MIL-STD-1604(OS)
28 September 1973

MILITARY STANDARD

Technical And Maintenance Overhaul And Repair Standards, Preparation Of

FSC MISC

DEPARTMENT OF DEFENSE

Washington, D. C. 20301

Technical and Maintenance Overhaul and Repair Standards, Preparation of

MIL-STD-1604(OS)

1. This Military Standard is approved for use by the Naval Ordnance Systems Command.

2. Recommended corrections, additions, or deletions should be addressed to Commanding Officer, Naval Ordnance Station, Standardization Division (502), Indian Head, MD 20640. In this regard DD Form 1426 "Standardization Document Improvement Proposal" has been included at the end of this standard for your convenience.

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1.0 SCOPE

1.1 Purpose. The purpose of this standard is to delineate uniform requirements and criteria for the preparation of Technical and Maintenance Overhaul and Repair Standards (TRSs).

1.2 Applicability. This standard is applicable to TRS preparation for those NAVORDSYSCOM systems, equipments, and components in new acquisition procurement and those currently in service which will be operational in the fleet in the Post FY-75 period.

The TRS is not meant to support Ordnance Publications (OPs) and Ordnance Data (ODs). It is meant to replace OPs and ODs. For existing systems and equipments which will remain operational after FY-75 and for which OPs and/or ODs are extant, the TRS will reference (as applicable (see 5.1.2)) these OPs and ODs. For new acquisition systems and equipments, TRSs will be prepared instead of OPs and ODs.

1.2.1 Conformance. Conformance with TRS requirements is required of contractors, NAVORDSYSCOM managed field activities, or other service-managed field activities when this standard is cited in contractual documents, work directives, Ordnance Tasks (ORDTASKs), and Military Interdepartmental Purchase Requests (MIPRs).

1.3 Implementation. This standard will be used in preparing Technical and Maintenance Overhaul and Repair Standards (TRSs). These TRSs are prepared for systems, equipments, and components and will provide specific planned examination, maintenance, and test criteria, in conjunction with associated Quality Assurance Test and Inspection Plans (QATIPs), for overhaul or repair at the identified level of maintenance.

1.3.1 Objective. The objective of this military standard is to provide adequate instructions for the preparation of the TRSs to the extent that each TRS and associated QATIP shall stress quality and workmanship standards in the accomplishment of overhaul and repair to produce products which meet designed performance requirements. This military standard shall provide for inclusion in the TRSs and associated QATIPs adequate instruction for the handling, storage, preservation, packaging, and transportation of the item as necessary during the overhaul or repair activity.

1.3.2 Compliance. This military standard requires that each TRS shall be prepared for compliance by the appropriate levels of maintenance to specifically identify the work to be performed by the intermediate or depot level activity. The technical complexity of work performance will be scoped to the capability of the maintenance level in the applicable TRS for that activity.

1.3.3 Constraints. This military standard requires that the TRS will not repeat normal maintenance and test procedures covered in applicable Ordnance Publications (OPs) and Ordnance Data (ODs) for the item, except when deemed necessary for clarity or continuity; instead, reference to the appropriate document will be made.

2.0 REFERENCED DOCUMENTS

2.1 Specifications, Publications, Ordnance Requirements, and Standards. The following documents of the issue in effect on the date of invitation for bids or request for proposal, form a part of this Standard and will be applicable to the preparation of TRSs to the extent specified herein:

SPECIFICATION

MILITARY

MIL-M-15071	Manuals, Technical: Equipments and Systems Content Requirements for
MIL-M-38784	Manuals, Technical: General Requirements for Preparation of
MIL-M-82527(OS)	Maintenance Requirement Cards (MRCs) and Maintenance Index Pages (MIPs); Development and Preparation of (NAVORD Planned Maintenance System)
MIL-Q-9858	Quality Program Requirements
WS-10759	NAVORD Specification/Purchase Description (WS) for Ordnance Publications (OPs)

PUBLICATIONS

FEDERAL

FED-STD-101	Preservation, Packaging and Packing Materials, Test Procedures

MILITARY

DOD 5220.22-M	Industrial Security Manual for Safekeeping Classified Information

ORDNANCE REQUIREMENTS

OR-30	Integrated Logistics Support Program Requirements
OR-99	Intermediate and Depot Maintenance of Packaging, Handling, Storage, and Transportation Equipment

STANDARDS

MIL-STD-794	Parts and Equipment, Procedures for Packaging and Packing of
MIL-STD-480	Configuration Control-Engineering Changes, Deviations, and Waivers
MIL-STD-481	Configuration Control-Engineering Changes, Deviations, and Waivers (Short Form)
MIL-STD-1388	Logistics Support Analysis

2.2 Availability of Documents. Copies of specifications, standards, drawings and publications required by suppliers in connection with specific procurement functions should be obtained from the specific procuring agency or as directed by the contracting officer.

3.0 DEFINITIONS

3.1 General: For the purpose of this standard, terms used herein are defined as follows:

(a) Assembly. A number of parts or subassemblies or any combination thereof joined together to perform a specific function and capable of disassembly.

(b) Base-Level Repair (BLR). Repair performed at organizational and intermediate level maintenance activities.

(c) Component. A composite fabricated unit, generally complete within itself, that is designed to perform a stated service when installed in its proper position (e.g., boiler, motor generator, etc.).

(d) Depot Maintenance. That maintenance performed on materiel requiring major overhaul or a complete rebuild of parts, assemblies, subassemblies, and end items, including the manufacture of parts, modifications, testing, and reclamation as required. Depot maintenance serves to support lower categories of maintenance by providing technical assistance and performing that maintenance beyond their responsibility. Depot maintenance provides stocks of serviceable equipment by using more extensive facilities for repair than are available in lower level maintenance activities.

(e) Designated Overhaul Activity (DOA). A Designated Overhaul Point (DOP) performing depot maintenance on a particular system/equipment with the exception of those components designated for repair or overhaul at a Specialized Overhaul Activity (SOA).

(f) Designated Overhaul Point (DOP). An activity (including an activity of another service or a contractor) designated by a Hardware Systems Command or Project Manager to perform the highest (depot) level of repair on a particular item or group of items.

(g) Designated Repair Activity (DRA). A Base-Level Repair activity performing intermediate maintenance on a particular system/equipment with the exception of those components designated for repair or overhaul at an SOA.

(h) Equipment. A component or components and necessary assemblies, subassemblies, and parts connected or associated together to perform an operational function.

(i) Final Acceptance Test(s). That examination and test of an item after completion of its overhaul or repair to ensure that the item satisfies performance requirements.

(j) Intermediate Maintenance. That maintenance which is the responsibility of and performed by designated maintenance activities for direct support of using organizations. Its phases normally consist of calibration, repair, or replacement of damaged or unserviceable parts, components, or assemblies; the emergency manufacture of nonavailable parts, and providing technical assistance to using organizations.

(k) Item. A nonspecific term used to denote any product, including systems, materials, parts, subassemblies, sets, accessories, etc.

(l) Overhaul. The process of restoring an item to original specifications, except for purely cosmetic defects; by disassembly, component inspection, replacement or restoration of unacceptable components, reassembly incorporating approved alterations, and inspection and test at all required levels of assembly. The process insures meeting current approved specifications with a life expectancy for the restored item equivalent to new equipment similarly configured.

(m) Planned Overhaul/Repair Maintenance. The minimum overhaul or repair maintenance required for an item covered by a TRS. This work is that determined by such means as experience and engineering judgement. The purpose of this requirement is to permit pre-planning of overhaul or repair to the maximum extent practicable to minimize potential failures before they develop into major defects or malfunctions.

(n) Proofing. Proofing as used herein consists of the systematic process by which physical and functional descriptions and procedures set forth in the TRS are evaluated for technical accuracy and adequacy with respect to the performance of the functions and requirements on the actual systems, equipments, and components described in the TRS. Proofing also ensures that the TRS is in conformity with the content, inspection, and production requirements of this standard and other applicable technical specifications.

(o) Repair. The restoration of an unserviceable item to an operational status by replacement of failed parts or components, and the replacement of parts/components necessitated by wear, deterioration, or damage, to preclude premature failures.

(p) Specialized Overhaul Activity (SOA). A Designated Overhaul Point (DOP) performing depot maintenance on a particular equipment/component in support of supply system demands emanating from Designated Overhaul Activities and Base-Level Repair Activities.

(q) Subassembly. Two or more parts which form a portion of an assembly or a unit replaceable as a whole, but having a part or parts which are individually replaceable. Note. The distinction between an assembly and a subassembly is determined by the individual application. An assembly in one instance may be a subassembly in another where it forms a portion of an assembly.

(r) System. A combination of parts, assemblies, and sets joined together to perform a specific operational function or functions.

(s) Tender Repair (TR). A Base-Level Repair activity performing intermediate maintenance aboard ships designated as tenders in support of equipments installed in Fleet ships. Functions are similar to those of the DRA within available facilities except that emergency repair may be performed as required on components designated for repair or overhaul at an SOA.

3.2 Safety Precautions and Notes. Warnings, Cautions and Notes shall be used to place emphasis on any condition potentially hazardous to personnel or equipment or to highlight an important instruction.

3.2.1 Warnings and Cautions. Warnings and Cautions shall appear immediately prior to the procedural step giving the specific instructions or precautions necessary to prevent injury to personnel or damage to equipment. Warnings and Cautions have the following significance:

WARNING: An examing or testing procedure or practice which must be observed or risk either loss of life or injury to personnel.

CAUTION: An examing or testing procedure which must be followed or risk damage to or destruction of the equipment.

3.2.2 Notes. Notes may be used where necessary to highlight an examining or testing procedure or a condition. Notes may, as appropriate, precede or follow the procedure to be highlighted.

4.0 GENERAL REQUIREMENTS

4.1 Level of Writing. The text of the TRS shall be specific, concise, and clearly worded with respect to the level of maintenance to be performed so as to be readily understandable by inspectors, and overhauling and repair personnel, who have had previous working experience with the system, equipment, or component or similar items. Language usage levels are specified in MIL-M-15071.

4.1.1 Illustrations. Illustrations consist of tables, line drawings or pictorial art. The use of illustrations is expected in instances where they will improve clarity and reduce the volume of written descriptive matter. Tables will be labeled: Table 1; Table 2. Other illustrations will be labeled: Figure 1; Figure 2. Where tables have more than two columns, vertical lines shall appear between each column and the table boxed. Two column tables need not be boxed or lined. Full page illustrations, if necessary, shall be arranged so that the reader has to make only one clockwise turn to view it in perspective.

4.1.2 Location of Illustrations. Illustrations shall, where feasible, appear on the same page of text as the action depicted.

4.2 Content and Format. The TRS shall present material in the following format:

Cover Sheet (see 5.1.1)
Description of changes (see 5.1.1.1)
References (see 5.1.2)
Purpose (see 5.1.3)
Scope (see 5.1.4)

Section 1.		Overhaul/Repair Work Requirements (see 5.1.5.1)
	1.1	General
	1.2	Examinations, Tests and Corrective Actions
	1.3	Planned Overhaul/Repair Maintenance
	1.4	Reassembly and Grooming
	1.5	Final Acceptance Tests
	1.6	Listing of special gages, interface gages, and tools, test equipment, facilities, fixtures, number and skill of personnel required, and approximate number of man-hours per work requirement needed
	1.7	Preservation, Packaging, Handling, Storage, and Transportation Requirements
Section 2.		Overhaul/Repair Record Requirements (see 5.1.5.2)
Appendices		(see 5.1.5.3)
Enclosures		(see 5.1.5.4)

4.3 Applicability of TRS

4.3.1 Similar Items. When an existing NAVORD TRS for an item is found to be entirely applicable to a similar item, the TRS applicability will be extended to cover both items. The cover sheet shall be modified accordingly.

4.3.2 Minor Differences. When an existing NAVORD TRS for an item is found to be applicable to a similar item, except for minor differences, the TRS may be supplemented to cover the differences. The cover sheet shall be modified accordingly.

4.3.2.1 The Supplementary TRS (STRS) prepared in conformance with paragraph 4.3.2 will be appended to the existing TRS. Material presented in the STRS will include a description of the variant item and will be set forth in accordance with the content and format requirements identified in paragraph 4.2 above, and detailed in paragraph 5, except that procedures and data contained in the existing TRS which are pertinent and applicable to the item covered by the STRS need not be repeated, unless necessary for coherency and clarity. Since it is possible that more than one STRS may be required and appended to an existing TRS, it is essential that the cover sheet of the existing TRS reflect accurately the identification of items covered by the appended STRSs (see para. 5.1).

4.3.3 Maintenance Activity Relationship. TRSs prepared for DOA/DRA accomplishment will not contain data pertaining to overhaul or repair actions covered in TRSs prepared for SOAs. DOA/DRA action in these cases will involve only removal and installation of the items covered by TRSs for SOA action.

4.3.4 Assembly Level Relationship. TRSs prepared for DOA/DRA overhaul or repair of items of higher levels of assembly (e.g., system and equipment) shall not include or duplicate overhaul/repair data included in TRSs for associated lower levels of assembly (e.g., component, assembly, subassembly); instead the TRS for the lower levels of assembly shall be referenced.

4.4 Production/Reproduction. Acceptable production/reproduction details are set forth in this specification. Alternate methods will be considered by the contracting agency if equivalent performance and durability are provided. The copy shall be such that clear, readable reproductions can be obtained. Any method of duplication which will provide the necessary quantity of black legible copies will be acceptable.

4.4.1 Typography.

4.4.1.1 General Typing Instructions. General typing instructions shall be as follows:

(a) Use elite type size, 12 characters per inch.

(b) Top, bottom, right, and left margins shall be approximately 1 inch.

4.4.1.2 Legend. The TRS document number shall appear in the upper right corner of the first page of the text and shall alternate upper left corner and upper right corner on succeeding pages.

4.4.1.3 Title. The title shall be typed in capital letters on the first page of the text only, underlined and located at the left margin two lines below the legend.

4.4.1.4 Paragraph Numbering. Decimal paragraph and subparagraph numbering shall be used. All paragraph numbers shall be indented four spaces from the left margin.

4.4.1.5 Notes, Cautions, and Warnings. These devices shall be inserted in the body of the text by indenting approximately 1 inch from both the right and left margins.

4.4.1.6 Page Numbering. Pages shall be numbered consecutively, in the center, approximately 1/2 inch from the bottom of the page.

4.4.1.7 Appendices and Enclosures. The following identification applies to both appendices and enclosures:

(a) The first page shall carry the identification in the center of the page, on the same line as the legend.

(b) The legend will be carried on all pages.

(c) On pages other than the first, the identification will be carried in the lower right hand corner, as follows:

Appendix ( ) Enclosure ( )
Sheet _____ of _____ Sheet _____ of _____

4.4.2 Paper Stock. Any good quality white paper stock (8 inches by 10-1/2 inches) which is suitable for the intended method of reproduction may be used. Fold out sheets may be used when necessary.

4.4.3 Assembling. TRSs shall be prepared in loose-leaf form suitable for insertion in standard 3-ring binders. Each document shall be stapled. The pages shall be punched or drilled as follows:

Number of holes - - - - - - - - 3
Hole size - - - - - - - - - - - 1/4 inch
Distance, left edge - - - - - 7/16 inch
Distance, center to center - - 4 1/4 inches

4.5 Revisions.

4.5.1 Changes. Information amending, correcting, or modifying a TRS shall be issued as a permanent change. Such permanent changes shall be produced in accordance with the following change control procedures.

4.5.1.1 TRS Change Control Procedures. The purpose of the change control procedures is to provide a standard, systematic method for documenting and controlling major, minor, and complete changes (revisions) to the TRSs. To effect a change, the recommended change(s) shall be originated by (1) the repair/overhaul activity (or commercial activity) responsible for initial TRS preparation, or (2) the validated repair/overhaul activity designated to repair/overhaul the item, or (3) the NAVORD technical code, Maintenance Engineering Agent (MEA), or In-Service Engineering Agent (ISEA), and shall be submitted to the cognizant ISEA via the most expeditious means of communication (e.g., telephone, message, letter) commensurate with the urgency of the change. Immediate authorization to effect pen-and-ink changes to the TRS may be granted by the ISEA by return communications; however, all telephone requests, approvals, and disapprovals must be confirmed by message. All change information must be entered on the Description of Change sheet (see Figure 3, page 28). The second sheet of each TRS must reflect the method of ISEA action, and the change (revision) number must be placed in the lower left hand corner of the affected page(s).

4.5.1.2 Minor Changes. Changes in this category are defined as those changes in TRS wording or work process description which do not affect the test specification, do not require immediate incorporation, and can be accomplished on a routine basis. Minor changes shall be prepared in final format and forwarded to the ISEA for approval and change number assignment, prior to incorporation. A new cover sheet bearing the next change number as a part of the document number shall be issued.

4.5.1.3 Major Changes. Changes in this category are those which must be made to an existing TRS in order to perform production overhaul/repair processing, to correct assignable conditions adverse to effective operations, or to perform acceptance testing in accordance with specifications. If the change involves a major revision to one or more pages, new pages incorporating the change data into the TRS body shall be prepared

together with a new cover sheet bearing the next change number. Changes in this category will require the approval of NAVORD or the designated ISEA prior to use.

4.5.1.4 Complete Change. A complete revision of the TRS is required if (1) a single change affects more than 25 percent of the pages, or (2) after ten (10) changes have been made to the TRS. The TRS shall be reprinted in its entirety, assigned the next revision letter as part of the document number, and forwarded to the ISEA for review and approval prior to use.

4.6 TRS Document Number. As a technical publication, each TRS will be assigned an identifying number which correlates with the NAVORD TRS number system.

4.6.1 TRS Number Assignment. NAVORD or a designated representative will assign the document numbers for each TRS and STRS and will monitor change number assignments.

4.6.2 TRS Numbering System. The TRS number will consist of three or more numeric or alpha-numeric groups in combination, specifically oriented to the item which the TRS describes, and will include a code to reflect the maintenance level to which the TRS is applicable. Four digit numeric codes will be assigned by NAVORD or a designated representative to identify repairable item categories. Selective identification of the repairable item within the category will be accomplished by coding the nomenclature assigned to the repairable.

4.6.2.1 The identification of the next higher level of assembly to which the repairable item covered by the TRS is applicable will be listed on the TRS/STRS cover sheet. The next higher level of assembly will be derived from data contained in the Engineering Document Requirements List (EDRL) (see 4.8.3). The level of indenture structure format of the EDRL for TRSs will identify the hierarchy of repairable items which make up the item for which the EDRL is prepared.

If the number of next higher level assemblies is excessive, selected assemblies (at NAVORD's discretion) will be listed. The complete list of next higher assemblies will be maintained in ORDLIS and may be distributed as required by NAVORD.

4.6.2.2 In assigning the numeric or alpha-numeric groups which specifically identify the repairable items for TRS numbering system purposes, the following nomenclature priorities will be used: (1) MK/MOD designation or JAN nomenclature, (2) List of Drawings (LD) number, or Material List (ML) number, and (3) Assembly Drawing number. In the examples provided below for illustrative purposes, the first four digit group represents the NAVORD TRS numbering system category code, the following groups (or group containing an equivalent number of characters) represent the noun name coding for the repairable item.

a. Example 1, TRS No. 0550-0068-0011. The first numeric group (0550) identifies the item category as a Fire Control System, Gun. The second group (0068) represents the MARK number of the system (MK 68), and the third group (0011), identifies the

MOD number, i.e., GFCS MK68 MOD11. Similarly, in TRS No. 1080-0053-000A, the first numeric group (1080) illustrates the category code for a radar set. The second group (0053) and third group (000A) identify the specific radar set by JAN nomenclature, i.e., SPG-53A, since MK/MOD identification is not assigned to this radar set.

b. Example 2. TRS No. 6875-LD0324567. The first numeric group (6875) illustrates the category code for a power supply component within a radar set. The second group (LD0324567) identifies the List of Drawings number in a nine digit field. Similarly, in TRS No. 1175-ML0345678, the first numeric group illustrates the category code for a power amplifier assembly, and the second group (ML0345678) is a nine digit code for the Material List number for that item. In these examples, neither MK/MOD nor JAN nomenclature designations are assigned to these repairables.

c. Example 3. TRS No. 8183-002345678. The first numeric group illustrates the category code (8183) for a terminal board, and the nine digit code for the Assembly Drawing number is (002345678). In this example, neither MK/MOD, JAN nomenclature, List of Drawings, nor Material List designations are assigned to this repairable.

4.6.3 Supplementary TRS Numbering. When STRSs are prepared for appending to an existing TRS in accordance with 4.3.2, STRS numbering will conform to the numbering system shown in 4.6.2, except that a dash and a two digit alpha-numeric code will be added to the last group in order to identify the singular nature of the STRS. The cover sheet of the existing TRS will be modified to include the identification of the repairable and the STRS number; similarly, the STRS cover sheet will include identification of the existing TRS and the repairable which it covers.

4.6.3.1 In those instances where it is desirable to initiate TRS preparation for two or more similarly configured repairables in consonance with 4.3.2 and a lead TRS does not exist, the TRS prepared for the basic item shall be numbered in accordance with procedures set forth in 4.6.2, and STRS prepared for the similar repairables and appended to that TRS will be numbered in accordance with procedures set forth in 4.6.3.

4.6.4 Maintenance Levels. The maintenance level code shall consist of a dash and a single number, following the numbering structure shown above, to indicate the level of maintenance for which the TRS was prepared (e.g., -1 indicates Depot level, and -2 indicates Intermediate level.) For example, assignment of a power amplifier assembly STRS to Depot level may be indicated as follows: 1175-ML0345678-A1-1.

4.6.5 Change Number Assignments. Change number assignments will follow the maintenance level code. For example, a change to an assembly level STRS may be indicated as follows: 1175-ML0345678-A-1 Ch. 1. The change request shall be forwarded to the ISEA for approval and change number verification. The required change data must be entered on the Description of Change page, and affected pages must contain the change number on the lower left hand corner of the page. (See 4.5.1.1).

4.6.6 Revision Number Assignments. Revision number assignments will follow the maintenance level code. For example, a revision to an assembly level TRS may be indicated as follows: 8183-002345678-1, Revision A. The revised TRS will be forwarded to the ISEA for review, approval and revision number verification. The revision data must be reflected in the body of the TRS; i.e., Revision A replaces TRS 8183-002345678-1 Change 10 in its entirety.

4.7 Engineering Judgement Record. Concurrent with procurement of new weapon systems, equipment, or components, a concise, formal Engineering Judgement Record (EJR) shall be provided for each item for which a depot level TRS is prepared by commercial activities. This record shall accompany the TRS but shall not form part of the TRS. This record shall contain the engineering analyses and reasoning in support of all tolerances, limits, and other parameters included in the standard. Each parameter discussed shall be identified with the associated paragraph number(s) of the TRS. The approving authority (activity) shall retain this record for reference and information. It is to be noted that departure from design specifications is not authorized, per se, through this procedure. If deviations from specification requirements are necessary, requests for deviation must be submitted together with separate engineering analyses in accordance with established procedures as required by MIL-STD-480 or MIL-STD-481, as applicable. EJRs developed in accordance with this standard shall be numbered identically with the corresponding depot level TRS (see 4.6.2 above) with the exception of the last number group (see 4.6.4 above) which shall be excluded. EJRs shall be identified in the Engineering Document Requirements List (EDRL) (see 4.8.3 below). (Provisions of this paragraph are not applicable to TRS preparation for existing weapon systems, equipment, or components.)

4.8 Contract Information.

4.8.1 Ordering Data. Procurement documents should specify the following:

4.8.1.1 Procurement Requirements.

(a) Title, number and date of this standard.

(b) Exceptions to this standard.

(c) Applicable drawings and other documents.

(d) The requiring activity will specify the maintenance levels for which logistics documents (e.g., TRSs QATIPs, etc.) are required; EJRs developed in accordance with this standard will be specified by the contractor.

4.8.1.2 Contract Data Requirements. Data noted or referenced in this standard will be prepared and delivered by the contractor only when they are listed on a Contract Data Requirements List (CDRL) (DD-1423) incorporated into the contract. In those instances, the data shall be prepared in accordance with the following Data Item Descriptions (DIDs) cited by number in Block 4 of the DD Form 1423:

DID No.	Title	Paragraph No.
DI-L-2100	EDRL	4.8.3
DI-L-2101	TRS	4.2
(See Notice-1)	QATIP	4.8.3
DI-L-2103	EJR	4.7

This paragraph will be implemented only when TRSs are prepared by contractors and will not be implemented when TRSs are prepared within NAVORD.

4.8.2 Management Control System Documents. The following management control system documents should be included on DD Form 1660 (Management Control Summary List):

(a) DOD 5220.22-M (see 5.1.5.5).
(b) MIL-Q-9858 (see 5.2).
(c) MIL-M-15071 (see 4.1).
(d) OR-30 (see 4.8.3).
(e) MIL-STD-1388 (see 4.8.4).

4.8.3 Engineering Document Requirements List. Specific engineering documents (e.g., TRSs, EJRs, and QATIPs) will be listed in an Engineering Document Requirements List (EDRL) to be issued by the contractor upon completion of a logistic support/maintenance engineering analysis accomplished in accordance with MIL-STD-1388, or OR-30. The requiring activity will specify the maintenance level(s) (i.e., DOA, SOA, DRA, TR) for which the engineering documents (except EJRs) are required. The EDRL will identify the proposed engineering documents to be developed in accordance with this standard and other applicable documents, by applicable repairable item nomenclature, document type, applicable maintenance level(s), document number, document title, scheduled completion date, proofing schedule (see 5.3.2 and 5.3.3) and requirements, and estimated cost of preparation (including proofing) (see 5.3.4). The format of the EDRL will correspond to that shown in Figure 8, page 43. An approved EDRL will be issued by the requiring activity sixty days after receipt of the contractor prepared EDRL. The contractor will develop and submit engineering documents in accordance with the approved EDRL as specified in the CDRL. (Provisions of this paragraph are not applicable to engineering document preparation for existing weapon systems, equipment, components, assemblies, or subassemblies.)

4.9 Preparation for Delivery.

4.9.1 Packaging and Packing. Individual copies of TRSs shall be packaged to reduce the likelihood of damage in transit. TRSs shipped in bulk shall not be individually wrapped. Containers shall comply with the Uniform Freight Classification Rules or other carrier regulations, as applicable to the mode of transportation.

4.9.2 Marking. For bulk shipment, interior packages and exterior shipping containers shall be marked with the following information for each item enclosed, except for shipment of an individual copy:

(a) Box _____ of _____ (enter numbers).
(b) TRS document number.
(c) Quantity.
(d) Contractor or order number.

All marking shall comply with security requirements.

5.0 DETAIL REQUIREMENTS

5.1 TRS/STRS Format.

5.1.1 Cover Sheet. The applicable cover sheet shall be as shown on Figures 1 and 2 (see pages 26 and 27). The maximum number of characters in the abbreviated title shall be 30.

5.1.1.1 Description of Changes Sheet. The Description of Changes Sheet shall be as shown on Figure 3, page 28.

5.1.2 References.

5.1.2.1 References shall be identified by letters (e.g., (a), (b), (c), etc.).

5.1.2.2 The number of references shall be kept to a minimum. Where repetition of lengthy instructions contained in existing documents is impractical from the standpoint of volume or complexity, applicable portions shall be referenced and not repeated in the TRS. When it is necessary to include information or data to ensure clarity and understanding in the TRS, it shall be extracted verbatim or paraphrased from the reference material in a concise, accurate format.

5.1.2.3 When possible, the use of references in the TRS shall be limited to Government approved documents such as Military specifications and standards, technical manuals, uniform methods and standards, training aid booklets, drawings, illustrated parts breakdowns, exploded parts views, illustrations to depict levels of disassembly/reassembly, and such other approved visual aids which will enhance clarity.

5.1.2.4 Where commercial documents are the only suitable reference material available, they shall be used subject to the concurrence of the procuring activity. Non-Government controlled documents, such as commercial specifications, catalog information, or manufacturers' manuals, may be referenced for general information procedures, but in these instances the appropriate data will be extracted and set forth verbatim in the TRS. Only Government recognized documents shall be referenced for specific requirements or procedures.

5.1.3 Purpose. The purpose of the TRS with associated QATIPs is to provide examination, test, repair, maintenance, and performance specifications for the overhaul, repair or refurbishment of a system, equipment, component, assembly or subassembly, by depot and intermediate levels of maintenance commensurate with activity capability and capacity to perform the requisite maintenance. Conformance with the TRS is required of commercial and Government maintenance activities.

5.1.4 Scope. The scope shall provide the following information:

(a) A brief summary of the content of the TRS.

(b) Identification of the item(s) covered by the TRS using approved nomenclature and Federal Stock Number (FSN), (or Federal Item Identification Number (FIIN), or Federal Supply Code for Manufacturers (FSCM) Part Number, or NAVORD Drawing Number if the FSN is not available). If a TRS is for a component, to the extent known identify other systems wherein the component is used when TRS is intended to cover similar components used in more than one system.

(c) The specific boundaries of each system, equipment, or component involved using either written description or Government approved drawings. Boundaries for systems should, in general, conform with the established boundaries which show on approved system diagrams and drawings. Boundaries for systems, equipments, or components, should, in general, be consistent with a unit which can be removed from the ship, examined and repaired, and tested in the shop, separately from other items.

(d) Specific delineation of the work to be performed on the system, equipment, or component, within the boundaries identified above, by intermediate and depot levels of maintenance. The work to be identified is limited to corrective maintenance actions, and should not include preventive maintenance requirements separately identified in conformance with MIL-M-82527(OS).

(e) If the TRS is for a system or equipment, it shall contain the identification and relationship of TRSs for subitems which make up the system or equipment.

5.1.5 Technical Sections.

5.1.5.1 Section 1.- Overhaul/Repair Work Requirements. The following subsections (1.1 through 1.7) with the numbering, headings, and contents shall be included as follows:

(a) 1.1 General. The following general requirements shall be included under this heading:

(1) Specify that the overhauling/repairing activity (DOA/DRA/SOA/TR) is responsible for overhauling/repairing the system, equipment, or component such that it satisfies the post-overhaul/repair requirements specified in paragraph 1.5 (Final Acceptance Tests) (see below), to assure satisfactory service from the item between maintenance cycles without requiring more than routine maintenance.

(2) Specify that in the event of conflict between the TRS and original design, the requirements in the TRS and associated QATIPs shall govern. Prior to the delineation of procedures in the TRS and QATIPs which are in conflict with original design criteria, approval will be obtained from NAVORD or its designated agent.

(3) Specify that component configuration changes shall not be made when such changes will prohibit use of approved parts for the item involved unless required engineering changes, waivers, or deviations have been obtained in accordance with provisions of MIL-STD-480 (or MIL-STD-481 as applicable). This action shall be detailed in order to maintain authorized configurations.

(4) Require provision of Production Process Flow Charts or work flow block diagrams graphically depicting the sequence of repair/overhaul events required to occur throughout the maintenance process described in the TRS. These displays may consist of an overall block diagram depicting the entire process with more detailed flow charts for specific phases of repair/overhaul activity. Sufficient detail should be provided to clearly illustrate the described process.

(b) 1.2 Examination, Tests, and Corrective Actions. The following maintenance requirements and associated actions shall be included in paragraphs under this heading:

(1) Pre-overhaul/Repair Maintenance Inspection. Specify the examinations and inspections required prior to and during repair and refurbishment to determine the need for work in addition to that prescribed by planned overhaul or repair maintenance, commensurate with prescribed levels of maintenance. Describe the method of examination of inspection and specify acceptance and rejection criteria. Examples of items and examination/inspection criteria are set forth in 5.1.5.1.1.

(2) Pre-overhaul/Repair Performance or Other Evaluation Tests. Specify the performance or other evaluation tests necessary for item failure diagnosis and for the determination of requirements for corrective maintenance in addition to that prescribed by planned overhaul or repair maintenance. Testing and evaluation requirements will be scaled to the activity level of maintenance and will specify the detail steps for test accomplishment.

(3) Corrective Maintenance Actions. Specify corrective maintenance actions appropriate to the level of maintenance which are acceptable to correct deficiencies found during pre-overhaul/repair performance tests and examinations/inspections. Corrective actions include replacement, repair, or refurbishment. Where corrective actions must be accomplished and certified in accordance with a specific procedure, the TRS shall invoke the applicable procedure.

(4) Recording Results. Specify the methods for recording results, inspection and examination results, and corrective actions taken. Identify distribution requirements for reports.

(c) 1.3 Planned Overhaul/Repair Maintenance. Paragraphs under this heading shall specify the following:

(1) Planned Overhaul/Repair Requirements. Specify planned overhaul/repair requirements delineated in scope to appropriate levels of maintenance. These requirements shall include cleaning, refurbishing, and replacement of parts. By planned overhaul or repair work, it is intended to mean the minimum maintenance

work for the system, equipment, or component regardless of condition. These requirements must be delineated to reflect the extent of maintenance to be performed by specific levels of maintenance, e.g., DOA/SOA, DRA/TR. Such requirements are not dependent on data obtained from pre-overhaul/repair examination and tests. The requirements shall be determined by application of engineering judgement and consideration of the following:

a. Review of the design
b. Service of the item
c. Past experience
d. Performance requirements
e. Trade-off in cost and reliability between individual part replacement versus part refurbishment.

(2) Disassembly Instructions. General disassembly instructions will normally suffice except in cases where certain detailed disassembly procedures are required to prevent damage to critical components or where personnel safety may be jeopardized. In these cases, specify disassembly procedures and limits to the degree appropriate to the level of maintenance. Where disassembly instructions are given correctly in technical manuals, the manuals may be referenced if instructions are lengthy and require the manual for clarity and comprehension (see 5.1.2.2). Where examinations, inspections, and tests must be performed prior to or during disassembly, the TRS shall so specify. QATIPs hold points shall be specified. Detailed disassembly instructions apply to actions required for both planned and corrective overhaul/repair maintenance.

(3) Planned Material Lists. Provide planned overhaul and repair material lists. These lists shall identify those parts which are specifically required to be replaced regardless of their condition. Selected materials must be on hand at the appropriate maintenance level activities in order to accomplish the planned maintenance actions in accordance with the TRS. These material lists, depending upon extent, may either be contained in the body of the TRS or placed in an appendix and referred to in the body of the TRS.

(4) Contingency Material Lists. Provide contingency material lists. These lists shall identify those parts based on engineering analysis or experience, delineated with respect to levels of maintenance,

which may be expected to require some replacement. It shall be stated that the contingency material lists are provided to permit the maintenance activity to have the necessary material on hand if required. It is not intended to make the procurement of such material mandatory. Contingency material lists, depending upon extent, may be either contained in the body of the TRS or placed in an appendix and referred to in the body of the TRS.

(5) Criteria for Suitability of Worn-in-Parts Versus New Parts. Provide criteria by which to determine the suitability of worn or degraded parts for continued use until the next similar overhaul/repair period. The criteria shall explicitly state those measurable, wear/deterioration limits which, if exceeded, require replacement by new parts.

(6) Receipt Inspection of New/Refurbished Parts. Provide procedures for conduct of critical inspection and review of new parts and of overhauled/repaired parts received from DOA/SOA activities (including comparison with parts being replaced to establish equivalence before installation).

(d) 1.4 Reassembly and Grooming. Paragraphs under this heading shall:

(1) Provide all necessary reassembly instructions, including required hold points for quality inspection accomplishment as delineated by QATIPs. Where such instructions are given correctly in technical documentation they shall be referenced instead of repeating lengthy instructions in the TRS. Where critical examinations and tests are required to be performed during reassembly, the TRS shall so specify.

(2) Specify grooming which is required before or during postoverhaul tests. Grooming instructions given in technical manuals shall be referenced rather than repeated in the TRS. Typical examples of grooming are:

a. Adjustment of relief bypass valves.
b. Rotor balancing to reduce noise levels.
c. Honing of valve seats to reduce leakage.
d. Improving coupling alignment.

(3) Specify that, upon completion of grooming, the overhaul/repair activity will place suitable data on the body of the part which will provide in legible

form the following information: part no., serial no. (if applicable), overhaul/repair activity identification, and the date of overhaul/repair. This data may be engraved in prepared metal plates, or printed on suitable decal material, or stenciled on the part depending upon the part dimensions, use environment and material composition. Identification methods will be included in the TRS for the applicable item.

(e) 1.5 Final Acceptance Tests. Paragraphs under this heading shall:

(1) Specify the system, equipment, or component performance requirements.

(2) Specify the examinations and tests, including required test equipment and documentation, required to assure that the item satisfies the above performance requirements.

(3) Specify hold points for quality inspection accomplishment as delineated by QATIPs.

(4) Specify the method of recording test data.

(f) 1.6 Listing of Equipment and Personnel Requirements. Specify special tools and gages, test equipment, facilities, fixtures, and provide an estimate of the number and skill of personnel required, and an approximation of the number of man-hours per work requirements needed.

(g) 1.7 Preservation, Packaging, Handling, Storage, and Transportation Requirements. Provide preservation, packaging, handling, storage, and transportation requirements in accordance with contractual or work authorization documents. For example, preservation for storage when the item is not to be installed for an extended period of time.

5.1.5.1.1 Items to be Inspected and Acceptance Criteria.

5.1.5.1.1.1 Items which are subject to wear, corrosion, erosion, and aging shall be examined and tested if such wear or other deterioration would ultimately result in failure to meet performance specifications. Specific acceptance criteria shall be furnished in the TRS for each such item. The criteria are to be based on actual wear, corrosion, erosion, and aging data when such data are available. These criteria are to be based on assuring satisfactory performance for the planned period of service between refurbishments for the particular item. The criteria will in many instances

be a matter of engineering judgement when wear or deterioration rates have not been established for shipboard operating conditions.

5.1.5.1.1.2 Where specific parts are mentioned, the part number (FSN, FIIN, FSCM/Part Number, or NAVORD Part Number as applicable), and applicable reference document shall be written in the text of the TRS to minimize any possibility of misunderstanding.

5.1.5.1.1.3 When the technical manual includes charts of clearances and tolerances, this information may be used as a starting point in specifying allowable wear. The following list illustrates typical examples of items and applicable criteria of acceptability:

(a) Bushings or bearings and mating shafts. Clearances or dimensions.

(b) Pump wear rings or rotors. Clearances or dimensions.

(c) Thrust bearings. End play.

(d) Gear trains. Backlash, contact pattern, and alignment.

(e) Pressure containing parts. Wall thickness (thinnest area, erosion path, or both) and leakage rate.

(f) Couplings and shafts. Alignment and clearance.

(g) Piping, valves, fittings. Thickness and leakage rate.

(h) Operating mechanisms. Backlash or play.

(i) Cylinders and pistons. Clearances, diameters, and leakage rate.

(j) Valves, disks, and seats. Dimensions for important parts, seat angles, seat rings, ball diameters.

(k) Electrical wire. Insulation resistance.

(l) Switches, transformers, relays, and other electronic or electrical components. Electrical and mechanical characteristics.

5.1.5.2 Section 2.- Overhaul/Repair Record Requirements.

5.1.5.2.1 Data Purpose. The purpose to be served by the overhaul/repair record shall be to:

(a) Provide a permanent record of the overhaul/repair test and inspection (see format Figure 5).

(b) Define items and areas requiring work.

(c) Provide data for future overhaul planning.

(d) Serve as a basis for determining the adequacy of the TRS for use on subsequent overhauls or refurbishments.

(e) Provide data for ADP reporting systems as required.

(f) Serve as a library of information which may be used in analyzing postoverhaul malfunction.

5.1.5.2.2 Data Record. To achieve the purpose sepcified in 5.1.5.2.1, the TRS shall require the recording of any or all of the following data. Fulfillment of overhaul/repair record requirements will be accomplished through preparation and completion of the Traveler and Inspection/Discrepancy/Repair Report (TIDRR), in accordance with the example format and preparation/completion instructions contained in Figure 5. The TIDRR will serve as a dual purpose, permanent type record by directing the movement of the item being overhauled/repaired from receipt to issue status, and by providing for a record of inspections, discrepancies, and overhaul/repair actions accomplished during the repair process. The TIDRR will be comprised of five (5) sections; i.e., Traveler, Inspection/Discrepancy, Planned Overhaul/Repair Actions, Examinations/Tests, and Remarks, which will require recording, as a minimum, data required of and derived from (1) examinations, (2) tests, (3) corrective repair actions, (4) disassembly/reassembly and grooming, (5) overhaul repair actions, and (6) final acceptance tests for the item covered by the TRS.

5.1.5.2.2.1 Traveler and Inspection/Discrepancy/Repair Report (TIDRR). The TRS originator shall provide the TIDRR data sheet form in the example format set forth in Figure 5, in quality suitable for reproduction. Instructions for preparation of the TIDRR by the TRS originator and for recording pertinent data by the overhaul/repair activity are provided in Figure 5. When completed, TIDRRs will be retained by the overhaul/repair activity for review by the cognizant ISEA/MEA and as a data source for repairables management program information requirements and ADP reporting systems input preparation.

5.1.5.3 Appendices. Appendices will be used to separate relatively bulky information from the body of the TRS when such separation will increase the clarity of the overall TRS. When used, appendices

shall be identified by capital letters (e.g., (A), (B), and (C)). The following are examples of material which will be placed in appendices:

(a) Contingency Material List. (see format Figure 7).

(b) Planned Overhaul/Repair Material List (see format Figure 6).

(c) Format for the Traveler and Inspection/Discrepancy/Repair Record (TIDRR). (See example format and instructions Figure 5.)

5.1.5.4 Enclosures. Enclosures may be used to include closely related material which is not an inherent part of the TRS. The enclosures, identified in full, shall be listed by numbers (e.g., (1), (2), and (3)) in the order that they are mentioned in the text. An example of material to be enclosed is the prearrival tests (see 5.3.5).

5.1.5.5 Security Classification. The security classification of a TRS shall be established by the Naval procuring activity. Whenever practicable all classified matter will be separated into a classified appendix leaving the main body of the TRS unclassified. Security requirements shall be handled in accordance with DD Form 441 (attachment), DOD 5220.22-M (see 4.9.2). The security requirements are contained in DD Form 254 which is furnished by the procuring activity.

5.1.5.6 Notes, Cautions, and Warnings. Notes, cautions, and warnings. when used to emphasize important and critical instructions, shall immediately precede the applicable instructions or as noted in 3.2 above.

5.2 Quality Assurance Provisions.

5.2.1 Responsibility for Inspection. Unless otherwise specified in the contract, work request, or purchase order, the designated activity is responsible for the performance of all inspection requirements specified in the applicable TRS. Except as otherwise specified in the contract, work request, job order, or project order, the designated activity may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the standard where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements. Additional quality program requirements will be invoked as set forth in MIL-Q-9858.

5.3 Standardization.

5.3.1 Uniform Methods and Standards. The activity preparing the TRS shall take maximum advantage of existing uniform methods and standards.

5.3.2 Procedures for Review.

5.3.2.1 Reviews. Engineering review of Technical Repair Standards may be conducted at three stages of preparation progress, viz, in-process, completion of preliminary TRS, and in its final form prior to promulgation.

5.3.2.2 In-process Reviews. In-process review is the review of TRSs while in the process of preparation. The review may be performed by the cognizant Government activity or the preparing activity (originator) and may occur at any point(s) during the TRS development, as specified by the procuring activity documentation (i.e., work requests, contracts, etc.).

5.3.2.3 Review of Preliminary TRSs. Preliminary TRS review consists of review for technical content and format when the TRS has been completed in its initial form. The review is conducted by cognizant Government personnel prior to TRS submission in final form.

5.3.3 Approval and Acceptance. Review of the TRS in its final form for approval and acceptance consists of careful examination of the TRS format and content for accuracy and adequacy. This review will normally be conducted in conjunction with and following satisfactory performance of proofing (see 5.3.4 below). This function is a NAVORD responsibility but may be delegated to the appropriate maintenance engineering activity or agent.

5.3.4 Proofing. Completed TRSs shall be proofed at the TRS originating activity prior to formal approval. The purpose of proofing is to assure that the TRS is complete, accurate, workable, and compatible with other processing documentation and conforms to the content, inspection, and production requirements of this standard and other applicable technical document specifications such as MIL-M-15071, MIL-M-38784, and WS-10759. When the TRS originator is also the designated overhaul/repair activity for the item, proofing may be conducted during Validation. Proofing will be accomplished through detailed application of TRS provisions in the actual performance of examining, testing, and servicing instructions against or on the physical system, equipment, or component described in the TRS. The proofing demonstration shall include inspection, disassembly, assembly, maintenance, trouble-shooting, testing, and other work specified in the TRS for the hardware to the extent technically practical. Written information and drawings in each TRS shall be compared against actual equipment in all details. Procedures that would damage the hardware or that would incur extraordinary costs will be demonstrated by review of applicable drawings. Changes found necessary during proofing will be incorporated in the TRS and the TRS reproofed prior to formal approval and distribution. Proofing will be performed by cognizant Government personnel and TRS originator personnel. Satisfactory accomplishment of the proofing is a prerequisite to final approval of the TRS.

5.3.5 Prearrival Tests. If required (normally in a system TRS), prearrival tests provide instructions for examinations and tests which will assist in developing the overall work package. Since these tests are not conducted by the overhaul/repair activity, they do not constitute a part of the TRS proper, and are made an enclosure to the TRS.

5.3.5.1 Purpose. The examinations and tests shall be designed to provide overhaul planning information such as the following:

(a) Confirmation of the applicability of the equipment and component TRSs referenced in the system TRS.

(b) Determination of new equipment or components installed since the last overhaul/repair of the system.

(c) Determination of the overall condition of the system and its important equipments and components.

(d) A comparison of actual performance data versus required performance characteristics for the system and its important equipments and components.

(e) Identification of equipment or components requiring overhaul or repair in addition to planned overhaul maintenance items.

(f) Preparation of mandatory planning documents.

5.3.5.2 Scope. The scope of the prearrival examination and tests shall be limited to that which can be performed on an operational system by ship's force with outside assistance in the form of engineering guidance and special test equipment. For each examination or test, the item, the method, the special test equipment, and when applicable, the required performance characteristics shall be listed. Space shall be provided for recording the results, signature, and data of each examination or test.

5.3.5.3 When Required. Prearrival examination and tests will be included when the necessary data can only be obtained from an installed system or when data is required well in advance of the induction of the item for overhaul/repair. They may be included at any time when such inclusion can be shown to represent either cost savings or greater reliability.

5.3.6 Inspection of Preparation for Delivery. The packaging, packing, and marking shall be inspected for compliance with section 4.9 of this standard.

Preparing Activity: Navy - OS
Project Number: MISC-N937

TECHNICAL-MAINTENANCE OVERHAUL AND REPAIR STANDARD

TRS NO. _____

CANCELS _____

TITLE: _____

ABBR. TITLE: _____

FEDERAL STOCK NO. (FSN): _____

APPLICABLE NEXT HIGHER LEVEL OF ASSEMBLY: _____

TRS NO.	NOMENCLATURE	FSN

APPENDED SUPPLEMENTARY TECHNICAL-MAINTENANCE OVERHAUL AND REPAIR STANDARDS:

STRS NO.	NOMENCLATURE	FSN

PREPARED BY: _____ APPROVED: _____

ACTIVITY: _____ ISEA: _____

DATE: _____

Figure 1 - TRS Cover Sheet

SUPPLEMENTARY TECHNICAL-MAINTENANCE OVERHAUL AND REPAIR STANDARD

STRS NO. _____

CANCELS _____

TITLE: _____

ABBR. TITLE: _____

FEDERAL STOCK NO. (FSN): _____

APPLICABLE NEXT HIGHER LEVEL OF ASSEMBLY: _____

TRS NO.	NOMENCLATURE	FSN

APPLICABLE TECHNICAL-MAINTENANCE OVERHAUL AND REPAIR STANDARD

TRS NO.	NOMENCLATURE	FSN

PREPARED BY: _____ APPROVED: _____

ACTIVITY: _____ ISEA: _____

DATE: _____

Figure 2 - STRS Cover Sheet

DESCRIPTION OF CHANGE			
CHANGE	DATE	AFFECTED	REASON

Figure 3 - Description of Change Table

TRS No. _ _ _ _ _

TITLE OF TECHNICAL/MAINTENANCE OVERHAUL AND REPAIR STANDARD

REFERENCES

(a) _ _ _ _ _

(b) _ _ _ _ _

(c) _ _ _ _ _

APPENDICES

(A) Traveler and Inspection/Discrepancy/Repair Report

(B) Planned Overhaul/Repair Material List

(C) Contingency Material List

(D) _ _ _ _ _

ENCLOSURES

(1) Prearrival Tests (system TRS only).

(2) _ _ _ _ _

FIGURES

1 _ _ _ _ _

2 _ _ _ _ _

PURPOSE

The purpose of this TRS is to provide examination, test, repair, maintenance, and performance specifications for the overhaul/repair of (list system, equipment, or component).

The TRS establishes minimum standards of acceptance with respect to the condition and performance of the item.

SCOPE

Summary of contents of the TRS.
Identification of items covered by the TRS.
Boundaries.
Specific delineation of work to be performed.
Identification of TRSs for subitems.

Figure 4 - Technical/Maintenance Overhaul and Repair Standard Format

SECTION 1.- OVERHAUL/REPAIR WORK REQUIREMENTS

1.1 General

1.1.1 The overhauling/repair activity is responsible for overhauling/repairing the (list system, equipment, or component) such that it satisfies the post-overhaul/repair requirements specified in 1.5 of this TRS. As a minimum, the overhauling/repairing activity shall comply with the requirements of 1.2 through 1.7 of this TRS.

1.1.2 In instances where the design requirements conflict with the requirements of the TRS and QATIPs, the requirements of the TRS shall govern. These instances are identified where occurring, and approval authority is shown.

1.1.3 Component configuration changes shall not be made when these changes prohibit the use of approved parts for the item involved.

1.1.4 Flow charts/block diagrams are provided as follows: _ _ _ _

1.2 Tests, examination, and corrective actions.

1.2.1 _ _ _ _ _

1.3 Planned overhaul/repair maintenance.

1.3.1 _ _ _ _ _

1.4 Reassembly and grooming.

1.4.1 _ _ _ _

1.5 Final acceptance tests.

1.5.1 _ _ _ _

1.6 Listing of special gages, interface gages, and tools, test equipment, facilities, fixtures, number and skill of personnel required, and approximate number of man-hours per work requirements needed.

1.6.1 _ _ _ _

1.7 Preservation, packaging, handling, storage, and transportation requirements.

1.7.1 _ _ _ _ _

Figure 4 - Technical/Maintenance Overhaul and Repair Standard Format (Continued)

_ _ _ _

SECTION 2.- OVERHAUL/REPAIR RECORD REQUIREMENTS

2.1 All examination data, test results, and maintenance actions shall be recorded in the Traveler and Inspection/Discrepancy/Repair Report.

2.2 All completed Appendix A documents shall be filed by the overhauling activity as a permanent record of the overhaul/repair.

SECTION 3.- OVERHAUL/REPAIR MATERIAL REQUIREMENTS

3.1 The material required for overhaul/repair of item _ _ _ _ is included in the following lists:

(a) Planned Overhaul/Repair Material List, Appendix B.

(b) Contingency Material List, Appendix C.

3.2 Appendix B includes those parts, based on engineering analysis, that are required to implement planned maintenance actions.

3.3 Appendix C identifies those parts, based on engineering analysis, that may normally be expected to require some replacement.

Figure 4 - Technical/Maintenance Overhaul and Repair Standard Format (Continued

TECHNICAL/MAINTENANCE OVERHAUL AND REPAIR STANDARD

TRAVELER AND INSPECTION/DISCREPANCY/REPAIR REPORT

1. When filled in, this document will serve as a record of results of the examination and tests performed on the system, equipment, or component during the overhaul/repair. It will also provide verification of work performed during the overhaul/repair and certification of system, equipment, or component condition and performance after the overhaul/repair. In addition, the TIDRR will assist in defining other items or areas requiring work, will provide the data base for future overhaul planning, will serve as the basis for determining the adequacy of the TRS for use on subsequent overhauls or refurbishments, will serve as a library of information which may be used in analyzing post overhaul/repair malfunctions, and will serve as a data source for repairables management program information requirements.

2. The overhaul activity will maintain a record file consisting of completed Traveler and Inspection/Discrepancy/Repair Reports for all systems, equipment, and components overhauled/repaired per TRS instructions.

Appendix A
Sheet _____ of _____

Traveler and Inspection/Discrepancy/Repair Report (TIDRR) Format - Appendix to TRS

Figure 5

TRAVELER AND INSPECTION/DISCREPANCY/REPAIR REPORT (TIDRR)

(1) The TRS originator shall prepare the TIDR& outline and designate data recording requirements concurrently with TRS preparation. The TIDRR outline will be an appendix to and form part of the TRS.

(2) The quality of the TIDRR shall be sufficient to permit working copy reproduction of the TIDRR by the depot/intermediate maintenance level activity designated to perform overhaul/repair of the item covered by the TRS. A TIDRR (working copy) shall be completed for each item processed by the overhaul/repair activity.

(3) TIDRR HEADING. Information required in the heading is self-explanatory. The TRS originator will complete, as practical, the following heading information:

Item/Component Nomenclature
Federal Stock Number (FSN)(or Federal Item Identification Number (FIIN) or Federal Supply Code for Manufacturers (FSCM) if FSN not available)
Item Part Number
Equipment Title (i.e., next higher assembly)
System Title (system terminology including Mark/Mod designation)
Inventory Control Point
Cognizance Symbol

The remaining blocks will be completed on reproduced (working) copies of the TIDRR by the activity performing the overhaul/repair work.

(4) TRAVELER SECTION. The Traveler Section will provide a systematic method for scheduling and tracking each item through the overhaul/repair process, and for verification that each planned processing operation is accomplished and initialed off by responsible personnel.

(a) The Processing Operations column shall be filled in by the TRS originator at the time of TRS preparation. The broad categories of processing operations will be based upon the detailed procedures in the TRS and will be identified and listed in a planned sequence of events to enhance the orderly movement of the item through the overhaul/repair production line. An example listing is shown herein (page 36) to illustrate representative general categories of operations. Formatting of the Traveler Section may be modified, if required, to accommodate repetitive processing steps peculiar to the procedures contained in the TRS, or repeated steps may be indicated by appropriate work sequence number assignment.

Figure 5 - TIDRR Format - Appendix to TRS (Continued)

(b) Work center and shop code assignments are prepared on working copies by the TIDRR scheduler for the activity performing the overhaul/repair for the items covered by the TRS. Where a formal planning group does not exist at the designated overhaul/repair activity for the item covered by the TRS, these blocks will be precompleted by the TRS originator. Man-hours expenditure figures will be the totals for the operation performed measured in tenths.

(c) Work processing start date represents the date of induction for the overhaul/repair and completion date represents the date when the item has been packaged and is ready for issue.

(d) Work complete and satisfactory blocks will be signed off by responsible personnel after assurance that all required work has been performed and the data record is complete.

(5) INSPECTION/DISCREPANCY RECORD.

(a) Discrepancies reported by the user organization (or other survey activity) will be entered under the "Reported Discrepancies" column by the overhaul/repair activity on working copies of the TIDRR. Following the examinations or tests necessary to ascertain the existence of the reported discrepancy, the appropriate block "Verified" or "Not Verified" will be checked, recommended action identified and the inspection phase signed off. Verified discrepancies and those other discrepancies noted during disassembly and other receiving tests/examinations will be listed under the "Discrepancies and Recommended Actions" column. Corrective action will be noted when accomplished opposite the required action in the "Corrective Action Taken" column, and Quality Assurance Inspection indicated. It is to be noted that maintenance actions to be listed herein are exclusive of planned overhaul/repair actions.

(b) Upon completion of discrepancy correction action, the Inspection/Discrepancy Record will be signed off by the responsible supervisor and attested to by the Quality Assurance Inspector in the appropriate blocks.

(6) PLANNED OVERHAUL/REPAIR ACTION RECORD.

(a) Planned overhaul or repair actions required by the TRS instructions shall be indicated by the TRS originator by including the numbers of the paragraphs from the TRS in which the pertinent requirements are specified. As each of the overhaul/repair actions is accomplished by the overhaul/repair activity, the actual work performed will be briefly stated in the "Action Accomplished" column, and the replacement parts utilized listed on the working copy, using the identification provided in the Planned Overhaul/Material and Contingency

Figure 5 - TIDRR Format - Appendix to TRS (Continued)

Material Lists. Each required planned overhaul/repair action must be signed off by responsible shop supervisors and Quality Assurance Inspectors, and the completion date noted.

(b) Upon completion of planned overhaul/repair actions, the record will be certified by the responsible supervisor and attested to by the cognizant Quality Assurance Inspector in the appropriate blocks.

(7) EXAMINATIONS/TESTS RECORD.

(a) The TRS originator will include the numbers of the paragraphs from the TRS in which pertinent requirements are specified, the title of the test/examination to be conducted, and the acceptance standard (limits) allowed. The overhaul/repair activity will record the actual measurements obtained for all examinations/tests including final acceptance tests required by the TRS on the TIDRR working copies. Condition or performance deficiencies noted during tests and examinations must be identified and the corrective action taken set forth in the column marked "Examination/Test Performance".

(b) Upon completion of the examinations and test requirements, the record will be certified by the responsible supervisor and attested to by the cognizant Quality Assurance Inspector in the appropriate blocks.

(8) REMARKS. The Remarks sheet is included to permit the overhaul/repair activity to provide comments and recommendations pertinent to (1) the condition of the item upon receipt/disassembly, (2) overhaul/repair procedures as stated in the TRS, (3) parameters utilized in examinations and tests, (4) parts rejection or discard, and (5) other comments pertinent to the overhaul/repair of the item on the working copies of the TIDRR. Each entry on the Remarks sheet must be accompanied by the initials and code of the originator of the comment/recommendation.

Figure 5 - TIDRR Format - Appendix to TRS (Continued)

TRAVELER and INSPECTION/DISCREPANCY/REPAIR REPORT NO. _____

NOMENCLATURE	FSN	FIIN/FSCM	PART NO.	SERIAL NO.	TRS NO.

SYST. TITLE	EQUIP. TITLE	ICP	COG.	ICP SER./DATE	JOB ORDER NO.

TIDRR PREPARED BY	CODE	DATE	TIDRR APPROVED BY	CODE	DATE

TRAVELER SECTION

WORK SEQ.	PROCESSING OPERATION	WORK CENTER	SHOP CODE	SHOP SUPV.	MAN HOURS	QUAL. ASSUR.	DATE
	UNPACK						
	VISUAL INSPECTION						
	RECEIVING TEST / EXAM.						
	DISASSEMBLY						
	PLANNED OVERHAUL/REPAIR						
	IN-PROCESS TESTS						
	CORRECTIVE ACTION						
	ASSEMBLY						
	PERFORMANCE TESTS						
	GROOM / PAINT						
	MARK/IDENTIFICATION						
	ACCEPTANCE TEST						
	CALIBRATE						
	TOUCH-UP						
	VISUAL CHECKS						
	FINAL ACCEPTANCE TEST						
	PACKING/PACKAGING						

PROCESSING		WORK COMPLETE AND SATISFACTORY			
START	COMPLETE	SUPERVISOR	CODE	QUAL. ASSURANCE	CODE

TIDRR NO. _____ PAGE _____ OF _____

Figure 5 - TIDRR Format - Appendix to TRS (continued)

TIDRR Continuation Sheet (I/D) ITEM NOMENCLATURE._____

INSPECTION/DISCREPANCY RECORD

NO.	REPORTED DISCREPANCIES	RECOMMENDED ACTION

☐ Verified / ☐ Not Verified	INSPECTOR	SHOP	DATE

NO. DISCREPANCIES & RECOMMENDED ACT.	CORRECTIVE ACTION TAKEN	QA

	WORK COMPLETE & SATISFACTORY				
DATE	SUPERVISOR	CODE		QUALITY ASSURANCE	CODE

TIDRR NO._____ ITEM SER. NO._____ PAGE ____ OF ____

Figure 5 - TIDRR Format - Appendix to TRS (continued)

TIDRR Continuation Sheet (O/R) ITEM NOMENCLATURE:

PLANNED OVERHAUL/REPAIR ACTION RECORD

TRS PARA NO.	ACTION ACCOMPLISHED	REPAIR PART NO. USED	SHOP SUPVR.	QUALITY ASSUR. INSP.	DATE

WORK COMPLETE & SATISFACTORY

DATE	SUPERVISOR	CODE	DATE	QUALITY ASSURANCE	CODE

TIDRR NO._____ ITEM SER.NO _____ PAGE_____ OF_____

Figure 5 - TIDRR Format - Appendix to TRS (continued)

TIDRR Continuation Sheet (E/T) ITEM NOMENCLATURE._____

EXAMINATIONS/TESTS RECORD

TRS PARA. NO.	EXAMINATION / TEST PERFORMANCE	VALUE (OR RANGE)		SHOP SUPVR.	QUALITY ASSUR. INSP.	DATE
		SPECIFIED	OBSERVED			

DATE	WORK COMPLETE & SATISFACTORY				
	SUPERVISOR	CODE	DATE	QUALITY ASSURANCE	CODE

TIDRR NO:_____ ITEM SER. NO_____ PAGE_____OF_____

Figure 5 - TIDRR Format - Appendix to TRS (continued)

TIDRR Continuation Sheet (R) ITEM NOMENCLATURE. _____

Reference NO.	REMARKS

TIDRR NO: _____ ITEM SER. NO: _____ PAGE _____ OF _____

Figure 5 - TIDRR Format - Appendix to TRS (continued)

Planned Overhaul/Repair Material List

Component _____ No. _____

Description	Dwg. No.	Pc. No.	Qty.	EIC (Equipment Identification Code) Number	Federal Stock No. *

* or Vendor service part No. if a Federal Stock No. is nonexistent.

Appendix
Sheet of

Figure 6 - Planned Overhaul/Repair Material List Format - Appendix to TRS

Contingency Material List

Component _____ No. _____

Description	Dwg. No.	Pc. No.	Qty	EIC (Equipment Identification Code) Number	Federal Stock No. *

* or Vendor service part No. if a Federal Stock No. is nonexistent.

Appendix
Sheet of

Figure 7 - Contingency Material List Format - Appendix to TRS

ENGINEERING DOCUMENT REQUIREMENTS LIST

FOR

(SYSTEM IDENTIFICATION)

(PREPARING CONTRACTOR)

LINE NO.	REPAIRABLE ITEM NOMENCLATURE	DOC. TYPE	MAINT. LEVEL	DOCUMENT NUMBER	DOCUMENT TITLE	SCHEDULED COMPLETION DATE	SCHEDULED PROOFING DATE(S)	COST	REMARKS

Appendix
Sheet _ of _

Figure 8 - Engineering Document Requirements List Format - Appendix to TRS

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge *(DO NOT STAPLE)*, and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document*(s)* or to amend contractual requirements.

(Fold along this line)

(Fold along this line)

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STANDARIZATION DIVISION (502)
INDIAN HEAD, MD 20640

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR ☐ USER ☐ MANUFACTURER ☐ OTHER *(Specify)*:
b. ADDRESS *(Street, City, State, ZIP Code)*	

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

DD FORM 1426 PREVIOUS EDITION IS OBSOLETE.