sealing.   Instructions for closing of containers, torquing bolts, and any other final operations required to prepare containers for shipment, or return to storage, shall be provided.

3.5.6.3   Shipping and storage.   Shipping and storage procedures shall be in accordance with regulations applicable to the specific equipment involved. Empty shipping containers and dunnage should be retained for future use.

3.5.7   Storage inspection.   For equipment (tanks, racks, adapters, pylons, etc.), "Ready" and "Extended Storage" categories of inspection shall be explained and storage and maintenance requirements shall be provided. As a minimum, maintenance and inspection criteria shall be provided in the following chart form:

<div align="center">

Inspection and Maintenance Criteria

</div>

Nomenclature	Inspect For	Repair	Ready Storage	Extended Storage

3.5.7.1   Degrees of storage.   The following text, with appropriate paragraph numbering, shall be included in the maintenance procedures:

"X.   **STORAGE INSPECTION.**

Different degrees of inspection are required based upon the type of storage:

X.X   Ready Storage.   Equipment maintained in a completely ready status in anticipation of a relatively near term use requirement. This equipment may be positioned on the shelf, held in the shop, or may be installed in the next higher assembly or installation. The item may be preloaded with munitions and maintained in a munitions holding area or munitions storage igloo in preparation for installation on the aircraft. Equipment shall be provided adequate protection from damage and the elements. Examples of ready storage would be DD 780 equipment receiving frequent use, and mobility contingency, or bare base assets requiring a high degree of readiness for

MIL-PRF-87929B(USAF)

immediate employment. Inspection interval for items placed in ready storage shall be that deemed necessary by the Item Manager/System Manager to assure serviceability in "ready-to-use" condition. For weapons release equipment, the inspection frequency on items in ready storage shall be a minimum of every eighteen months.

X.X   Extended Storage.   Those items maintained in a ready condition for which no requirement exists for frequent exercises or immediate short term employment. Equipment placed in extended storage shall be in a serviceable, ready-to-use condition. This category includes War Reserve Material assets.

X.X.X   Inspection Criteria.   An annual sampling inspection shall be performed of percent of all assets in extended storage. Items inspected shall be identified and marked to prevent redundant inspection of the same items during future annual inspections. Subsequent annual inspections shall be performed on those items which have acquired the longest calendar year time period since last inspection. In the event that deterioration of equipment is detected during any annual inspection, a determination shall be made whether an inspection of all assets having corresponding packaging dates must be performed. For field organizations, this determination shall be made either by the organizational commander or maintenance supervisor. For AFMC depot organizations, this determination shall be made by the supply inspector.

X.X.X   Storage and Packaging.   Equipment placed in extended storage shall meet the following criteria:

   a.   Equipment shall be packaged in accordance with applicable transportation packaging order.

   b.   Packaged equipment must be warehoused in a covered structure which will provide protection from climatic elements.

   c.   Units which have been subjected to prior use must meet all criteria prior to being placed in extended storage.

   d.   Items received from depot or in base supply assets, meeting the packaging requirements specified in READY STORAGE above, shall be considered as being in extended storage."

3.6   Special technical manuals.   Equipment operation and maintenance procedures shall be documented in accordance with the preceding instructions. However, certain equipment characteristics require unique operation and maintenance procedures, unusual support requirements, and other considerations that require additional specific information be furnished, as applicable, in the form of special manuals. Appendixes B thru L provide the DTDs for electronic delivery of the specialized WP manuals. When specified, these special manuals shall be developed in accordance with the WP/SWP concept previously determined, having an arrangement as follows:

   a.   Front Matter (see 3.4.1.1).

   b.   Alphabetical Index (WP 001 00) (see 3.4.3.1).

   c.   Foreword (WP 002 00) (see 3.4.3.2).

   d.   Master List of Special Tools, Test Equipment and Consumables (WP 003 00) (see 3.4.3.3).

31

MIL-PRF-87929B(USAF)

    e.   Technical WP/SWPs (meeting the requirements of 3.4.3.6) shall include the specialized or unique technical procedures as described for the various special manuals in 3.6.1 through 3.6.11.

3.6.1   <u>Aircraft Engine Testing and Trending Procedures Manual</u>   (see Appendix B).

3.6.2   <u>Aircraft Power Package (Engine Installation Hardware Configuration) Testing Procedures Manual</u>   (see Appendix C).

3.6.3   <u>Static Firing of Missile Motors Manual</u>   (see Appendix D).

3.6.4   <u>System Peculiar Corrosion Control Manual</u>   (see Appendix E).

3.6.5   <u>Nondestructive Inspection (NDI) Manual</u>   (see Appendix F).

3.6.6   <u>Aircraft Structural Integrity Program (ASIP) Manual</u>   (see Appendix G).

3.6.7   <u>ATE Operator Test Procedures Manual</u>   (see Appendix H).

3.6.8   <u>Specialized Storage and Maintenance Procedures for Conventional Components/AUR Munitions and CMBR Agents Manual</u>   (see Appendix I).

3.6.9   <u>Parachute Packing Procedures Manual</u>   (see Appendix J).

3.6.10   <u>Operators Instructions (Hand-Held Flight Computers) Manual</u>   (see Appendix K).

3.6.11   <u>Installation-Engineering Facility (Ground C-E Equipment) Manual</u>   (see Appendix L).

3.7   <u>Checklists</u>.   When specified, checklists shall be prepared in accordance with MIL-PRF-5096. Procedures from individual WPs shall form the basis for the checklist tasks.

4.   VERIFICATION.

4.1   <u>Verification</u>.   Unless otherwise specified in the contract or purchase order:

    a.   Validity of the accuracy and scope of the technical manual technical content, shall be the responsibility of the contractor (see 6.2).

    b.   The contractor shall provide suitable facilities to perform the validation functions specified herein.

    c.   The contractor's existing quality assurance procedures shall be used.

    d.   The government reserves the right to review any of the verifications when such reviews are deemed necessary to ensure supplies and services conform to the prescribed contractual requirements.

4.1.1   <u>Minimum verification requirements</u>.   As a minimum, verification shall ensure the following:

    a.   Suitability of the technical manaul for the intended maintenance environment.

MIL-PRF-87929B(USAF)

  b. Usability by the intended users.

  c. Compatibility with other Government systems.

4.1.2 <u>Compliance</u>. All technical manuals shall meet all of the requirements of sections 3 and 5 of this specification. The requirements set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any requirements in this specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Use of sampling inspections shall be in accordance with commercially acceptable quality assurance procedures; however, Government approval for use of sampling in QA procedures does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

5. PACKAGING.

5.1 <u>Packaging</u>. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES.

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

6.1 <u>Intended use</u>. Technical manuals prepared in accordance with this specification are intended to be used for accomplishing operation, inspection, maintenance, storage, and other specialized tasks on Air Force equipment.

6.1.1 <u>WP concept</u>. The objective of the WP concept is to present a self-contained set of procedures based on of work area requirements to support significant operation and maintenance tasks. Division of O&M information into specific WPs depends on the operational modes and complexity of the O&M actions and the level of O&M to be covered. Each WP or SWP is an independent, task/process oriented unit using a minimum amount of references within a TM. Text is factual, concise, comprehensive, and readily understandable to personnel with a minimum of training and experience in the area where the data will be used.

6.1.2 <u>Application</u>. The WP/SWP concept applies to the operation and maintenance of system components removed from their host system or from their higher assembly (i.e., off-equipment). A WP may also be used for a total system when the system is small enough to make it cost effective. Complexities and maintenance concepts dictates how WPs and SWPs will be developed for given equipment. Relatively simple, non complex equipment may require a TM with only a few WPs containing all of the O&M procedures. Complex equipment however, may require a set of TMs, each manual with a full set of WPs and, when applicable, a number of SWPs to further manage and focus the information for specific maintenance work stations or specific operations.

MIL-PRF-87929B(USAF)

6.2   Acquisition requirements.   Acquisition documents must specify the following:

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

b.   Issue of the DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1, 2.2.2).

c.   The type, quantity and breakout of manuals comprising a maintenance manual set (see 1.1, 3.2.1).

   (1)   Organizational maintenance (see 3.2.1.1).

   (2)   Intermediate maintenance (see 3.2.1.1).

   (3)   Depot maintenance (see 3.2.1.2).

      (a)   Horizontal or vertical maintenance (engines and missiles) (see 3.2.1.2).

      (b)   Maintenance concept (conditional maintenance or total overhaul) (see 3.2.1.2, 3.2.1.4).

   (4)   Combined I and D level maintenance manuals (see 3.2.1.3).

   (5)   On-condition maintenance instruction manual (see 3.2.1.4).

   (6)   If a manual set is to be prepared (see 3.2.1.5).

   (7)   If manuals are to be prepared for major accessories (see 3.2.1.6).

   (8)   Combined operation and maintenance (see 3.2.2).

d.   If repair of special tools and test equipment is to be included (see 3.4.3.3.5).

e.   If instructions for local manufacture of tools/equipment is to be included (see 3.4.3.3.6).

f.   If IPB is to be included (see 3.4.3.4).

g.   If specialized manuals are required (see 3.6).

   (1)   Aircraft Engine Testing and Trending Procedures Manual (see 3.6.1 and Appendix B).

      (a)   If testing and trending procedures is to be a WP in the engine maintenance manual(s) (see B.30.1).

   (2)   Aircraft Power Package (Engine Installation Hardware Configuration) Testing Procedures Manual (see 3.6.2 and Appendix C).

   (3)   Static Firing of Missile Motors Manual (see 3.6.3 and Appendix D).

   (4)   System Peculiar Corrosion Control Manual (see 3.6.4 and Appendix E).

   (5)   Nondestructive Inspection (NDI) Manual (see 3.6.5 and Appendix F).

   (6)   Aircraft Structural Integrity Program (ASIP) Manual (see 3.6.6 and Appendix G).

      (a)   If detailed system information for flight data gathering programs is to be included (see G.30.1.4).

   (7)   ATE Operator Test Procedures Manual (see 3.6.7 and Appendix H).

   (8)   Specialized Storage and Maintenance Procedures for Conventional Components/AUR Munitions and CMBR Agents Manual (see 3.6.8 and Appendix I).

    (a)   If other inspections are to be included and, if so, the categories and types (see I.30.3.5.1.9).

    (b)   If a configuration table is to be included and, if so, the required column headings (see I.30.3.5.3.8).

    (c)   If the depot related data SWP is to be included and, if so, the appropriate data to be included (see I.30.3.6.10).

   (9)   Parachute Packing Procedures Manual (see 3.6.9 and Appendix **J**).

    (a)   Required inspection intervals (see **J**.30.2.2).

  (10)   Operators Instructions Manual (Hand-Held Flight Computers) (see 3.6.10 and Appendix K).

  (11)   Installation-Engineering Facility Manual (Ground Communication-Electronic [C-E] Equipment (see 3.6.11 and Appendix L).

h.   If checklists are to be prepared (see 3.7).

i.   If responsibility for inspection is to be other than as specified in this document (see 4.1).

6.3   Technical manual acquisition.   The requirement for technical manuals should be considered when this specification is applied on a contract. If technical manuals are required, specifications and standards that have been cleared and listed in DoD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL) must be listed on a separate Contract Data Requirements List (DD Form 1423), which is included as an exhibit to the contract. The technical manuals must be acquired under separate contract line item in the contract.

6.4   Definitions.

6.4.1.   Warnings.   A warning is a short message which calls attention to an essential operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to, or death of personnel or long term health hazards.

6.4.2   Cautions.   A caution is a short message which calls attention to an essential operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in damage to, or destruction of equipment or loss of mission effectiveness.

6.4.3   Notes.   A note is a short message which describes an unusual procedure or condition to which special attention must be paid for any reason (but it may not replace a caution or warning

6.4.4   Consumables.   Sealants, lubricants, gaskets, seals, cleaning solvents, paint, are considered consumable materials.

6.4.5   Replacement.   Replacement means removal of the equipment and installation of a new or newly overhauled item in its place.

6.4.6   Nonnuclear munitions.   Nonnuclear munitions are: nonnuclear bombs, fuzes, warheads, missiles, pyrotechnics, chemical/biological materials, and items such as impulse cartridges, jettison charges, training items, ammunition, and other nonaircraft inventory items considered similar or relative to nonnuclear munitions.

MIL-PRF-87929B(USAF)

6.4.7   Special containers.   For the purpose of this specification, a special container is defined as a container that has been designed and fabricated to meet specific requirements, such as configuration, environmental control, impact protection, accessory and hardware storage, for a specific item.

6.4.8   Verification.   Verification, in the context of this specification, equates to the contractor's quality assurance program for validating the content of the WP/SWP. Suggested validation methods include:

a.   Actual performance.   Using production configured equipment, hands-on performance of the procedure using the technical instructions as written.

b.   Simulation.   Using production configured equipment and the technical manual procedure, simulate the actions required by comparing the task steps to the hardware, while not actually removing any equipment.

c.   Table top analysis.   Primarily for non-procedural data, compare the technical content to source data to ensure the technical accuracy and depth of coverage.

6.5   Subject term (key word) listing.

Depot Maintenance

Intermediate Maintenance

On-condition Maintenance

Operation and Maintenance Package,

Subordinate Work Package, Work

6.6   Changes from previous issue.   Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

MIL-PRF-87929B(USAF)

NUMERICAL INDEX OF EFFECTIVE WORK PACKAGES.

NOTE

Only those work packages and subordinate work packages assigned to this manual are listed in this index, therefore, WP/SWP numbers may not be sequential.

WP/SWP Number	Change Number	Model Application	WP/SWP Number	Change Number	Model Application
001 00		F107-WR-400	017 00		F107-WR-400
		F107-WR-101			F107-WR-101
002 00		F107-WR-400	018 00		F107-WR-400
		F107-WR-101			F107-WR-101
002 01		F107-WR-400	019 00		F107-WR-400
002 02		F107-WR-101			F107-WR-101
003 00		F107-WR-400	020 00		F107-WR-400
		F107-WR-101			F107-WR-101
004 00		F107-WR-400	021 00		F107-WR-400
004 01		F107-WR-101	021 01		F107-WR-400
005 00		F107-WR-400			F107-WR-101
		F107-WR-101	022 00		F107-WR-400
006 00		F107-WR-400	022 01		F107-WR-101
006 01		F107-WR-101	023 00		F107-WR-400
007 00		F107-WR-400			F107-WR-101
007 01		F107-WR-101	023 01		F107-WR-101
		F107-WR-101	024 00		F107-WR-400
008 00		F107-WR-400	024 01		F107-WR-101
		F107-WR-101	025 00		F107-WR-400
008 01		F107-WR-400			F107-WR-101
		F107-WR-101	026 00		
009 00		F107-WR-400	027 00		F107-WR-400
009 01		F107-WR-101			F107-WR-101
010 00		F107-WR-400	033 00		F107-WR-400
		F107-WR-101	033 01		F107-WR-101
011 00		F107-WR-400	034 00		F107-WR-400
		F107-WR-101	034 01		F107-WR-101
012 00		F107-WR-101	035 00		F107-WR-400
		F107-WR-101			F107-WR-101
013 00		F107-WR-400	036 00		F107-WR-400
		F107-WR-101			F107-WR-101
014 00		F107-WR-400	036 01		F107-WR-400
014 01		F107-WR-101			F107-WR-101
015 00		F107-WR-400	037 00		F107-WR-400
		F107-WR-101	037 01		F107-WR-101
016 00		F107-WR-400	038 00		F107-WR-400
016 01		F107-WR-101	038 01		F107-WR-101
			039 00		F107-WR-400
					F107-WR-101

I/(II blank)

FIGURE 1. Example of index of effective work packages.

MIL-PRF-87929B(USAF)

WORK PACKAGE

ALPHABETICAL INDEX

OPERATION AND SERVICE INSTRUCTIONS

EFFECTIVITY: ENGINE MODELS F107-WR-400 AND F107-WR-101 SERIES

LIST OF EFFECTIVE WP PAGES

Total Number of Pages in this WP is 2

Page No.	Change No.	Page No.	Change No.	Page No.	Change No.

1 0
2 Blank 0

ALPHABETICAL INDEX OF EFFECTIVE WORK PACKAGES

NOTE

Only those work packages and subordinate work packages assigned to this manual are listed in this index.

Subject	WP/SWP	Subject	WP/SWP
Alphabetical Index	001 00	Maintenance of Training PGM/ Components	007 02
Contingency Procedures	006 03	Master Lists of Special Tools,	
Depot Related Data	007 03	Equipment, and Consumables . . .	004 00
Description of Live Munitions	002 01	Packaging, Handling and Storage . .	005 00
Description of Training Munitions . . .	002 02	Safety Summary	003 00
Difference Data	999 00	Unpacking, Inspection, Checkout,	
Foreword	002 00	Assembly, Ground Handling and	
Illustrated Parts Breakdown	998 00	Servicing	006 01
Inspection Requirements	006 00	Unpacking, Inspection, Checkout,	
Maintenance	007 00	Assembly, Ground Handling and	
Maintenance of Precision Guided Munitions (PGM)/Components . . .	007 01	Servicing for Training Munitions . .	006 01

1/(2 blank)

FIGURE 2. Example of alphabetical index WP

MIL-PRF-87929B(USAF)

WORK PACKAGE

FOREWORD

OPERATION AND SERVICE INSTRUCTIONS

EFFECTIVITY: ENGINE MODELS F107-WR-400 AND F107-WR-101 SERIES

LIST OF EFFECTIVE WP PAGES

Total Number of Pages in this WP is 6

Page No.	Change No.	Page No.	Change No.	Page No.	Change No.
1-5 0					
6 Blank 0					

TABLE OF CONTENTS

1

FIGURE 3. Example foreword WP.

MIL-PRF-87929B(USAF)

TO 2J-F107-3
WP 002 00

1. PURPOSE.

This manual contains a series of Work Packages (WP) and Subordinate Work Packages (SWP) which provide complete instructions for depot level maintenance of the F107-WR-101 and F107-WR-400 turbofan engines (figures 1 and 2).

2. SCOPE.

The complete set of work packages covers all disassembly, cleaning, inspection, repair, assembly, final testing, troubleshooting, and shipping preparation.

3. ABBREVIATIONS/ACRONYMS.

The following abbreviations/acronyms are used in this manual.

LIST OF ABBREVIATIONS/ACRONYMS

TERM	DEFINITION
ALCM	Air Launched Cruise Missile
ATP	Acceptance Test Procedure
GLCM	Ground Launched Cruise Missile
HP	High Pressure
LP	Low Pressure
OTL	Operational Test Launch
PAST	Product Assurance Support Test
RPM	Revolutions Per Minute
SLCM	Sea Launched Cruise Missile
SWP	Subordinate Work Package
WP	Work Package

4. RELATED PUBLICATIONS.

The following publications are referenced in and used in conjunction with this manual.

LIST OF RELATED PUBLICATIONS

PUBLICATION NUMBER	PUBLICATION TITLE
00-25-113-F107-ENG	Critical Alloys and Precious Metals Parts List
2J-F107-4	Illustrated Parts Breakdown, F107-WR-101
2J-F107-14	Illustrated Parts Breakdown, F107-WR-400
35E20-3-34-1	CNU-414/E Engine Shipping and Storage Container

5. TIME COMPLIANCE TECHNICAL ORDERS (TCTO).

The following TCTOs are applicable to the F107-WR-101 and F107-WR-400 engines.

LIST OF TIME COMPLIANCE
TECHNICAL ORDERS

TCTO NUMBER	TCTO TITLE	TCTO DATE
2J-F107-532	Inspections of Oil Cooler Assembly	5 May 1991

6. MANUAL STRUCTURE.

This manual is divided into WPs and SWPs. Each WP is an independent, task oriented unit. Only essential information is provided. WPs cover the subjects of alphabetical index, foreword, theory of operation, operating instructions, troubleshooting, alignment, disassembly, assembly, cleaning, inspection and repair. A WP is subdivided into SWPs when one division by WP is not sufficient to maintain a logical sequence of data, for clarity, or to isolate specific maintenance level requirements.

7. WP BREAKOUT.

The WPs are arranged in disassembly sequence. The Alphabetical Index (WP 001 00) provides a complete list of all WPs and SWPs.

8. LOCATING INFORMATION.

The Numerical Index of Effective Work Packages lists in numerical order all WPs and SWPs contained in this manual and provides the model application for each WP/SWP. The Alphabetical Index WP lists in alphabetical order all WPs and SWPs contained in this manual. Each WP/SWP contains a table of contents which lists all procedures contained in that WP/SWP. References to paragraphs, tables, or figures within a WP are made by number, e.g. paragraph 7, table 2, or figure 3. A reference to another WP merely includes the WP or SWP number, e.g. WP 008 00 or SWP 006 01. To find a particular procedure or topic, it is necessary to refer to that WP or SWP.

2

FIGURE 3. Example foreword WP – Continued.

MIL-PRF-87929B(USAF)

9. LEADING PARTICULARS.

The following information applies to both the F107-WR-101 and F107-WR-400 engines.

Table 1. Leading Particulars.

Characteristic	Description
Engine Type	Non-augmented Turbofan
Size	Length: XXX Inches Diameter: XX Inches at Widest Point
Weight	XXXX Pounds
Fuel Type	JP-4
Thrust	XXXX Pounds
Fuel Consumption	XX Pounds Per Hour at Sea Level with Full Throttle
Service Ceiling	XXXXX Feet Above Sea Level

10. PRINCIPLES OF OPERATION.

10.1 Description. The F107-WR-400 and F107-WR-101 turbofan engines are non-augmented (no after-burner), twin spool, axial flow turbofan engines, with a mixed exhaust. Low pressure (LP) spool consists of a two stage axial fan (1stg and 2stg fans), followed by two additional axial compressor stages (3stg and 4stg rotors) in gas generator flow path, all driven by two axial turbines (2stg and 3stg turbines). High pressure (HP) spool consists of a single stage centrifugal compressor driven by a single axial turbine. Shafts are counterrotating to minimize gyroscopic and shaft vibration effects. Engines use a folded annular burner with rotary fuel injection. Provisions are included for customer air bleed as required by installations. Lubrication system is self-contained and is not dependent on air vehicle.

10.2 Configurations. The F107 turbofan engine is produced in two configurations, F107-WR-101 and F107-WR-400. The F107-WR-101 is referred to as the ALCM (Air Launched Cruise Missile) engine, as it

powers AGM-86 ALCM. The F107-WR-400 is the Tomahawk engine, which refers to the BQM-109 Sea Launched Cruise Missile (SLCM) and Ground Launched Cruise Missile (GLCM). Differences between the two engine configurations correspond to individual air vehicle requirements.

11. MAINTENANCE CONCEPT.

These engines are designed to have a useful life of 10 years. Life consists of periods of operational environment, which include 25 hours of engine operation (not including acceptance testing). Operating hours also may include up to 49 air-assisted starts and up to 4 cartridge starts. Currently, engines are returned from the field every 36 months for recertification or refurbishment primarily due to the 36-month storage life of No. 1 bearing (grease-packed). This manual addresses those engines returned to Depot for limited or full recertification, and for refurbishment. Term recertification applies to those engines that have been deployed as part of a missile system, but have never been run for reasons other than initial Acceptance Test Procedure (ATP). Limited recertification shall be performed on those engines returned from first and third deployments; full recertification shall be performed on each engine after second period of deployment.

11.1 Limited Recertification. Limited recertification will require disassembly of engine only to Level I, as required to replace No. 1 bearing. With respect to accessories, oxygen bottle and starter cartridge will be replaced and oxygen bottle and fuel control will be removed and returned to vendors for recertification/refurbishment as required.

11.2 Full Recertification. Full recertification will require complete disassembly of engine for inspection and replacement of O-rings and gaskets; no replacement of major components in basic engine assembly is anticipated, except No. 1 bearing. With respect to accessories, fuel control unit, oxygen bottle, and starter cartridge will be replaced.

11.3 Refurbishment. Refurbishment is applicable to those engines which have been flown or tested in some fashion such as Product Assurance Support Test (PAST) or Operational Test Launch (OTL). Refurbishment also requires complete disassembly of engine; major components may be replaced as required.

3

FIGURE 3. Example foreword WP – Continued.

MIL-PRF-87929B(USAF)

12. TOLERANCES, CLEARANCES, AND WEAR LIMITS.

Each inspection and repair WP contains an inspection table, if applicable. Identified in each table are inspection area, condition, serviceable and repairable limits, and corrective action.

12.1 Wear Limits. Two kinds of limits are identified, serviceable and repairable. A limit is the condition beyond which deterioration of a part necessitates repair or replacement. The SERVICEABLE LIMITS column defines the maximum departure from manufacturer's established standard that will not materially reduce the usability of the part. If a part is within serviceable limits, no corrective action is required. The REPAIRABLE LIMITS column defines the maximum deterioration of part from manufacturer's established standard that is repairable. If a part is within repairable limits but exceeds serviceable limits, it must be repaired in accordance with the CORRECTIVE ACTION column. If a part exceeds repairable limits, it is not repairable and must be replaced. If a part is not serviceable and not repairable, it must be replaced.

13. PART IDENTIFICATION.

All engine parts must be identified at disassembly. Identification may include part number, serial number (when applicable), time and starts on part, and engine serial number.

14. ONE TIME USE ITEMS.

The following listed items shall be considered as consumables and shall be discarded upon disassembly to prevent reuse. O-rings (preformed packings), conical seals, lock wire, and tab-lock washers. Discard self-locking nuts as required. The HP shaft cup lock washer and cup lock washer on the first bevel gearshaft may be used a second time only if previous stake marks do not prevent a smooth contour fit. They shall not be used more than two times. Attaching hardware such as clamps, washers, screws, and nuts may be used unless found defective. In addition, the engine spark ignitors should be bagged and retained for possible test cell engine runs. New ignitors are installed prior to engine delivery back to the field. The oil filter (not oil screen) (F107-WR-101) located in the engine oil tank is not to be reused, however, it may be used for laboratory analysis if required.

15. IMPROVEMENT REPORTS.

Recommendations proposing changes to this manual should be submitted on AFTO Form 22 in accordance with TO 00-5-1.

4

FIGURE 3. Example foreword WP – Continued.

42

MIL-PRF-87929B(USAF)

ENGINE
STARTER
CARTRIDGE

OXGEN
TANK ASSY

LEFT SIDE VIEW

THERMOCOUPLES

LEFT SERVICE
ADAPTER ASSY

FUEL CONTROL

OIL
COOLER

LUBRICATION
AND SCAVENGE
PUMP

HOT GAS
SERVICE ISLAND ADAPTER

RIGHT SIDE VIEW

THERMOCOUPLES

WIRING HARNESS
ASSY

FUEL SYSTEM
ACCUMULATOR

FUEL PRESSURE
TRANSDUCER

ACCESSORY DRIVE
GEARBOX ASSY

H9002647

5
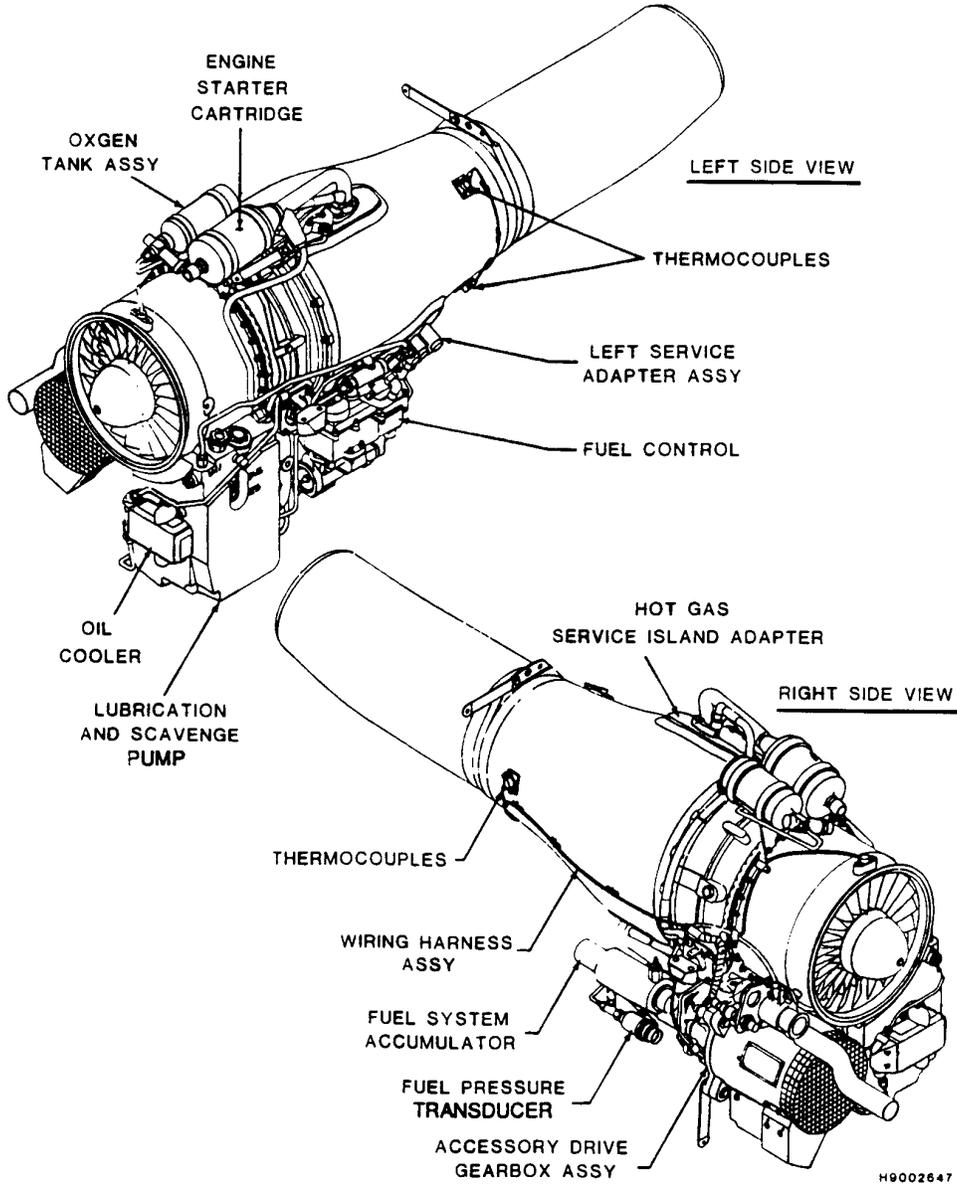
Figure 1.   F107-WR-101 Turbofan Engine.

FIGURE 3. <u>Example foreword WP – Continued</u>.

MIL-PRF-87929B(USAF)

ENGINE
ACCESSORY
GENERATOR

LUBRICATION AND
SCAVENGE PUMP

LEFT SERVICE
ADAPTER
ASSEMBLY

LEFT SIDE VIEW

OIL COOLER

FUEL CONTROL

WIRING HARNESS
ASSEMBLY

RIGHT SIDE VIEW

THERMOCOUPLE

HOT GAS SERVICE
ADAPTER ASSEMBLY

ACCESSORY DRIVE
GEARBOX ASSEMBLY

ENGINE STARTER
CARTRIGE
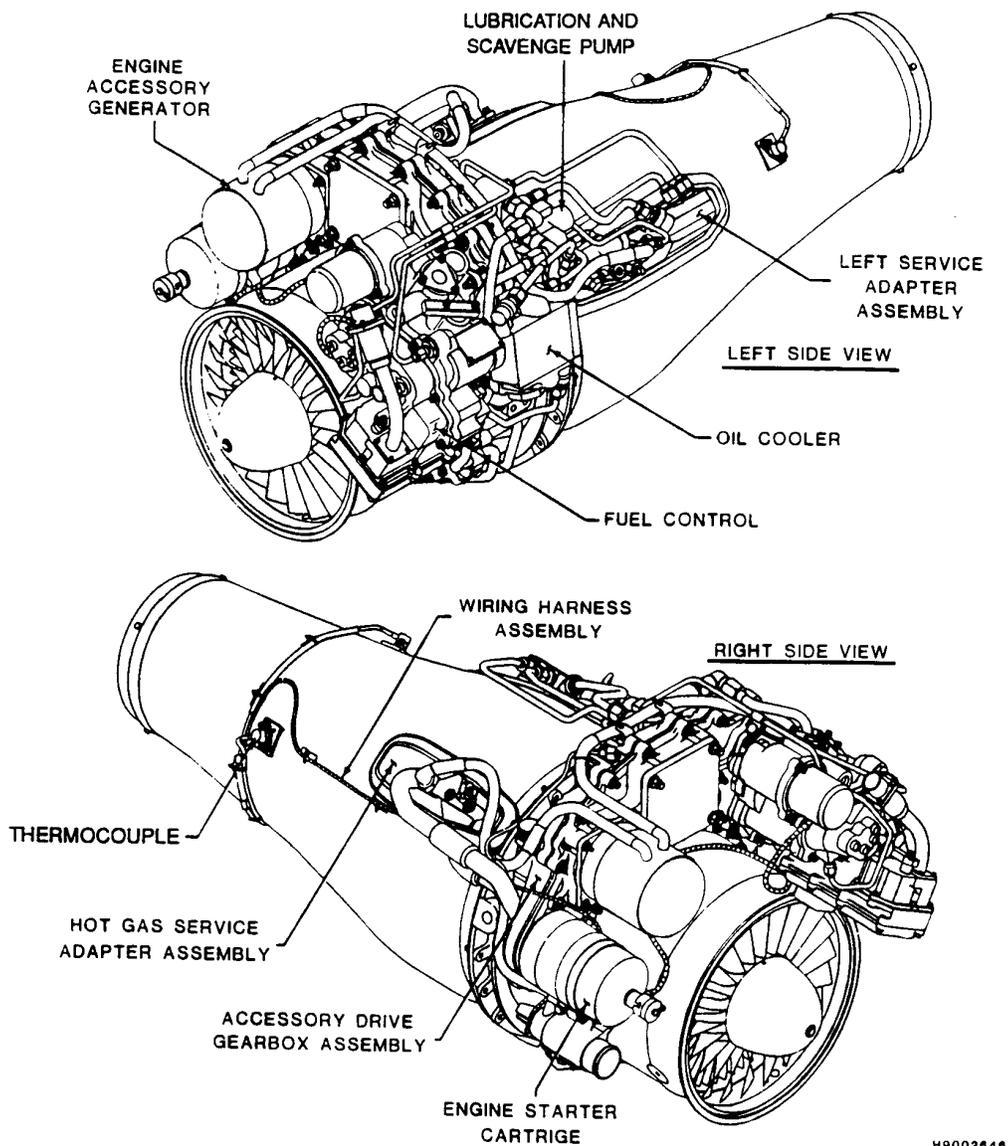
H9002646

Figure 2.   F107-WR-400 Turbofan Engine

6

FIGURE 3. Example foreword WP – Continued.

MIL-PRF-87929B(USAF)

WORK PACKAGE

TECHNICAL PROCEDURES

BALANCE - HP ROTARY GROUP

EFFECTIVITY: ENGINE MODELS F107-WR-400 AND F107-WR-101 SERIES

LIST OF EFFECTIVE WP PAGES

Total Number of Pages in this WP is 10

Page No.	Change No.	Page No.	Change No.	Page No.	Change No.
1-10 0					

TABLE OF CONTENTS

1

FIGURE 4. Example technical WP.

MIL-PRF-87929B(USAF)

LIST OF ILLUSTRATIONS

REFERENCE MATERIAL REQUIRED

Publication Number	Publication Title
WP 008 00	Engine Cleaning

APPLICABLE TCTOs

None

CONSUMABLE MATERIALS

Nomenclature	Specification/Part No.	CAGE Code
Corrosion Preventative	RUST-LICK 606	14098
Molybdenum Disulfide	MIL-M-7866	
Oil (for half bearing)	SAE-30	
Abrasive Wheel, Mandrel-mounted	VWB112	55719
Bags, Plastic	PPP-B-26	
Buffing Wheel, Aluminum Oxide	BW1432-A	06220
	A-4784W	70752
Guard, Polyethylene	MP 9000-1000	03663
	MP 9000-1500	03663
Rotary File, Tungsten Carbide	R2734/12-T	91606

2

FIGURE 4. Example technical WP – Continued.

46

MIL-PRF-87929B(USAF)

APPLICABLE SUPPORT EQUIPMENT

Part No.	Cage Code	Nomenclature/Type Designation
TL1911	99091	Arbor, Balance, Centrifugal Compressor Rotor
TL1917	99091	Wrench, High Pressure Shaft
TL1927	99091	Fixture, High Pressure Assembly
TL1946	99091	Puller, Radial Compressor Rotor
TL1966	99091	Driver, Radial Compressor Rotor
TL1975	99091	Bearing Set, Balance
TL2438	99091	Bearing, Balance, HP Turbine Shaft
TL2531	99091	Case, Handling
TL2573	99091	Bearings, Balance
TL2575	99091	Bearings, Balance
TL2582	99091	Bearings, Balance
TL2583	99091	Fixture, Balance
TL2586	99091	Fixture, Balance
TL2599	99091	Thrust Stop
TL2600	99091	Thrust Stop

FOREWORD

This Work Package (WP) contains procedures for verifying operational balance status of the High Pressure (HP) rotary group. Balancing is required if any part of the HP rotary group has been repaired or replaced.

SAFETY SUMMARY

Various steps in this WP may require use of heat to ease installation or removal of TL1911 Centrifugal Compressor Rotor Balance Arbor. Wear thermal protective gloves when working with heat or handling heated components.

3

FIGURE 4. Example technical WP – Continued.

47

MIL-PRF-87929B(USAF)

1. HANDLING.

CAUTION

Turbine blades are easily damaged. Ensure polyethylene guard is installed when not performing balancing operations. Turbine blade damage may result.

When handling High Pressure (HP) Turbine Shaft Assembly, a polyethylene guard must remain installed around the turbine blades. Remove guard only when balancing operations are being performed. If HP Turbine Shaft Assembly will be left for an extended period, it should be stowed in TL 2531 Handling Case (figure 1).

2. CENTRIFUGAL COMPRESSOR ROTOR BALANCE.

Balance Centrifugal Compressor Rotor (centrifugal rotor) only when it has been repaired or replaced. If centrifugal rotor has not been repaired or replaced, proceed to CENTRIFUGAL COMPRESSOR ROTOR AND HP TURBINE SHAFT ASSEMBLY BALANCE. If centrifugal rotor has been repaired or replaced, proceed as follows:

   a. Install Fixture and Balance Bearings on balance machine per table 1 (figure 2).

Table 1. Balance Set Up

	FIXTURES	BALANCE BEARING		THRUST STOP	
		LEFT	RIGHT	LEFT	RIGHT
HP Turbine Shaft	TL2586	TL2573	TL2575	TL2599	TL2600
HP Rotary Group	TL2585	TL2581	TL2575		TL2600
Centrifugal Compressor Rotor	TL2583	TL2582	TL2582	TL2600	TL2600
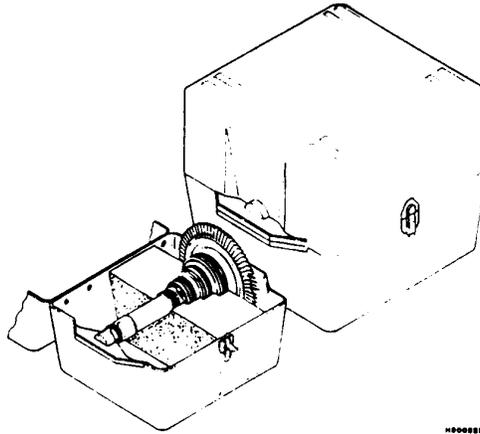
Figure 1. HP Rotary Group in TL2531 Handling Case

4

FIGURE 4. Example technical WP – Continued.

MIL-PRF-87929B(USAF)
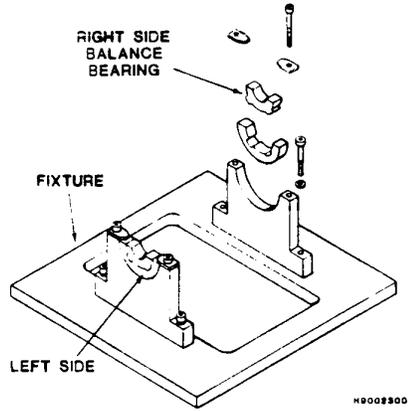
Figure 2. Balance Bearing and Fixture

'A' DIMENSION	'B' DIMENSION	'C' DIMENSION	'A + B + C' DIMENSION	SPEED RANGE
2.8	1.80	3.3	7.90	1200 RPM
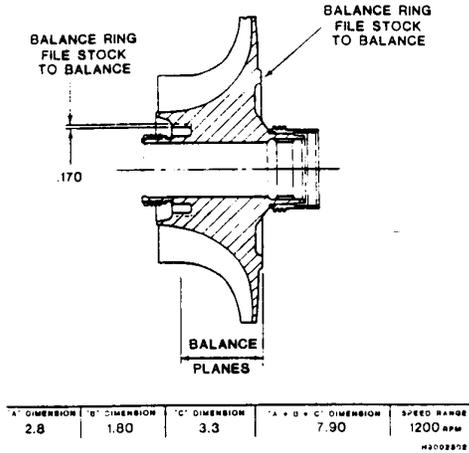
Figure 4. Balance Information and Stock Removal for Centrifugal Rotor
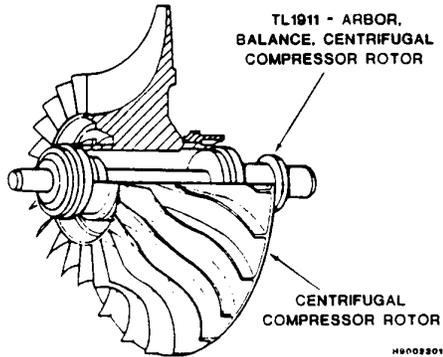
Figure 3. TL1911 Centrifugal Compressor Rotor Arbor Balance Installed on Centrifugal Rotor

┌─────────────┐
│ **WARNING** │
└─────────────┘

Heated components may cause burns. Wear thermal protective gloves when handling heated components.

b. Install TL1911 Centrifugal Rotor Compressor Balance Arbor in bore of centrifugal rotor (figure 3). If required, use heat gun to locally heat bore of centrifugal rotor to ease installation.

c. Install centrifugal rotor and TL1911 on balance machine.

d. Rotate centrifugal rotor to 1200 Revolutions Per Minute (RPM) and verify balance to within 0.010 ounce-inch (0.28 grams) maximum in two planes (figure 4).

e. Remove centrifugal rotor and TL1911 from balance machine. If centrifugal rotor is balanced, proceed to step 2i below. If centrifugal rotor is not balanced, continue with step 2f below.

5

FIGURE 4. Example technical WP – Continued.

49

MIL-PRF-87929B(USAF)

f. Use tungsten carbide rotary file to remove material, as required, from balance rings (figure 4). Polish all grind marks smooth using an aluminum oxide buffing wheel.

g. Clean centrifugal rotor (WP 008 00).

h. Install centrifugal rotor and TL1911 on balance machine. Repeat steps 2d and 2e above.

WARNING

Heated components may cause burns. Wear thermal protective gloves when handling heated components.

i. Remove TL1911 from centrifugal rotor. If required, use heat gun to locally heat bore of centrifugal rotor to ease removal.

j. Place HP centrifugal rotor in TL2531 Handling Case (figure 1).

3. HP TURBINE SHAFT ASSEMBLY BALANCE.

This procedure is only necessary if the HP Turbine Shaft Assembly (HP shaft) has been repaired or replaced. If HP shaft has been repaired or replaced, proceed as follows:

a. Install Fixture and Balance Bearings on balance machine per table 1 (figure 2).

b. Install HP shaft on balance machine.

c. Rotate HP shaft to 1200 RPM and verify balance to within 0.042 ounce-inch (1.19 grams) maximum in planes A and B (figure 5).

d. Remove HP shaft from balance machine. If HP shaft is balanced, proceed to step 3h below. If centrifugal rotor is not balanced, continue with step 3e below.

e. Use abrasive wheel to remove material from 1stg turbine rotor balance ring (stock) in equal amounts on both sides of turbine. Polish all grind marks smooth using an aluminum oxide buffing wheel.

'A' DIMENSION	'B' DIMENSION	'C' DIMENSION	'A' 'B' 'C' DIMENSION	SPEED RANGE
3.6	4.80	1.2	9.60	1200 RPM
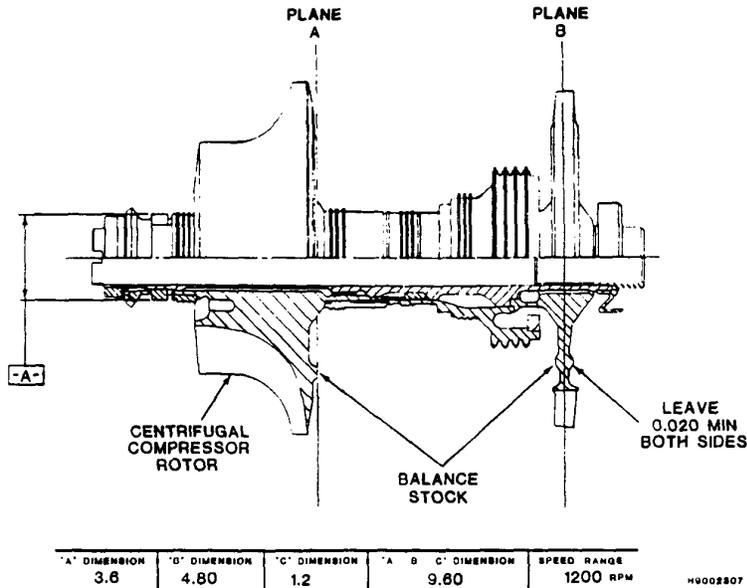
Figure 5. Balance Information and Stock Removal for HP Rotary Group

6

FIGURE 4. Example technical WP – Continued.

MIL-PRF-87929B(USAF)

f. Clean centrifugal rotor (WP 008 00).

g. Install HP shaft on balance machine. Repeat steps 3c and 3d above.

i. Place HP shaft in TL2531 Handling Case (figure 1).

4. <u>CENTRIFUGAL COMPRESSOR ROTOR AND HP TURBINE SHAFT ASSEMBLY BALANCE.</u>

This procedure is only necessary if the HP Turbine Shaft Assembly (HP shaft) or Centrifugal Compressor Rotor (centrifugal rotor) has been repaired or replaced. If either has been repaired or replaced, proceed as follows:

a. Install HP shaft on TL1927 HP Assembly Fixture (figure 6).

b. Mount centrifugal rotor (blades up) on HP shaft. Rotate centrifugal rotor until splines on centrifugal rotor align with splines on HP shaft. (When splines are aligned centrifugal rotor will drop down approximately 0.50 inch and will not turn independent of HP shaft.)

c. Using arbor press and TL1966 Radial Compressor Rotor Driver, seat centrifugal rotor on HP shaft (figure 7).

d. Install TL2438 HP Turbine Shaft Balance Bearing on HP shaft (figure 8).

e. Install pinion bevel gear on HP shaft.
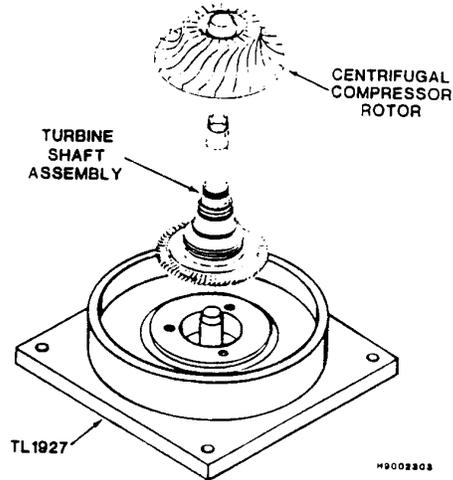
Figure 6. TL1927 HP Assembly Fixture
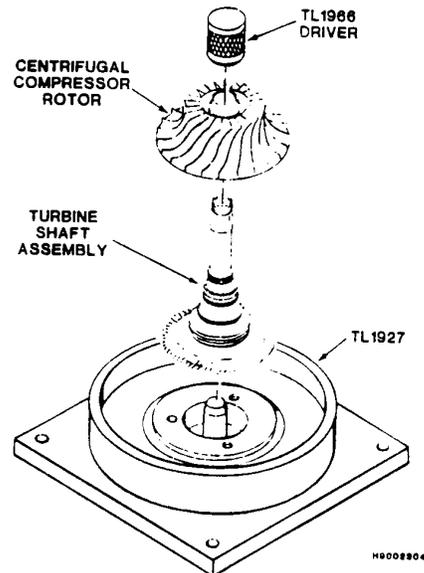
Figure 7. Installation of Centrifugal Compressor Rotor Using TL1966 Driver

7

FIGURE 4. <u>Example technical WP – Continued</u>.

MIL-PRF-87929B(USAF)

TO 2J-F107-3
WP 018 00
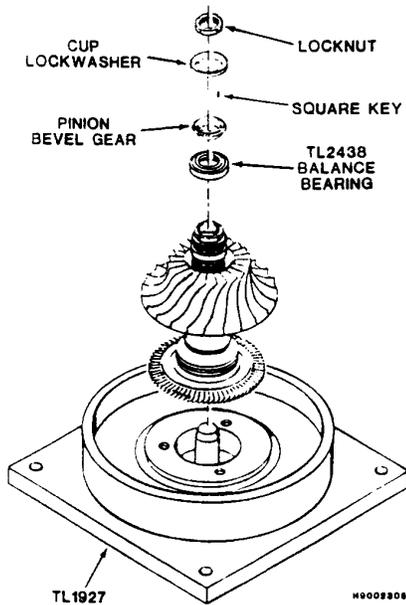
Figure 8. *Installation of TL2438 HP Turbine Shaft Balance Bearing on HP Shaft*
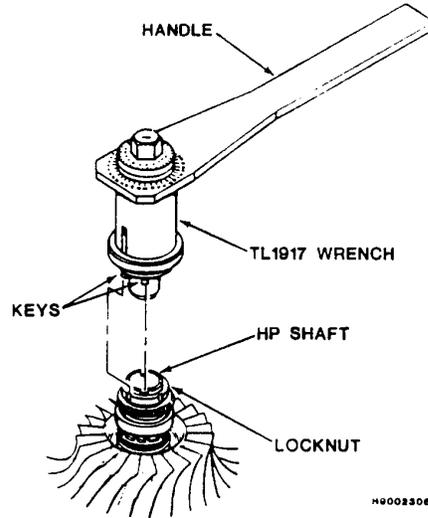
Figure 9. *Torquing HP Spool Locknut Using TL1917 HP Shaft Wrench*

f. Align and insert square key in slot on HP shaft and pinion bevel gear (figure 8).

g. Install HP cuplock washer on HP shaft aligning tangs on washer with slots in pinion bevel gear (figure 8).

h. Apply anti-seize compound to threads of HP spool locknut and install locknut on HP shaft.

i. Using TL1917 HP Shaft Wrench, torque locknut 15 to 20 inch-pounds, then turn an additional 75 to 85 degrees to seat parts. Loosen locknut, then retorque to 17 ± 2 inch-pounds (figure 9).

j. Install Fixture and Balance Bearings on balance machine per table 1 (figure 2).

k. Remove HP Rotary Group from TL1927 and install HP Rotary Group on balance machine.

l. Rotate HP Rotary Group to 1200 RPM and verify balance to within 0.010 ounce-inch (0.28 grams) maximum in planes A and B (figure 5).

m. Remove HP Rotary Group from balance machine and place on TL1927. If HP Rotary Group is balanced, proceed to step 4q below. If HP Rotary Group is not balanced, continue with step 4n below.

n. Use tungsten carbide rotary file to remove material, as required, from balance ring (stock) on centrifugal rotor. Use abrasive wheel to remove material from 1stg turbine rotor balance rings (stock) in equal amounts on both sides of turbine. Polish all grind marks smooth using an aluminum oxide buffing wheel.

o. Clean HP Rotary Group (WP 008 00).

8

FIGURE 4. Example technical WP – Continued.

52

MIL-PRF-87929B(USAF)
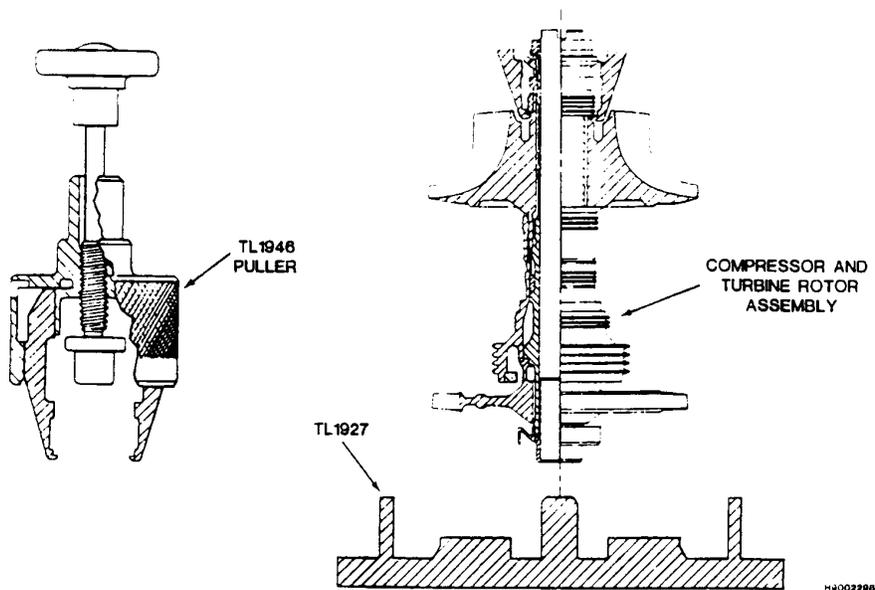
Figure 10. Removing Centrifugal Rotor Using TL1946 Radial Compressor Rotor Puller

p. Remove HP Rotary Group from TL1927 and install HP Rotary Group on balance machine. Repeat steps 4l and 4m above.

q. Using TL1917, remove HP spool locknut.

r. Remove cuplock washer, pinion bevel gear, square key and TL 2438 Balance Bearing from HP shaft.

s. Using TL1946 Radial Compressor Rotor Puller, remove centrifugal rotor from HP shaft as follows (figure 10):

   (1) Install TL1946 Puller on HP shaft and insert four fingers around and behind forward compressor labyrinth seal. Ensure that fingers are attached to compressor hub and not forward compressor labyrinth seal lands.

   (2) Thread sleeve down around four fingers to hold them against centrifugal rotor hub.

   (3) Turn hand knob clockwise to remove centrifugal rotor from HP shaft.
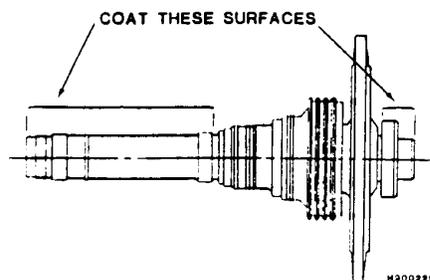
Figure 11. Surfaces to be Coated with Corrosion Preventative

t. Remove TL 1946 from centrifugal rotor.

u. Lightly coat HP shaft barrel and spline area, pinion bevel gear, aft seal runner and bearing sleeve with SAE-30 engine oil, or if assembly is to be stored, lightly spray surfaces with corrosion preventative RUST-LICK 606 or equivalent (figure 11).

9

FIGURE 4. Example technical WP – Continued.

MIL-PRF-87929B(USAF)

v. Mount centrifugal rotor (blades up) on HP shaft. Rotate centrifugal rotor until splines on centrifugal rotor align with splines on HP shaft. (When splines are aligned centrifugal rotor will drop down approximately 0.50 inch and will not turn independent of HP shaft.) Do not seat centrifugal rotor on HP shaft.

w. Install pinion bevel gear, square key, cuplock washer and locknut on HP shaft. Finger tighten locknut.

x. Place HP Rotary Group in TL2531 Handling Case (figure 1).

10

FIGURE 4. Example technical WP – Continued.

54
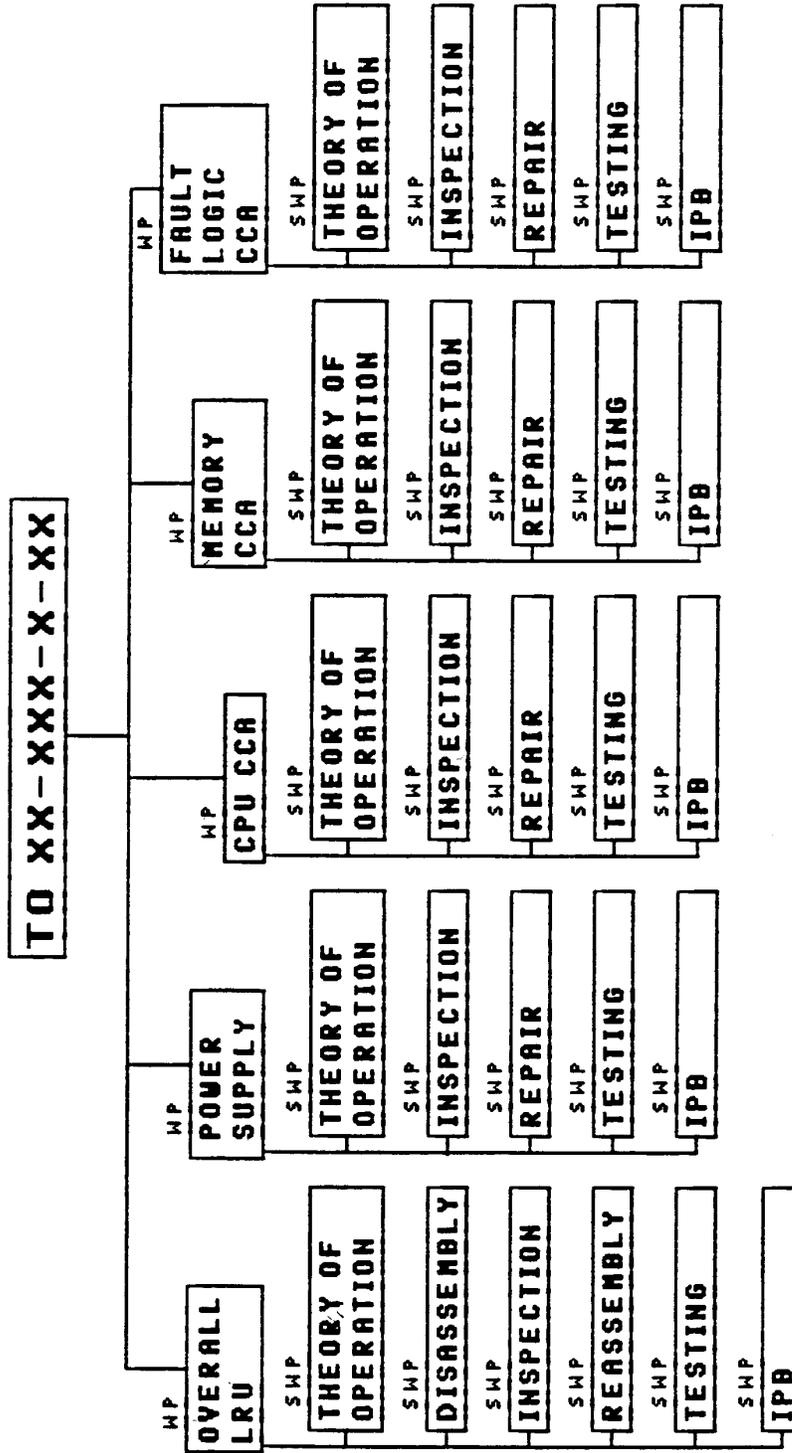
MIL-PRF-87929B(USAF)

FIGURE 5. Examples of WP/SWP breakout.

MIL-PRF-87929B(USAF)
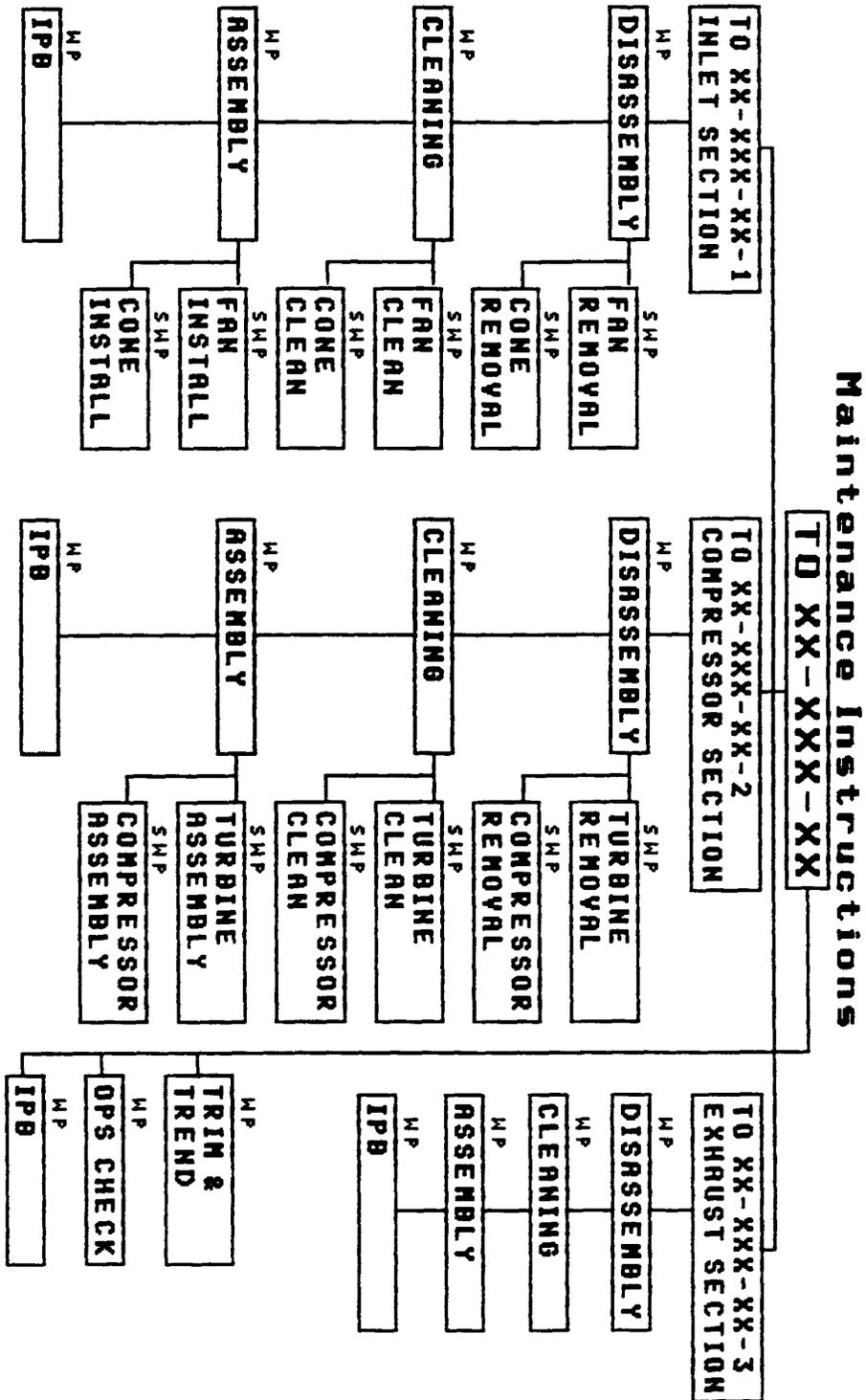
FIGURE 5. Exapmles of WP/SWP breakout – Continued.

56

MIL-PRF-87929B(USAF)

FIGURE 5. Examples of WP/SWP breakout – Continued.

57
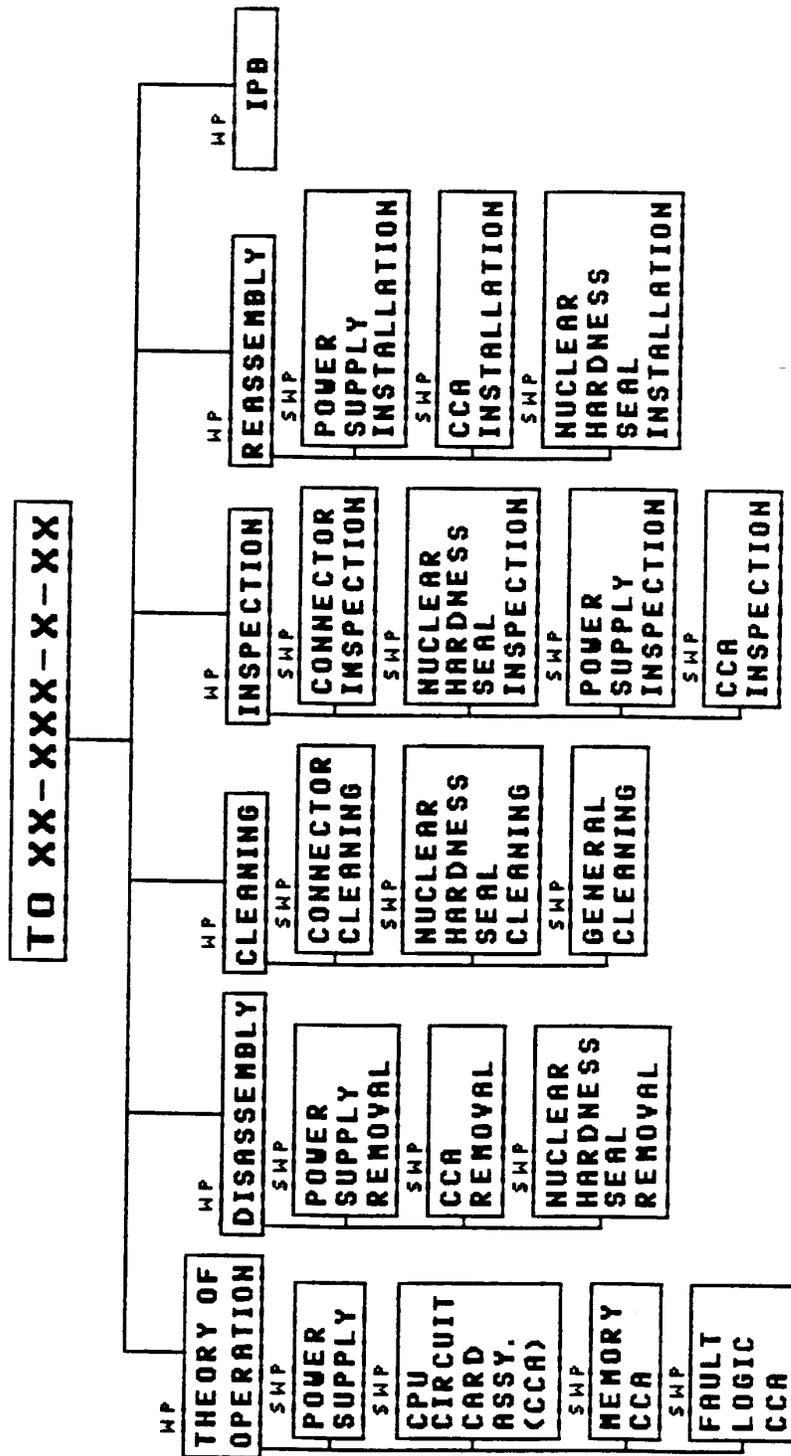
MIL-PRF-87929B(USAF)
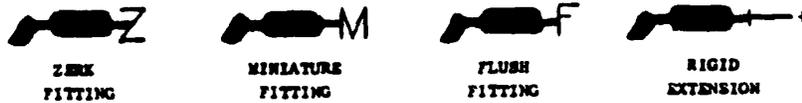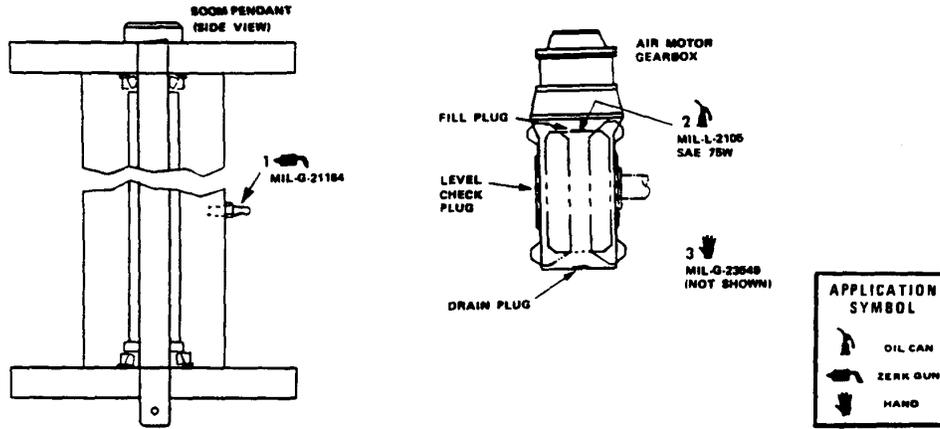
FIGURE 6. Example of lubrication illustrations and symbols.

58

MIL-PRF-87929B(USAF)
APPENDIX A

WORK PACKAGE TYPE MANUALS
DOCUMENT TYPE DEFINITION

A.1.   SCOPE.

A.1.1   <u>Scope</u>.   The markup tags described herein are based on rules outlined in MIL-PRF-28001 and the Information Processing - Text and Office Systems - Standard Generalized Markup Language (SGML) document, International Organization for Standardization (ISO) 8879, as incorporated in Federal Information Processing Standards (FIPS) 152. The Document Type Definition (DTD) subset within this appendix provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see A.4.1), Tag Description Table (see A.4.2), and Attribute Description Table (see A.4.3) are available (see A.5.). This Appendix is a mandatory part of this specification. The information contained herein is intended for compliance.

A.2.   APPLICABLE DOCUMENTS.

A.2.1   <u>Government documents</u>.

A.2.1.1   <u>Specifications, standards, and handbooks</u>.   The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

  Military

    MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text

STANDARDS

  Federal Information Processing Standards

    FIPS 152   Standard Generalized Markup Language (SGML)

(Unless otherwise indicated, copies of federal and military specifications, standards and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

(Copies of FIPS are available to Department of Defense activities from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094. Others must request copies of FIPS from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161-2171.)

A.3.   DOCUMENT TYPE DEFINITION.

A.3.1   <u>SGML document type definition</u>.   Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

59

MIL-PRF-87929B(USAF)
APPENDIX A

A.3.2   Template document type for work package type manuals.   The DTD for work package type manuals is as follows:

```
<!-- ************************* START OF FILE **************************** -->

<!-- SUPPLEMENT NOTICE: This file is made available to provide the user with a
digital representation of the DTD found in Appendix A of MIL-PRF-87929B.  This
file is incomplete without MIL-PRF-87929B. -->

<!-- NOTE: The start and end of this file are marked with a row of asterisks.
If these rows are not present the file may not be complete! -->

<!-- MIL-PRF-87929B Work Package DTD -->

<!-- The following set of declarations may be referred to by using a public
entity as follows:

<!ENTITY % m87929wpPRF PUBLIC "-//USA-DOD//DTD MIL-PRF-87929B WP//EN" >
%m87929wpPRF; -->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:

<!DOCTYPE docwp [ and the associated "]>" to the end of the file. -->

<!-- ENTITY DECLARATIONS -->

<!ENTITY % m38807cPRF PUBLIC "-//USA-DOD//DTD MIL-PRF-38807C IPB//EN"  >

<!ENTITY % testpt
"major NMTOKENS #IMPLIED
secondary NMTOKENS #IMPLIED
minor NMTOKENS #IMPLIED " >

<!ENTITY % frnt "(idinfo, recchg, verstat?, niewp, safesum)" >

<!ENTITY % titles "title" >

<!ENTITY % yesorno "NUMBER" >

<!ENTITY % text "(#PCDATA | change | ftnref | xref | verbatim | emphasis |
applicabil | graphic | extref | dataiden | hci | hcp | esds |
tstptref | line)+" >

<!ENTITY % list "randlist | deflist | seqlist" >

<!ENTITY % fpi "(para0 | applicdef | symsect | abbrsect | internatlstd | lrp |
tctolist)*" >

<!ENTITY % safesum "para0+" >

<!ENTITY % wp "((wpno | awpno), (swpno | aswpno), wpidinfo, contents,
illuslist?, tablelist?, refmatreq, applictcto, consummat, applicequip,
illusse?, tablimtbl?, para0*)" >
```

60

MIL-PRF-87929B(USAF)
APPENDIX A

```
<!ENTITY % testtrend "IGNORE" >

<![ %testtrend; [

<!ENTITY % tables "(inspdam | compdrop | fica | inspreq | repsched | pdminsp
| inspmaint | penapp)" >

]]>

<!ENTITY % tables "(inspdam | compdrop | fica | inspreq | repsched | pdminsp |
inspmaint)" >

<!ENTITY % sttec "%wp;, techinfo?, (toollist, para0*)?, (eqplist, para0*)?,
(consum, para0*)?,  (contlist, para0*)?" >

<!ENTITY % forwp "%wp;, purpose, scope, manstru, coverage?, indexscheme,
locinfo, para0*, leadpartic, maintcon, (para0 | envcont | warrprov)*,
tmimprep?" >

<!ENTITY % effect "model+" >

<!ENTITY % ipbforwd "(para0*, modelcover, serialization?, finding?, simassem?,
quickchgexpl?, symsect, abbrsect?, shtnoexpl?, useonexpl, smrexpl, ipbhci?,
ipbesds?, partstd, mfrlist?, internatlstd?, lrp?, tctolist, para0*)" >

%m38807cPRF;

<!ENTITY % leadpartic "%parazero;, subpara1*" >

<!ENTITY % niewp "((wpno | awpno), (swpno | aswpno), chgno, model+, title)+" >

<!ENTITY % wpatt
"%bodyatt;
modelapp CDATA #IMPLIED
emergency %yesorno; '0'
id ID #IMPLIED
chgno NUMBER '0'
maintcd CDATA #IMPLIED" >

<!ENTITY % swpatt
"%bodyatt;
modelapp CDATA #IMPLIED
emergency %yesorno; '0'
id ID #IMPLIED
chgno NUMBER '0'
maintcd CDATA #IMPLIED" >

<!ENTITY % wptabatts
"id ID #IMPLIED
leftind  CDATA  #IMPLIED
rightind CDATA  #IMPLIED
leftmar  NUTOKEN  #IMPLIED
rightmar NUTOKEN  #IMPLIED
topmar   NUTOKEN  #IMPLIED
botmar   NUTOKEN  #IMPLIED
```

61

MIL-PRF-87929B(USAF)
APPENDIX A

```
mindepth NUTOKEN  #IMPLIED
fontsize (7.5pt | 8pt | 8.5pt | 9pt | 9.5pt | 10pt) '10pt'
place (inline|float) 'float'

%verified;
%bodyatt;
%secur;  " >

<!ENTITY degstor "<para0><title> Storage Inspection <para>Different degrees of
inspection are required based upon the type of storage: <subpara1><title>
Ready Storage <para>Equipment maintained in a completely ready status in
anticipation of a relatively near term use requirement. This equipment may be
positioned on the shelf, held in the shop, or may be installed in the next
higher assembly or installation. The item may be preloaded with munitions and
maintained in a munitions holding area or munitions storage igloo in
preparation for installation on the aircraft. Equipment shall also be provided
adequate protection from damage and the elements. Examples of ready storage
would be DD 780 equipment receiving frequent use, and mobility contingency, or
bare base assets requiring a high degree of readiness for immediate
employment. Inspection interval for items placed in ready storage shall be
that deemed necessary by the &mgrtype; Manager to assure serviceability in
'ready-to-use' condition. For weapons release equipment, the inspection
frequency on items in ready storage shall be a minimum of every eighteen
months.

<subpara1><title> Extended Storage <para>Those items maintained in a ready
condition for which no requirement exists for frequent exercises or immediate
short term employment. Equipment placed in extended storage shall be in a
serviceable, ready-to-use condition. This category includes War Reserve
Material assets.
&degstor2;" >

<!ENTITY degstor2 "<subpara2><title> Inspection Criteria <para>An annual
sampling inspection shall be performed of &insppc; percent of all assets in
extended storage. Items inspected shall be identified; marked to prevent
redundant inspection of the same items during future annual inspections.
Subsequent annual inspections shall be performed on those items which have
acquired the longest calendar year time period since last inspection. In the
event that deterioration of equipment is detected during any annual
inspection, a determination shall be made whether an inspection of all assets
having corresponding packaging dates must be performed. For field
organizations, this determination shall be made either by the organizational
commander or maintenance supervisor. For AFMC depot organizations, this
determination shall be made by the supply inspector.

<subpara2><title> Storage and Packaging <para> Equipment placed in extended
storage shall meet the following criteria:

<randlist><item> Equipment shall be packaged in accordance with applicable
transportation packaging order.

<item> Packaged equipment must be warehoused in a covered structure which will
provide protection from climatic elements.<item> Units which have been
subjected to prior use must meet all criteria
prior to being placed in extended storage.
```

62

<item> Items received from depot or in base supply assets, meeting the
packaging requirements specified in READY STORAGE above, shall be considered
as being in extended storage. </randlist>" >

<!ENTITY insppc "User enters sampling percentage here." >

<!ENTITY mgrtype "User enters manager type: 'System' or 'Item'." >

<!ENTITY niewpchg "Insert Change No. &niewpchgno; work packages and
subordinate work packages, dated &niewpchgdate;. Dispose of superseded work
packages and subordinate work packages. If changed pages are issued to a work
package or subordinate work package, insert the changed pages in the
applicable work package or subordinate work package. The portion of the text
affected in a change or revised WP or SWP is indicated by change bars in the
outer margin of each column of text. Changes to illustrations and diagrams are
indicated by pointing hands or shaded areas." >

<!ENTITY niewpchgdate "Insert work package change date here." >

<!ENTITY niewpchgno "Insert work package change number here." >

<!ENTITY niewpnote "Only these work packages and subordinate work packages
assigned to this manual are listed in this index, therefore WP/SWP numbers may
not be sequential." >

<!ENTITY repkit "Certain repair parts for components covered in this
publication are supplied in the form of kits. Refer to the applicable
Illustrated Parts Breakdown (IPB) for details. Maintenance activities shall
replace all parts, regardless of condition, which are removed during
disassembly, with like parts furnished in the kit. Therefore instructions for
inspection, cleaning, and rework of the used parts have been omitted. If any
parts in the kit must be inspected, cleaned, or tested prior to installation,
instructions for performing these requirements are included in this WP. An
installed part which is not defective need not be removed solely for the
purpose of replacement by a corresponding kitted part." >

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT action   - o (%text;) >
<!ATTLIST   action%secur; >

<!ELEMENT ailist   - o EMPTY >

<!ELEMENT aiwp   - - (%wp;, ailist) >
<!ATTLIST aiwp   %wpatt; >

<!ELEMENT applicequip   - o (applicequiptbl | none) >
<!ATTLIST applicequip   %chgatt; >

<!ELEMENT applicequiptbl - o (toolno, toolname, figno)+ -(%exclus;)
                          +(tfnid | tfnref | tfndisplay | warning |
                          caution | note) >

<!ELEMENT applictcto   - o (applictctotbl | none) >
<!ATTLIST applictcto   %chgatt; >

MIL-PRF-87929B(USAF)
APPENDIX A

```
<!ELEMENT applictctotbl       - o  (tctono, title, date)+  -(%exclus;) +(tfnid
                                  | tfnref | tfndisplay | warning | caution |
                                  note) >

<!ELEMENT aswpno              - o  (%text;) >
<!ATTLIST aswpno              %secur; >

<!ELEMENT awpno               - o  (%text;) >
<!ATTLIST awpno               %secur; >

<!ELEMENT cause               - o  (%text;) >
<!ATTLIST cause               %secur;>

<!ELEMENT chgno               - o  (%text;) >
<!ATTLIST chgno               %secur; >

<!ELEMENT code                - o  (%text;) >
<!ATTLIST code                %secur; >

<!ELEMENT compdrop            - o  (%parazero;, subpara1*, compdroptbl) >
<!ATTLIST compdrop            %para0att; >

<!ELEMENT compdroptbl         - -  (nomen, packunpack, distance, action)+
                                  -(%exclus;) +(tfnid | tfnref | tfndisplay |
                                  warning | caution | note) >
<!ATTLIST compdroptbl         %wptabatts; >

<!ELEMENT consum              - o  (%parazero;, subpara1*, consumtbl) >
<!ATTLIST consum              %para0att; >

<!ELEMENT consummat           - o  (consummattbl | none) >
<!ATTLIST consummat           %chgatt; >

<!ELEMENT consummattbl        - o  (nomen, (spec | partno), cage)+
                                  -(%exclus;) +(tfnid | tfnref | tfndisplay |
                                  warning | caution | note) >

<!ELEMENT consumtbl           - -  (nomen, (spec | partno), (cage | (name,
                                  address)), use, ref)+   -(%exclus;) +(tfnid |
                                  tfnref | tfndisplay | warning | caution | note)
                                  >
<!ATTLIST consumtbl           %wptabatts; >

<!ELEMENT contlist            - o  (%parazero;, subpara1*, contlisttbl,
                                  figure*) >
<!ATTLIST contlist            %para0att; >

<!ELEMENT contlisttbl         - -  ((figno, ((use, partno?) | partno), units,
                                  dim, cube, loadwt,  emptywt)+)  -(%exclus;)
                                  +(tfnid | tfnref | tfndisplay | warning |
                                  caution | note) >
<!ATTLIST contlisttbl         %wptabatts; >

<!ELEMENT coverage            - o  (%parazero;, subpara1*) >
<!ATTLIST coverage            %para0att; >
```

64

MIL-PRF-87929B(USAF)
APPENDIX A

```
<!ELEMENT cube             - o  (%text;) >
<!ATTLIST cube             %secur; >

<!ELEMENT ddwp             - -  (%wp;, %ddchap;)  +(foldout | figure |
                           table) >
<!ATTLIST ddwp             %wpatt; >

<!ELEMENT descript         - o  (%text;) >
<!ATTLIST descript         %secur; >

<!ELEMENT dim              - o  (%text;) >
<!ATTLIST dim              %secur; >

<!ELEMENT dispos           - o  (%text;) >
<!ATTLIST dispos           %secur; >

<!ELEMENT distance         - o  (%text;) >
<!ATTLIST distance         %secur; >

<!ELEMENT docwp            - -  (front, aiwp, forewordwp, sttecwp, wp+,
                           ipbwp?, ddwp?)  +(pgbrk | brk | line | modreq |
                           location | subjinfo) >
<!ATTLIST docwp            service %service; 'AF'
                           %docatt; >

<!ELEMENT effect           - o  (%text;) >
<!ATTLIST effect           %secur; >

<!ELEMENT effectivity      - o  (%effect;) >
<!ATTLIST effectivity      %secur; >

<!ELEMENT emptywt          - o  (%text;) >
<!ATTLIST emptywt          %secur; >

<!ELEMENT envcont          - o  (%parazero;, subpara1*) >
<!ATTLIST envcont          %para0att; >

<!ELEMENT eqplist          - o  (%parazero;, subpara1*, eqplisttbl) >
<!ATTLIST eqplist          %para0att; >

<!ELEMENT eqplisttbl       - -  ((partno | typedes), (cage | (name,
                           address)), figno, nomen, use)+  -(%exclus;)
                           +(tfnid | tfnref | tfndisplay | warning |
                           caution | note) >
<!ATTLIST eqplisttbl       %wptabatts; >

<!ELEMENT extstor          - o  (%text;) >
<!ATTLIST extstor          %secur; >

<!ELEMENT fica             - o  (%parazero;, subpara1*, ficatbl) >
<!ATTLIST fica             %para0att; >

<!ELEMENT ficatbl          - -  (trouble, cause, action)+  -(%exclus;)
                           +(tfnid | tfnref | tfndisplay | warning |
                           caution | note) >
```

65

MIL-PRF-87929B(USAF)
APPENDIX A

```
<!ATTLIST ficatbl              %wptabatts; >

<!ELEMENT figno                - o  (%text;) >
<!ATTLIST figno                %secur; >

<!ELEMENT forewordwp           - -  (%forwp;)  +(figure | table) >
<!ATTLIST forewordwp           %wpatt; >

<!ELEMENT freq                 - o  (%text;) >
<!ATTLIST freq                 %secur; >

<!ELEMENT illusse              - o  (tfig+) >

<!ELEMENT indexscheme          - o  (%parazero;, subpara1*) >
<!ATTLIST indexscheme          %para0att; >

<!ELEMENT insp                 - o  (%text;) >
<!ATTLIST insp                 %secur; >

<!ELEMENT inspdam              - o  (%parazero;, subpara1*, deflist?,
                               inspdamtbl) >
<!ATTLIST inspdam              %para0att; >

<!ELEMENT inspdamtbl           - -  (nomen, insp, dispos)+  -(%exclus;)
                               +(tfnid | tfnref | tfndisplay | warning |
                               caution | note) >
<!ATTLIST inspdamtbl           %wptabatts; >

<!ELEMENT inspmaint            - o  (%parazero;, subpara1*, inspmainttbl) >
<!ATTLIST inspmaint            %para0att; >

<!ELEMENT inspmainttbl         - -  (nomen, insp, repair, readystor, extstor)+
                               -(%exclus;) +(tfnid | tfnref | tfndisplay |
                               warning | caution | note) >
<!ATTLIST inspmainttbl         %wptabatts; >

<!ELEMENT inspreq              - o  (%parazero;, subpara1*, inspreqtbl) >
<!ATTLIST inspreq              %para0att; >

<!ELEMENT inspreqtbl           - -  (code, (nomen, (req, ref, (periodic |
                               special), (applicabil | effect), minutes)+)+)+
                               -(%exclus;) +(tfnid | tfnref | tfndisplay |
                               warning | caution | note) >
<!ATTLIST inspreqtbl           %wptabatts; >

<!ELEMENT ipbswp               - -  ((wpno | awpno), (swpno | aswpno),
                               wpidinfo, contents, pl, numindx?, rfdsindx?) >
<!ATTLIST ipbswp               %swpatt; >

<!ELEMENT ipbwp                - -  ((wpno | awpno), (swpno | aswpno),
                               wpidinfo, contents, ipbforeword, pl, numindx?,
                               rfdsindx?, ipbswp*) >
<!ATTLIST ipbwp                %wpatt; >

<!ELEMENT leadpartic           - o  (%leadpartic;) >
```

66

MIL-PRF-87929B(USAF)
APPENDIX A

```
<!ATTLIST leadpartic          %para0att; >

<!ELEMENT loadwt              - o  (%text;) >
<!ATTLIST loadwt              %secur; >

<!ELEMENT locinfo             - o  (%parazero;, subpara1*) >
<!ATTLIST locinfo             %para0att; >

<!ELEMENT maintcon            - o  (%parazero;, subpara1*) >
<!ATTLIST maintcon            %para0att; >

<!ELEMENT manstru             - o  (%parazero;, subpara1*) >
<!ATTLIST manstru             %para0att; >

<!ELEMENT maxrep              - o  (%text;) >
<!ATTLIST maxrep              %secur; >

<!ELEMENT maxserv             - o  (%text;) >
<!ATTLIST maxserv             %secur; >

<!ELEMENT minmax              - o  (%text;) >
<!ATTLIST minmax              %secur; >

<!ELEMENT minutes             - o  (%text;) >
<!ATTLIST minutes             %secur; >

<!ELEMENT model               - o  (%text;) >
<!ATTLIST model               %secur; >

<!ELEMENT name                - o  (#PCDATA) >
<!ATTLIST name                %secur; >

<!ELEMENT niewp               - o  (%niewp;) >
<!ATTLIST niewp               %verified;
                              chgno NUMBER '0' >

<!ELEMENT none                - o  EMPTY >

<!ELEMENT packunpack          - o  (%text;) >
<!ATTLIST packunpack          %secur; >

<!ELEMENT pdminsp             - o  (%parazero;, subpara1*, pdminsptbl) >
<!ATTLIST pdminsp             %para0att; >

<!ELEMENT pdminsptbl          - -  (insp, maxserv, maxrep, action)+
                              -(%exclus;)  +(tfnid | tfnref | tfndisplay |
                              warning | caution | note) >
<!ATTLIST pdminsptbl          %wptabatts; >

<!ELEMENT penapp              - o  (%parazero;, subpara1*, penapptbl) >
<!ATTLIST penapp              %para0att; >

<!ELEMENT penapptbl           - -  (partno, nomen, reintest, reptest,
                              remarks)+  -(%exclus;) +(tfnid | tfnref |
                              tfndisplay | warning | caution | note) >
```

67

MIL-PRF-87929B(USAF)
APPENDIX A

```
<!ATTLIST penapptbl          %wptabatts; >

<!ELEMENT periodic           - o  (%text;) >
<!ATTLIST periodic           %secur; >

<!ELEMENT purpose            - o  (%parazero;, subpara1*) >
<!ATTLIST purpose            %para0att;  >

<!ELEMENT qty                - o  (%text;) >
<!ATTLIST qty                %secur; >

<!ELEMENT readystor          - o  (%text;) >
<!ATTLIST readystor          %secur; >

<!ELEMENT recchg             - -  (chghist) >

<!ELEMENT ref                - o  (%text;) >
<!ATTLIST ref                %secur; >

<!ELEMENT refmatreq          - o  (refmatreqtbl | none) >
<!ATTLIST refmatreq          %chgatt; >

<!ELEMENT refmatreqtbl       - o (tmidno, title)+   -(%exclus;) +(tfnid |
                             tfnref | tfndisplay | warning | caution | note)
                             >

<!ELEMENT refno              - o  (%text;) >
<!ATTLIST refno              %secur; >

<!ELEMENT reintest           - o  (%text;) >
<!ATTLIST reintest           %secur; >

<!ELEMENT repair             - o  (%text;) >
<!ATTLIST repair             %secur; >

<!ELEMENT repsched           - o  (%parazero;, subpara1*, repschedtbl) >
<!ATTLIST repsched           %para0att; >

<!ELEMENT repschedtbl        - -  (freq, sysno, nomen, partno, qty?,
                             minutes)+  -(%exclus;) +(tfnid | tfnref |
                             tfndisplay | warning | caution | note) >
<!ATTLIST repschedtbl        %wptabatts; >

<!ELEMENT reptest            - o  (%text;) >
<!ATTLIST reptest            %secur; >

<!ELEMENT req                - o  (%text;) >
<!ATTLIST req                %secur; >

<!ELEMENT rminrmax           - o  (%text;) >
<!ATTLIST rminrmax           %secur; >

<!ELEMENT scope              - o  (%parazero;, subpara1*) >
<!ATTLIST scope              %para0att; >
```

68

MIL-PRF-87929B(USAF)
APPENDIX A

```
<!ELEMENT spec              - o  (%text;) >
<!ATTLIST spec              %secur; >

<!ELEMENT special           - o  (%text;) >
<!ATTLIST special           %secur; >

<!ELEMENT sttecwp           - -  (%sttec;)   +(figure | table) >
<!ATTLIST sttecwp           %wpatt; >

<!ELEMENT swp               - -  (%wp;, wpforewd?, techinfo) >
<!ATTLIST swp               %swpatt; >

<!ELEMENT swpno             - o  (%text;) >
<!ATTLIST swpno             %secur; >

<!ELEMENT sysno             - o  (%text;) >
<!ATTLIST sysno             %secur; >

<!ELEMENT tablimtbl         - -  ((refno, figno, descript, minmax,
                            rminrmax)+)  -(%exclus;) +(tfnid | tfnref |
                            tfndisplay | warning | caution | note) >
<!ATTLIST tablimtbl         %wptabatts; >

<!ELEMENT techinfo          - -  (para0 | %tables;)+ >
<!ATTLIST techinfo          %para0att; >

<!ELEMENT tfig              - -  ((nomen | partno | typedes), graphic) >
<!ATTLIST tfig              id ID #IMPLIED
                            place (inline|float) 'float'
                            %verified;
                            %bodyatt;
                            %secur;
                            placement (quarter | half | whole | halfvert)
                            #REQUIRED >

<!ELEMENT toollist          - o  (%parazero;, subpara1*, toollisttbl) >
<!ATTLIST toollist          %para0att; >

<!ELEMENT toollisttbl       - -  (partno, (cage | (name, address)), figno,
                            nomen, use)+  -(%exclus;) +(tfnid | tfnref |
                            tfndisplay | warning | caution | note) >
<!ATTLIST toollisttbl       %wptabatts; >

<!ELEMENT toolname          - o  (%text;) >
<!ATTLIST toolname          %chgatt; >

<!ELEMENT toolno            - o  (%text;) >
<!ATTLIST toolno            %chgatt; >

<!ELEMENT trouble           - o  (%text;) >
<!ATTLIST trouble           %secur; >

<!ELEMENT tstptref          - o  EMPTY >
<!ATTLIST tstptref          %testpt; >
```

69

MIL-PRF-87929B(USAF)
APPENDIX A

```
<!ELEMENT use              - o  (%text;) >
<!ATTLIST use              %secur; >

<!ELEMENT warrprov         - o  (%parazero;, subpara1*) >
<!ATTLIST warrprov         %para0att; >

<!ELEMENT wp               - -  (%wp;, wpforewd, techinfo, swp*)  +(figure
                           | table | foldout) >
<!ATTLIST wp               %wpatt; >

<!ELEMENT wpforewd         - o  ((para0 | symsect | abbrsect | applicdef)+)
                           +(figure | table) >
<!ATTLIST wpforewd         %para0att; >

<!ELEMENT wpidinfo         - -  (title, effectivity, wplep ) -(foldout |
                           figure | table) >
<!ATTLIST wpidinfo         %verified; >

<!ELEMENT wplep            - o  EMPTY >

<!ELEMENT wpno             - o  (%text;) >
<!ATTLIST wpno             %secur; >

<!-- *************************** END OF FILE *************************** -->
```

A.4.   DETAILED DESCRIPTION.

A.4.1   <u>Document type definition</u>.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

A.4.2   <u>Tag description table</u>.   The Tag Description Table provides detailed descriptions of the tags above. It provides the element tagging structure, full element name, tag minimization requirements, element structure, referencing elements, source paragraph, and attribute descriptions unique to the element. See A.5., for information on obtaining this table.

A.4.3   <u>Attribute description table</u>.   The Attribute Description Table provides detailed descriptions of the attributes above. See A.5., for information on obtaining this table.

A.5.   OBTAINING FILES.

A.5.1   <u>Obtaining files</u>.   The DTD, attribute and tag description tables are available as ASCII files by either of two methods (see A.5.1.1 and A.5.1.2). In the event of a conflict between the text of this document and any downloaded files, the text of this document takes precedence. These files are for convenience and informational purposes only.

A.5.1.1   <u>File Transfer Protocol (FTP)</u>.   The procedures for obtaining files via FTP are as follows.

   a.   Connect to "WPAFTB1.wpafb.af.mil" using the FTP software available at your site. For example, if your FTP software is invoked using the "ftp" command, type "ftp WPAFTB1.wpafb.af.mil". Do not attempt to log-in to this site using a "telnet" connection. If this connection fails, connect using "129.52.100.1".

70

MIL-PRF-87929B(USAF)
APPENDIX A

b.   Log-in (login, name, remote user name, etc.) as "ftp" and press "enter".

c.   For password, type electronic mail (e-mail) name followed by "@" (at) and press "enter".

d.   Type "cd sgml" (or the command your system requires to change to "sgml" directory) and press "enter". At this point, a short new users message will normally appear. If the new users message does not appear, it should be downloaded and read. Download file by typing "get.message" (or the command your system requires to download a file) and press "enter".

e.   Type "get filelist.txt" (or the command your system requires to download a file) and press "enter". This file contains a list of all files available. This file is updated as new items are added, therefore it should be downloaded and read before downloading any other file.

f.   If the needed file ends with ".zip", see g. below, otherwise type "asc" (or the command your system requires for an ASCII transfer) and press "enter". Type "get XXXXXX.XXX" (where XXXXXX.XXX is the name of the file to be downloaded) and press "enter" to download needed file. Repeat for each file to be downloaded.

g.   If the needed file ends with ".zip", type "bin" (or the command your system requires for a binary transfer) and press "enter". Type "get XXXXXX.XXX" (where XXXXXX.XXX is the name of the file to be downloaded) and press "enter" to download needed file. Repeat for each file to be downloaded. Zipped files were compressed using PKZIP Version 2.04

h.   File "nc.txt" contains information on the naming conventions used on all files in this directory. Type "get nc.txt" to download this file.

A.5.1.2   Bulletin Board System (BBS).   The procedure for obtaining files via the Air Force Continuous Acquisition and Life-Cycle Support (AF CALS) BBS are as follows. (There is currently no charge for an account on this BBS.)

a.   Connect to the AF CALS BBS by dialing commercial 513-476-1273 or Defense Switched Network (DSN) 986-1273.

b.   To open a new account, type "new" and press "enter". Answer questions. If an account already exists, type the appropriate "User-ID" and press "enter".

c.   At the main menu, type "2" and press "enter".

d.   Type "1 dtd" and press "enter" to access the library.

e.   Type "3 filelist.txt" and press "enter". Select option. This file contains a list of all files available. This file is updated as new items are added, therefore it should be downloaded and read before downloading any other file.

f.   Type "3 XXXXXX.XXX" (where XXXXXX.XXX is the name of the file to be downloaded) and press "enter". Select option to download selected file.

g.   If the needed file ends with ".zip", type "3 pkunzip.exe" and press "enter". Select option to download selected file. To uncompress the file, type "pkunzip XXXXXX.XXX" (where XXXXXX.XXX is the name of the file to be decompressed).

h.   File "nc.txt" contains information on the naming conventions used on all files in this directory. Type "3 nc.txt" to download this file.

71/72

MIL-PRF-87929B(USAF)
APPENDIX B

SPECIAL REQUIREMENTS FOR
AIRCRAFT ENGINE TESTING AND TRENDING PROCEDURES
TECHNICAL MANUAL

B.1.   SCOPE.

B.1.1   <u>Scope</u>.   This appendix provides the special or unique criteria, in addition to the provisions of this specification, required for development of an aircraft engine testing and trending procedures Technical Manual (TM). The Document Type Definition (DTD) subset contained in Appendix A (see A.3.2) provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see A.5.1) are available (see A.5.). This appendix is a mandatory part of this specification. The information contained herein is intended for compliance.

B.2.   APPLICABLE DOCUMENTS.   This section is not applicable to this appendix.

B.3.   SPECIAL REQUIREMENTS.

B.3.1   <u>Aircraft engine testing and trending procedures manual</u>.   This manual shall provide instructions for conducting test of the complete engine. When specified, the testing and trending procedures shall be a WP in the engine maintenance manual(s). Test data pertaining to specific testing conditions, test set up and operating procedures of applicable support equipment shall be included.

    a.   The following, as applicable, shall be included:

        (1)   Safety Precautions

        (2)   Preparation for Test

        (3)   Instrumentation Requirements

        (4)   Engine Static Test and Motoring Procedures

        (5)   Engine Starting, Operating, and Shutdown Procedures

        (6)   Operating Limits

        (7)   Level of Testing Following Specific Repairs

        (8)   Engine Functional Test and Performance Evaluation MIL-PRF-87929B(USAF) APPENDIX B

        (9)   Test Schedule.

      (10)   Penalty Schedule

      (11)   Fluid and Electrical Supply Requirements

      (12)   Drainage Requirements

    b.   If an item has been provided for testing the engine, instructions for its use shall be provided.

    c.   Allowable engine performance data corrected to standard day atmospheric conditions shall be included. Performance evaluation charts or curves shall be provided. Correction charts shall be included to show correction factors for performance evaluation.

MIL-PRF-87929B(USAF)
APPENDIX B

d. If engine performance is to be evaluated through use of Aircraft Integrated Data System (AIDS), provisions shall be included for compilation of data and establishment of the engine condition indication baseline. Data shall be presented in such a manner that diagnosis of mechanical or performance problems or trends toward potential problems may be evaluated through the use of AIDS. The instructions shall specify that these data will remain with the engine during maintenance for comparative use.

e. The sequence and method of accomplishing a functional test or performance evaluation of the engine shall be included. All checks and adjustments shall be described in detail with appropriate references to charts or curves. For performance evaluation, a test schedule shall be provided in tabular form.

f. A table shall be included outlining the additional testing required for parts reinstalled or replaced following successful completion of a performance run. The table shall contain the following headings:

Penalty Applications

Part No.	Nomenclature	Reinstallation Test	Replacement Test	Remarks

g. A paragraph reading substantially as follows shall be inserted immediately following the Penalty Application table:

"Parts removed to gain access to other parts or areas shall invoke the same penalties, in accordance with the table of penalty applications, as parts removed to correct deficiencies and malfunctions. In the event that more than one penalty is invoked, the most severe shall apply."

MIL-PRF-87929B(USAF)
APPENDIX C

SPECIAL REQUIREMENTS FOR
AIRCRAFT POWER PACKAGE (ENGINE INSTALLATION HARDWARE
CONFIGURATION) TESTING PROCEDURES TECHNICAL MANUAL

C.1. SCOPE.

C.1.1   Scope.   This appendix provides the special or unique criteria, in addition to the provisions of this specification, required for development of a Technical Manual (TM) for Aircraft Power Package Testing Procedures (Engine Installation Hardware Configuration). The Document Type Definition (DTD) subset within this appendix provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see C.5.1) are available (see A.5.). This appendix is a mandatory part of this specification. The information contained herein is intended for compliance. This technical manual requirement shall apply when test facilities have been provisioned and the using command maintenance plans require test and trim of removed power packages.

C.2. APPLICABLE DOCUMENTS.

C.2.1   Government documents.

C.2.1.1   Specifications, standards, and handbooks.   The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

    Military

        MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text

STANDARDS

    Federal Information Processing Standards

        FIPS 152   Standard Generalized Markup Language (SGML)

C.3. SPECIAL REQUIREMENTS.

C.3.1   Testing procedures manual.   This manual shall include testing procedures for aircraft power package in engine installation hardware configuration with the power package removed from the aircraft. All essential information required to install the power package in the test stand, conduct tests, adjust engine trim, analyze any malfunctions evidenced during test, and removal of power package from the test stand shall be included. Instructions shall include a functional test of all power package components remotely controlled by or having indicators in the cockpit.

C.3.1.1   Testing facility WP.   A brief description of the entire test facility and functional descriptions of the controls and indicators used and monitored during power package testing shall be included. Illustrations shall be provided to portray control panels and indicators peculiar to testing of specific power packages. Calibration requirements for peculiar test instrumentation shall include

the frequency of calibration and required accuracy of instruments only. Reference to applicable instrument manuals for calibration instructions shall be made.

C.3.1.2   <u>Preoperative procedures WP</u>.   Detailed step-by-step instructions for all preliminary operations required prior to performing a power package test run shall be included. Instructions shall include:

   a.   Initial preparation of test area.

   b.   Engine transfer from transportation dolly to run-up dolly.

   c.   Installation and positioning of equipment and special tools required for test.

   d.   Engine inspection.

   e.   Installation of run-up dolly in test facility.

   f.   Servicing instructions.

   g.   Hook up of all control and instrumentation connections (at engine and test facility) and preliminary leak check.

   h.   Final preparation of test area.

   i.   Positioning of power switches and circuit breakers.

   j.   Engine anti-icing valves check (check both engine anti-icing valves and nose cowl anti-icing valves).

   k.   Ignition system check.

   l.   Constant Speed Drive (CSD) oil system priming (if applicable).

   m.   Oil sampling (if applicable).

C.3.1.3   <u>Operating procedures WP</u>.   Step-by-step operating procedures, charts, graphs, electrical schematics, and flow diagrams necessary to perform the power package test shall be included. Instructions shall include, but are not limited to, the following:

   a.   Pre-trim preparation instructions.

   b.   Test reference table.

   c.   Temperature limit charts for engine starting, acceleration, and stabilized conditions.

   d.   Trim time limitation figure.

   e.   Trim target charts shall be prepared and properly annotated to indicate correction factors when using closed type cells, inlet screens, or sound suppressors.

   f.   Chart for determining depression factors.

   g.   Engine starting, shut down, and emergency shut down procedures.

   h.   Engine fuel flow and engine oil system pressure check.

   i.   Engine revolutions per minute (RPM) indicating system check.

   j.   Engine breather check.

   k.   Alternator functional check - (Use exciting A1A Load Bank) Engine vibration shall be taken during loaded condition. A token load may be required during run to prevent damage to the system.

   l.   Exhaust gas temperature (EGT) harness check - Spread check and average shall be made with existing equipment.

   m.   Exhaust pressure ratio (EPR) system check (if applicable).

   n.   Bleed valve functional check (use EPR limits).

   o.   Fuel pump output pressure.

   p.   PT7 pressure measurement.

   q.   Anti-ice functional check.

   r.   Engine oil temperature measurement.

   s.   Oil consumption check, curves, etc.

   t.   Hydraulic pump functional check (using system comparable to M37).

   u.   Generator checkout.

   v.   Trim procedures in step-by-step form.

      (1)   Trim checks shall include simulated wet trim for temperature presently authorized.

      (2)   N1 and N2 RPM (engine conditioning and overspeed check).

      (3)   Field cleaning (carbo-blast).

      (4)   Vibration analysis check.

      (5)   EGT spread check.

C.3.1.4   <u>Trouble analysis WP</u>.   Troubleshooting tables and procedures shall be included. Electrical schematics and flow diagrams, as an aid to troubleshooting, and engine system checkouts shall be provided as required. Remedies shall be brief and concise. The table shall also contain references to test points shown on the diagrams so that the table and diagrams combined will provide a systematic procedure for isolating the source of malfunction. Troubleshooting instructions shall be listed and arranged under the following headings:

Trouble	Probable Cause	Isolating Procedure	Remedy

C.3.1.5   <u>Postoperative Procedures WP</u>.   Step-by-step instructions for all operations required to restore the test facility to normal configuration after power package testing shall be included. Instructions shall include:

   a.   Removal of special equipment from power package and test facility.

   b.   Removal of power package from test stand.

   c.   References to applicable Technical Manual for engine preservation and depreservation.

   d.   Oil sampling (if applicable).

MIL-PRF-87929B(USAF)
APPENDIX C

C.4.   DOCUMENT TYPE DEFINITION.

C.4.1   <u>SGML document type definition</u>.   Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

C.4.2   <u>Template document type for work package type manuals</u>.   The DTD for Aircraft Power Package Testing Procedures (Engine Installation Hardware Configuration) Technical Manual is as follows:

```
<!-- ************************* START OF FILE *************************** -->

<!-- SUPPLEMENT NOTICE:   This file is made available to provide the user with
a digital representation of the DTD found in Appendix C of MIL-M-87929A. This
file is incomplete without MIL-M-87929A. -->

<!-- NOTE: The start and end of this file are marked with a row of asterisks.
If these rows are not present the file may not be complete! -->

<!-- MIL-M-87929A Aircraft Power Package DTD -->

<!-- The following set of declarations may be referred to by using a public
entity as follows:

<!ENTITY % m87929app PUBLIC "-//USA-DOD//DTD MIL-M-87929A APP AMEND1//EN" >
%m87929app;
-->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:

     <!DOCTYPE docapp [

and the associated "]>" to the end of the file. -->

<!ENTITY % m87929wp PUBLIC "-//USA-DOD//DTD MIL-M-87929A AMEND1//EN" >

%m87929wp;

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT docapp            - -  (front, aiwp, forewordwp, sttecwp,
                            testfacwp, preopwp, opprocwp, troublewp,
                            postopwp, ipbwp?, ddwp?, foldsect?)  +(pgbrk |
                            brk) >
<!ATTLIST docapp            service %service; 'AF'
                            %docatt;
                            %secur; >

<!ELEMENT isoproc           - o  (%wptext;) >
<!ATTLIST isoproc           %secur; >

<!ELEMENT opprocwp          - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                            +(figure | table | foldout) >
```

78

MIL-PRF-87929B(USAF)
APPENDIX C

```
<!ATTLIST opprocwp                chgno NUMBER "0"
                                  %bodyatt;
                                  %secur; >

<!ELEMENT postopwp                - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                                  +(figure | table | foldout) >
<!ATTLIST postopwp                chgno NUMBER "0"
                                  %bodyatt;
                                  %secur; >

<!ELEMENT preopwp                 - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                                  +(figure | table | foldout) >
<!ATTLIST preopwp                 chgno NUMBER "0"
                                  %bodyatt;
                                  %secur; >

<!ELEMENT remedy                  - o  (%text;) >
<!ATTLIST remedy                  %secur; >

<!ELEMENT testfacwp               - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                                  +(figure | table | foldout) >

<!ATTLIST testfacwp               chgno NUMBER "0"
                                  %bodyatt;
                                  %secur; >

<!ELEMENT troublewp               - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                                  +(figure | table | foldout | tshoot) >
<!ATTLIST troublewp               chgno NUMBER "0"
                                  %bodyatt;
                                  %secur; >

<!ELEMENT tshoot                  - -  ((trouble, cause, isoproc, remedy)+)
                                  +(ftnote | warning | caution | note) >
<!ATTLIST tshoot                  tocentry %yesorno; "1"
                                  shortentry %yesorno; "0"
                                  verified %yesorno; "0"
                                  %bodyatt;
                                  %secur; >

<!-- *************************** END OF FILE *************************** -->
```

C.5. DETAILED DESCRIPTION.

C.5.1   <u>Document type definition</u>.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

79/80

MIL-PRF-87929B(USAF)
APPENDIX D

SPECIAL REQUIREMENTS
FOR STATIC FIRING OF MISSILE MOTORS
TECHNICAL MANUAL

D.1.   SCOPE.

D.1.1   <u>Scope</u>.   This appendix provides the special or unique criteria, in addition to the provisions of this specification, required for development of a static firing of missile motors Technical Manual (TM). The Document Type Definition (DTD) subset within this appendix provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see D.5.1) are available (see A.5.). This appendix is a mandatory part of this specification. The information contained herein is intended for compliance.

D.2.   APPLICABLE DOCUMENTS.

D.2.1   <u>Government documents</u>.

D.2.1.1   <u>Specifications, standards, and handbooks</u>.   The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

     Military

          MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic
                                             Printed Output and Exchange of Text

STANDARDS

     Federal Information Processing Standards

          FIPS 152   Standard Generalized Markup Language (SGML)

D.3.   SPECIAL REQUIREMENTS.

D.3.1   <u>Static firing of missile motors manual</u>.   This manual shall provide procedures for the static firing of missile motors. The manual shall include procedures for transportation of missile motors from the storage facility/Depot Maintenance Facility (DMF) to the test site, roll transfer into and out of the radiographic and other buildings, inspections required throughout the receipt to the test pad area, post firing inspections and dissection. The manual shall also provide procedures for the static firing of the motor, calibration of instrumentation, connection of motor instrumentation to the land lines, data collection, handling, reduction and analysis, and the final report format. The manual shall provide in detail and sequence, all operations and procedures required to be performed from the time the rocket motors are removed from and returned to the operational inventory (DMF)/motor surveillance storage facilities (R&D), until handling, inspection, and post firing inspections are complete (except static firing) and reduction. Also, the instructions shall be prepared in a manner to include two types of motors:

     a.   Research and development surveillance.

81

MIL-PRF-87929B(USAF)
APPENDIX D

    b.   Operational inventory surveillance.

D.3.1.1   <u>General safety requirements</u>.   The following statement shall be included in the safety summary of each WP:

"The safety requirements and precautions set forth in AFI 91-201 shall be complied with by munitions personnel during static firing operations. All personnel engaged directly, as well as indirectly, in operations in which ammunitions, explosives and other hazardous materials are involved should be thoroughly trained in explosive safety and capable of recognizing hazardous explosive exposures. Thinking safety and working safely must become a firmly established habit when working with or in the vicinity of items capable of exhibiting a hazard due to the nature of their explosive, flammable, or toxic fillers. The absence of a safety requirement in this manual or in AFI 91-201 does not necessarily indicate that no safeguards are needed. A. safety precaution is included in procedures where it is required. If immediately dangerous munitions are encountered, all operations in the immediate vicinity shall be shut down, personnel evacuated to a safe location, and EOD or other authorized personnel called to render assistance in elimination of the hazard. Operations shall not be resumed until the hazard has been eliminated."

D.3.1.2   <u>Handling, transportation, and inspection WP</u>.   Procedures shall be provided to remove the rocket motor from storage facilities, horizontal/vertical and DMF, and prepare and instrument rocket motor for road test, vibration test, and board course test. These instructions shall also cover preparation and loading instructions for transportation, including unloading from transporter and all inspection (including nondestructive inspection) required to determine prefiring posture. The information shall be brief but factual, giving step-by-step procedures.

D.3.1.3   <u>Preparation for firing WP</u>.   Procedures shall be provided for preparation and inspection of the motor for static firing, i.e. instrumentation, preparation and installation of Data Acquisition System (DAS), DAS checkout, and installation of firing harness and other related fixtures required for static firing of motor.

D.3.1.4   <u>Prefire facility preparation WP</u>.   Procedures shall be provided for test facility preparation (test pad, annex building, data recording building), test equipment verification, test pad instrumentation requirements, digital data reduction information and test data documentation. In addition, procedures for support systems preparation, rocket motor installation in test stand, and rocket motor alignment in test fixture shall be provided. All procedures necessary for setup, checkout and inspection of mechanical and electrical systems shall be provided.

D.3.1.5   <u>Test operations and motor firing WP</u>.   Procedures shall be provided for motor instrumentation, termination and calibration, Thrust Vector Control System (TVCS) checkout, TVCS dry run performance, prefire operations and motor firing. Emergency procedures for motor hangfire and motor malfunction are required.

D.3.1.6   <u>Postfire inspection WP</u>.   Procedures shall be provided for postfire inspections, calibrations, photography, test setup disassembly, test data review and documentation, test anomalies or motor malfunction, dissection of motor and components, and data reduction and analysis.

D.4.   DOCUMENT TYPE DEFINITION.

MIL-PRF-87929B(USAF)
APPENDIX D

D.4.1   SGML document type definition.   Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

D.4.2   Template document type for work package type manuals.   The DTD for Aircraft Power Package Testing Procedures (Engine Installation Hardware Configuration) Technical Manual is as follows:

```
<!-- ************************** START OF FILE *************************** -->

<!-- SUPPLEMENT NOTICE:  This file is made available to provide the user with
a digital representation of the DTD found in Appendix D of MIL-M-87929A. This
file is incomplete without MIL-M-87929A. -->

<!-- NOTE: The start and end of this file are marked with a row of asterisks.
If these rows are not present the file may not be complete! -->

<!-- MIL-M-87929A Static Firing of Missile Motors DTD -->

<!-- The following set of declarations may be referred to by using a public
entity as follows:

<!ENTITY % m87929sfmm PUBLIC "-//USA-DOD//DTD MIL-M-87929A SFMM AMEND1//EN" >
%m87929sfmm;
-->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:

     <!DOCTYPE docsfmm [

and the associated "]>" to the end of the file. -->

<!-- ENTITY DECLARATIONS -->

<!ENTITY % m87929wp PUBLIC "-//USA-DOD//DTD MIL-M-87929A AMEND1//EN" >

<!ENTITY safereq "The safety requirements and precautions set forth in AFR
127-100 shall be complied with by munitions personnel during static firing
operations. All personnel engaged directly, as well as indirectly, in
operations in which ammunitions, explosives and other hazardous materials are
involved should be thoroughly trained in explosive safety and capable of
recognizing hazardous explosive exposures. Thinking safety and working safely
must become a firmly established habit when working with or in the vicinity of
items capable of exhibiting a hazard due to the nature of their explosive,
flammable, or toxic fillers. The absence of a safety requirement in this
manual or in AFR 127-100 does not necessarily indicate that no safeguards are
needed. Safety precautions are included in procedures where it is required. If
immediately dangerous munitions are encountered, all operations in the
immediate vicinity shall be shut down, personnel evacuated to a safe location
and EOD or other authorized personnel called to render assistance in
elimination of the hazard. Operations shall not be resumed until the hazard
has been eliminated." >
```

83

MIL-PRF-87929B(USAF)
APPENDIX D

```
%m87929wp;

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT docsfmm            - -  (front, aiwp, forewordwp, sttecwp, htiwp,
                             prepfirewp, prefacwp, testopwp, postfirewp,
                             ipbwp?, ddwp?, foldsect?)   +(pgbrk | brk) >
<!ATTLIST docsfmm            service %service; 'AF'
                             %docatt;
                             %secur; >

<!ELEMENT htiwp              - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                             +(figure | table | foldout) >
<!ATTLIST htiwp              chgno NUMBER "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT postfirewp         - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                             +(figure | table | foldout) >
<!ATTLIST postfirewp         chgno NUMBER "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT prefacwp           - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                             +(figure | table | foldout) >
<!ATTLIST prefacwp           chgno NUMBER "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT prepfirewp         - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                             +(figure | table | foldout) >
<!ATTLIST prepfirewp         chgno NUMBER "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT testopwp           - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                             +(figure | table | foldout) >
<!ATTLIST testopwp           chgno NUMBER "0"
                             %bodyatt;
                             %secur; >

<!-- *************************** END OF FILE *************************** -->
```

D.5.   DETAILED DESCRIPTION.

D.5.1   <u>Document type definition</u>.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

MIL-PRF-87929B(USAF)
APPENDIX E

SPECIAL REQUIREMENTS FOR
SYSTEM PECULIAR CORROSION CONTROL
TECHNICAL MANUAL

E.1.   SCOPE.

E.1.1   <u>Scope</u>.   This appendix provides the special or unique criteria, in addition to the provisions of this specification, required for development of a system peculiar corrosion control Technical Manual (TM). This appendix is a mandatory part of this specification. The Document Type Definition (DTD) subset within this appendix provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see E.5.1) are available (see A.5.). The information contained herein is intended for compliance.

E.1.2   <u>Purpose</u>.   This manual provides instructions and guidance to organizational, intermediate, and depot level maintenance personnel for system peculiar corrosion prevention and control on equipment.

E.2.   APPLICABLE DOCUMENTS.

E.2.1   <u>Government documents</u>.

E.2.1.1   <u>Specifications, standards, and handbooks</u>.   The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

   Military

      MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic
                         Printed Output and Exchange of Text

STANDARDS

   Federal Information Processing Standards

      FIPS 152   Standard Generalized Markup Language (SGML)

E.2.1.2   <u>Other Government documents, drawings, and publications</u>.   The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

PUBLICATIONS

   Air Force Technical Manuals

      1-1-3   Preparation, Inspection and Repair of Aircraft Fuel, Oil, and Water
                           Alcohol Cells and Integral Tanks

      1-1-4   Exterior Finishes, Insignia and Markings Applicable to USAF Aircraft

MIL-PRF-87929B(USAF)
APPENDIX E

1-1-8	Application of Organic Coatings, Aerospace Systems
1-1-689	Prevention and Control of Corrosion and Fungus in Communication, Electronic, Meteorological and Avionics Equipment
1-1-691	Aircraft Weapons Systems Cleaning and Corrosion Control

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

E.3. SPECIAL REQUIREMENTS.

E.3.1 System Peculiar Corrosion Control Manual. Appendix E1 provides the Document Type Definition (DTD) for electronic delivery of this manual.

E.3.1.1 Preparation. The general preparation of the manual shall be in accordance with 3.4.1, 3.4.1.1 and the following:

a. Cleaning and temporary protection WP.

b. Paint removal and painting WP.

c. Sealing WP.

d. Special WPs, if needed.

e. Corrosion prone areas WPs.

E.3.1.2 Contents. The manual shall contain information required by maintenance personnel for determining the location and extent of corrosion damage and instructions for its removal and treatment. The manual shall not contain information already included in general series TMs unless essential for continuity of system peculiar data. Specific instructions in general series TMs shall be referenced where required. If the information in the general series TMs is not sufficient, the system peculiar manual shall contain the necessary information.

E.3.1.3 New materials. When new materials are used in the original fabrication of the equipment, an alternate material shall be identified for replacements, if available and applicable.

E.3.1.4 Special or proprietary equipment or processes. Use of "special" or proprietary equipment shall not be specified in the TMs without prior approval of the procuring activity and the Air Force Corrosion Program Manager, WR-ALC/CNC. The manual shall not refer to any contractor's process or material specifications. The applicable detailed process instructions shall be specified in the manual if not covered by general series TMs.

E.3.1.5 Cleaning and temporary protection WP. This WP shall describe cleaning and/or washing procedures for the equipment and shall include procedures for use of corrosion preventive compounds for temporary protection of specific areas after washing.

E.3.1.6 Paint removal and painting WP. Procedures which are applicable to the equipment and are not adequately covered in TO 1-1-4 or TO 1-1-8. Corrosion removal and treatment procedures shall be included if not sufficiently covered in TO 1-1-691 or TO 1-1-689.

86

MIL-PRF-87929B(USAF)
APPENDIX E

E.3.1.7   <u>Sealing WP</u>.   This WP shall describe types of sealants to be used. Sealing procedures shall be included and contain references to TO 1-1-691 or TO 1-1-3 where applicable.

E.3.1.8   <u>Special WPs</u>.   Special WPs (such as a WP/SWP on the control of microbial infestation in fuel tanks) may be included if a special problem exists, or if the special procedures for inspection and treatment are not covered in the general series TMs.

E.3.1.9   <u>Corrosion prone areas WPs</u>.   For aircraft, and larger/medium size missiles and equipment, there shall be a separate WP for each major structural group, auxiliary system or major area. Example: wings, fuselage, empennage, landing gears, and system components. These WPs shall address each corrosion prone area separately and present the following information for each area:

   a.   Illustrations shall be used to illustrate areas and conditions and shall be placed on a page facing the text for each corrosion prone area.

   b.   Information covering:

      (1)   The types of corrosion which may be found in the area and where it is likely to occur.

      (2)   The cause of the commonly found corrosion in the area.

      (3)   Particular metal and alloy types in the area.

      (4)   Any production changes in the equipment which may significantly affect corrosion, including changes in alloys, sealing materials, finishes, etc. Serial numbers of equipment affected by production changes shall be included.

      (5)   Any other general information about this area.

   c.   Information regarding the classification of structure in the area as to what is critical, noncritical, etc. Any necessary warning for critical structure shall be given.

   d.   Information giving damage limits or a reference to the manual where the damage limits are located.

   e.   Information giving the preferred inspection method, including reference to the Nondestructive Inspection (NDI) manual.

   f.   Information giving the recommended treatment/corrosion removal procedures.

   g.   Information identifying the type of sealant and sealing methods to be used with suitable reference to other parts of the manual, TO 1-1-3, 1-1-691 and 1-1-689 as required.

   h.   Information identifying the finish system to be used and the procedures for application with suitable reference to TO 1-1-3, 1-1-8 and 1-1-689 as required.

E.3.1.10   <u>Illustrations and tables for corrosion prone areas</u>.   In addition to the requirements of E.3.1.9, the following illustrations and tables shall be included at the end of every WP/SWP of the manual on corrosion prone areas (i.e. wing, fuselage, etc.).

E.3.1.10.1   <u>Illustrations</u>.   An illustration or group of illustrations shall be provided which identify each of these areas/items separately;

87

MIL-PRF-87929B(USAF)
APPENDIX E

   a.   Magnesium components.

   b.   Critical forgings and/or expensive and difficult to replace components (i.e. primary structure).

   c.   High strength steel (over 180 kilopounds per square inch) components.

   d.   Areas subject to collect moisture and area drain locations (condensate and urinal drains, battery vents, etc.).

These items/areas must be inspected and protected. An arrow should be included on structural illustrations to show the grain flow. The area of a component which has a tendency to corrode should be highlighted and a location key used to coincide with the text of a corrosion prone area and the table of corrosion inspections specified below.

E.3.1.10.2   <u>Corrosion inspections</u>.   A table of corrosion inspections shall provide the following information:

Corrosion Inspections

Index No. [1]	Area/Item Nomenclature	Material Identification	Corrosion Appearance	Perferred Inspection Method	Probable Cause

   [1]   C – Critical area

   a.   Index No.   This column shall contain an index number corresponding to the key in the illustration and text. The footnote "[1] C - Critical area" shall be included and critical areas shall be identified with a "C" before the index number.

   b.   Area/Item Nomenclature.   This column shall give the area or part number and nomenclature of the corrosion prone area.

   c.   Material Identification.   This column shall list the basic metal followed by the standard alloy code in parentheses. When the material has a special surface treatment such as shot peen, stress roll, etc, it shall be specified. Any material change shall be noted.

   d.   Corrosion Appearance.   This column shall identify the type of corrosion anticipated. A detailed description of what the corrosion will look like on each specific part, based on the use/location/exposure of the part, shall be included in this column or a reference to the discussion of known corrosion problems in the area shall be given. General statements such as "red rust" for steel parts or "white or grey powder" for aluminum parts are not adequate. Specific locations on the part where corrosion may be expected to start shall be identified.

   e.   Preferred Inspection Method.   This column shall give the preferred inspection method in brief form. Long procedures shall be included in the manual discussion and shall be referenced by the table. NDI procedures shall not be given in detail in the discussion unless they cannot be referenced in another Air Force TM.

88

MIL-PRF-87929B(USAF)
APPENDIX E

    f.   Probable Cause.   This column shall give the probable cause of the corrosion normally encountered in the area.

E.3.1.10.3   <u>Corrosion removal and repair procedures</u>.   A table giving the corrosion removal and repair procedures shall be keyed to the illustrations and text for the corrosion prone areas. The table shall include the following:

Corrosion Removal and Repair

Index No. [1]	Area/Item Nomenclature	Damage Limit	Repair Procedure

[1]   C – Critical area

    a.   Index No. - See E.3.1.10.2 a.

    b.   Area/Item Nomenclature - See E.3.1.10.2 b.

    c.   Damage Limit.   This column shall provide the damage limits. It shall give specific grind-out limits for each area/item.

    d.   Repair Procedure.   This column shall specify the corrosion repair procedure or reference a procedure in a general series TM, the text for the corrosion prone area, another WP/SWP or another system peculiar manual. Any material change shall be noted with the procedure for the new material also being listed.

E.3.1.10.4   <u>Sealant repair table</u>.   This table shall give the sealant repair procedure for all areas of the equipment with an area/reference key for a specific corrosion prone area, where applicable. Illustrations shall be used if needed. Detailed procedures in TO 1-1-3, TO 1-1-69,1 or the sealing WP of the manual shall be referenced. The table shall include the following:

Sealant Repair

Index No. [1]	Area/Item Nomenclature	Repair Procedure

[1]   C – Critical area

    a.   Index No. (see E.3.1.10.2 a.)

    b.   Area/Item Nomenclature (see E.3.1.10.2 b.)

    c.   Repair Procedure.   This column shall specify the sealant repair procedure or reference a procedure in a general series TM, the text for the corrosion prone area, another WP/SWP or another system peculiar manual. Any material change shall be noted with the procedure for the new material also being listed.

MIL-PRF-87929B(USAF)
APPENDIX E

E.3.1.10.5   Finish system table and illustrations.   Illustrations and a table in each WP/SWP shall show every type coating required for all areas of the equipment covered with exact areas being defined using a silhouette of the structure and a table. The table shall follow the format shown below and shall be keyed to the corresponding silhouette or silhouettes. The area reference key for a specific corrosion prone area shall be used in the table where applicable. Both interior and exterior silhouettes shall be shown. Finish system application procedures in TO 1-1-8, TO 1-1-691 and/or the paint removal and painting WP of the manual shall be referenced in the "Touch-Up Repair and Repaint" column.

Finish System

Index No. [1]	Area/Item Nomenclature	Metal Identification	Original Pretreatment	Color		Touch-Up Repair and Repaint		
				Name	Number FED-STD-595	Pretreatment	Primer	Top Coat

[1]   C – Critical area

E.3.1.10.6   Marking illustrations.   A table of exterior and interior markings shall show all authorized markings on the equipment. The table shall denote the marking legend, marking/lettering size, color of the marking per FED-STD-595, and exact location by referencing diagrams (foldouts acceptable). These diagrams shall show the actual location and reference back to the marking table. Usable on codes for markings that differ on similar models shall be used.

E.3.2   Definitions.

E.3.2.1   General series technical orders.   Technical orders which contain general information applicable to all types of systems. Example; TO 1-1-3, TO 1-1-691, etc.

E.3.2.2   System peculiar.   The term "system peculiar" indicates that information is applicable to one and only one weapon system or other item of aerospace equipment, but all series of a system may be included.

E.3.2.3   Special materials.   Special materials are those corrosion control materials not listed in the general series technical orders that are required for use on a particular aerospace system.

E.4.   DOCUMENT TYPE DEFINITION.

E.4.1   SGML document type definition.   Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

E.4.2   Template document type for work package type manuals.   The DTD for System Peculiar Corrosion Control Technical Manual is as follows:

```
<!-- ************************* START OF FILE *************************** -->

<!-- SUPPLEMENT NOTICE:  This file is made available to provide the user with
a digital representation of the DTD found in Appendix E of MIL-M-87929A.  This
file is incomplete without MIL-M-87929A. -->
```

MIL-PRF-87929B(USAF)
APPENDIX E

```
<!-- NOTE: The start and end of this file are marked with a row of asterisks.
If these rows are not present the file may not be complete! -->

<!-- MIL-M-87929A System Peculiar Corrosion Control DTD -->

<!-- The following set of declarations may be referred to by using a public
entity as follows:

<!ENTITY % m87929spc PUBLIC "-//USA-DOD//DTD MIL-M-87929A SPCC AMEND1//EN" >

%m87929spc;
-->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:

    <!DOCTYPE docspcc [

and the associated "]>" to the end of the file. -->

<!ENTITY % m87929wp PUBLIC "-//USA-DOD//DTD MIL-M-87929A AMEND1//EN" >

%m87929wp;

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT appear           - o  (para+) >
<!ATTLIST appear           %secur; >

<!ELEMENT cleaningwp       - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                           +(figure | table | foldout) >
<!ATTLIST cleaningwp       chgno NUMBER "0"
                           %bodyatt;
                           %secur; >

<!ELEMENT colorname        - o  (%text;) >
<!ATTLIST colorname        %secur; >

<!ELEMENT colornum         - o  (%text;) >
<!ATTLIST colornum         %secur; >

<!ELEMENT corremrep        - -  (para0, (indexno, nomen, damlimit,
                           repproc)+)   +(ftnote | warning | caution |
                           note) >
<!ATTLIST corremrep        %bodyatt;
                           %secur; >

<!ELEMENT corrinsp         - -  (para0, (indexno, nomen, material, appear,
                           prefinsp, cause)+)   +(ftnote | warning |
                           caution | note) >
<!ATTLIST corrinsp         %bodyatt;
                           %secur; >
```

91

MIL-PRF-87929B(USAF)
APPENDIX E

```
<!ELEMENT corrosionwp          - -  (%wp;, wpforewd, safesum?, techinfo,
                               ((corrinsp, corremrep, sealrep, finsys, markill)
                               | corrswp*))   +(figure | table | foldout) >
<!ATTLIST corrosionwp          chgno NUMBER "0"
                               %bodyatt;
                               %secur; >

<!ELEMENT corrswp              - -  (%wp;, wpforewd, safesum?, techinfo,
                               corrinsp, corremrep, sealrep, finsys, markill)
                               +(figure | table | foldout) >
<!ATTLIST corrswp              chgno NUMBER "0"
                               %bodyatt;
                               %secur; >

<!ELEMENT damlimit             - o  (%text;) >
<!ATTLIST damlimit             %secur; >

<!ELEMENT docspcc              - -  (front, aiwp, forewordwp, sttecwp,
                               cleaningwp, paintwp, sealingwp, specwp*,
                               corrosionwp*, ipbwp?, ddwp?, foldsect?)
                               +(pgbrk | brk) >
<!ATTLIST docspcc              service %service; 'AF'
                               %docatt;
                               %secur; >

<!ELEMENT finsys               - -  (para0, (indexno, nomen, metalid,
                               origpretreat, colorname, colornum, pretreat,
                               primer, topcoat)+)   +(ftnote | warning |
                               caution | note) >
<!ATTLIST finsys               %bodyatt;
                               %secur; >

<!ELEMENT indexno              - o  (%text;) >
<!ATTLIST indexno              %secur; >

<!ELEMENT location             - o  (%text;) >
<!ATTLIST location             %secur; >

<!ELEMENT markill              - -  ((marklegend, marksize, colorname,
                               colornum, location)+)   +(ftnote | warning |
                               caution | note) >
<!ATTLIST markill              %bodyatt;
                               %secur; >

<!ELEMENT marklegend           - o  (%text;) >
<!ATTLIST marklegend           %secur; >

<!ELEMENT marksize             - o  (%text;) >
<!ATTLIST marksize             %secur; >

<!ELEMENT material             - o  (%text;) >
<!ATTLIST material             %secur; >

<!ELEMENT metalid              - o  (%text;) >
<!ATTLIST metalid              %secur; >
```

MIL-PRF-87929B(USAF)
APPENDIX E

```
<!ELEMENT origpretreat        - o  (%text;) >
<!ATTLIST origpretreat        %secur; >

<!ELEMENT paintwp             - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                              +(figure | table | foldout) >
<!ATTLIST paintwp             chgno NUMBER "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT prefinsp            - o  (%text;) >
<!ATTLIST prefinsp            %secur; >

<!ELEMENT pretreat            - o  (%text;) >
<!ATTLIST pretreat            %secur; >

<!ELEMENT primer              - o  (%text;) >
<!ATTLIST primer              %secur; >

<!ELEMENT repproc             - o  (%text;) >
<!ATTLIST repproc             %secur; >

<!ELEMENT sealingwp           - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                              +(figure | table | foldout) >
<!ATTLIST sealingwp           chgno NUMBER "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT sealrep             - -  (para0, (indexno, nomen, repproc)+)
                              +(ftnote | warning | caution | note) >

<!ATTLIST sealrep             %bodyatt;
                              %secur; >

<!ELEMENT specwp              - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                              +(figure | table | foldout) >
<!ATTLIST specwp              chgno NUMBER "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT topcoat             - o  (%text;) >
<!ATTLIST topcoat             %secur; >

<!-- **************************** END OF FILE **************************** -->
```

E.5.   DETAILED DESCRIPTION.

E.5.1   <u>Document type definition</u>.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

MIL-PRF-87929B(USAF)
APPENDIX F

SPECIAL REQUIREMENTS FOR
NONDESTRUCTIVE INSPECTION
TECHNICAL MANUAL

F.1.   SCOPE.

F.1.1   <u>Scope</u>.   This appendix provides the special or unique criteria, in addition to the provisions of this specification, required for development of a Nondestructive Inspection (NDI) Technical Manual (TM). The Document Type Definition (DTD) subset within this appendix provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see E.5.1) are available (see A.5.). This appendix is a mandatory part of this specification. The information contained herein is intended for compliance.

F.2.   APPLICABLE DOCUMENTS.

F.2.1   <u>Government documents</u>.

F.2.1.1   <u>Specifications, standards and handbooks</u>.   The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

    Military

        MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text

        MIL-STD-38784   Manuals, Technical, General Style and Format Requirements

STANDARDS

    Federal Information Processing Standards

        FIPS 152   Standard Generalized Markup Language (SGML)

(Unless otherwise indicated, copies of federal and military specifications, standards and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

F.2.1.2   <u>Other Government documents, drawings, and publications</u>.   The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

PUBLICATIONS

    Air Force Technical Manuals

        33B-1-1   Nondestructive Inspection Methods

MIL-PRF-87929B(USAF)
APPENDIX F

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

F.3.   SPECIAL REQUIREMENTS.

F.3.1   Nondestructive inspection (NDI) manual.   This manual shall provide all NDI instructions, procedures and techniques for the system, subsystem, components or equipment concerned.

F.3.1.1   Definitions.   Definitions of NDI processes, procedures, materials, etc, shall be in accordance with the documents listed in Section F.2 of this appendix.

F.3.1.2   References.   The manual shall not include or refer to any contractor's process or material specifications solely by title and number. When such contractor data is needed, it shall be included in the manual.

F.3.1.3   Commodity items and support equipment.   NDI procedures for commodity items and support equipment contained in or on the weapon system shall be included in the system peculiar manual.

F.3.1.4   System peculiar NDI.   The manual shall include system peculiar procedures covering the following major NDI methods: fluorescent penetrant, magnetic particle, eddy current, ultrasonic and radiographic. Other methods shall be included when required to provide improved inspection, capability. The need for inclusion of equipment and reference standards not contained in the Table of Allowances (TA) 455 shall be submitted as soon as the requirement and equipment are identified.

F.3.1.5.1   Routine visual inspections.   Routine visual, magnifying glass, or other optical inspections that are normally accomplished by maintenance personnel shall not be included in the manual.

F.3.1.5.2   Instructions.   The manual shall contain detailed step-by-step instructions for each inspection so that a qualified NDI technician, can perform the required inspections. The basic theory, practice and control of NDI methods are contained in TO 33B-1-1 which shall be used as a guide for development of the manual.

F.3.1.5.3   Accept/reject criteria.   The manual shall not contain inspection frequency, accept/reject criteria, or instructions for correcting defective conditions. However, the NDI procedures shall be capable of supporting the rejectable flaw sizes listed in the system and/or engine maintenance manuals.

F.3.1.5.4   Related maintenance manuals.   The NDI procedures shall be responsive to, and consistent with, the maintenance manuals it supports. Those manuals establish and govern accept/reject criteria, such as rejectable flaw/crack sizes.

F.3.1.6   Illustrations.

F.3.1.6.1   Engineering production drawings.   NDI requirements contained in engineering production drawings shall not be automatically used to govern in-service NDI procedures unless specifically approved for maintenance use. Engineering production drawings normally contain

96

requirements generated by fabrication operations and do not necessarily represent NDI requirements generated by the in-service stress spectra.

F.3.1.6.2   Foldout pages and illustrations.   Foldout pages and illustrations over one page in size shall not be used.

F.3.1.6.3   Specific part/component illustration.   Each NDI procedure shall contain an illustration of the specific part or component to be inspected indicating the location and orientation of potential defects. Standard NDI symbols (see figure F-1) shall be used. The defect location shall be crosshatched or otherwise highlighted on the illustration to indicate the area of the specific NDI procedure.

F.3.1.6.4   Instrumented NDI procedure illustrations.   Each instrumented NDI procedure shall contain an illustration which accurately represents equipment readings and other data.

F.3.1.6.5   Illustrations used for more than one inspection.   If an illustration is used for more than one inspection of the same component or part, the illustration shall be placed behind the first inspection and referenced in all subsequent inspections.

F.3.1.7   NDI inspection safety.   In addition to the requirements of MIL-STD-38784, the safety summary shall specify the requirement to follow the safety precautions outlined in TO 33B-1-1.

F.3.1.8   Sequence.   The inspection procedures shall be arranged in a logical sequence of events. The procedures shall contain all information required to perform the NDI method reliably, including references to other technical manuals required to accomplish such tasks as gaining access to a part, removal of protective finishes, referral for accept/reject criteria, etc.

F.3.1.9   NDI equipment technical manuals.   NDI equipment technical manuals shall be referenced when they govern initial equipment setup and/or operation.

F.3.1.10   Foreword WP.   In addition to the requirements of 3.4.3.2, the foreword WP shall contain the following tables and figures, as applicable, and shall contain the intent of the following:

"This manual contains specific instructions for accomplishing nondestructive inspection of the (insert name) system and its associated subsystems. The procedures provide step-by-step instructions for the nondestructive inspection of locations where service defects would adversely affect safety, reduce fatigue and damage tolerance requirements, prevent items from functioning properly and/or affect component serviceability."

"This manual does not contain inspection level or frequency, accept/reject criteria or instructions for correcting defective conditions. Inspection levels and frequency are provided in the inspection (-6) manual. Detailed accept/reject criteria and instructions for correcting defects are provided in the system maintenance manual set."

"Recommendations for new, revised or field developed procedures shall be prepared on AFTO Form 242, Nondestructive Inspection Data, in accordance with TO 33B-1-1."

MIL-PRF-87929B(USAF)
APPENDIX F

F.3.1.10.1   Table of bare aluminum alloy conductivity acceptance values.   This table shall indicate alloy type, heat treat (temper), and conductivity in Percent International Annealed Copper Standard (% IACS) for each structural aluminum alloy used in the system.

F.3.1.10.2   Table of clad aluminum alloy sheet conductivity acceptance values.   This table shall indicate alloy type, heat treat (temper) and conductivity in % IACS for each structural application.

F.3.1.10.3   Figure of depth of penetration.   This figure shall show effective depth of penetration for eddy currents as a function of conductivity of the test material and eddy current operating frequency.

F.3.1.10.4   Figure of exposure correction.   This figure shall contain a source to object exposure correction chart for radiographic procedures.

F.3.1.10.5   Figure of radiographs.   This figure shall show maximum coverage of radiographs for honeycomb structures as a function of honeycomb thickness against a given cell size for each structural application.

F.3.1.11   Master list of special tools, test equipment, and consumables WP.   This WP shall be in accordance with 3.4.3.3 with the following exceptions:

a.   Peculiar NDI equipment shall be listed in a separate table (with same boxhead titles).

b.   Ultrasonic, eddy current and other NDI reference standards shall be listed in separate tables with a DWG (Drawing) No. column replacing the Figure and Index No. column. The drawing number shall be listed only if it is different from the part number, including dash numbers. Reference to applicable engineering drawings which specify dimensions, surface finish, tolerances, material composition, sample flaws and applicable fasteners of each NDI reference standard shall be included. NDI reference standards, penetrometers, fixtures (such as tube head stands), etc, shall be illustrated in accordance with 3.4.3.6.5.

c.   Eddy current probes shall be listed in a separate table. This list shall denote eddy current probes for each NDI method. (semiautomatic, Manual, Conductivity, etc.)

d.   Ultrasonic transducers shall be listed in a separate table. This list shall denote ultrasonic transducers for each NDI method. (Resonance, Ring Pattern, Contact Through Transmission, etc.)

e.   General NDI equipment shall be listed as follows:

Nomenclature	Specification Requirements

(1)   Nomenclature.   List the generic name of the equipment.

(2)   Specification Requirements.   List the requirements such as amperage, tank size, temperature range, etc. for the system or hardware covered in the NDI manual.

98

MIL-PRF-87929B(USAF)
APPENDIX F

 f. Couplants, fluorescent penetrant materials, magnetic particle/magnetic rubber materials, cleaning solvents, etc., are considered consumable items and shall be listed as such.

  (1) Radiographic materials shall be listed in a separate table.

  (2) Fluorescent penetrant materials shall be listed in a separate table.

  (3) Magnetic particle/magnetic rubber materials shall be listed in a separate table.

E.3.1.12 <u>Repetitive NDI procedures WP</u>. This WP shall contain all repetitive (occurring more than once) NDI procedures, including repetitive procedures for NDI equipment setup, and standardization of reference standards. Standard NDI symbols shall be used. The following is a typical WP/SWP breakout; however, regardless of breakout, the information required by the following shall be included.

WP 004	REPETITIVE NDI PROCEDURES (TECHNIQUES)
SWP 01	GENERAL
SWP 02	NDI EQUIPMENT SETUP
SWP 03	FLUORESCENT PENETRANT PROCEDURES
SWP 04	RADIOGRAPHIC PROCEDURES
SWP 05	MAGNETIC PARTICLE PROCEDURES
SWP 06	ULTRASONIC PROCEDURES
SWP 07	EDDY CURRENT PROCEDURES
SWP 08	OTHER NDI PROCEDURES

F.3.1.12.1 <u>SWP 01, General</u>. This SWP shall contain all general information pertinent to WP 004.

F.3.1.12.2 <u>SWP 02, NDI equipment setup</u>. This SWP shall contain all repetitive NDI equipment setups. Steps shall be provided for the standardization of NDI equipment for specific inspections to detect specific defects in a specific structural area or part. Procedures for standardizing instrumented NDI methods using NDI reference standards shall be provided.

F.3.1.12.3 <u>SWP 03, Fluorescent penetrant procedures</u>. This SWP shall contain all repetitive fluorescent penetrant procedures. Visible dye penetrant inspection methods are not acceptable and shall not be included.

F.3.1.12.4 <u>SWP 04, Radiographic procedures</u>. This SWP shall contain all repetitive radiographic procedures. The radiation icon shall be used.

F.3.1.12.5 <u>SWP 05, Magnetic particle procedures</u>. This SWP shall contain all repetitive magnetic particle procedures.

F.3.1.12.6   SWP 06, Ultrasonic procedures.   This SWP shall contain all repetitive ultrasonic procedures. The procedure shall state the specific ultrasonic method used (pulse echo, through transmission, etc.).

F.3.1.12.7   SWP 07, Eddy current procedures.   This SWP shall contain all repetitive eddy current procedures. The procedure shall state the specific eddy current method used (high frequency, low frequency, etc.).

F.3.1.12.8   SWP 08, Other NDI procedures.   This SWP shall contain all other repetitive NDI procedures not provided in SWPs 03 thru 08.

F.3.1.13   WP 005 and subsequent WP/SWPs.   WP 005 and subsequent WP/SWPs shall be broken out by major assembly, system or end item and shall contain the NDI procedures for parts/components within that assembly/system/item. Repetitive procedures shall be referenced as required. A figure of the assembly/system/item shall be provided at the beginning of each WP and the parts/components to be inspected shall be indexed. A table listing the index number, nomenclature, drawing number and inspection figure or paragraph reference for the part/component shall be provided. If the assembly/system/item is so large that indexing of parts or components causes overcrowding, the figure at the beginning of each WP shall consist of the assembly/system/item with subassemblies or subsystems indexed. The figure shall contain a table listing the subassembly/subsystem index number, nomenclature, and subassembly/subsystem figure reference. The subassembly/subsystem figures shall be located throughout the WP/SWPs preceding the applicable group of part/component inspection procedures.

F.3.1.13.1   Title.   The title of each inspection procedure shall consist of the nomenclature of the part/component to be inspected with applicable part numbers.

F.3.1.13.2   Safe for maintenance.   Specific safe for maintenance procedures shall be included unless provided in the system manual, in which case they shall be referenced.

F.3.1.13.3   Parts description.   Text shall be provided to describe and identify the part/component to be inspected, including part number. The text shall include the specific part material, heat treatment, if applicable, method of fabrication (cast, forged, bonded, etc.), and surface coating/finish.

F.3.1.13.4   Defect description.   A narrative with illustration shall be included describing the defect. Illustrations shall be consistent with related manuals.

F.3.1.13.5   Use of NDI standards.   NDI reference standards are considered support equipment; however, their specific use shall be governed by the NDI manual.

F.3.1.13.6   General NDI equipment setup procedures.   General NDI equipment setup procedures contained in the NDI equipment technical manual shall not be repeated, but shall be referenced.

F.3.1.13.7   Repetitive procedures.   All repetitive equipment setup/standardization shall be referenced as required (see F.3.1.12.2).

F.3.1.13.8   Specific NDI method.   The NDI method (fluorescent penetrant, radiographic (x-ray), ultrasonic, etc.) required to evaluate the component, part or area for particular defects or conditions

shall be included. Illustrations shall be used to accurately represent equipment readings and other related data and shall be consistent with related manuals.

F.3.1.13.8.1   Access.   This step shall describe the procedures required to gain access for inspection. Examples include: lower flaps, open/close doors, etc. The maintenance manual shall be referenced, to include specific panel numbers for removal, etc.

F.3.1.13.8.2   Preparation of part for inspection.   This step shall provide the requirements necessary to prepare the part for inspection, such as: soil removal, removal of protective coatings, primer, topcoat, disassembly, etc. The applicable maintenance manual governing the part preparation requirements shall be referenced.

F.3.1.13.8.3   Equipment required.   Equipment required to perform the NDI procedure shall include:

   a.   All ground support equipment required to accomplish the specific NDI methods shall be identified.

   b.   All NDI equipment required to accomplish the specific NDI methods shall be identified. All NDI equipment required by the NDI manual shall be consistent with NDI equipment model and type used during validation.

   c.   NDI reference standards required for standardizing instrumented test sensitivity (ultrasonics, eddy current, etc.) shall be listed, including master standards. A master standard shall be required for functional calibration of instrumented NDI methods, such as eddy current or ultrasonics.

F.3.1.13.8.4   NDI equipment setup/standardization.   Steps shall be provided for the setup/standardization of NDI equipment for specific inspections being performed. Procedures for standardizing instrumented NDI methods using NDI reference standards shall be provided.

F.3.1.13.8.5   Supplies.   All expendable supplies, items, and/or materials shall be listed as required to perform the specific NDI procedure.

F.3.1.13.8.6   Fluorescent penetrant.   Fluorescent penetrant inspections shall conform to F.3.1.13.3.

F.3.1.13.8.7   Radiographic.   Radiographic inspection methods shall conform to F.3.1.13.4.

F.3.1.13.8.8   Magnetic particle.   Magnetic particle inspections shall conform to F.3.1.13.5.

F.3.1.13.8.9   Ultrasonic.   Ultrasonic inspection shall conform to F.3.1.12.6.

F.3.1.13.8.10   Eddy current.   Electrical conductivity testing shall conform to F.3.1.13.7.

F.3.1.13.8.11   More than one defect.   If more than one defect or type of defect is expected in a component/area, the inspection method to be used for each particular defect shall be included in the NDI procedure.

F.3.1.13.8.12   Additional information.   Information pertinent to the inspection procedure which does not fall into any other category shall be included. Example: "This inspection must be performed prior to or following inspection number XX-1."

F.3.1.13.9   Backup NDI procedure (technique).   A backup or verification procedure shall be included in all cases where initial inspection results do not provide enough information to be confident a defect is present, or if needed, to quantitatively assess a flaw.

F.3.1.13.10   System securing.   The final paragraph in the inspection procedure shall provide information on the securing and/or restoration of the subsystem component, part, or aircraft area in accordance with applicable maintenance manuals. This step is intended to provide only general requirements and shall reference the applicable maintenance manual or procedure number for detailed instructions to restore original operating configuration. For those procedures which require a backup inspection, system securing shall be included in the backup procedure and not the primary.

F.4.   DOCUMENT TYPE DEFINITION.

F.4.1   SGML document type definition.   Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

F.4.2   Template document type for work package type manuals.   The DTD for Nondestructive Inspection Technical Manual is as follows:

```
<!-- ************************* START OF FILE *************************** -->

<!-- SUPPLEMENT NOTICE:   This file is made available to provide the user with
a digital representation of the DTD found in Appendix F of MIL-M-87929A.   This
file is incomplete without MIL-M-87929A. -->

<!-- NOTE: The start and end of this file are marked with a row of asterisks.
If these rows are not present the file may not be complete! -->

<!-- MIL-M-87929A Nondestructive Inspection DTD -->

<!-- The following set of declarations may be referred to by using a
public entity as follows:

<!ENTITY % m87929ndi PUBLIC "-//USA-DOD//DTD9 MIL-M-87929A NDI AMEND1//EN" >
%m87929ndi;
-->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:

    <!DOCTYPE docndi [

and the associated "]>" to the end of the file. -->

<!-- ENTITY DECLARATIONS -->

<!ENTITY % m87929wp PUBLIC "-//USA-DOD//DTD MIL-M-87929A AMEND1//EN" >
```

MIL-PRF-87929B(USAF)
APPENDIX F

```
<!ENTITY % sttec  "(wpidinfo, para0, (toollist, para0*)?, (eqplist, para0*)?,
(ndieqplist, para0*)?, (ndireflist+, para0*)?, (eddyeqplist, para0*)?,
(uteqplist, para0*)?, (genndi, para0*)?, (consum, para0*)?, (rmconsum,
para0*)?, (fpmconsum, para0*)?, (magconsum, para0*)?)" >

<!ENTITY % list "(seqlist | randlist | deflist)" >

<!ENTITY % spcpara "(warning?, caution?, note?)" >

<!ENTITY % fpi "(para0, (para0 | %list; | symsect | abbrsect | %spcpara;)*,
internatlstd?, lrp?, tctolist?)" >

<!ENTITY % forwp "(wpidinfo, contents, illuslist?, tablelist?, purpose, scope,
%fpi;, manstru, coverage?, indexscheme, locinfo, para0*, leadpartic, (para0 |
(maintcon?, envcont?, warrprov?))*, barealum?, cladalum?, tmimprep?) " >

%m87929wp;

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT access            - o  (%nparcon;, subpara2*) >
<!ATTLIST access            tocentry %yesorno; "1"
                            shortentry %yesorno; "0"
                            verified %yesorno; "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT alloytype         - o  (%text;) >
<!ATTLIST alloytype         %secur; >

<!ELEMENT application       - o  (%text;) >
<!ATTLIST application       %secur; >

<!ELEMENT backupndi         - o  (%parazero;) >
<!ATTLIST backupndi         tocentry %yesorno; "1"
                            shortentry %yesorno; "0"
                            verified %yesorno; "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT barealum          - - ((alloytype, heattreat, iacs)+)   +(ftnote
                            | warning | caution | note) >
<!ATTLIST barealum          tocentry %yesorno; "1"
                            shortentry %yesorno; "0"
                            verified %yesorno; "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT cladalum          - - ((application, (alloytype, heattreat,
                            iacs)+)+)  +(ftnote | warning | caution |
                            note) >
```

103

MIL-PRF-87929B(USAF)
APPENDIX F

```
<!ATTLIST cladalum            tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT defdesc             - o  (%parazero;) >
<!ATTLIST defdesc             tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT docndi              - -  (front, aiwp, forewordwp, sttecwp,
                              repndiwp, ndiwp+, ddwp?)  -(foldout)  +(pgbrk
                              | brk) >
<!ATTLIST docndi              service %service; "AF"
                              %docatt;
                              %secur; >

<!ELEMENT dwgno               - o  (%text;) >
<!ATTLIST dwgno               %secur; >

<!ELEMENT eddyeqplist         - -  ((method, (typedes, (cage | (name,
                              address)), figno, nomen, use)+)+)  +(ftnote |
                              warning | caution | note) >
<!ATTLIST eddyeqplist         tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT equipreq            - o  (%nparcon;, subpara2*) >
<!ATTLIST equipreq            tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT fpmconsum           - -  ((nomen, (spec | (partno, (cage | (name,
                              address))))), use, reference)+)  +(ftnote |
                              warning | caution | note) >
<!ATTLIST fpmconsum           tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT genndi              - -  ((nomen, specreq+)+) >
<!ATTLIST genndi              %secur; >

<!ELEMENT genndisetup         - o  (%parazero;) >
<!ATTLIST genndisetup         tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
```

104

MIL-PRF-87929B(USAF)
APPENDIX F

```
                             %bodyatt;
                             %secur; >
<!ELEMENT heattreat          - o  (%text;) >
<!ATTLIST heattreat          %secur; >

<!ELEMENT iacs               - o  (%text;) >
<!ATTLIST iacs               %secur; >

<!ELEMENT magconsum          - -  ((nomen, (spec | (partno, (cage | (name,
                             address)))), use, reference)+)   +(ftnote |
                             warning | caution | note) >
<!ATTLIST magconsum          tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT method             - o  (%text;) >
<!ATTLIST method             %secur; >

<!ELEMENT ndieqplist         - -  ((typedes, (cage | (name, address)), figno,
                             nomen, use)+)   +(ftnote | warning | caution |
                             note) >
<!ATTLIST ndieqplist         tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT ndimethod          - o  (access, prepinsp, equipreq, ndisetup,
                             supplies, subpara1+) >
<!ATTLIST ndimethod          %secur; >

<!ELEMENT ndireflist         - -  ((typedes, (cage | (name, address)), dwgno,
                             nomen, use)+)   +(ftnote | warning | caution |
                             note) >
<!ATTLIST ndireflist         tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT ndisetup           - o  (%nparcon;, subpara2*) >
<!ATTLIST ndisetup           tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT nditable           - -  (figure, (figindex, nomen, dwgno,
                             reference)+)   +(ftnote | warning | caution |
                             note) >
<!ATTLIST nditable           tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
```

105

MIL-PRF-87929B(USAF)
APPENDIX F

```
                              %bodyatt;
                              %secur; >

<!ELEMENT ndiwp               - -  (%wp;, wpforewd, safesum?, nditable+,
                              safing, partdesc, defdesc, genndisetup, repproc,
                              ndimethod, backupndi, syssecur?)   +(figure |
                              table) >
<!ATTLIST ndiwp               chgno NUMBER "0"
                              %secur;
                              %bodyatt; >

<!ELEMENT partdesc            - o  (%parazero;) >
<!ATTLIST partdesc            tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT prepinsp            - o  (%nparcon;, subpara2*) >
<!ATTLIST prepinsp            tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT repndiwp            - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                              +(figure | table) >
<!ATTLIST repndiwp            chgno NUMBER "0"
                              %secur;
                              %bodyatt; >

<!ELEMENT repproc             - o  (%parazero;) >
<!ATTLIST repproc             tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT rmconsum            - -  ((nomen, (spec | (partno, (cage | (name,
                              address)))), use, reference)+)   +(ftnote |
                              warning | caution | note) >
<!ATTLIST rmconsum            tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT safing              - o  (%parazero;) >
<!ATTLIST safing              tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >
```

MIL-PRF-87929B(USAF)
APPENDIX F

```
<!ELEMENT specreq              - o  (%text;) >
<!ATTLIST specreq              %secur; >

<!ELEMENT supplies             - o  (%nparcon;, subpara2*) >
<!ATTLIST supplies             tocentry %yesorno; "1"
                               shortentry %yesorno; "0"
                               verified %yesorno; "0"
                               %bodyatt;
                               %secur; >

<!ELEMENT syssecur             - o  (%parazero;) >
<!ATTLIST syssecur             tocentry %yesorno; "1"
                               shortentry %yesorno; "0"
                               verified %yesorno; "0"
                               %bodyatt;
                               %secur; >

<!ELEMENT uteqplist            - -  ((method, (typedes, (cage | (name,
                               address)), figno, nomen, use)+)+)   +(ftnote |
                               warning | caution | note) >
<!ATTLIST uteqplist            tocentry %yesorno; "1"
                               shortentry %yesorno; "0"
                               verified %yesorno; "0"
                               %bodyatt;
                               secur; >

<!-- *************************** END OF FILE *************************** -->
```

F.5. DETAILED DESCRIPTION.

F.5.1   <u>Document type definition</u>.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

MIL-PRF-87929B(USAF)
APPENDIX G

SPECIAL REQUIREMENTS FOR
AIRCRAFT STRUCTURAL INTEGRITY PROGRAM
TECHNICAL MANUAL

G.1.   SCOPE.

G.1.1   <u>Scope</u>.   This appendix provides the special or unique criteria, in addition to the provisions of this specification, required for development of an Aircraft Structural Integrity Program Technical Manual (TM). The Document Type Definition (DTD) subset within this appendix provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see G.5.1) are available (see A.5.). This appendix is a mandatory part of this specification. The information contained herein is intended for compliance.

G.2.   APPLICABLE DOCUMENTS.

G.2.1   <u>Government documents</u>.

G.2.1.1   <u>Specifications, standards, and handbooks</u>.   The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

    Military

        MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text

        MIL-STD-1530   Aircraft Structural Integrity Program, Aircraft Requirements

STANDARDS

    Federal Information Processing Standards

        FIPS 152   Standard Generalized Markup Language (SGML)

G.2.1.2   <u>Other Government documents, drawings, and publications</u>.   The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

PUBLICATIONS

    Air Force Instructions

        AFI 63-1001   Aircraft Structural Integrity Program

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

MIL-PRF-87929B(USAF)
APPENDIX G

G.3.   SPECIAL REQUIREMENTS.

G.3.1   <u>Aircraft Structural Integrity Program (ASIP) manual</u>.   This manual directs special aircraft related maintenance procedures required to support an ASIP. Coverage shall provide instructions and guidance to crew members and to personnel in the organizational, intermediate and depot levels of maintenance. An explanation of the ASIP for the particular series of aircraft shall be included.

G.3.1.1   <u>Preparation</u>.   The general manner of preparation shall be in accordance with 3.4.1 and 3.4.1.1, except the manual shall not contain a master list of special tools, test equipment and consumables WP. In addition to the requirements of 3.4.1 and 3.4.1.1, the following shall be included:

  a.   ASIP General Description (part of Foreword)

` b.   (aircraft designation) ASIP Description

  c.   (aircraft designation) Aircraft Program Operation

G.3.1.2   <u>Foreword WP</u>.   In addition to the requirements of 3.4.3.2, the foreword WP shall contain descriptive information about the ASIP in general. It shall include the following:

G.3.1.2.1   <u>Program objectives</u>.   A discussion of AF I63-1001 as it relates to this manual shall be included.

G.3.1.2.2   <u>Tasks</u>.   A brief description of Task I through Task III as described in MIL-STD-1530 and a more detailed description of Tasks IV and V of the Force Management Program shall be included.

G.3.1.2.3   <u>Interaction with other programs</u>.   Information describing the integral part the operational aircraft programs play in the overall ASIP shall be included.

G.3.1.2.4   <u>Applicable references</u>.   A list of all references required to support the Flight Recorder and Individual Airplane Tracking (IAT) programs shall be included. These references include: applicable handbooks, specifications, standards, TMs, regulations, instructions and work unit codes. This list shall be part of the list of related publications.

G.3.1.3   <u>(aircraft designation) ASIP description</u>.   This WP shall contain descriptive information about the specific aircraft ASIP. It shall include the following:

  a.   A general description of the applicable force management (Task V) Operational Programs for the aircraft. The Flight Loads Recorder Program shall be listed and described as an integral part of the Loads/Environment Spectra Survey Program. The following operational programs shall be listed and described as an integral part of the IAT Data Program:

     (1)   Exceedance Counter Program

     (2)   Mechanical Strain Recorder Program

     (3)   IAT Forms Program (to include AFTO Form 238 for component serialization report)

110

b.   Graphical flow diagrams of flight loads recorder data through the Loads/Environment Spectra Survey Program and exceedance counter, mechanical strain recorder and IAT data through the IAT Program. Further, flow diagrams shall show the information feedback to organizational, intermediate and depot levels of maintenance. A brief discussion of each task/step in the graphical flow diagram shall also be included.

c.   Detailed instructions for recorder or forms management reporting/information collection responsibilities. Single points of contact for each functional/management area shall also be included.

G.3.1.4   (aircraft designation) aircraft program operation.   Unless otherwise specified by the acquiring activity, this WP shall contain reference to existing aircraft TMs. When specified, detailed system description, operation, checkout, maintenance, troubleshooting and data forms instructions for the following flight data gathering programs (if applicable to aircraft series) shall be included:

a.   Flight Loads Recorder Program

b.   Exceedance Counter Program

c.   Mechanical Strain Recorder Program

d.   IAT Forms Program

G.4.   DOCUMENT TYPE DEFINITION.

G.4.1   SGML document type definition.   Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

G.4.2   Template document type for work package type manuals.   The DTD for Aircraft Structural Integrity Program Technical Manual is as follows:

```
<!-- *************************** START OF FILE *************************** -->

<!-- SUPPLEMENT NOTICE:  This file is made available to provide the user with
a digital representation of the DTD found in Appendix G of MIL-M-87929A.  This
file is incomplete without MIL-M-87929A. -->

<!-- NOTE: The start and end of this file are marked with a row of asterisks.
If these rows are not present the file may not be complete! -->

<!-- MIL-M-87929A Aircraft Structural Integrity Program DTD -->

<!-- The following set of declarations may be referred to by using a public
entity as follows:

<!ENTITY % m87929asp PUBLIC "-//USA-DOD//DTD MIL-M-87929A ASIP AMEND1//EN" >
%m87929asp;
-->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:
```

MIL-PRF-87929B(USAF)
APPENDIX G

```
<!DOCTYPE docasip [

and the associated "]>" to the end of the file. -->

<!-- ENTITY DECLARATIONS -->

<!ENTITY % m87929wp PUBLIC "-//USA-DOD//DTD MIL-M-87929A AMEND1//EN" >

<!ENTITY % list "(seqlist | randlist | deflist)" >

<!ENTITY % spcpara "(warning?, caution?, note?)" >

<!ENTITY % fpi "(para0, (para0 | %list; | symsect | abbrsect | %spcpara;)*,
internatlstd?, lrp?, tctolist?)" >

<!ENTITY % forwp "(wpidinfo, contents, illuslist?, tablelist?, purpose, scope,
%fpi;, manstru, coverage?, indexscheme, locinfo, maintcon?, envcont?,
warrprov?, progobj, tasks, interaction, para0*, tmimprep?)" >

%m87929wp;

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT asipwp            - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                                 +(figure | table | foldout) >
<!ATTLIST asipwp            chgno NUMBER "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT docasip           - -  (front, aiwp, forewordwp, asipwp, progopwp,
                                 ddwp?, foldsect?)  +(pgbrk | brk) >
<!ATTLIST docasip           service %service; 'AF'
                            %docatt;
                            %secur; >

<!ELEMENT interaction       - o  (para0+) >
<!ATTLIST interaction       %secur; >

<!ELEMENT progobj           - o  (para0+) >
<!ATTLIST progobj           %secur; >

<!ELEMENT progopwp          - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                                 +(figure | table | foldout) >
<!ATTLIST progopwp          chgno NUMBER "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT task1             - o  (subpara1+) >
<!ATTLIST task1             %secur; >

<!ELEMENT task2             - o  (subpara1+) >
<!ATTLIST task2             %secur; >

<!ELEMENT task3             - o  (subpara1+) >
<!ATTLIST task3             %secur; >
```

112

MIL-PRF-87929B(USAF)
APPENDIX G

```
<!ELEMENT task4              - o  (subpara1+) >
<!ATTLIST task4              %secur; >

<!ELEMENT task5              - o  (subpara1+) >
<!ATTLIST task5              %secur; >

<!ELEMENT tasks              - o  (para0, task1, task2, task3, task4, task5)
                             >
<!ATTLIST tasks              %secur; >

<!-- *************************** END OF FILE *************************** -->
```

G.5.   DETAILED DESCRIPTION.

G.5.1   <u>Document type definition</u>.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

MIL-PRF-87929B(USAF)
APPENDIX H

SPECIAL REQUIREMENTS FOR
ATE OPERATOR TEST PROCEDURES
TECHNICAL MANUAL

H.1.   SCOPE.

H.1.1   Scope.   This appendix provides the special or unique criteria, in addition to the provisions of this specification, required for development of an Automated Test Equipment (ATE) Operators Test Procedures Technical Manual (TM). The Document Type Definition (DTD) subset within this appendix provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see H.5.1) are available (see A.5.). This appendix is a mandatory part of this specification. The information contained herein is intended for compliance.

H.2.   APPLICABLE DOCUMENTS.

H.2.1   Government documents.

H.2.1.1   Specifications, standards, and handbooks.   The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

    Military

        MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text

STANDARDS

    Federal Information Processing Standards

        FIPS 152   Standard Generalized Markup Language (SGML)

H.3.   SPECIAL REQUIREMENTS.

H.3.1   ATE operator test procedures manual.   Operator test procedures manuals are used in conjunction with ATE. Manuals prepared to this specification must be compatible with the approved maintenance concept and related documents such as computer program source listing, flow charts and test requirements documents. The manual shall contain specific procedures for using one or more Computer Programs (CP) with ATE to test/fault isolate/calibrate one or more Units Under Test (UUT).

H.3.1.1   Foreword WP.   In addition to the requirements of 3.4.3.2, the following information shall be included.

H.3.1.1.1   Purpose.   The intended function of the manual shall be described relative to the test equipment type, unit(s) to be tested and applicable level of maintenance. These items shall be described by nomenclature, type designation, reference designation and part number, referring to the Table of Use and Applicability.

MIL-PRF-87929B(USAF)
APPENDIX H

H.3.1.1.2   Table of use and applicability.   This table shall specify in matrix form the following information as a minimum:

Table of Use and Applicability

UUT	ATE	ITA	CPIN (The applicable CPIN revision number(s) and date are identified in the compendium)	Test Time

    a.   Part number and unique reference designation number (if assigned) of each configuration of UUT which is supported by the manual. Identification shall be by brief nomenclature when part number and reference designator cannot be determined.

    b.   Part number and unique reference designation number of ATEs used to test each UUT.

    c.   Part number and unique reference designation number of Interface Test Adapter(s) (ITA) required to test each UUT.

    d.   Identification of computer program(s) configuration(s) by Computer Program Identification Number (CPIN) which is required to test each UUT. The applicable computer program revision number(s) required can be identified in the compendium. When multiple program storage media is used, the applicable call number(s) required to access each CP shall also be provided. The CPIN revision and date shall not be included in the manual.

    e.   Test time for each UUT.

H.3.1.1.3   Table for station utilization.   This table shall specify in matrix form the minimum information necessary for the station operator to know what station components are required to be operational/installed to test each specific UUT.

H.3.1.1.4   Additional reference material.   Engineering data, such as specifications and drawings, shall not be listed unless the information is essential to the use of the manual and inclusion is approved by the acquiring activity. This information shall be part of the list of related publications.

H.3.1.1.5   Capabilities and limitations.   The capabilities and limitations relative to test performance shall be specified in terms of the total test setup (ATE, UUT, ITA, CP, C&S and ancillary equipment). When applicable, temperature, relative humidity, barometric pressure and other environmental factors which could affect testing shall be expressed in terms which apply to any testing configuration listed in the Table of Use and Applicability.

H.3.1.1.6   Operator participation.   Conditions which will require participation by the operator during the testing process shall be fully described. This information shall be limited to description of circumstances which may occur and type of action to be taken. Instructions relative to specific programmed tests shall not be repeated here (see H.3.1.3.2.2).

H.3.1.2   Master list of special tools, test equipment, computer software, and consumables WP.   In addition to the requirements of 3.4.3.3, the following shall be included.

MIL-PRF-87929B(USAF)
APPENDIX H

H.3.1.2.1 <u>Computer software</u>. Descriptions of technical manual references to all associated software used with the ATE for checkout of the UUT shall be included. Each software product shall be identified by its associated CPIN. The appropriate CPIN references shall, as a minimum, include references as follows:

    a.   For the UUT test software.

    b.   For the ATE operating system (and/or executive control testing).

    c.   For the ATE self-test software (for ATE confidence testing).

    d.   For the UUT interface test adapter self-test software (for active circuitry operational assurance).

    e.   For the ATE support software (for on-line utilities such as editors, compilers, debuggers, and media transfer).

H.3.1.3 <u>Test procedures WP</u>. Complete information shall be provided which will enable an operator to evaluate the performance of a UUT and diagnose the cause(s) of any malfunction(s) encountered. All references to the UUT, ATE and ITA(s) shall be exclusively by nomenclature or reference designation number, or both. References to the CPs or to related publications shall not include change, revision or date. Information which is communicated to the operator by means of visual display shall not be repeated in this WP except to the extent required for explanation of the meaning. This WP may be broken down into SWPs to accommodate inclusion of two or more test procedures.

H.3.1.3.1 <u>Preparation for testing</u>. Complete step-by-step instructions shall be provided to effect all UUT, ITA, ATE interconnections (electronic and mechanical), physical positioning, switch/control settings, CP loading, and any other actions required to establish the correct testing configuration for performing the programmed test procedures. ATE confidence testing, visual inspection of the UUT, safe-to-turn-on tests and other pretest checks shall be performed prior to connecting the UUT to ATE.

H.3.1.3.1.1 <u>Test setup diagrams</u>. Test setup diagrams shall be used to supplement the preparation for testing text. The number of diagrams shall be kept to the minimum required, consistent with the configurations contained in the Table of Use and Applicability. Interconnection detail shall be limited to the extent required for clarity. Wiring or circuitry internal to cables or equipment, pin numbers within connectors or similar information which is not critical to ensure a correct testing configuration shall not be included. Test setup diagrams shall depict connections for ducting, heat sinking, etc, when they form a part of the test setup.

H.3.1.3.2 <u>Testing procedures</u>. Procedures, in the proper sequence for conducting a complete end-to-end test of a UUT as programmed in the appropriate CP, shall be provided. Sufficient information shall be included to enable the operator to: start testing, intervene when required to perform manual operations, interpret automated or manual test results, identify cause(s) of malfunction(s), perform normal and emergency shutdown procedures, and to restart testing subsequent to intervention or shutdown. Instructions shall be provided to accomplish any manual testing that forms a part of the complete testing procedures. All necessary safety precautions shall be included.

117

MIL-PRF-87929B(USAF)
APPENDIX H

H.3.1.3.2.1   Test start.   These procedures shall instruct the operator in the proper method of starting UUT testing under CP control. When this information is contained in the applicable ATE manual(s), reference shall be made that familiarization with the procedures contained therein is required. That information shall be repeated in this manual only to the extent required to enable an operator, trained in the use of the applicable tester, to start testing.

H.3.1.3.2.2   Operator intervention.   When required to augment visual displays under program control and the information contained in Operator Participation (see H.3.1.1.6), specific instructions shall be provided for performance of manual procedures. These instructions shall reference the applicable test indication numbers(s) and visual display data. Sufficient information shall be provided to enable the operator to determine required actions, make necessary calculations and decisions, perform manual operations and return testing to program control or terminate testing, as applicable.

H.3.1.3.2.3   Interpretation of test results.   In addition to the operator intervention instructions, information shall be provided which clearly explains test results. This information shall reference the applicable test indication number(s) and visual display data.

H.3.1.3.2.4   Malfunction isolation.   When isolation of malfunction causes(s) cannot be accomplished to the appropriate level under CP control, procedures for manual or manually assisted isolation shall be provided. These procedures shall meet the criteria of H.3.1.3.2.2.

H.3.1.3.2.5   Termination and restart.   These procedures shall instruct the operator in the proper method(s) to terminate testing under both routine and emergency conditions and to reestablish testing under CP control. When this information is contained in the applicable ATE manual(s), reference shall be made that familiarization with the procedures contained therein is required. That information shall be repeated in this manual only to the extent required to enable an operator, trained in the use of the applicable ATE, to terminate and restart testing.

H.3.1.3.2.6   Test points.   When testing and fault isolation procedures require manual probing of test points on the UUT, sufficient information in the form of text and illustrations to permit ready identification of each test point shall be provided. All necessary safety precautions shall be included.

H.3.1.3.2.7   Fault isolation loops.   Fault isolation loops shall be provided for each functional testing area of UUTs. Loops shall provide sufficient information to allow an operator to identify the cause of any malfunction, be it the UUT, interconnecting adapters/ cables, or the ATE.

H.3.2   Definitions.

H.3.2.1   Diagnostic Flow Chart (DFC).   Provides the detailed UUT oriented methods employed on a test-by-test basis showing all branching and including the purpose, methodology, and expected results.

H.3.2.2   Test Diagrams (TDM).   Provides the detailed the UUT/ID/ATE interface information on a test-by-test basis. Two type of diagrams are applicable; a system diagram and TDM.

118

MIL-PRF-87929B(USAF)
APPENDIX H

H.4.   DOCUMENT TYPE DEFINITION.

H.4.1   <u>SGML document type definition</u>.   Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

H.4.2   <u>Template document type for work package type manuals</u>.   The DTD for ATE Operator Test Procedures Technical Manual is as follows:

```
<!-- ************************* START OF FILE *************************** -->

<!-- SUPPLEMENT NOTICE:   This file is made available to provide the user with
a digital representation of the DTD found in Appendix H of MIL-M-87929A.   This
file is incomplete without MIL-M-87929A. -->

<!-- NOTE: The start and end of this file are marked with a row of asterisks.
If these rows are not present the file may not be complete! -->

<!-- MIL-M-87929A ATE Operator Test Procedures DTD -->

<!-- The following set of declarations may be referred to by using a public
entity as follows:

<!ENTITY % m87929ate PUBLIC "-//USA-DOD//DTD MIL-M-87929A ATE AMEND1//EN" >
%m87929ate;
-->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:

     <!DOCTYPE docate [

and the associated "]>" to the end of the file. -->

<!-- ENTITY DECLARATIONS -->

<!ENTITY % m87929wp PUBLIC "-//DOD-USA//DTD MIL-M-87929A AMEND1//EN" >

<!ENTITY % list "(seqlist | randlist | deflist)" >

<!ENTITY % spcpara "(warning?, caution?, note?)" >

<!ENTITY % fpi "(para0, (para0 | %list; | symsect | abbrsect | %spcpara;)*,
internatlstd?, lrp?, tctolist?)" >

<!ENTITY % forwp "(wpidinfo, contents, illuslist?, tablelist?, purpose, scope,
%fpi;, manstru, coverage?, indexscheme, locinfo, para0*, leadpartic,
maintcon?, envcont?, warrprov?, useapplic, statutil, caplim, oppartic, para0*,
tmimprep?)"
>

<!ENTITY % sttec "(wpidinfo, para0, (toollist, para0*)?, (eqplist, para0*)?,
(consum, para0*)?, contlist?, software, para0*)" >
```

119

MIL-PRF-87929B(USAF)
APPENDIX H

```
%m87929wp;

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT ate            - o  (partno, refdes) >
<!ATTLIST ate            %secur; >

<!ELEMENT caplim         - o  (%parazero;) >
<!ATTLIST caplim         tocentry %yesorno; "1"
                         shortentry %yesorno; "0"
                         verified %yesorno; "0"
                         %bodyatt;
                         %secur; >

<!ELEMENT cpin           - o  (%text;) >
<!ATTLIST cpin           %secur; >

<!ELEMENT docate         - -  (front, aiwp, forewordwp, sttecwp, testwp+,
                         ddwp?, foldsect?)   +(pgbrk | brk) >
<!ATTLIST docate         service %service; 'AF'
                         %docatt;
                         %secur; >

<!ELEMENT ita            - o  (partno, refdes) >
<!ATTLIST ita            %secur; >

<!ELEMENT oppartic       - o  (%parazero;) >
<!ATTLIST oppartic       tocentry %yesorno; "1"
                         shortentry %yesorno; "0"
                         verified %yesorno; "0"
                         %bodyatt;
                         %secur; >

<!ELEMENT preptest       - o  (%parazero;) >
<!ATTLIST preptest       tocentry %yesorno; "1"
                         shortentry %yesorno; "0"
                         verified %yesorno; "0"
                         %bodyatt;
                         %secur; >

<!ELEMENT software       - o  (%parazero;) >
<!ATTLIST software       tocentry %yesorno; "1"
                         shortentry %yesorno; "0"
                         verified %yesorno; "0"
                         %bodyatt;
                         %secur; >

<!ELEMENT statutil       - o  (table) >
<!ATTLIST statutil       %secur; >

<!ELEMENT testproc       - o  (%parazero;) >
<!ATTLIST testproc       tocentry %yesorno; "1"
                         shortentry %yesorno; "0"
                         verified %yesorno; "0"
                         %bodyatt;
```

MIL-PRF-87929B(USAF)
APPENDIX H

```
                         %secur; >

<!ELEMENT testtime       - o  (%text;) >
<!ATTLIST testtime       %secur; >

<!ELEMENT testwp         - -  (%wp;, wpforewd, safesum?, preptest,
                         testproc, swp*)   +(figure | table | foldout) >
<!ATTLIST testwp         chgno NUMBER "0"
                         %bodyatt;
                         %secur; >

<!ELEMENT useapplic      - -  ((uut, ate, ita, cpin, testtime)+)
                         +(ftnote | warning | caution | note) >
<!ATTLIST useapplic      tocentry %yesorno; "1"
                         shortentry %yesorno; "0"
                         verified %yesorno; "0"
                         %bodyatt;
                         %secur; >

<!ELEMENT uut            - o  ((partno, refdes) | nomen) >
<!ATTLIST uut            %secur; >

<!-- *************************** END OF FILE *************************** -->
```

H.5.   DETAILED DESCRIPTION.

H.5.1   <u>Document type definition</u>.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

MIL-PRF-87929B(USAF)
APPENDIX I

MANUALS, TECHNICAL - SPECIAL REQUIREMENTS FOR STORAGE AND MAINTENANCE PROCEDURES; AUR MUNITIONS/LAUNCHERS AND ASSOCIATED SUPPORT EQUIPMENT, CONVENTIONAL COMPONENTS AND CMBR AGENTS

I.1. SCOPE.

I.1.1   Scope.   This appendix provides the special or unique criteria, in addition to the provisions of MIL-PRF-87929, required for development of the following: Specialized Storage and Maintenance Procedures for All Up Round (AUR) Munitions/Launchers (missiles, precision guided, and assembled munitions and associated support equipment)/ Conventional Components and Chemical Munitions/Biological Research (CMBR) Agents Technical Manual (TM). The Document Type Definition (DTD) subset within this appendix provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see I.5.1) are available (see A.5.). This appendix supersedes Appendix I of MIL-M-87929. The information contained herein is intended for compliance.

I.2. APPLICABLE DOCUMENTS.

I.2.1   Government documents.

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

SPECIFICATIONS

    Military

        MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text

        MIL-PRF-38807   Manuals, Technical - Illustrated Parts Breakdown, Preparation of

        MIL-PRF-87929   Manuals, Technical - Operation and Maintenance Instructions in Work Package Format (for USAF Equipment)

STANDARDS

    Military

        FIPS 152   Standard Generalized Markup Language (SGML)

        MIL-STD-38784   Manuals, Technical - General Style and Format Requirements

    Federal

        FED-STD-595   Color Requirements for Individual Color Chips

        DOD STD 6055.9   DoD Ammunition and Explosive Safety Standards

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

MIL-PRF-87929B(USAF)
APPENDIX I

I.2.1.2   Other Government documents, drawings, and publications.   The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

PUBLICATIONS

Air Force Technical Manuals

TO XX-XXX-06	Applicable Work Unit Code Manual (WUC) (when required)
TO 1-1-8	Application and Removal of Organic Coatings, Aerospace and Non-Aerospace Equipment
TO 1-1-691	Aircraft Weapon Systems-Cleaning and Corrosion Control
TO 11A-1-10	General Instructions, Munitions Serviceability Procedures

Air Force Instructions

AFI 21-201	Inspection, Storage, and Maintenance of Nonnuclear and Nuclear Munitions
AFI 21-202	Combat Ammunition Operation Procedures
AFI 91-204	Investigating and Reporting USAF Mishaps

Air Force Manuals

AFMAN 91-201	Explosive Safety Standards

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

I.3.   REQUIREMENTS.

I.3.1   Specialized storage and maintenance procedures for AUR munitions/launchers/support equipment/ conventional components, and CMBR agents.   This appendix covers the requirements for specialized inspection, testing, maintenance, and storage procedures to be accomplished during the life-cycle of AUR munitions/launchers/support equipment/conventional components, and CMBR agents and associated containers. The manuals shall include all procedures necessary to establish a complete progressive storage and maintenance program. No requirement shall be omitted, even if the requirement would not be applicable until expiration of a long interval of storage. Specific requirements that are not applicable to the weapon system may be omitted unless otherwise specified herein. Work described shall be limited to that which is accomplished in the designated storage, inspection, and maintenance areas. Operation and maintenance instructions for auxiliary equipment shall not be included; applicable manuals shall be referenced.

I.3.2   General Work Package (WP)/Subordinate Work Package (SWP) requirements.   The general manner of preparation shall be in accordance with MIL-PRF-87929 with the following exceptions.

a.   First subordinate sideheads shall be in all capital letters and not underscored.

b.   Paragraphs shall be numbered in accordance with MIL-STD-38784.

    c.   Table of contents shall be arranged alphabetically and shall only list primary and first subordinate paragraphs.   If the acquiring activity requires, second subordinate paragraphs may be added.

    d.   When applicable, the following statement shall be included on the WP/SWPs title page: "THIS (WORK PACKAGE/SUBORDINATE WORK PACKAGE) INCOMPLETE WITHOUT WORK PACKAGE WP 020 00." This statement shall be located two lines below the title block.

    e.   The requirements of MIL-PRF-87929 3.4.1.1 b and 3.4.3.1 a. (5) do not apply.

    f.   The requirements of MIL-PRF-87929, 3.4.3.6 h., j., and k. do not apply.

    g.   A safety summary shall be located in each WP/SWP except, WP 010 00, WP 020 00, WP 030 00, and WP 998 00. This paragraph shall be titled Safety Summary and Accident Prevention, and contain the following statement: "All personnel involved in the performance of the procedures in this WP/SWP shall be thoroughly familiar with the safety and accident prevention information contained in WP 020 00."

    h.   The consumable materials list within each WP/SWP shall be in accordance with MIL-PRF-87929, 3.4.3.6.3, except the "CAGE" column shall be titled "Use" and shall give the use of the item within the WP/SWP.

    i.   The applicable support equipment list shall be in accordance with MIL-PRF-87929, 3.4.3.6.4, except: the table shall be titled "Tools and Equipment"; the "Part Number" column shall be titled "Part/Specification Number" and shall list the applicable part or specification number; and the "CAGE" column shall be titled "Use" and shall give the use of the item within the WP/SWP.

    j.   WARNING and CAUTION statements in the technical WPs/SWPs shall be used only to highlight unusual conditions or non-routine procedures and shall be located immediately prior to the specific procedures to which they apply

I.3.3   Manual arrangement.   The arrangement and titles of WP/SWPs shall be as specified in I.3.5. In addition, the Safety Summary shall be a separate WP rather than included in each WP. When WPs 080 00, 090 00, 100 00, and 998 00 are not applicable, they shall be listed as "Not Applicable" in the numerical index of effective WPs. WPs 110 00 through 997 00 shall be used when specified by the acquiring activity. Unless otherwise specified, procedures for containers shall be included in the appropriate WPs/SWPs (see I.6.1).

I.3.3.1   WP/SWP Numbering System.   When additional WPs and SWPs are required, they shall be created and numbered using a tired/indentured methodology. The major task shall use the first two digits of the WP number. The first level of indenture WPs shall use the third digit. All SWPs will utilize the fourth and fifth digits of the WP number. The indentured WPs and SWPs may be used for additional configurations, inert/training items, subcomponents, subtasks, etc., as required. However, the method of breakout of these additional WP/SWPs shall remain consistent throughout the manual. The following diagram illustrates the tired/indentured numbering system.

MIL-PRF-87929B(USAF)
APPENDIX I

```
|------ MAJOR TASK (MINIMUM REQUIREMENTS)
|
| | -------- FIRST INDENTURED LEVEL (AS REQUIRED)
| |
| |  |------ NEXT LEVEL OF INDENTURE (AS REQUIRED)
| |  |
| |  |
 (XX)(X)  (XX) -------- WP/SWP NUMBER
```
Example :

070 00 - Major task heading: Standardized work package headings. WPs 010 00 through 070 00 and 998 00 are considered the minimum requirements. WPs 080 00, 090 00, and 100 00 will have a specified title and content when used. This structure allows for 88 additional major tasks.

07**1** 00 - First indentured level: Used for different versions/configurations, as required, to segregate tasks and procedures. This allows for 9 WP breakouts to the first level of indenture.

071 **01** - Second level of indenture: Used for component/sub-system task procedures, as required. This level allows for 99 SWPs for each of the 9 first level breakout WPs.

I.3.4   Front matter.   The front matter of the manual shall be prepared as follows:

   a.   Title page. In accordance with MIL-STD-38784.

   b.   List of Effective Pages (all inclusive). In addition with the requirements of MIL-STD-38784, the list shall specify the effective pages of each WP/SWP contained in the manual.

   c.   Verification Status Pages (when applicable). In accordance with MIL-STD-38784.

   d.   Numerical Index of Effective WP/SWP. The index shall include the WP/SWP number, title, and effectivity.

   e.   List of Related Publications, using the MIL-STD-38784 format.

   f.   List of Time Compliance Technical Orders (TCTO). In addition to the requirements of MIL-STD-38784, this list shall include a column listing the Rescission Date. List both active and rescinded TCTOs applicable to the munitions and associated components sequentially by the date of issue.

I.3.5   WP/SWP arrangement.   Unless otherwise specified, the following WPs shall be included in the order shown. Arrangement and breakout of WPs 110 00 through 997 00 shall be as specified by the acquiring activity. Indentured WPs and SWPs shall be provided for sections, major components, training munitions, or differing configurations, when specified (see I.6.1).

   a.   The following WPs are the minimum requirements:

      (1)   WP 010 00 Foreword/System Description (see I.3.5.1)

      (2)   WP 020 00 Safety Summary and Accident Prevention (see I.3.5.2)

      (3)   WP 030 00 Master Lists of Special Tools, Equipment, and Consumables (see I.3.5.3)

126

MIL-PRF-87929B(USAF)
APPENDIX I

    (4)   WP 040 00 Storage and Handling Requirements (see I.3.5.4)

    (5)   WP 050 00 Inspection Requirements and Procedures (see I.3.5.5)

    (6)   WP 060 00 Unpacking and Packaging (see I.3.5.6)

    (7)   WP 070 00 Maintenance (see I.3.5.7)

    (8)   WP 998 00 Illustrated Parts Breakdown (see I.3.5.8)

b.   When used, the following WPs shall be numbered and titled as follows :

    (1)   WP 080 00 Testing/Reprogramming (see I.3.5.9)

    (2)   WP 090 00 Contingency Procedures (see I.3.5.10)

    (3)   WP 100 00 Depot Related Data and Special Instructions (see I.3.5.11)

    (4)   WP 110 00 - WP 997 00 Any other WP as specified by acquiring activity (see I.3.5.12, I.6.1)

I.3.5.1   Foreword/System Description WP (WP 010 00).   The Foreword/System Description WP will always be the first WP and the requirements of MIL-PRF-87929, 3.4.3.2, apply, with the following exceptions:

a.   The requirements of MIL-PRF-87929, 3.4.3.2 (a), (b), and (c) do not apply.

b.   The requirements of MIL-PRF-87929, 3.4.3.2 (d), except for the hazardous materials icon requirements of MIL-STD-38784 which shall be included in the Safety Summary and Accident Prevention WP. Only non-USAF standard abbreviations/acronyms need be explained.

c.   In addition, the following shall be included:

    (1)   Use of words: Shall, Will, Should, and May.

    (2)   Explanation of WP/SWP Numbering System.

I.3.5.1.1   Description of item.   A physical and functional description of the item and each component shall be included. When applicable, a detailed theory of operation shall also be included. Appropriate illustrations shall be included.

I.3.5.1.2   Table of leading characteristics.   A table of leading characteristics shall be provided in landscape orientation. The table shall list the nomenclature, FSC/DODIC (Department of Defense Identification Code), Part No./Model No./CAGE, length, width, diameter, center of gravity, weight, net explosive weight (NEW), and Dimensions Outer Pack for the item and each component, as applicable.

MIL-PRF-87929B(USAF)
APPENDIX I

Table of Leading Characteristics

Nomenclature	FSC/ DODIC	Part/ Model No. CAGE Code	Dimensions (Inches)				Center of Gravity	Weight (Pounds)		Dimensions (Inches) Outer Pack
			Length	Width	Height	Diameter		Gross	NEW	

I.3.5.1.3   Markings.   The physical description illustration(s) shall be used to show markings. Color coding requirements shall be included in textual form. Color graphics shall not be used to illustrate color coding requirements. Item and container markings shall be included as applicable.

I.3.5.1.4   Configuration table.   A configuration table shall be included in landscape format. As a minimum, the table shall list configuration(s)/components by nomenclature and part number. The acquiring activity will provide additional column headings as required (see I.6.1).

I.3.5.2   Safety Summary and Accident Prevention WP (WP 020 00).   In addition to the safety summary requirements of MIL-STD-38784, this WP shall contain information pertaining to accident prevention and shall also contain a description of the following hazards: explosive; pneumatic; electrical (high voltage); chemical; static electricity; environmental; other associated hazards. The following paragraph shall be included:

"When an abnormal condition is noted and procedures are not available in this manual, work shall be stopped and qualified guidance obtained. Personnel shall be evacuated to a safe site. Explosive Ordnance Disposal (EOD) or other authorized personnel shall be called for help in eliminating the hazard. Operations shall not be resumed until the hazard has been eliminated."

Additionally, WARNINGS and CAUTIONS associated with normal operations or routine procedures shall be covered in this WP

I.3.5.2.1   Hazardous materials.   In addition to the requirements of MIL-STD-38784, the following data shall be provided:

   a.   A list of all hazardous materials required by maintenance procedures contained in the manual.

   b.   For each hazardous material, the list shall illustrate the appropriate icon, state the specific hazard, describe the application of the material (including accident prevention requirements), and state appropriate disposal procedures.

   c.   Hazardous materials, when applicable, may be combined into groups when their hazards, application, and disposal data are compatible.

   d.   In this manual the caption WARNING shall not be used for hazardous material. Instead, icons shall be used to alert personnel that the procedures to be performed require the use of such products. Under this icon, the name of the hazardous material and a numeric identifier shall be given. The hazardous material icon shall only appear prior to the procedure (immediately preceding the first step) in which the material will be used.

128

MIL-PRF-87929B(USAF)
APPENDIX I

I.3.5.2.2   <u>Accidents/Incidents</u>.   This paragraph shall state the following:

"Accidents/incidents involving collision or inadvertent release of the (insert applicable item) can cause the (insert applicable item) to misfire, malfunction, or explode. If any doubt exists as to acceptability of the (insert applicable item), reject it. Report accident/incident and notify appropriate authority if explosive components are involved."

I.3.5.2.3   <u>Dropped munitions/component processing</u>.   This paragraph shall present the reporting and disposition of munitions/components that have been dropped, and refer to a table which provides specific processing/inspection criteria. This paragraph shall state the following:

"Dropped munitions/component processing criteria are contained in the following table. If any doubt exists as to acceptability of dropped component/AUR, reject it. Report dropping incidents in accordance with AFI 91-204, and notify appropriate authority if explosive components are involved. Request disposition of dropped components from (insert appropriate Air Logistics Center [ALC])."

I.3.5.2.4   <u>Drop criteria</u>.   When applicable, component drop criteria shall be included in the following format:

Drop Criteria

Item	Packaged/ Unpackaged	Drop Distance (Feet)	Required Action

I.3.5.2.5   <u>Fire</u>.   A paragraph shall be included for explosive components enveloped by fire. Information shall include withdrawal times and distance, and fire fighting guidance. A reference to TO 11A-1-46 and AFMAN 91-201 shall also be included. In addition, munitions technical manuals shall contain a table with end item/component withdrawal time and nonessential personnel safe withdrawal distance. Column headings shall be:

Withdrawal Time and Distance

Nomenclature	Withdrawal Time (Seconds)	Personnel Withdrawal Distance (Feet)

I.3.5.2.6   <u>Danger zones</u>.   When applicable, an illustration showing danger zones shall be provided.

I.3.5.3   <u>Master Lists of Special Tools, Equipment, and Consumables WP (WP 030 00)</u>.   This WP shall contain the information required by MIL-PRF-87929, 3.4.3.3, except as noted herein.

I.3.5.3.1 <u>Improper use of tools</u>. The following warning shall precede the master list of special tools:

"
WARNING

Improper use of tools and equipment can cause injury to personnel and damage to equipment."

129

MIL-PRF-87929B(USAF)
APPENDIX I

I.3.5.3.2   Common tools.   The following paragraph shall be included:

"A substitute item may be used in place of any common tool if the use does not degrade the condition and reliability of the material or safety of operation."

I.3.5.3.3   Electrical and pneumatic power requirements.   Electrical and pneumatic power requirements for special tools, test equipment, and support equipment shall be given. As a minimum, voltage, type, frequency, and tolerance shall be stated for electrical requirements, and operating pressure/vacuum and flow demand for pneumatic requirements.

I.3.5.3.4   Master list of special tools.   The list of special tools shall be in accordance with MIL-PRF-87929, 3.4.3.3.1, with the following exceptions. The Part No. column shall be titled "Part/Specification No." and the part or specification number, as applicable, shall be included. Alternate items shall be listed immediately following the item for which it is an alternate. Alternate items shall be identified as alternate in the use column. Unless otherwise specified, special tools shall be illustrated in this WP (see I.6.1).

I.3.5.3.5   Master list of test equipment.   The list of test equipment shall be in accordance with MIL-PRF-87929, 3.4.3.3.2 except the "Type Designation" column shall be titled "Type Designation/Part No." and the type designation or part number, as applicable, shall be included. Unless otherwise specified, test equipment shall be illustrated in this WP (see I.6.1).

I.3.5.3.6   Master list of support equipment.   The list of support equipment shall be arranged in the following format. If an alternate item of support equipment can be used, it shall be listed immediately following the item for which it is an alternate, and be identified as an alternate in the Use column. When specified, support equipment shall be illustrated in this WP (see I.6.1).

Master List of Support Equipment

Part Number	CAGE Code	Figure Number	Nomenclature	Use

   a.   Part Number.   Support equipment shall be listed in alphanumeric sequence by part number; except alternate items shall be listed immediately following the item for which it is an alternate.

   b.   CAGE Code.   The CAGE code or manufacturers name and address if code is not available.

   c.   Figure Number.   The figure number in this WP which illustrates the item. If the item is not illustrated, the statement "Not Illustrated" shall appear in this column.

   d.   Nomenclature.   Nomenclature shall be in accordance with the requirements of MIL-PRF-38784.

   e.   Use.   A brief statement indicating the use of the item shall be provided in this column.

I.3.5.3.7   Master list of safety and protective devices.   The list of safety and protective devices shall follow the list of support equipment and shall be arranged as follows (requirements for each column are the same as I.3.5.3.6 a. through e.):

130

MIL-PRF-87929B(USAF)
APPENDIX I

Master List of Safety and Protective Devices

Part Number	CAGE Code	Figure Number	Nomenclature	Use

I.3.5.3.8   Master list of consumables.   The list of consumables shall in accordance with MIL-PRF-87929 (see 3.4.3.3.3).

I.3.5.4   Storage and Handling Requirements WP (WP 040 00).

I.3.5.4.1   Specialized Storage and Handling.   Principal hazards involved in the storage and handling of items and explosive components listed in the manual shall be included. A reference to AFMAN 91-201 for definition of terms shall be included. A reference to TO 11A-1-46, AFMAN 91-201, and DoD STD 6055.9 for storage, handling, and compatibility requirements shall be included. An identification paragraph shall be included to read: "The use of standard nomenclature and lot number/serial number is mandatory for all storage records, reports, and communications concerning munitions. Legible identification markings shall be maintained on munitions in storage." Specialized storage and handling procedures shall be arranged in the following order:

    a.   Handling

    b.   Storage Data

    c.   Storage Requirements

I.3.5.4.1.1   Handling.   When required, instructions shall include normal and specialized handling procedures. A warning pertaining to careful handling of explosive material shall be included. The following statement shall be included: "Damaged containers shall be repaired as soon as possible and markings restored to the repaired area. Chemical protection equipment required when handling items covered by the manual shall be in accordance with AFMAN 91-201."

I.3.5.4.1.2   Storage data.   A storage data table shall be included and contain the following information in the format shown. Special shelf/service life requirements shall be identified by notes.

Storage Data

Item	Temperature Limitations (°F or °C)		Shelf Life	Service Life
	Min	Max		

    a.   Item.   List all munitions/components (nomenclature, type, model, and part number).

    b.   Temperature limitations (if applicable). Provide the minimum and maximum temperature limits for the item.

    c.   Shelf life/service life. Provide the shelf and service life of the item in years, months or days, as applicable.

MIL-PRF-87929B(USAF)
APPENDIX I

I.3.5.4.1.3 <u>Storage requirements</u>. Data shall cover general storage requirements, serviceability statements, and requirements pertaining to both inside and outside storage. Stacking limitations and dunnage requirements shall be included.

I.3.5.5 <u>Inspection Requirements and Procedures WP (WP 050 00)</u>. When required, inspection requirements shall cover the end item, and all components listed which are packaged and stored separately. Inspection requirements for training, dummy/inert and nonexplosive items shall be listed, as applicable. General guidelines for inspections and definitions of terms are contained in TO 11A-1-10 and shall be used as reference in preparing specific requirements. Inspection requirements shall be in the following order. When a requirement is not applicable, it shall be included and marked "Not Applicable."

    a.   Types of Inspections (see I.3.5.5.1)

        (1)   Receiving Inspection (I.3.5.5.1.1)

        (2)   Shipping Inspection (see I.3.5.5.1.2)

        (3)   Periodic Inspection (see I.3.5.5.1.3)

        (4)   Special Inspection (see I.3.5.5.1.4)

        (5)   Preissue Inspection (see I.3.5.5.1.5)

        (6)   Returned Munitions Inspection (see I.3.5.5.1.6)

        (7)   Storage Monitoring Inspection (see I.3.5.5.1.7)

        (8)   Other Inspections (e.g., Pre-Flight, Post-Flight, Recertification, etc.) (see I.3.5.5.1.8)

    b.   Inspection Evaluation (see I.3.5.5.2)

    c.   Instructions for disposition of rejected items (see I.3.5.5.3)

    d.   Classification of visual defects tables (see I.3.5.5.4)

I.3.5.5.1 <u>Types of inspections</u>.

I.3.5.5.1.1 <u>Receiving inspection (RI)</u>. General inspection guidelines are contained in TO 11A-1-10 and shall be used as a guide to establish inspection criteria. Checkpoints required to perform inspection shall be presented in the classification of defects table.

I.3.5.5.1.2 <u>Shipping inspection (SI)</u>. General inspection guidelines are contained in TO 11A-1-10 and shall be used as a guide to establish inspection criteria. Checkpoints required to perform inspection shall be presented in the classification of defects table.

I.3.5.5.1.3 <u>Periodic inspection (PI)</u>. General inspection guidelines are contained in TO 11A-1-10 and shall be used as a guide to establish inspection criteria. Periodic inspection intervals will be established by the acquiring activity. Inspections shall be performed on a sample-size basis. Unless otherwise specified by the acquiring activity, inspection quantities shall be based upon sample-size reject table(s) listed in TO 11A-1-10. Inspection criteria shall be presented in the classification of visual defects table which shall include all checkpoints necessary to ensure serviceability of the item(s). Specify items which are exempt from this inspection, if applicable. If inspection of inert training items is different than that required for live items, indicate inspection requirements.

MIL-PRF-87929B(USAF)
APPENDIX I

I.3.5.5.1.4   Special inspections (SPI).   Special inspections may be performed by direction of local authority, major commands, or appropriate ALC. Special inspections shall be performed in accordance with specific instructions from the directing authority.

I.3.5.5.1.5   Preissue inspection (PII).   Inspections shall provide data required to ensure serviceability of an item prior to issue. General inspection guidelines are contained in TO 11A-1-10 and shall be used as a guide to establish inspection criteria. Specific inspection procedures shall be as directed in TO 11A-1-10.

I.3.5.5.1.5.1   Priority of issue.   Priority of issue information shall contain notes pertaining to established and/or indefinite shelf life items. The following note for established shelf life items shall read: "When the lot number or date of manufacture cannot be identified, an item shall not be issued. If either the lot number or date of manufacture is known, the other may be obtained from (insert appropriate commodity directorate (OO-ALC/LIW or WR-ALC/LKG)." The following note for indefinite shelf life items shall read: "When the lot number cannot be identified, an item shall not be issued. Missing date of manufacture is not significant and shall not be cause for classifying the item unserviceable for issue. If only the lot number or date of manufacture is known and the unknown information is needed, it may be obtained from (insert appropriate commodity directorate [OO-ALC/LIW or WR-ALC/LKG])."

I.3.5.5.1.6   Returned munitions inspection (RMI).   This inspection shall be performed on munitions returned from custody/consumption accounts prior to return to base stock (FV/FK). TO 11A-1-10 shall be used as a guide to establish inspection criteria. Specific inspection procedures shall be as directed in TO 11A-1-10.

I.3.5.5.1.7   Storage monitoring inspection (SMI).   Storage monitoring inspections are performed to measure/monitor specific conditions or characteristics of stored assets (e.g. humidity indicator checks). The inspection shall include all instructions necessary to accomplish this inspection. Criteria and guidelines are contained in TO 11A-1-10 and shall be used. When specified, a humidity indicator inspection cycle table shall be provided in the following format (see I.6.1). The following note shall be added to the humidity indicator inspection cycle table:

NOTE

The local environment for each location shall be determined using TO 1-1-691. High humidity is listed as very severe/severe, medium humidity as moderate, and low humidity as mild.

Humidity Indicator Inspection Cycle (Months)

	Local Environment		
	High Humidity	Medium Humidity	Low Humidity
Inside Storage Outside Storage			

I.3.5.5.1.8   Other inspections.   When specified, other inspections shall be included. The acquiring activity will specify the categories and types of inspections required (see I.6.1).

133

MIL-PRF-87929B(USAF)
APPENDIX I

I.3.5.5.2   Inspection evaluation.   Inspection evaluation criteria shall be presented. Criteria in TO 11A-1-10 shall be used as a guideline or reference to TO 11A-1-10 shall be made.

I.3.5.5.3   Instructions for disposition of rejected items.   This paragraph shall present the disposition instructions for end items/components that have been rejected. This paragraph shall contain a reference to AFI 21-202 for the disposition of nonrepairable items.

I.3.5.5.4   Classification of visual defects tables.   Inspection tables shall identify inspection requirements by component and work unit code (WUC), inspection, defect classification (critical, major, or minor), how malfunctioned (How Mal), and corrective action to be taken to correct the defect or discrepancy. The tables shall be appropriately titled and arranged as follows:

Classification of Visual Defects

Component (WUC)	Inspection (Inspect for the following defects)	Defect Classification (How Mal)	Corrective Action

I.3.5.5.5   Inspection - components SWPs.   These SWPs shall include the information required by I.3.5.5 An inspection SWP shall be provided for sections, major components, training munitions or differing configurations, as applicable.

I.3.5.6   Unpacking and Packaging WP (WP 060 00).   This WP shall contain the following information applicable to the end items:

I.3.5.6.1   Unpacking.   These instructions shall include procedures for uncrating, opening special containers, removing items, and handling of packing materials. Procedures for disposition of empty reusable containers shall be included. Procedures for unpacking items packaged in simple hermetically-sealed containers or simple one-time use containers need not be included. Include instructions for marking containers when shelf/service life is affected by unpacking. The following paragraph shall be included: "The safety requirements of AFMAN 91-201 shall be followed when unpacking. Before opening a container, ensure that all markings are legible. Record markings that may be destroyed by opening the container. Retain serviceable packing for possible reuse."

I.3.5.6.2   Packaging.   A description and illustration of the original shipping and storage containers for the service (end) item, training/dummy item, and major components shall be provided (as applicable). Special Packaging Instructions/Transportation Packaging Orders (SPI/TPO) shall be used as the source document. This paragraph shall contain, at minimum, the following:

    a.   Step-by-step procedures for installing items in container, in all standard storage and shipping configurations.

    b.   Preservation instructions.

    c.   Applicable container marking and sealing requirements.

I.3.5.6.3   Unpacking and Packaging SWPs.   These SWPs shall include the information required by I.3.5.6. An Unpacking and Packaging SWP shall be provided for sections, major components, training munitions, or differing configurations, as applicable.

MIL-PRF-87929B(USAF)
APPENDIX I

I.3.5.7   Maintenance WP (WP 070 00).   Procedures for authorized maintenance of the munitions shall be included. A list of materials to be used shall be included. Consumable materials shall be in accordance with I.3.2 h. Those required for cleaning, painting, and markings shall be listed only in WP 030 00 and in this WP as specified herein. Arrangement of the WP shall be in the following order, as applicable:

    a.   Safety Summary and Accident Prevention (see I.3.2.f)

    b.   Sequence of Operations (see I.3.5.7.1)

    c.   Torque Requirements Table (see I.3.5.7.2)

    d.   Maintenance (see I.3.5.7.3)

    e.   Preparation for Use (see I.3.5.7.4)

    f.   Assembly (see I.3.5.7.5)

    g.   Checkout (see I.3.5.7.6)

    h.   Servicing (see I.3.5.7.7)

    i.   Disassembly (see I.3.5.7.8)

    j.   Component Repair (see I.3.5.7.9)

    k.   Cleaning, Corrosion Control, Painting, and Marking (see I.3.5.7.10)

I.3.5.7.1   Sequence of operations.   When deviations are not authorized, the acquiring activity will provide the appropriate sequence of work to be performed. Otherwise, this paragraph shall contain the following statement: "Production techniques involving preparation of more than one item may require deviations from the work sequence. Several procedures may be performed simultaneously, and in different work areas, providing the preceding and subsequent tasks are not invalidated or interfered with and that all safety and reliability requirements are observed."

I.3.5.7.2   Torque requirements table.   This table shall be arranged as follows and contain the appropriate information in each column:

Torque Requirements

Part Number	Nomenclature	Torque

I.3.5.7.3   Maintenance.   Maintenance procedures described herein shall include all authorized maintenance actions, including those required to respond to the defects noted as a result of inspections conducted in accordance with WP 050 00 and/or tests conducted in accordance with WP 080 00.

I.3.5.7.4   Preparation for use.   These instructions shall include all procedures for preparing an item for use, such as inspection of components, assembly (buildup), installation of components, alignment, test, and complete inspection, as applicable. When preparation for use/assembly results in change of identification or DoD Ammunition Code (DODAC), procedures shall be included to ensure all applicable functions are notified.

135

MIL-PRF-87929B(USAF)
APPENDIX I

I.3.5.7.5   <u>Assembly</u>.   Detailed assembly instructions shall be provided. Appropriate illustrations shall be included.

I.3.5.7.6   <u>Checkout</u>.   Checkout instructions for assembled items shall be provided.

I.3.5.7.7   <u>Servicing</u>.   Servicing instructions shall be provided and shall include lubrication, adjustment and any other servicing requirements as applicable.

I.3.5.7.8   <u>Disassembly</u>.   Detailed disassembly instructions shall be provided. These procedures shall configure the item for packaging.

I.3.5.7.9   <u>Component Repair</u>.   This paragraph shall state the repair limitations for the munitions and shall identify those maintenance tasks which can be performed on assembled munitions. These instructions shall include all procedures authorized for accomplishment at the level of maintenance determined by the acquiring activity and shall include those expanded step-by-step procedures for corrective actions in the Classification of Defect Tables. Torque requirements shall be included in textual form.

I.3.5.7.9.1   <u>Removal/replacement</u>.   Detailed instructions for removal/replacement of items/components shall be provided. It shall also include a statement that all replacement components shall be inspected in accordance with applicable WP/SWP prior to assembly. Appropriate illustrations shall be included.

I.3.5.7.9.2   <u>Component repair</u>.   Instructions shall be provided for the maintenance/repair of authorized components. Appropriate illustrations shall be included.

I.3.5.7.10   <u>Cleaning, corrosion control, painting, and marking</u>.

I.3.5.7.10.1   <u>Cleaning/corrosion control materials and procedures</u>.   Procedures for cleaning/corrosion control shall be included. A reference to TO 1-1-691 for basic corrosion control procedures shall be provided. A table shall be included and arranged in the following format:

Cleaning/Corrosion Control Materials and Procedures

Discrepancy	Material	Specification/ Part Number	Tools and Procedures

   a.   Column 1 - The discrepancy to check for.

   b.   Column 2 - The material(s) to be used.

   c.   Column 3 - The military, Government, or commercial specification number or part number shall be shown.

   d.   Column 4 - The tools and procedures to correct the discrepancy.

I.3.5.7.10.2   <u>Painting and markings</u>.   This paragraph shall provide a brief description of the purpose of painting and marking requirements and call out the table which presents an approved materials list to be used to accomplish the required task. A reference shall be made to WP 010 00 for the marking requirements of the item and container. This paragraph shall also contain the

136

MIL-PRF-87929B(USAF)
APPENDIX I

following statement: "Apply protective paints in accordance with TO 1-1-8." The table shall be arranged in the following format:

Paint and Marking Materials

Item	Specification Number/ Color Number per FED-STD-595	Use

    a.   Column 1 - The component/item to be painted/marked.

    b.   Column 2 - The military, Government, or commercial specification number, and color per FED-STD-595.

    c.   Column 3 - Identifies the use or purpose of the materials.

I.3.5.7.11   Maintenance SWPs.   These SWPs shall include the information required by I.3.5.7, except I.3.5.7.9.1 and I.3.5.7.9.2. SWPs shall be provided for sections, major components, training munitions or differing configurations, as applicable.

I.3.5.8   Illustrated Parts Breakdown WP (WP 998 00).   An IPB work package shall be prepared and numbered 998 00. The format and contents of the IPB WP shall be in accordance with MIL-PRF-38807. All references to "Figure Number" shall be changed to "WP/SWP Number and Figure Number".

I.3.5.8.1   Illustrated Parts Breakdown SWPs.   These SWPs shall include the information required by I.3.5.8. SWPs shall be provided for sections, major components, training munitions or differing configurations, and numbered accordingly, as applicable.

I.3.5.8.2   Separate manual.   When specified, the IPB shall be developed as a separate manual. When the IPB is provided as a separate manual it shall be prepared in accordance with MIL-PRF-38807. (see I.6.1)

I.3.5.9   Testing/Reprogramming WP (WP 080 00).   When specified, this WP shall be included (see I.6.1). This WP shall contain the following information.

I.3.5.9.1   Testing and reprogramming procedures.   This WP shall include instructions and step-by-step procedures using specified equipment for electrical, mechanical, and functional testing of munition items and/or reprogramming. Electrical continuity/resistance checks shall include, as applicable, meter preparation procedures, protective shielding, electrical grounding, and tie-down requirements. When applicable, reference to appropriate SWPs for specialized testing shall be included.

I.3.5.9.2   Records/documentation.   When required for the weapon system, procedures shall be included to record and report test/reprogramming records and documentation.

I.3.5.9.3   Test evaluation.   This paragraph shall follow test requirements and the title of the paragraph shall be "Test Evaluation". Criteria and procedures shall be provided for evaluation of

tests conducted. This paragraph shall also present the disposition instructions for items that have been rejected. This paragraph shall also contain a reference to AFI 21-202 for the disposition of nonrepairable items.

I.3.5.10   Contingency Procedures WP (WP 090 00).   When specified, this WP shall be included and shall contain the following information (see I.6.1):

I.3.5.10.1   Concept of operations.   Information shall be included which describes the concept of operations, e.g. an explanation of rapid assembly during contingency operations.

I.3.5.10.2   Breakout and preparation for use.   This information shall provide the minimum instructions required to prepare assembled munitions for use during contingency operations.

I.3.5.10.3   Unpacking, inspection, and assembly.   This information shall provide the minimum instructions required to unpack, inspect, and assemble munitions for contingency operations.

I.3.5.11   Depot Related Data and Special Instructions WP (WP 100 00).   When specified, this WP shall be included (see I.6.1). The acquiring activity will provide the appropriate data for storage requirements and detailed procedures for disassembly, repair, assembly, and inspection/testing of applicable components.

I.3.5.12   Additional WPs (WP 110 00 through 997 00).   When specified, additional WPs (e.g. maintenance for unique support equipment, unique testers, etc.) are required (see I.6.1), the acquiring activity will specify the type of WP and the information to be included.

I.3.6   Chemical Munitions/Biological Research Agents manual.   When specified, CMBR agents manuals shall be prepared in accordance with MIL-PRF-87929 and this appendix with the addition of the following information (see I.6.1):

I.3.6.1   Safety Summary and Accident Prevention WP (WP 020 00).   In addition to the requirements of I.3.5.2, the safety summary shall also contain the following:

I.3.6.1.1   Decontamination.   These instructions shall include step-by-step procedures for decontamination of the CMBR agents, when this information is included in general or other technical manuals, such manuals shall be referenced. If the agent or decontamination solution is classified, the procedures shall be included in a separate supplement. When included, these procedures shall be arranged in the following order:

    a.   Description (see I.3.6.1.1.1)

    b.   Symptoms (see I.3.6.1.1.2)

    c.   First Aid (see I.3.6.1.1.3)

    d.   Decontamination of personnel (see I.3.6.1.1.4)

    e.   Decontamination of clothing (see I.3.6.1.1.5)

    f.   Decontamination of equipment (see I.3.6.1.1.6)

    g.   Preparation, sampling, and testing of decontamination solution (see I.3.6.1.1.7)

MIL-PRF-87929B(USAF)
APPENDIX I

   h.   Minor leaks in CMBR agent items (see I.3.6.1.1.8)

   i.   Major leaks in CMBR agent items (see I.3.6.1.1.9)

   j.   Decontamination of CMBR agent items (see I.3.6.1.1.10)

   k.   CMBR agent spills (see I.3.6.1.1.11)

I.3.6.1.1.1   Description.   A general description of the CMBR agent and the decontaminant(s) shall be included.

I.3.6.1.1.2   Symptoms.   Symptoms shall be listed which indicate that personnel who have been contaminated by a CMBR agent.

I.3.6.1.1.3   First aid.   First aid instructions shall be provided for treatment of personnel who have been contaminated by a CMBR agent.

I.3.6.1.1.4   Decontamination of personnel.   Procedures shall include the steps required for decontamination when wearing impermeable protective clothing and also the steps required for decontamination of personnel not wearing protective clothing.

I.3.6.1.1.5   Decontamination of clothing.   Procedures for decontaminating clothing which has been exposed to the CMBR agent shall be given.

I.3.6.1.1.6   Decontamination of equipment.   Instructions shall include all procedures for the decontamination of equipment involved in minor/major leaks and spills of a CMBR agent.

I.3.6.1.1.7   Preparation, sampling, and testing of decontamination solution.   Procedures to prepare, sample, and test the decontamination solution shall be provided.

I.3.6.1.1.8   Minor leaks in CMBR agent items.   The corrective procedures to follow when minor leaks occur in the CMBR agent items shall be given.

I.3.6.1.1.9   Major leaks in CMBR agent items.   The corrective procedures to follow when major leaks occur in the CMBR agent items shall be given.

I.3.6.1.1.10   Decontamination of CMBR agent items.   Procedures to follow in decontaminating the CMBR agent items after completion of a mission, prior to storage or reuse, as applicable, shall be given.

I.3.6.1.1.11   CMBR agent spills.   Corrective procedures to follow in decontaminating the area after a CMBR agent spill shall be given.

I.3.6.2   Storage and Handling Requirements WP (WP 040 00).   In addition to the requirements of I.3.5.4, this WP shall also contain the following.

I.3.6.2.1   Preparation for storage.   These instructions shall include, as applicable, the procedures for preparing the items for storage in shipping container(s), including repackaging. Procedures for both inert items and special items shall be given. The instructions shall be arranged in the following order:

139

MIL-PRF-87929B(USAF)
APPENDIX I

    a.   Internal component preparation (see I.3.6.2.1.1)

    b.   External component preparation (see I.3.6.2.1.2)

    c.   CMBR agent and residue removal (see I.3.6.2.1.3)

    d.   Seam and area taping (see I.3.6.2.1.4)

I.3.6.2.1.1   <u>Internal component preparation</u>.   Instructions shall cover the removal and replacement of any internal components that are to be accomplished prior to storage.

I.3.6.2.1.2   <u>External component preparation</u>.   Instructions shall be included for removal and replacement of any external components that are to be accomplished prior to storage.

I.3.6.2.1.3   <u>CMBR agent and residue removal</u>.   Instructions shall be included for the removal of a CMBR agent or the agent residue from the item.

I.3.6.2.1.4   <u>Seam and area taping</u>.   The seams and areas to be taped prior to storage shall be described. The tape shall be properly identified by part or military specification number. The CAGE Code shall be included if part number is given. An illustration shall be provided to facilitate location of the taping areas.

I.3.6.3   <u>Maintenance WP (WP 070 00)</u>.   In addition to the requirements of I.3.5.7, this WP shall contain the following.

I.3.6.3.1   <u>Preparation for use</u>.   These instructions shall include step-by-step procedures for unpacking the munition (if applicable) and preparation of the munition for use. Special safety precautions to be observed shall be described.

I.3.6.3.2   <u>Filling</u>.   These instructions shall include step-by-step procedures for filling, component selection and installation, preoperational check of filling equipment, and filling method, if applicable.

I.3.6.3.3   <u>Maintenance</u>.   These instructions shall include step-by-step procedures for all maintenance authorized for accomplishment within the scope of the manual.

I.4.   DOCUMENT TYPE DEFINITION.

I.4.1   <u>SGML document type definition</u>.   Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

I.4.2   <u>Template document type for work package type manuals</u>.   The DTD for Special Requirements for Storage and Maintenance Procedures; AUR Munitions/Launchers and Associated Support Equipment, Conventional Components and CMBR Agents Manuals, Technical, is as follows:

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!--*****************************START OF FILE****************************** -->

<!-- The following set of declarations may be referred to by using a public
entity as follows:

<!ENTITY % m87929biPRF PUBLIC "-//USA-DOD//DTD MIL-PRF-87929B.SSMP PRF//EN" >
%m87929biPRF; -->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:

     <!DOCTYPE docssmp [

 and the associated "]>" to the end of the file. -->

<!-- ENTITY DECLARATIONS -->

<!ENTITY % m87929wpPRF PUBLIC "-//USA-DOD//DTD MIL-M-87929A PRF//EN" >

<!-- Marked section to determine whether manual deals with CMBR agents. If the
value is set to IGNORE then the manual does not. -->

<!ENTITY % cmbr "IGNORE" >

<![ %cmbr; [
<!ENTITY % cstore "incomprep, excomprep, cmbrrem, taping," >
<!ENTITY % cmaint ", prepuse, filling" >
<!ENTITY % cmbrd ", cmbrdecon" >
]]>

<!ENTITY % cmbrd " " >

<!ENTITY % cstore " " >

<!ENTITY % cmaint " " >

<!-- Marked section to determine if the Illlustrated Parts Breakdown appears
as a separate WP.  If the value is set to INCLUDE the Illustrated Parts
Breakdown will appear as a separate WP in this manual. -->
<!ENTITY % ipbsep "IGNORE" >
<![ %ipbsep; [
<!ENTITY % ipbw ", ipbwp" >
]]>

<!ENTITY % ipbw " " >

<!ENTITY % frnt "(idinfo, lep, verstat?, niewp, lrpentry+, wptcto)" >

<!ENTITY % list "seqlist | randlist | deflist" >

<!ENTITY % fpi "(para0, (para0 | %list; | symsect | abbrsect |
warning | caution | note)*, internatlstd?, wptctolist?)" >
```

141

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!ENTITY % ssmpwps "(wp*, forewordwp, wp*, safesumwp, wp*, sttecwp, wp*,
storagewp, wp*, inspreqwp, wp*, unpackwp, wp*, maintwp, wp*, (testreprogwp,
wp*)?, (contprowp, wp*)?, (depspinstwp, wp*)? %ipbw;, ddwp?)" >

<!ENTITY % wp "((wpno | awpno), (swpno | aswpno), title, effect, contents)" >

<!ENTITY % forwp "(%wp;, (%fpi;)?, purpose, scope, para0*, manstru, coverage,
indexscheme?, locinfo, para0*, leadpartic, para0*, maintcon, (para0 | envcont
| warrprov)*, tmimprep, para0*, descitem, (%fpi;)?, swp*)" >

<!ENTITY % safesum "(%wp;, purpose?, para0+, hazardmat, para0*, accinc, dmcp,
dropcrit?, fire, danger? %cmbrd;, swp*)" >

<!ENTITY % sttec "(%wp;, para0+, (electpwrreq, para0*)?, spectoollist, para0?,
(eqplisttbl, para0*)?, supeqplist, para0?, safelist, para0?, consumtbl, (para0
| contlisttbl)*, swp*)" >

<!ENTITY % maintwp  "(%wp;, wpforewd?, seqops?, torqureq? %cmaint;, mainten?,
prepuse?, assembly?, checkout?, servicing?, disass?, comprep?, painmar?,
para0*, maintswp*)" >

<!ENTITY % maintswp "(%wp;, wpforewd?, seqops?, torqureq? %cmaint;, mainten?,
prepuse?, assembly?, checkout?, servicing?, disass?, comprep?, painmar?,
para0*)" >

<!ENTITY % storewp "(%wp;, wpforewd?, (handling, para0*)?, stordata, storreq,
%cstore; para0*, swp*)" >

<!ENTITY % ipbforwd "(para0*, modelcover, serialization?, finding?, simassem?,
quickchgexpl?, shtnoexpl?, useonexpl, smrexpl, ipbhci?, ipbesds?, partstd,
mfrlist?, internatlstd?, lrp?, tctolist, para0*)" >

<!ENTITY % icon "graphic+, hazmat?, seqno?" >

<!ENTITY % titles "title" >

<!ENTITY % parazero "%titles;, warning*, caution?, note?, (para,note?)?,
(step1, step1+)?" >

<!ENTITY % leadpartic "(%parazero;, subpara1*)?, leadtbl" >

<!ENTITY % niewp "((wpno | awpno), (swpno | aswpno), title, effect)+" >

<!ENTITY % sub2att
"%para0att;
tocentry ( 0 | 1 )  '0' " >

%m87929wpPRF;

<!ENTITY abnorcon "When an abnormal condition is noted and procedures are not
available in this manual, work shall be stopped and qualified guidance
obtained. Personnel shall be evacuated to a safe site. Explosive Ordinancs
Disposal (EOD) or other authorized personnel shall be called for help in
eliminating the hazard.  Operations shall not be resumed until the hazard has
been eliminated. " >
```

142

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!ENTITY accsincs "Accidents/incidents involving collision or inadvertent
release of the &applitem; can cause the &applitem; to misfire, malfunction, or
explode. If any doubt exists as to the acceptability of the &applitem;, reject
it. Report accident/incident and notify Explosive Ordinance Disposal (EOD) if
explosive components are involved." >

<!ENTITY applitem "insert applicabe item " >

<!ENTITY appralc "insert appropriate ALC " >

<!ENTITY comtool "A substitute item may be used in place of any common tool if
the use does not degrade the condition and reliability of the material or the
safety of operation." >

<!ENTITY dropmuncp "Dropped munitions/component processing criteria are
contained in applicable table in each WP/SWP. If any doubt exists as to
acceptability of dropped component/AUR, reject it. Report dropping incidents
in accordance with AFOSH and AFR series, and notify EOD if explosive
components are involved. Request disposition of dropped components from
&appralc;." >

<!ENTITY hanteseqp "Verify that all required handling and test equipment is
available and serviceable. " >

<!ENTITY imprtool "Improper use of tools and equipment can cause injury to
personnel and damage to equipment. " >

<!ENTITY paintto "Apply protective paints in accordance with TO 1-1-8." >

<!ENTITY tesdoc "Record and report data in accordance with existing directives
when required. " >

<!ENTITY unpacking "The safety requirements of AFI91-201 shall be followed
when unpacking. Before opening a container, ensure that all markings are
legible. Record markings that may be destroyed by opening the container.
Retain serviceable packing for possible reuse. " >

<!ENTITY spechand "The use of standard nomenclature and lot number/serial
number is mandatory for all storage records, reports and communications
concerning munitions.  Legible identification markings shall be maintained on
munitions in storage." >

<!ENTITY handling "Damaged containers shall be repaired as soon as possible
and markings restored to the repaired area.  Chemical protection equipment
required when handling items covered by the manual shall be in accordance with
AFMAN 91-201.">

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT accinc            - o  (%parazero;, subpara1*) >
<!ATTLIST accinc            %para0att; >

<!ELEMENT alternate         - o  (%text;) >
<!ATTLIST alternate         %secur; >
```

143

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!ELEMENT assembly        - o  (%parazero;, subpara1*) >
<!ATTLIST assembly        %para0att; >

<!ELEMENT breakprep       - o  (%parazero;, subpara1*) >
<!ATTLIST breakprep       %para0att; >

<!ELEMENT checkout        - o  (%parazero;, subpara1*) >
<!ATTLIST checkout        %para0att; >

<!ELEMENT classdef        - o  (%parazero;, subpara1*, visdeftbl) >
<!ATTLIST classdef        %para0att; >

<!ELEMENT clean           - o  (%nparcon;, subpara2*, cleantbl) >
<!ATTLIST clean           %sub1att; >

<!ELEMENT cleantbl        - -  (discrep, material, (spec | partno),
                          toolproc)+  -(%exclus;)  +(tfnid | tfnref |
                          tfndisplay | warning | caution | note) >
<!ATTLIST cleantbl        %wptabatts; >

<!ELEMENT cmbrdecon       - o (%parazero;, descrip, symptons, firstaid,
                          dpersonnel, dclothing, deqp, testprep, minleaks,
                          majleaks, dagents, cmbrspills, subpara1*) >
<!ATTLIST cmbrdecon       %para0att; >

<!ELEMENT cmbrrem         - o  (%parazero;, subpara1*) >
<!ATTLIST cmbrrem         %para0att; >

<!ELEMENT cmbrspills      - o  (%nparcon;, subpara2*) >
<!ATTLIST cmbrspills      %sub1att; >

<!ELEMENT cog             - o (%text;) >
<!ATTLIST cog             %secur; >

<!ELEMENT colornumber     - o  (#PCDATA) >
<!ATTLIST colornumber     %secur; >

<!ELEMENT comprep         - o  (%parazero;, subpara1*, remove, subpara1*,
                          repaired, subpara1*) >
<!ATTLIST comprep         %para0att; >

<!ELEMENT conops          - o  (%parazero;, subpara1*) >
<!ATTLIST conops          %para0att; >

<!ELEMENT contprowp       - -  (%wp;, wpforewd?, conops, breakprep,
                          unpinspass, para0*, swp*)  +(figure | table) >
<!ATTLIST contprowp       %wpatt; >

<!ELEMENT cooktime        - o  (#PCDATA) >
<!ATTLIST cooktime        %secur; >

<!ELEMENT coract          - o  (%text;) >
<!ATTLIST coract          %secur; >

<!ELEMENT dagents         - o  (%nparcon;, subpara2*) >
```

144

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!ATTLIST dagents            %sub1att; >

<!ELEMENT danger             - o  (%parazero;, subpara1*, dangerill*) >
<!ATTLIST danger             %para0att; >

<!ELEMENT dangerill          - o   EMPTY >
<!ATTLIST dangerill          %graphatt;
                             %secur; >

<!ELEMENT dclothing          - o  (%nparcon;, subpara2*) >
<!ATTLIST dclothing          %sub1att; >

<!ELEMENT defclass           - o  (#PCDATA) >
<!ATTLIST defclass           %secur; >

<!ELEMENT depspinstwp        - -  (%wp;, wpforewd?, techinfo, swp*)
                             +(figure | table | foldout) >
<!ATTLIST depspinstwp        %wpatt; >

<!ELEMENT deqp               - o  (%nparcon;, subpara2*) >
<!ATTLIST deqp               %sub1att; >

<!ELEMENT descitem           - o  (%parazero;, subpara1*) >
<!ATTLIST descitem           %para0att; >

<!ELEMENT descrip            - o  (%nparcon;, subpara2*) >
<!ATTLIST descrip            %sub1att; >

<!ELEMENT diam               - o  (%text;) >
<!ATTLIST diam               %secur; >

<!ELEMENT diamout            - o  (%text;) >
<!ATTLIST diamout            %secur; >

<!ELEMENT disass             - o  (%parazero;, subpara1*) >
<!ATTLIST disass             %para0att; >

<!ELEMENT discrep            - o  (%text;) >
<!ATTLIST discrep            %secur; >

<!ELEMENT dmcp               - o  (%parazero;, subpara1*) >
<!ATTLIST dmcp               %para0att; >

<!ELEMENT docssmp            - - (front, %ssmpwps;) +(pgbrk | brk | line |
                             modreq | location | subjinfo) >
<!ATTLIST docssmp            service %service; 'AF'
                             %docatt; >

<!ELEMENT dodic              - o  (%text;) >
<!ATTLIST dodic              %secur; >

<!ELEMENT dpersonnel         - o  (%nparcon;, subpara2*) >
<!ATTLIST dpersonnel         %sub1att; >

<!ELEMENT dropcrit           - o  (%parazero;, subpara1*, dropcrittbl) >
```

145

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!ATTLIST dropcrit            %para0att; >

<!ELEMENT dropcrittbl         - o  (item, packunpack, distance, action)+
                              -(%exclus;) +(tfnid | tfnref | tfndisplay |
                              warning | caution | note) >
<!ATTLIST dropcrittbl         %wptabatts; >

<!ELEMENT electpwrreq         - o  (%parazero;, subpara1*) >
<!ATTLIST electpwrreq         %para0att; >

<!ELEMENT excomprep           - o  (%parazero;, subpara1*) >
<!ATTLIST excomprep           %para0att; >

<!ELEMENT filling             - o  (%parazero;, subpara1*) >
<!ATTLIST filling             %para0att; >

<!ELEMENT fire                - o  (%parazero;, subpara1*, firetbl) >
<!ATTLIST fire                %para0att; >

<!ELEMENT firetbl             - o  (nomen, cooktime, withdist)+   -(%exclus;)
                              +(tfnid | tfnref | tfndisplay | warning |
                              caution | note) >
<!ATTLIST firetbl             %wptabatts; >

<!ELEMENT firstaid            - o  (%nparcon;, subpara2*) >
<!ATTLIST firstaid            %sub1att; >

<!ELEMENT fsc                 - o  (%text;) >
<!ATTLIST fsc                 %secur; >

<!ELEMENT grosswt             - o  (%text;) >
<!ATTLIST grosswt             %secur; >

<!ELEMENT handling            - o  (%parazero;, subpara1*) >
<!ATTLIST handling            %para0att; >

<!ELEMENT hazardmat           - o  (%parazero;, subpara1*, hazardmattbl) >
<!ATTLIST hazardmat           %para0att; >

<!ELEMENT hazardmattbl        - -  (hazicon, hazdep, hazapp, hazdisp)+
                              -(%exclus;)  +(tfnid | tfnref | tfndisplay |
                              warning | caution | note) >
<!ATTLIST hazardmattbl        %wptabatts; >

<!ELEMENT hazapp              - o  (para) >
<!ATTLIST hazapp              %secur; >

<!ELEMENT hazicon             - o  (graphic*, para+) >
<!ATTLIST hazicon             %secur; >

<!ELEMENT hazdep              - o  (para) >
<!ATTLIST hazdep              %secur; >

<!ELEMENT hazdisp             - o  (para) >
<!ATTLIST hazdisp             %secur; >
```

146

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!ELEMENT high              - o  (#PCDATA) >
<!ATTLIST high              %secur; >

<!ELEMENT height            - o (%text;) >
<!ATTLIST height            %secur; >

<!ELEMENT humtbl            - o  (inside, outside)  -(%exclus;)  +(tfnid |
                            tfnref | tfndisplay | warning | caution | note)
                            >
<!ATTLIST humtbl            %wptabatts; >

<!ELEMENT incomprep         - o  (%parazero;, subpara1*) >
<!ATTLIST incomprep         %para0att; >

<!ELEMENT inside            - o  (high, med, low) >
<!ATTLIST inside            %secur; >

<!ELEMENT inspdef           - o  (#PCDATA) >
<!ATTLIST inspdef           %secur; >

<!ELEMENT inspeval          - o  (%parazero;, subpara1*) >
<!ATTLIST inspeval          %para0att; >

<!ELEMENT inspreqwp         - o  (%wp;, wpforewd?, typinsp, inspeval,
                            instdisp, classdef, para0*, swp*) >
<!ATTLIST inspreqwp         %wpatt; >

<!ELEMENT instdisp          - o  (%parazero;, subpara1*) >
<!ATTLIST instdisp          %para0att; >

<!ELEMENT leadtbl           - (nomen, (fsc | dodic), (partno | modelno |
                            cage), length, width, height, diam, cog,
                            grosswt, newwt, diamout)+  -(%exclus;) +(tfnid |
                            tfnref | tfndisplay | warning | caution | note)
                            >
<!ATTLIST leadtbl           %wptabatts; >

<!ELEMENT length            - o (%text;) >
<!ATTLIST length            %secur; >

<!ELEMENT low               - o  (#PCDATA) >
<!ATTLIST low               %secur; >

<!ELEMENT mainten           - o  (%parazero;, subpara1*) >
<!ATTLIST mainten           %para0att; >

<!ELEMENT maintwp           - -  (%maintwp;)  +(figure | table | foldout) >
<!ATTLIST maintwp           %wpatt; >

<!ELEMENT maintswp          - -  (%maintswp;) >
<!ATTLIST maintswp          %swpatt; >

<!ELEMENT majleaks          - o  (%nparcon;, subpara2*) >
<!ATTLIST majleaks          %sub1att; >
```

147

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!ELEMENT malcode          - o  (#PCDATA) >
<!ATTLIST malcode          %secur; >

<!ELEMENT material         - o  (#PCDATA) >
<!ATTLIST material         %secur; >

<!ELEMENT med              - o  (#PCDATA) >
<!ATTLIST med              %secur; >

<!ELEMENT minleaks         - o  (%nparcon;, subpara2*) >
<!ATTLIST minleaks         %sub1att; >

<!ELEMENT newwt            - o  (%text;) >
<!ATTLIST newwt            %secur; >

<!ELEMENT notapplic        - o  EMPTY >

<!ELEMENT otherinsp        - o  (%nparcon;, subpara2*) >
<!ATTLIST otherinsp        %sub2att; >

<!ELEMENT outside          - o  (high, med, low) >
<!ATTLIST outside          %secur; >

<!ELEMENT pack             - o  (%parazero;, subpara1*) >
<!ATTLIST pack             %para0att; >

<!ELEMENT paint            - o  (%nparcon;, subpara2*, painttbl, subpara2*)
                             >
<!ATTLIST paint            %sub1att; >

<!ELEMENT painttbl         - -  (item, (spec | colornumber), use)+
                             -(%exclus;) +(tfnid | tfnref | tfndisplay |
                             warning | caution | note) >
<!ATTLIST painttbl         %wptabatts; >

<!ELEMENT painmar          - o  (%parazero;, clean, paint, subpara1*) >
<!ATTLIST painmar          %para0att; >

<!ELEMENT perinsp          - o  (%nparcon;, subpara2*) >
<!ATTLIST perinsp          %sub1att; >

<!ELEMENT preissinsp       - o  (%nparcon;, priorityiss, subpara2*) >
<!ATTLIST preissinsp       %sub1att; >

<!ELEMENT prepuse          - o  (%parazero;, subpara1*) >
<!ATTLIST prepuse          %para0att; >

<!ELEMENT priorityiss      - o  (%nparcon1;, subpara3*) >
<!ATTLIST priorityiss      %sub2att; >

<!ELEMENT recisdate        - o  (#PCDATA) >
<!ATTLIST recisdate        %secur;
                           %chgatt; >

<!ELEMENT receivinsp       - o  (%nparcon;, subpara2*) >
```

148

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!ATTLIST receivinsp        %sub1att; >

<!ELEMENT records           - o  (%parazero;, subpara1*) >
<!ATTLIST records           %para0att; >

<!ELEMENT remove            - o  (%nparcon;, subpara2*) >
<!ATTLIST remove            %sub1att; >

<!ELEMENT repaired          - o  (%nparcon;, subpara2*) >
<!ATTLIST repaired          %sub1att; >

<!ELEMENT retmuninsp        - o  (%nparcon;, subpara2*) >
<!ATTLIST retmuninsp        %sub1att; >

<!ELEMENT safelist          - o  ((partno, (cage | (name, address)), figno,
                            nomen, use)+)  +(ftnote | warning | caution |
                            note) >
<!ATTLIST safelist          %wptabatts; >

<!ELEMENT safesumwp         - o  (%safesum;) +(warning | caution | note |
                            precaut) >
<!ATTLIST safesumwp         %wpatt; >

<!ELEMENT seqops            - o  (%parazero;, subpara1*) >
<!ATTLIST seqops            %para0att; >

<!ELEMENT servicing         - o  (%parazero;, subpara1*) >
<!ATTLIST servicing         %para0att; >

<!ELEMENT servlife          - o  (#PCDATA) >
<!ATTLIST servlife          %secur; >

<!ELEMENT shellife          - o  (#PCDATA) >
<!ATTLIST shellife          %secur; >

<!ELEMENT shipinsp          - o  (%nparcon;, subpara2*) >
<!ATTLIST shipinsp          %sub1att; >

<!ELEMENT specinsp          - o  (%nparcon;, subpara2*) >
<!ATTLIST specinsp          %sub1att; >

<!ELEMENT specno            - o  (#PCDATA) >
<!ATTLIST specno            %secur; >

<!ELEMENT spectoollist      - o  (((partno|specno), (cage | (name,
                            address)), figno, nomen, (use | alternate))+) >
<!ATTLIST spectoollist      %wptabatts; >

<!ELEMENT storagewp         - -  (%storewp;)  +(table | figure | foldout) >
<!ATTLIST storagewp         %wpatt; >

<!ELEMENT stordata          - o  (%parazero;, subpara1*, stordatatbl) >
<!ATTLIST stordata          %para0att; >
```

149

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!ELEMENT stordatatbl        - - (item, tempmin, tempmax, shellife,
                             servlife)+  -(%exclus;) +(tfnid | tfnref |
                             tfndisplay | warning | caution | note) >
<!ATTLIST stordatatbl        %wptabatts; >

<!ELEMENT stormoninsp        - o  (%nparcon;, subpara2*, humtbl?) >
<!ATTLIST stormoninsp        %sub1att; >

<!ELEMENT storreq            - o  (%parazero;, subpara1*) >
<!ATTLIST storreq            %para0att;  >

<!ELEMENT supeqplist         - o  ((partno, (cage | (name, address)), figno,
                             nomen, use)+)  +(ftnote | warning | caution |
                             note) >
<!ATTLIST supeqplist         %wptabatts; >

<!ELEMENT symptons           - o  (%nparcon;, subpara2*) >
<!ATTLIST symptons           %sub1att; >

<!ELEMENT taping             - o  (%parazero;, subpara1*) >
<!ATTLIST taping             %para0att; >

<!ELEMENT tempmax            - o  (#PCDATA) >
<!ATTLIST tempmax            %secur; >

<!ELEMENT tempmin            - o  (#PCDATA) >
<!ATTLIST tempmin            %secur; >

<!ELEMENT testeval           - o  (%parazero;, subpara1*) >
<!ATTLIST testeval           %para0att; >

<!ELEMENT testprep           - o  (%nparcon;, subpara2*) >
<!ATTLIST testprep           %sub1att; >

<!ELEMENT testproc           - o  (%parazero;, subpara1*) >
<!ATTLIST testproc           %para0att; >

<!ELEMENT testreprogwp       - - (%wp;, wpforewd?, testproc, records,
                             testeval?, para0*, swp*) +(figure | table) >
<!ATTLIST testreprogwp       %wpatt; >

<!ELEMENT toolproc           - o  (#PCDATA) >
<!ATTLIST toolproc           %secur; >

<!ELEMENT torqureq           - o  (%parazero;, subpara1*, torqureqtbl?) >
<!ATTLIST torqureq           %para0att; >

<!ELEMENT torqureqtbl        - o  (partno, nomen, torque)+  -(%exclus;)
                             +(tfnid | tfnref | tfndisplay | warning |
                             caution | note) >
<!ATTLIST torqureqtbl        %wptabatts; >

<!ELEMENT torque             - o  (#PCDATA) >
<!ATTLIST torque             %secur; >
```

150

MIL-PRF-87929B(USAF)
APPENDIX I

```
<!ELEMENT typinsp            - o  (%parazero;, receivinsp, shipinsp, perinsp,
                                  specinsp, preissinsp, retmuninsp, stormoninsp,
                                  otherinsp*) >
<!ATTLIST typinsp            %para0att; >

<!ELEMENT unpack             - o  (%parazero;, subpara1*) >
<!ATTLIST unpack             %para0att; >

<!ELEMENT unpackswp          - -  (%wp;, wpforewd?, unpack, pack, para0*)
                                  +(figure | table | foldout) >
<!ATTLIST unpackswp          %swpatt; >

<!ELEMENT unpackwp           - -  (%wp;, wpforewd?, unpack, para0*, pack,
                                  para0*, unpackswp*)  +(figure | table | foldout)
                                  >
<!ATTLIST unpackwp           %wpatt; >

<!ELEMENT unpinspass         - o  (%parazero;, subpara1*) >
<!ATTLIST unpinspass         %para0att; >

<!ELEMENT visdeftbl          - -  (title, ((wuc | nomen), ((inspdef, (defclass
                                  | malcode), coract) | note)+)+)   -(%exclus;)
                                  +(tfnid | tfnref | tfndisplay | warning |
                                  caution | note) >
<!ATTLIST visdeftbl          %wptabatts; >

<!ELEMENT width              - o  (%text;) >
<!ATTLIST width              %secur; >

<!ELEMENT withdist           - o  (#PCDATA) >
<!ATTLIST withdist           %secur; >

<!ELEMENT wptctolist         - -  ((%parazero;, subpara1*), tctono, title,
                                  date, recisdate)+ >
<!ATTLIST wptctolist         %para0att; >

<!ELEMENT wptcto             - -  ((tctono, title, date, recisdate)+ |
                                  notapplic) >

<!ELEMENT wuc                - o  (#PCDATA) >
<!ATTLIST wuc                %secur; >

<!-- *************************** END OF FILE *************************** -->
```

I.5. DETAILED DESCRIPTION.

I.5.1 Document type definition.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

I.5.2 Tag description table.   The Tag Description Table provides detailed descriptions of the tags above. It provides the element tagging structure, full element name, tag minimization requirements, element structure, referencing elements, source paragraph, and attribute descriptions unique to the element. See A.5., for information on obtaining this table.

I.5.3   Attribute description table.   The Attribute Description Table provides detailed descriptions of the attributes above. See A.5., for information on obtaining this table.

I.6.   NOTES.

I.6.1   Acquisition requirements.   Acquisition documents must specify:

a.   If procedures for containers shall not be included (see I.3.3).

b.   If WPs 110 00 through 997 00 or SWPs shall be used and if so, the arrangement and breakout to be used (see I.3.5).

c.   If other WP/SWPs shall be included and the type of information required (see I.3.5 b (4), I.3.5.12).

d.   If a configuration table shall be included and if so, the required column headings (see I.3.5.1.4).

e.   If special tools shall be illustrated elsewhere in the manual or not illustrated (see I.3.5.3.4).

f.   If test equipment shall be illustrated elsewhere in the manual or not illustrated (see I.3.5.3.5).

g.   If sample size for periodic inspections (PI) shall be other than specified (see I.3.5.1.3).

h.   If a humidity indicator inspection cycle table shall be provided (see I.3.5.5.1.7).

i.   If other inspections shall be included and, if so, the categories and types of inspections required (see I.3.5.5.1.8).

j.   Whether the IPB shall be prepared as a separate WP or as a separate manual (see I.3.5.8.2).

k.   If a Testing/Reprogramming WP shall be included (see I.3.5.9).

l.   If a Contingency Procedures WP shall be included (see I.3.5.10).

m.   If a Depot Related Data and Special Instructions WP shall be included (see I.3.5.11).

n.   If a chemical munitions/biological research agents manual shall be prepared (see I.3.6).

I.6.2   Definitions.

I.6.2.1   Conventional components/munitions.   Includes all ammunition, munition fillers, demolition material, solid rocket motors, liquid propellants, cartridges, pyrotechnics, mines, bombs, grenades, warheads of all types, explosive elements of ejection/egress and aircraft systems, explosive components of missile systems and space systems, and assembled kits and devices containing explosive material.

I.6.2.2   Chemical munitions.   For the purposes of this appendix, a chemical munition is a nonnuclear munition in which the filler is primarily a chemical agent. Chemical agents do not include riot control agents, chemical herbicides, or smoke and flame

152

MIL-PRF-87929B(USAF)
APPENDIX I

I.6.2.3   Biological research agents.   For the purposes of this appendix, biological research agents are those small quantities of biological agents (including toxins) necessary for research and development of defense measures and material, such as immunizations, detection and warning devices, and other safety measures.

MIL-PRF-87929B(USAF)
APPENDIX J

SPECIAL REQUIREMENTS FOR
PARACHUTE PACKING PROCEDURES
TECHNICAL MANUAL

J.1.   SCOPE.

J.1.1   Scope.   This appendix provides the special or unique criteria, in addition to the provisions of this specification, required for development of a Parachute Packing Procedures Technical Manual (TM). The Document Type Definition (DTD) subset within this appendix provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see C.5.1) are available (see A.5.). This appendix is a mandatory part of this specification. The information contained herein is intended for compliance.

J.2.   APPLICABLE DOCUMENTS.

J.2.1   Government documents.

J.2.1.1   Specifications, standards, and handbooks.   The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

    Military

        MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text

STANDARDS

    Federal Information Processing Standards

        FIPS 152   Standard Generalized Markup Language (SGML)

J.2.1.2   Other Government documents, drawings, and publications.   The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

PUBLICATIONS

    Air Force Technical Manuals

        00-25-241   Parachute Logs and Records

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

MIL-PRF-87929B(USAF)
APPENDIX J

J.3.   SPECIAL REQUIREMENTS.

J.3.1   Parachute packing procedures manual.   The technical manual shall include detailed procedures for inspection, repair, assembly, and packing of personnel, cargo, aerial delivery, and aircraft deceleration parachutes.

J.3.2   Inspection WP.   The inspections shall be presented under the following headings. When the parachute consists of a number of major components, each component shall be treated individually.

J.3.2.1   General.   Information under the "General" heading shall emphasize the importance of properly maintaining the parachute. When the parachute incorporates, or is designed to incorporate, explosive munition devices, the following warning shall be added:

"

```
╔══════════════╗
║   WARNING    ║
╚══════════════╝
```

When an abnormal condition is noted and pertinent procedures contained herein
do not specifically relate to the noted irregularity, work shall be stopped and
technically qualified guidance shall be obtained before continuing the operation."

J.3.2.2   Inspection periods.   Inspection intervals will be provided by the acquiring activity. A table, specifying the intervals between inspections for each activity assigned to the care of the parachute, shall be furnished. The table shall specify complete inspection of the parachute prior to service packing for use, (interval) Day Periodic External Inspection, (interval) Day Periodic Complete Inspection.

J.3.2.2.1   Inspection prior to packing.   A statement shall be provided covering the extent of inspection required prior to packing of the parachute.

J.3.2.2.2   (interval) day periodic external inspection.   Detailed instructions shall be provided covering inspections of external parts of the packed parachutes in service, stored or installed in aircraft. Instructions shall specify requirements for processing a complete inspection if results of the external inspection indicates the need.

J.3.2.2.3   (interval) day periodic complete inspection.   It shall be stated that all packed parachutes shall be unpacked, completely inspected and repacked at least once every (interval) days, or more if conditions warrant.

J.3.2.3   Preflight inspection.   Instructions shall be provided covering preflight inspection of the parachute, including necessary data for adequate inspection of the automatic or mechanical devices if incorporated in the parachute design.

J.3.2.4   Complete inspection procedures.   A brief statement shall be provided covering the extent of inspection required at each echelon of maintenance. Subsequent paragraphs and illustrations shall provide detailed instructions for complete inspection of each major component, including operational inspection of applicable automatic or mechanical devices, and extent and types of damage, or extent of wear, that require repair or replacement. Damage not requiring repair shall not be illustrated.

156

MIL-PRF-87929B(USAF)
APPENDIX J

J.3.3   Repair procedures WP.   Instructions for repair of the major components of the parachute shall be provided.

J.3.3.1   Estimated cost of repair.   Instructions shall be furnished for determining economical repair costs for reconditioning the parachute. The text shall be supplemented with tables showing percentage of cost for new parts to be expected for repairs, and estimated costs for significant repairs, such as splicing, patching, etc.

J.3.3.2   Detailed repair procedures.   Instructions shall be provided for repair or replacement of worn or damaged components which comprise the parachute. A materials table shall cite applicable military specifications and shall be furnished in the following format:

Component	Item	Material	Specification

J.3.3.3   Cleaning.   Minimum instructions shall be provided for removal of loose foreign matter from the parachute. Reference shall be made to the manual that provides detailed cleaning.

J.3.3.4   Testing.   Instructions covering functional testing of the parachute shall be included. Remedial action shall be described for failures of the parachute to meet the tests.
J.3.4   Packing procedures WP.   Detailed instructions for assembling and packing the parachute shall be furnished. Information shall be presented under the following headings, and any additional headings deemed essential:

J.3.4.1   Facilities and equipment.   Data shall be provided regarding facilities, space, tables, and other major equipment, required to accomplish packing.

J.3.4.2   Packing.   Detailed procedures shall be provided covering the proper layout of the parachute, assembly of each component, folding, packing, and other procedures required for final preparation of the parachute. These instructions shall be provided in step-by-step sequence and supplemented with essential illustrations. Procedures shall specify required dimensional size of the parachute in packed configuration and other dimensions essential for proper installation or application for which the parachute is designed. Parachute logs and records shall be in accordance with TO 00-25-241.

J.4.   DOCUMENT TYPE DEFINITION.

J.4.1   SGML document type definition.   Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

J.4.2   Template document type for work package type manuals.   The DTD for Parachute Packing Procedures Technical Manual is as follows:

```
<!-- ************************** START OF FILE *************************** -->

<!-- SUPPLEMENT NOTICE:  This file is made available to provide the user with
a digital representation of the DTD found in Appendix J of MIL-M-87929A.  This
file is incomplete without MIL-M-87929A. -->
```

157

MIL-PRF-87929B(USAF)
APPENDIX J

```
<!-- NOTE: The start and end of this file are marked with a row of asterisks.
If these rows are not present the file may not be complete! -->

<!-- MIL-M-87929A Parachute Packing Procedures DTD -->

<!-- The following set of declarations may be referred to by using a public
entity as follows:

<!ENTITY % m87929pp PUBLIC "-//USA-DOD//DTD MIL-M-87929A PP AMEND1//EN" >
%m87929pp;
-->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:

     <!DOCTYPE docpp [

and the associated "]>" to the end of the file. -->

<!-- ENTITY DECLARATIONS -->

<!ENTITY % m87929wp PUBLIC "-//USA-DOD//DTD MIL-M-87929A AMEND1//EN" >

<!ENTITY genwarn "<warning><para> When an abnormal condition is noted and
pertinent procedures contained herein do not specifically relate to the noted
irregularity, work shall be stopped and technically qualified guidance shall
be obtained before continuing the operation. </warning>" >

%m87929wp;

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT cleaning        - o  (%parazero;) >
<!ATTLIST cleaning        tocentry %yesorno; "1"
                          shortentry %yesorno; "0"
                          verified %yesorno; "0"
                          %bodyatt;
                          %secur; >

<!ELEMENT compinsp        - o  (%parazero;) >
<!ATTLIST compinsp        tocentry %yesorno; "1"
                          shortentry %yesorno; "0"
                          verified %yesorno; "0"
                          %bodyatt;
                          %secur; >

<!ELEMENT corract         - o  (%nparcon;, subpara2*) >
<!ATTLIST corract         tocentry %yesorno; "1"
                          shortentry %yesorno; "0"
                          verified %yesorno; "0"
                          %bodyatt;
                          %secur; >

<!ELEMENT detrep          - o  (%parazero;)   +(mattable) >
<!ATTLIST detrep          tocentry %yesorno; "1"
```

158

```
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT docpp              - -  (front, aiwp, forewordwp, sttecwp, inspwp,
                              repwp, packwp, ipbwp?, ddwp?, foldsect?)
                              +(pgbrk | brk) >
<!ATTLIST docpp              service %service; 'AF'
                              %docatt;
                              %secur; >

<!ELEMENT estcost            - o  (%parazero;) >
<!ATTLIST estcost            tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT faceqp             - o  (%parazero;) >
<!ATTLIST faceqp             tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT functest           - o  (%nparcon;, subpara2*) >
<!ATTLIST functest           tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT general            - o  (%parazero;) >
<!ATTLIST general            tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT inspper            - o  (para0, table, inspprior, perextinsp,
                              percompinsp) >
<!ATTLIST inspper            %secur; >

<!ELEMENT inspprior          - o  (%nparcon;, subpara2*) >
<!ATTLIST inspprior          tocentry %yesorno; "1"
                              shortentry %yesorno; "0"
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT inspwp             - -  (%wp;, wpforewd, safesum?, ((general,
                              inspper, prefinsp, compinsp) | swp*))   +(figure
                              | table | foldout) >
```

159

MIL-PRF-87929B(USAF)
APPENDIX J

```
<!ATTLIST inspwp            chgno NUMBER "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT material          - o  (%text;) >
<!ATTLIST material          %secur; >

<!ELEMENT mattable          - -  ((nomen, item, material, spec)+) >
<!ATTLIST mattable          tocentry %yesorno; "1"
                            shortentry %yesorno; "0"
                            verified %yesorno; "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT packing           - o  (%parazero;) >
<!ATTLIST packing           tocentry %yesorno; "1"
                            shortentry %yesorno; "0"
                            verified %yesorno; "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT packwp            - -  (%wp;, wpforewd, safesum?, faceqp, packing,
                            para0*)  +(figure | table | foldout) >
<!ATTLIST packwp            chgno NUMBER "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT percompinsp       - o  (%nparcon;, subpara2*) >
<!ATTLIST percompinsp       tocentry %yesorno; "1"
                            shortentry %yesorno; "0"
                            verified %yesorno; "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT perextinsp        - o  (%nparcon;, subpara2*) >
<!ATTLIST perextinsp        tocentry %yesorno; "1"
                            shortentry %yesorno; "0"
                            verified %yesorno; "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT prefinsp          - o  (%parazero;) >
<!ATTLIST prefinsp          tocentry %yesorno; "1"
                            shortentry %yesorno; "0"
                            verified %yesorno; "0"
                            %bodyatt;
                            %secur; >

<!ELEMENT repwp             - -  (%wp;, wpforewd, safesum?, estcost, detrep,
                            cleaning, testing)  +(figure | table | foldout)
                            >
<!ATTLIST repwp             chgno NUMBER "0"
                            %bodyatt;
                            %secur; >
```

160

MIL-PRF-87929B(USAF)
APPENDIX J

```
<!ELEMENT testing              - o  (%parazero;, (functest, corract)+) >
<!ATTLIST testing              tocentry %yesorno; "1"
                               shortentry %yesorno; "0"
                               verified %yesorno; "0"
                               %bodyatt;
                               %secur; >

<!-- *************************** END OF FILE *************************** -->
```

J.5.   DETAILED DESCRIPTION.

J.5.1   Document type definition.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

161/162

MIL-PRF-87929B(USAF)
APPENDIX K

SPECIAL REQUIREMENTS FOR
OPERATOR INSTRUCTIONS (HAND-HELD FLIGHT COMPUTERS)
TECHNICAL MANUAL

K.1.   SCOPE.

K.1.1   Scope.   This appendix provides the special or unique criteria, in addition to the provisions of this specification, required for development of an Operator Instructions (Hand-Held Flight Computers) Technical Manual (TM). This appendix is a mandatory part of this specification. The information contained herein is intended for compliance.

K.2.   APPLICABLE DOCUMENTS.

K.2.1   Government documents.

K.2.1.1   Specifications, standards, and handbooks.   The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

    Military

        MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text

STANDARDS

    Federal Information Processing Standards

        FIPS 152   Standard Generalized Markup Language (SGML)

K.3.   SPECIAL REQUIREMENTS.

K.3.1   Hand-held flight computer operation instructions.   This manual covers operation of hand-held range, takeoff and landing, and air navigation computers. These computers may be disc or slide rule types constructed of heavy paper, metal, or plastic, and inscribed with the scales and calibrations needed by the aircrew for solving appropriate problems. Appendix K1 provides the Document Type Definition (DTD) for electronic delivery of this manual.

K.3.1.1   Preparation.   The general manner of preparation shall be in accordance with 3.4.1 and 3.4.1.1, except it shall not contain alphabetical or master list of special tools, test equipment and consumables WPs. Page size shall be determined by the size of the carrying case for the computer.

K.3.1.2   Text content.   The manual shall not deal with detailed theory of operation, but shall contain information necessary for the efficient operation of the computer by personnel having operating experience.

K.3.1.3   Abbreviations.   Abbreviations on the computer itself shall be abbreviated in the same manner when reference is made thereto.

MIL-M-87929B(USAF)
APPENDIX K

K.3.1.4 <u>Illustrations</u>. Illustrations and diagrams shall be used to clarify and supplement the related text.

K.3.1.5 <u>Operation WP</u>. This WP shall contain detailed practical operation instructions in proper sequence for a complete step-by- step, start-to-finish cycle. Such instructions shall be sufficient to satisfy the requirements of personnel responsible for operation of the computer. Preliminary adjustments and settings, explanation of each step and where to obtain readings shall be included. Representative examples shall be provided. When operation is relatively simple, the operation instructions may be included in the foreword WP.

K.4.   DOCUMENT TYPE DEFINITION.

K.4.1 <u>SGML document type definition</u>. Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

K.4.2 <u>Template document type for work package type manuals</u>. The DTD for Operator Instructions(Hand-Held Flight Computers) Technical Manual is as follows:

```
<!-- *************************** START OF FILE **************************** -->

<!-- SUPPLEMENT NOTICE:  This file is made available to provide the user with
a digital representation of the DTD found in Appendix K of MIL-M-87929A.  This
file is incomplete without MIL-M-87929A. -->

<!-- NOTE: The start and end of this file are marked with a row of asterisks.
If these rows are not present the file may not be complete! -->

<!-- MIL-M-87929A Operator Instructions DTD -->

<!-- The following set of declarations may be referred to by using a public
entity as follows:

<!ENTITY % m87929hhf PUBLIC "-//USA-DOD//DTD MIL-M-87929A HHFC AMEND1//EN" >
%m87929hhf;
-->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:

    <!DOCTYPE dochhfc [

and the associated "]>" to the end of the file. -->

<!ENTITY % m87929wp PUBLIC "-//USA-DOD//DTD MIL-M-87929A AMEND1//EN" >

%m87929wp;

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT dochhfc            - -  (front, forewordwp, opwp*, ddwp?,
                                  foldsect?)  +(pgbrk | brk) >
```

164

MIL-PRF-87929B(USAF)
APPENDIX K

```
<!ATTLIST dochhfc              service %service; 'AF'
                               %secur;
                               %docatt; >

<!ELEMENT opwp                 - -  (%wp;, wpforewd, safesum?, techinfo, swp*)
                               +(figure | table | foldout) >
<!ATTLIST opwp                 chgno NUMBER '0'
                               %bodyatt;
                               %secur; >

<!-- ************************** END OF FILE *************************** -->
```

K.5.   DETAILED DESCRIPTION.

K.5.1   <u>Document type definition</u>.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

165/166

MIL-PRF-87929B(USAF)
APPENDIX L

SPECIAL REQUIREMENTS FOR
INSTALLATION-ENGINEERING FACILITY (GROUND C-E EQUIPMENT)
TECHNICAL MANUAL

L.1. SCOPE.

L.1.1 Scope.   This appendix provides the special or unique criteria, in addition to the provisions of this specification, required for development of an Installation-Engineering Facility (for Ground Communication-Electronic [C-E] Equipment) Technical Manual (TM). The Document Type Definition (DTD) subset within this appendix provides the structure and content of documents prepared in accordance with this specification. Digital copies of the DTD (see L.5.1) are available (see A.5.). This appendix is a mandatory part of this specification. The information contained herein is intended for compliance.

L.2. APPLICABLE DOCUMENTS.

L.2.1 Government documents.

L.2.1.1 Specifications, standards, and handbooks.   The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

    Military

        MIL-PRF-28001   Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text

STANDARDS

    Federal Information Processing Standards

        FIPS 152   Standard Generalized Markup Language (SGML)

L.2.1.2 Other Government documents, drawings, and publications.   The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

PUBLICATIONS

    Air Force Manuals

        00-25-241   Parachute Logs and Records

        AFI 33-104   Base-Level Planning and Implementation

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

MIL-PRF-87929B(USAF)
APPENDIX L

L.3. SPECIAL REQUIREMENTS.

L.3.1   Installation-Engineering Facility (for Ground C-E Equipment) Manual.   This manual shall support pre-engineering, site adaptation, planning, installation and testing of a ground C-E equipment facility. The term "facility" used herein refers to a grouping or configuration of two or more ground C-E equipments, designed to satisfy a specific operational requirement. The manual shall contain information applicable to specific facilities. The manual will be used to engineer the installation of complex ground facilities and to test such facilities, after installation, for proper adjustment and operation.

L.3.1.1   Coverage.   The installation-engineering facility manual is concerned with equipment compatibility, equipment interface and cabling interconnections between equipment that allow the facility to function as an operational entity. Emphasis shall be placed on equipment configuration, unified installation, floor plans, engineering planning criteria, installation criteria, and facility tests.

L.3.1.1.1   Preparation.   The general requirements shall be in accordance with 3.4.1 and 3.4.1.1. Tabular material shall be used whenever possible to present adequate information coverage.

L.3.1.2   Identification.   The following identification shall appear on the title page, two lines below and in similar type as the term "Technical Manual":

<div align="center">

AIR FORCE COMMUNICATIONS SERVICE
(E-I STANDARD)

</div>

L.3.1.2.1   Facility title.   The title page shall identify the facility by means of the exact title and C-E facility code number as indicated in AFI 33-104. The specific configuration shall be indicated as a secondary title under the facility code and title.

L.3.1.3   Foreword WP.   In addition to the requirements of 3.4.3.2, this WP shall describe the facility and its purpose in terms of its function and shall, by means of functional descriptions of the facility and its components, describe how the function is accomplished. This WP shall also identify the interfaces of the facility with other portions of a system, subsystem, or facilities with reference to the illustrations specified in L.3.1.3.2.

L.3.1.3.1   Facility description and purpose.   A brief but thorough summary of the facility shall be given in terms of its physical description. The facility's purpose shall be described in terms of its function and operational use. The relationship of the facility to interconnecting facilities shall be explained in terms of its major equipment function. A short summary of how the function of the facility is accomplished shall be included as a briefing orientation to engineering and installation personnel.

L.3.1.3.2   Illustrations.   Block and other type diagrams shall be presented to show functional relationships between equipment, direction of signal flow, and interconnections with other facilities, remote control, or monitoring devices.

L.3.1.3.3   Tables.   Tables are required to provide field engineers with adequate data for preplanning purposes. These tables consist of:

    a.   Leading Particulars.

b.   Capabilities and Limitations.

L.3.1.3.3.1   <u>Leading particulars</u>.   Tables shall list the logistic characteristics of the facility and the maximum-minimum variations from a standard equipment configuration. Tables shall present required facility floor space; dimensions and weight of individual equipment plus floor and wall projections required for inside plant installations; electromagnetic compatibility aspects; such as, transmitter power, receiver sensitivity and bandwidth of equipment within the facility configuration. Tables shall include input power requirements, both ac and dc, including KVa loading (connected and demand); frequency , power factor, and number of phases for ac requirements; allowable frequency variation and voltage levels with allowable variations, plus other electrical data that will enable an engineer to plan an installation. Identification of all cables used in the facility shall be presented. Absolute identification shall be made by nomenclature, symbol, number, function, cable type, number and size of conductors, length, and terminal connectors. This presentation is required for all interequipment cabling and, when applicable, for input and output cables that link the facility to another or to auxiliary equipment. Special logistic techniques and procedures for transportation and storage shall also be listed in the tables.

L.3.1.3.3.2   <u>Capabilities and limitations</u>.   The functional characteristics of the facility shall be identified in terms of types of operation, power output, frequency, pulse characteristics, antenna characteristics, RFI malfunctioning levels, sensitivity, selectivity, storage capacity, and memory type viewing parameters. The capabilities of the facility shall be further identified in terms of maximum range, coverage resolution and accuracy. In addition, limiting factors of the facility shall be listed in terms of climatic effects; such as, ambient and operating temperatures, pressure, humidity, wind and ice loading; abnormal power stability requirements, maximum tolerances in frequency and voltage deviations; excessive floor or tower loading; and abnormal clearance requirements for installation, operation, and maintenance.

L.3.1.4   <u>Master list of special tools, test equipment, and consumables WP</u>.   In addition to the requirements of 3.4.3.3, this WP shall also contain the following information:

L.3.1.4.1   <u>Equipment supplied</u>.   This table shall contain an itemized list of all equipment and major components that are part of the facility. When engineered Standard Facility Equipment Lists (SFEL) exist, the equipment shall be listed under the specific SFEL package. Identification shall be made by military nomenclature when it exists, or by commercial nomenclature, by common name, and by manufacturer's part number. A very brief descriptive statement covering the purpose of each identified item shall also be presented.

L.3.1.4.2   <u>Equipment required but not supplied</u>.   This table shall list all equipment required to complete the facility configuration and SE (Support Equipment) required for installation and test that are not supplied through facility procurement. The listed equipment shall be adequately identified.

L.3.1.5   <u>Engineering WP</u>.   This WP shall provide data to enable a field engineer to pre-engineer, site adapt and accomplish engineering planning for installation of a facility to meet a functional requirement in any specific geographical area. Data shall be presented in the following order:

a.   Siting Considerations.

b.   Supporting Structures.

MIL-PRF-87929B(USAF)
APPENDIX L

 c. Power Requirements.

 d. Layout Planning.

L.3.1.5.1 <u>Siting considerations</u>. Basic information required to site adapt a standard facility configuration shall be presented. It shall consist of three primary areas of consideration: electronic, logistic, and geographical.

L.3.1.5.1.1 <u>Electronic</u>. Criteria shall be given for clear area requirements for Radio Frequency (RF) propagation, RF interference shielding and filtering, reflections, random noise sources, need for siting away from shock sources such as; blasting, heavy air or ground traffic, nuclear explosion. In addition, the electronic criteria shall take into account the possibility that a standard configuration may be augmented, or that specific equipment may be deleted under certain operating conditions.

L.3.1.5.1.2 <u>Logistic</u>. The siting criteria for logistic support shall contain information that will identify type and quantity of support required from electrical power sources, commercial communications facilities, fuel sources, water supply sources, drainage/sanitary waste systems, access roads and transportation services for physical installation, maintenance and operation of the facility. The area required for storage and assembly of facility components during site preparation, installation and follow-on operation and maintenance shall also be described and diagrammed.

L.3.1.5.1.3 <u>Geographical</u>. The geographical siting criteria shall contain a description and diagram for a normal or average site. The description shall include: dimensions and area of total site, including clear zones (areas); soil bearing characteristics required for installation and subsequent operation; grading and drainage limits; building and equipment electrical grounding. Limiting climatic and natural conditions that affect site construction, installation, and operation shall be listed and described.

L.3.1.5.2 <u>Supporting structures</u>. Complete structure data is required for any structure or portion thereof. The information shall include novel supporting structures or the criteria necessary to select or redesign interiors of existing structures to house facility elements. When new buildings are required, they shall be designated as permanent or semipermanent. Type of building should be classified as fireproof, semifireproof or ordinary. These requirements shall be indicated for both inside and outside plant.

L.3.1.5.2.1 <u>Inside plant</u>. The description of inside plant shall include, but not be limited to, the following criteria:

 a. A layout plan showing and describing gross floor space requirements for the facility, including access, maintenance, storage, operating and special use areas, minimum access door clearance (height and width required for access and egress of largest nonreducible facility component).

 b. Required clearance around equipment in operating area and other facility related spaces.

 c. Required floor to clear ceiling heights.

 d. Design live and wind loads with particular emphasis to unusual live load requirements.

 e. Special architectural features such as; cable openings, cable trenches, raised floor, acoustic treatment, outsized doors, removable wall panels.

170

f. Special structural features such as; elevators, cranes, hoists, concentrated floor loads, cable anchors, structural ferrous bonding.

g. Equipment heat gain per facility element.

h. Inside summer and winter design dry bulb temperature, relative humidity.

i. Requirement for heating, air conditioning and mechanical ventilation, humidity control, plumbing and special mechanical features, including water intrusion prevention.

j. A statement of lighting requirements,including general and special lighting techniques and intensities, and hazard lighting.

k. A qualitative and quantitative description of the electrical power required for operation and maintenance of the facility equipment, including identification and number of circuits, plus a riser diagram. Where the facility demands uninterrupted power, as a condition of specified operation, the elements so affected shall be identified in the break-out of power consumption. Facility KVa power consumption shall be given in both demand and connected load.

l. Facility equipment, structures grounding, and lightning protection plan for both inside and outside plant equipment.

m. Specific requirements for facility related intercom, telephone and timing systems.

n. Location and dimension of RF shielded and classified communications equipment areas.

o. Orientation of inside plant to outside plant.

p. Any novel feature peculiar to the facility.

L.3.1.5.2.2   Outside plant.   The following points shall be explained and shown in the construction design criteria:

a. Antenna site plot plan, including radomes, antenna warning lights, shelters, waveguide and transmission line routes, guys and guy anchors, grounding, fencing, etc. Controlling dimensions of equipment and structure spaces and clearance areas shall be given.

b. Antenna/antenna component mounting plate(s) dimensional details.

c. Antenna support foundation(s) and guy anchor reaction data.

d. Description and physical data relating to transmission lines and cables and their suspension structures.

e. Description and location for underground or buried cable, trenching, ducting, direct-burial cable, manholes, hand holes or pull boxes for signal or control cables.

f. Location and description of access roads, parking areas, equipment pads, and similar features required for installation, operation and maintenance of the facility.

g. Description of corrosion prevention and coating touch-up procedures after installation.

L.3.1.5.3   Power requirements.   Power requirements shall be described which will indicate, in addition to that previously listed, interface between electrical construction effort and facility installation responsibilities.

171

L.3.1.5.3.1   Electrical system data.   The number, electrical rating and location of switching and distribution panels shall be given. As a part of this data, a listing of circuit breaker assignments for the equipment installation/operation/maintenance shall be included. The individual branch circuit breaker is to be described by its panel location and rating for frequency, voltage, phase, capacity, and whether automatic closure type is required.

L.3.1.5.4   Layout planning.   Although the information required in L.3.1.5.1 through L.3.1.5.3.1 will provide engineering information requisite for installation planning, the information required herein shall correlate the data into a brief description of the principal factors that influence arrangement of the equipment, components, and hardware which make up the facility. These considerations shall entail such information as:

   a.   Electronic: electromagnetic interference and potential radiation effects.

   b.   Functional association of equipment.

   c.   Allowable or design lengths of transmission lines and cables.

   d.   Critical lengths of interconnecting signal cables.

   e.   Circuit terminations, including tie-in with other facilities.

   f.   Remote control and monitoring (microwave versus landline or other type of transmission).

   g.   Special intra- and inter-communications.

   h.   Off-site location of commercial power and communication facilities.

   i.   Physical consideration such as:

      (1)   Location of installed facilities (heating, air conditioning and so forth).

      (2)   Efficiency of total installation, including ease of operation and maintenance (access requirements for operation, maintenance, installation and removal).

      (3)   Space provision for potential expansion.

      (4)   Security fencing and parking area requirements.

      (5)   Required intensity of room illumination (foot-candles).

      (6)   Allowable intensity of sound in decibels.

      (7)   Topography.

      (8)   Water table limitations when underground structures are used.

      (9)   Permissible live loading and snow loading for flat roofs.

      (10)   Economy of construction and installation.

   j.   Tabulation of minimum-maximum or, when applicable, exact distances between:

      (1)   Equipment, associated control units and indicators, electrical and physical plant facilities, and major equipment components.

      (2)   Equipment and building walls and ceilings.

      (3)   Similar and nonsimilar antennas and associated equipment.

172

MIL-PRF-87929B(USAF)
APPENDIX L

(4)   Antennas and buildings.

(5)   Power and signal cables.

(6)   Antennas and power and signal cables.

(7)   Similar and nonsimilar transmission lines (power and communications).

L.3.1.5.5   Installation-engineering drawings.   Reference shall be made to all drawings required for engineering the installation of the facility. References shall be to dimensional drawings concerned with a typical or standard layout, including an overall site plan, equipment arrangement, simplified wiring diagrams, simplified floor and plot plans showing cross section elevations and arrangement of utilities. Additionally, the typical configuration shall be supplemented with minimum and maximum equipment configuration if variations are applicable.

L.3.1.6   Installation WP.   This WP shall contain the information and instructions required to install a specific facility. Data content shall include, but not be limited to, the following items:

a.   Equipment and materials

b.   Installation instructions

c.   Manpower requirements

L.3.1.6.1   Equipment and materials.   Complete identification shall be given of all equipment and materials that will be required to accomplish an installation. Such information shall normally be presented in tabular form and shall consist of:

a.   A list of all engineered and approved SFELs that are applicable to the facility.

b.   A listing of equipment and material required but which are not included in approved SFELs. This listing shall include nomenclature (military when applicable, commercial if no military nomenclature exists) plus federal stock numbers of each listed item.

L.3.1.6.2   Installation instructions.   Complete instructions shall be presented that will enable installation personnel to install the facility in accordance with established practices. These instructions shall not repeat contents of equipment installation TMs unless such information is required for clarity. Standard Air Force construction and installation practices and procedures shall not be presented; however, installation practices and procedures that are peculiar to the installation of the facility shall be presented. Required data shall include, but not be limited to:

a.   Instructions in the use of special installation tools and material handling equipment. Illustrations shall be used as required.

b.   Instructions and requirements, if applicable, for sequential installation of equipment, components and materials.

c.   Installation instructions for:

(1)   Inside plant equipment and material, including interconnecting cabling and wiring.

173

MIL-PRF-87929B(USAF)
APPENDIX L

    (2)   Erection of self-supporting and guyed towers, radomes, antennas and other related housing and supporting structures.

    (3)   Tower mounted and other outside plant equipment, including use of special lift equipment.

    (4)   Construction of overhead, underground and buried power, control and communication lines.

    (5)   Fabrication of special signal cables that are not included in SFELs.

    (6)   Waveguides and signal transmission lines.

L.3.1.6.2.1   Installation drawings.   Reference shall be made to all drawings required to install the facility. The information shall contain a list of standard building or room construction drawings, plus the applicable specifications that govern such construction drawings and such construction. A list shall also be included, when applicable, of drawings that pertain to outside plant such as; tower construction and erection, plus the applicable specifications as these drawings pertain to facility installation. In addition to lists of Air Force drawings that apply to the facility, this chapter shall contain simplified drawings, wiring diagrams, wiring and cable lists (drawings), and miscellaneous illustrations that are necessary to supplement existing data or to clarify installation instructions presented in the standard.

L.3.1.6.3   Manpower requirements.   Total manpower requirements to install the facility shall be presented. This information shall be expressed in man-days or man-weeks and shall include installation plus time required to test the installed facility. The information shall show work categories and the amount of time required to accomplish each category.

L.3.1.7   Test WP.   This WP shall contain procedures for conducting tests required to insure that the installed facility is technically adequate to accomplish its operational objective. The information shall include, but not be limited to, these types of tests:

    a.   Pre-shakedown.

    b.   Shakedown.

    c.   Operational.

L.3.1.7.1   Pre-shakedown.   The pre-shakedown test shall include the requirement for physical inspection to verify conformance with installation requirements and safety; electrical measurements to confirm the adequacy and stability of primary power, voltage, frequency, etc; and preliminary adjustments to be made prior to shakedown and operational tests.

L.3.1.7.2   Shakedown.   The shakedown test is essentially a running time test for each electronic part that composes the facility. The manual shall specify the duration of time required for the shakedown test in order to insure that the facility will operate adequately to accomplish its operational requirement. Real or simulated operating conditions shall be prescribed so that the whole facility and its parts are at normal functioning voltage, current, temperature and so forth.

L.3.1.7.3   Operational.   A description of the tests required to assure that all the operational functions of the facility have been met shall be given. The purpose of these tests is to provide

procedures for accurate determination of performance levels. The tests shall include detailed instructions, including required duration of tests, and shall make provision for permanent recording of data. Flight and Electronic Countermeasures (ECM) tests shall be included, when applicable, in the list of tests to be conducted, however, the requirement for flight tests shall be held to an absolute minimum, relative to accurate determination of facility performance levels.

L.3.1.7.3.1   Test sequence.   The preferred sequence of tests shall be stated. In sequence listing, a step-by-step procedure for each test shall be presented, or a reference shall be made to the publication in which the prescribed procedures can be found. Test procedures shall include:

   a.   Performance specifications.

   b.   Test interface between test equipment and the facility to include cables, plugs, attenuators, etc.

   c.   Test equipment required.

   d.   Sample test data sheets or oscilloscope illustrations, pen charts, computer readouts, etc.

   e.   Test configuration diagram.

   f.   The following statement shall appear following the description of operational test:

"Accomplish the performance, alignment, and adjustment routines on the installed facility in the presence of representatives of the using command."

L.3.1.8   Definitions peculiar to installation-engineering facility manuals.

L.3.1.8.1   C-E equipment.   The physical components of a facility, usually denoting a major end item having a military nomenclature (AN/-, TS-, OA-, etc.) as opposed to a part number.

L.3.1.8.2   C-E facility.   A group of equipment or components engineered and installed to perform an operational function in support of a requirement, system, or mission.

L.3.1.8.3   Site.   A physical location of ground C-E equipment or facilities, such as: Station, Base, Depot, ALC, Field, Fort, Launching Area, Camp, Installation, and Arsenal.

L.3.1.8.4   System.   A numbered part of a Mission Category, such as: 480L, 465L, etc, that may consist of one or more facilities or sites.

L.3.1.8.5   SFEL.   Standard Facility Equipment List.

L.4.   DOCUMENT TYPE DEFINITION.

L.4.1   SGML document type definition.   Data to be delivered digitally in accordance with this specification shall be SGML tagged using the DTD found in this Appendix. The procedure for accomplishing this is found in MIL-PRF-28001 and FIPS 152 (ISO 8879).

L.4.2   Template document type for work package type manuals.   The DTD for Installation-Engineering Facility (Ground C-E Equipment) Technical Manual is as follows:

MIL-PRF-87929B(USAF)
APPENDIX L

```
<!-- *************************** START OF FILE *************************** -->

<!-- SUPPLEMENT NOTICE:  This file is made available to provide the user with
a digital representation of the DTD found in Appendix L of MIL-M-87929A.  This
file is incomplete without MIL-M-87929A. -->

<!-- NOTE: The start and end of this file are marked with a row of asterisks.
If these rows are not present the file may not be complete! -->

<!-- MIL-M-87929A Installation-Engineering Facility DTD -->

<!-- The following set of declarations may be referred to by using a public
entity as follows:

<!ENTITY % m87929ief PUBLIC "-//USA-DOD//DTD MIL-M-87929A IEF AMEND1//EN" >
%m87929ief;
-->

<!-- NOTE: In order to parse the following DTD subset alone, append the
following statement to the beginning of the file:

     <!DOCTYPE docief [

and the associated "]>" to the end of the file. -->

<!-- ENTITY DECLARATIONS -->

<!ENTITY % m87929wp PUBLIC "-//USA-DOD//DTD MIL-M-87929A AMEND1//EN" >

<!ENTITY % sttec "(wpidinfo, para0, (toollist, para0*)?, (eqplist, para0*)?,
(consum, para0*)?, (contlist, para0*)?, (eqpsup, para0*)?, noeqpsup, para0*)"
>

<!ENTITY % list "(seqlist | randlist | deflist)" >

<!ENTITY % spcpara "(warning?, caution?, note?)" >

<!ENTITY % fpi "(para0, (para0 | %list; | symsect | abbrsect | %spcpara;)*,
internatlstd?, lrp?, tctolist?)" >

<!ENTITY % forwp "(wpidinfo, contents, illuslist?, tablelist?, purpose, scope,
%fpi, manstru, coverage?, indexscheme, locinfo, para0*, facdesc, leadpartic,
caplim, maintcon?, envcont?, warrprov?, para0*, tmimprep?)" >

<!ENTITY optest "Accomplish the performance, alignment, and adjustment
routines on the installed facility in the presence of representatives of the
using command." >

%m87929wp;

<!-- ELEMENT and ATTRIBUTE LIST DECLARATIONS -->

<!ELEMENT caplim              - o  (table) >
<!ATTLIST caplim              %secur; >
```

176

MIL-PRF-87929B(USAF)
APPENDIX L

```
<!ELEMENT docief           - -  (front, aiwp, forewordwp, sttecwp, engwp,
                           inswp, testwp, ddwp?, foldsect?)    +(pgbrk |
                           brk) >
<!ATTLIST docief           service %service; 'AF'
                           %docatt;
                           %secur; >

<!ELEMENT electronic       - o  (%nparcon;, subpara2*) >
<!ATTLIST electronic       tocentry %yesorno; "1"
                           shortentry %yesorno; "0"
                           verified %yesorno; "0"
                           %bodyatt;
                           %secur; >

<!ELEMENT engwp            - -  (%wp;, wpforewd, safesum?, ((siting,
                           structures, powerreq, layout, para0*) | swp*))
                           +(figure | table | foldout) >
<!ATTLIST engwp            chgno NUMBER "0"
                           %bodyatt;
                           %secur; >

<!ELEMENT eqpsup           - -  ((nomen, partno, descript)+) >
<!ATTLIST eqpsup           tocentry %yesorno; "1"
                           shortentry %yesorno; "0"
                           verified %yesorno; "0"
                           %bodyatt;
                           %secur; >

<!ELEMENT equipmat         - o  (para0, table*) >
<!ATTLIST equipmat         %secur; >

<!ELEMENT facdesc          - o  (%parazero;) >
<!ATTLIST facdesc          tocentry %yesorno; "1"
                           shortentry %yesorno; "0"
                           verified %yesorno; "0"
                           %bodyatt;
                           %secur; >

<!ELEMENT geograph         - o  (%nparcon;, subpara2*) >
<!ATTLIST geograph         tocentry %yesorno; "1"
                           shortentry %yesorno; "0"
                           verified %yesorno; "0"
                           %bodyatt;
                           %secur; >

<!ELEMENT inside           - o  (%nparcon;, subpara2*) >
<!ATTLIST inside           tocentry %yesorno; "1"
                           shortentry %yesorno; "0"
                           verified %yesorno; "0"
                           %bodyatt;
                           %secur; >

<!ELEMENT install          - o  (%parazero;) >
<!ATTLIST install          tocentry %yesorno; "1"
                           shortentry %yesorno; "0"
```

177

```
                              verified %yesorno; "0"
                              %bodyatt;
                              %secur; >

<!ELEMENT inswp              - -  (%wp;, wpforewd, safesum?, ((equipmat,
                             install, manpower, para0*) | swp*))   +(figure |
                             table | foldout) >
<!ATTLIST inswp              chgno NUMBER "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT layout             - o  (%parazero;) >
<!ATTLIST layout             tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT logistic           - o  (%nparcon;, subpara2*) >
<!ATTLIST logistic           tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT manpower           - o  (%parazero;) >
<!ATTLIST manpower           tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT noeqpsup           - o  (table) >
<!ATTLIST noeqpsup           %secur; >

<!ELEMENT operat             - o  (%parazero;) >
<!ATTLIST operat             tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT outside            - o  (%nparcon;, subpara2*) >
<!ATTLIST outside            tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT powerreq           - o  (%parazero;) >
<!ATTLIST powerreq           tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >
```

MIL-PRF-87929B(USAF)
APPENDIX L

```
<!ELEMENT preshake           - o  (%parazero;) >
<!ATTLIST preshake           tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT shakedown          - o  (%parazero;) >
<!ATTLIST shakedown          tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT siting             - o  (%titles;, warning*, caution*, note*,
                             (para, note*)?, (step1, step1+)?, electronic,
                             logistic, geograph, subpara1*) >
<!ATTLIST siting             tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"

                             %bodyatt;
                             %secur; >

<!ELEMENT structures         - o  (%titles;, warning*, caution*, note*,
                             (para, note*)?, (step1, step1+)?, inside,
                             outside, subpara1*) >
<!ATTLIST structures         tocentry %yesorno; "1"
                             shortentry %yesorno; "0"
                             verified %yesorno; "0"
                             %bodyatt;
                             %secur; >

<!ELEMENT testwp             - -  (%wp;, wpforewd, ((preshake, shakedown,
                             operat, para0*) | swp*))   +(figure | table |
                             foldout) >
<!ATTLIST testwp             chgno NUMBER "0"
                             %bodyatt;
                             %secur; >

<!-- *************************** END OF FILE *************************** -->
```

L.5.   DETAILED DESCRIPTION.

L.5.1   <u>Document type definition</u>.   The DTD within this appendix provides the structure and content of documents prepared in accordance with this specification. The DTD is available in a digital format. See A.5., for information on obtaining the file.

MIL-PRF-87929B(USAF)

INDEX

MIL-PRF-87929B(USAF)

INDEX

MIL-PRF-87929B(USAF)

INDEX

MIL-PRF-87929B(USAF)

INDEX

MIL-PRF-87929B(USAF)

INDEX

CONCLUDING MATERIAL

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waiver any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-PRF-87929B (USAF)	2. DOCUMENT DATE (YYMMDD) 96/03/01

3. DOCUMENT TITLE
MANUALS, TECHNICAL, OPERATION AND MAINTENANCE INSTRUCTIONS IN WORK PACKAGE FORMAT (FOR

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(include Zip Code)*	d. TELEPHONE *(Include Area Code)* (1) Commercial (2) AUTOVON *(If applicable)*	e. DATE SUBMITTED *(YYMMDD)*

8. PREPARING ACTIVITY

a. NAME Steven C. Holloway	b. TELEPHONE *(Include Area Code)* (1) Commercial (2) AUTOVON (937) 257-3085 787-3085

c. ADDRESS *(Include Zip Code)*
Det 2, HQ ESC/AV-2C
4027 Col Glenn Hwy, Suite 300
Dayton, OH 45431-1672
	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:
	   Defense Quality and Standardization Office
	   5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466
	   Telephone (703) 756-2340 AUTOVON 289-2340

DD FORM 1426, OCT 89 *(EF-V1)* *(PerFORM PRO)*   PREVIOUS EDITIONS ARE OBSOLETE.