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MIL-STD-1767B (USAF) 05 May 1994

SUPERSEDING MIL-STD-1767A (USAF) 15 June 1988

FSC 14GP

# **MILITARY STANDARD**

# PROCEDURES FOR QUALITY ASSURANCE AND CONFIGURATION CONTROL OF ICBM WEAPON SYSTEM TECHNICAL PUBLICATIONS/DATA



AMSC NO. F4437

#### **FCREWCRD**

- 1. This Military Standard is approved for use by the Space and Missile Systems Center (SMC), Air Force Material Command (AFMC), Department of the Air Force, and is available for use by all Departments and Agencies of the Department of Defense.
- 2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to Space and Missile Systems Center/SDFC, 160 Skynet Street, Suite 2315, Los Angeles CA 90245-4683, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.
- 3. This standard describes the functions, roles and responsibilities for quality assurance and configuration control of ICBM Weapon System technical publications/data. It is applicable to all agencies, offices, commands and contractors involved in the development, production or use of ICBM Weapon System technical publications/data. The program implements the quality assurance and change control requirements of AFR 8-2, TO 00-5-1, TO 00-5-2, TO 00-5-3 and MIL-M-38784.
- 4. SAMSO-STD-77-6, System Requirements Analysis Program for the MX Weapon System, is an essential companion document to MIL-STD-1767B.

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#### 1. SCOPE

- 1.1 <u>Purpose</u>. This standard establishes the requirements for a quality assurance and configuration control program for technical publications/data procured by the Air Force in support of Intercontinental Ballistic Missile (ICBM) weapon systems. It provides the minimum quality assurance and configuration control requirements for ICBM weapon system technical publication/data except those specifically exempted elsewhere in the standard.
- 1.2 <u>Objectives.</u> The objectives of the program implemented by this standard are as follows:
  - a. To establish and maintain controls that assure adequate, accurate and timely technical publications/data.
  - b. To provide means, by validation and verification, that assures the technical publications/data supports operation and maintenance activities.
  - c. To establish means for maintaining configuration accountability and control of technical publications/data coverage because of equipment and facility modifications.
  - d. To assure standardization of technical publications/data wherever practical.
  - e. To create change criteria, procedures and controls to assure timely update of technical publications/data.
- 1.3 <u>Application</u>. This standard applies to all agencies, offices, commands and contractors involved in the development, production or use of ICBM weapon system technical publications/data during the acquisition phase.
- 1.3.1 <u>Separate Directives</u>. Separate directives and operating procedures may be developed to expand and implement specific requirements of this standard.

#### 2. REFERENCED DOCUMENTS

#### 2.1 Government Documents.

2.1.1 <u>Specifications and Standards</u>. Unless otherwise specified, the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this standard to the extent specified herein.

#### SPECIFICATIONS

MIL-M-38784 Manuals, Technical: General Style and Requirements

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

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

#### 3. DEFINITIONS

- 3.1 <u>General</u>. For purposes of this standard, the following definitions shall apply.
- 3.1.1 <u>Associate Contractor</u>. An associate contractor is responsible to the Air Force Material Command, Space and Missile Systems Center (AFMC SMC) for preparing, or providing inputs for, specific technical publications/data. For purposes of this standard, the term "contractor" is synonymous with "associate contractor".
- 3.1.2 <u>Central Technical Order Control Unit (CTOCU)</u>. THE CTOCU is the AFMC SMC agency responsible for configuration accountability, configuration control and quality assurance of organizational and intermediate level technical orders (TOS). The CTOCU may have one or more technical Order Control Unit(s) (TOCU) (see 3.1.22), located at an operational base or test site, to implement portions of this standard. For purposes of this standard, the CTOCU is the Technical Order Review Board (see 3.1.25). Composition and responsibilities of the CTOCU are defined in the CTOCU SOP.
- 3.1.3 <u>Configuration Accountability.</u> Configuration accountability is the maintenance of records that completely describe the configuration of ICBM weapon system technical publications/data.
- 3.1.4 <u>Configuration Control</u>. Configuration control is the controlling of technical publications/data to ensure they include procedures to support all system and equipment configurations fielded and all approved operation and maintenance concepts associated with these configurations.
- 3.1.5 <u>Data Element</u>. A data element is the lowest identifiable level of technical publications/data being considered for verification. A data element may consist of any of the following items:
  - a. Paragraph.
  - b. Subparagraph.
  - c. Step
  - d. Sub-step.
  - e. Figure.
  - f. Any identifiable portion of a figure.
  - g. Table.
  - h. Any identifiable portion of a table.

- 3.1.6 <u>Depot Technical Publications/Data</u>. Depot technical publications/data are used to overhaul, repair, and/or test hardware end items procured from the contractor(s). They are managed controlled and distributed in accordance with TO 00-5-1, TO 00-5-2 and TO 00-5-3.
- 3.1.7 <u>Development/Support/Interface Working Group (DSIWG)</u>. The DSIWG is a working group established and chaired by the TOMA to plan, schedule and coordinate the development and acquisition of all ICBM weapon system technical publications/data. Composition and responsibilities of the DSIWG are defined in the DSIWG SOP.
- 3.1.8 <u>Illustrated Parts Breakdown (IPB)</u>. The IPB provides parts identification and supply information necessary to support organizational and intermediate level maintenance.
- 3.1.9 <u>In-Process Review (IPR)</u>. An in-process review is defined in TO 00-5-3.
- 3.1.10 <u>Interim Technical Order Field Change Notice (ITOFCN)</u>. An ITOFCN is a temporary TO change issued by a Technical Order Control Unit (TOCU) (see 3.1.22) to remedy emergency problems encountered or to support special activities at an operational base or test site. A TOFCN (see 3.1.23) may take the place of an ITOFCN.
- 3.1.11 <u>Post-Publication Review.</u> A post-publication review is defined in TO 00-5-1.
- 3.1.12 <u>Preliminary Technical Order (PTO)</u>. A preliminary technical order is defined in TO 00-5-2.
- 3.1.13 <u>Prepublication Review (PPR).</u> A prepublication review is defined in TO 00-5-3.
- 3.1.14 Quality Assurance. Quality assurance provides effective procedures for review, validation and verification of technical publications/data for technical adequacy and accuracy, pertinency, and conformance to specifications requirements.
- 3.1.15 <u>Reading Grade Level (RGL).</u> Methodology for determining and validating readability of narrative material is described in MIL-M-38784.
- 3.1.16 Real Property Installed Equipment (RPIE). RPIE is government owned or leased equipment that is physically attached to, integrated into, or built on Air Force property. This equipment is normally procured through the Military Construction Program and installed as part of the construction effort.
- 3.1.17 <u>Review Team.</u> A technical publications/data review team participates in an IPR or PPR and is chaired by a designated representative of the TOMA. The composition of the team is dependent upon the content of the TOs being reviewed and the status of the TOs at the time of review. Normally, participants include

appropriate USAF Space Command (AFSPACECOM), Air Force Material Command (AFMC), Air Education Training Command (AETC), Air Force Operational Test and Evaluation Center (AFOTEC), Air Force Communications Command (AFCC) agencies, and contractor personnel.

- 3.1.18 <u>Civil Engineering Manuals (CEMs)</u>. CEMs provide operation and maintenance instructions, parts identification, and related information for systems and equipment classified as RPIE (see 3.1.16). These manuals are used by AFSPACECOM, but are excluded from the Technical Order System per AFR 8-2. They are developed for AFSPACECOMM by AFMC during the acquisition phase in accordance with applicable specifications and are subject to the same reviews, validation and verification controls as specified in TO 00-5-3. After transition to AFSPACECOM, they are maintained and controlled by AFSPACECOM.
- 3.1.19 <u>System Engineering/Technical Assistance (SE/TA) Contractor.</u> The SE/TA contractor provides technical assistance to AFMC SMC for all technical publications/data activities.
- 3.1.20 Technical Order (TO). A technical order is defined in TO 00-5-1.
- 3.1.21 <u>Technical Order Change Notice (TOCN).</u> A TOCN is a cover sheet for any hard copy change to ICBM weapon system technical publications/data issued by the cognizant contractor during the acquisition phase.
- 3.1.22 <u>Technical Order Control Unit (TOCU)</u>. A TOCU is an ancillary agency of the CTOCU. It is located at an operational base or test site and is responsible for implementing those portions of this standard as directed by the CTOCU.
- 3.1.23 <u>Technical Order Field Change Notice (TOFCN)</u>. A TOFCN is an interim change to a technical publication, issued only by the CTOCU, to enable work to proceed while a proposed change is receiving further consideration and/or final preparation as a TOCN. A TOFCN may take the place of an ITOFCN (see 3.1.10).
- 3.1.24 <u>Technical Order Management Agency (TOMA)</u>. A TOMA is defined in TO 00-5-3. For purposes of this standard, the TOMA is AFMC SMC.
- 3.1.25 <u>Technical Order Review Board (TORB)</u>. A TORB is defined in TO 00-5-3. for the purposes of this standard, the CTOCU (see 3.1.2) is the TORB.
- 3.1.26 <u>Technical Order Verification Team (TOVT)</u>. A TOVT is composed of Air Force (AFMC/ACC/AFOTEC) and contractor personnel, and chaired by a TOMA designated representative, to perform verification in accordance with AFR 8-2, TO 00-5-3, and this standard. ATC, AFCC, the SE/TA contractor, and other agencies may participate in the verification, when requested by the CTOCU.
- 3.1.27 <u>Technical Publications/Data</u>. All of the broad variety of technical orders, preliminary technical orders, parts identification manuals, work card decks, checklists, etc., used for operation and maintenance of systems and equipment.

- 3.1.28 <u>Using Command</u>. A Using Command is defined in TO 00-5-3.
- 3.1.29 <u>Validation</u>. Validation is defined in TO 00-5-3.
- 3.1.30 Verification. Verification is defined in TO 00-5-3.
- 3.2 Acronyms. The following acronyms are used in this standard:

A&CO Assembly and Checkout

AFALC Air Force Acquisition Logistics Center

AFCC Air Force Communications Command

AFPRO Air Force Plant Representative Office

AFR Air Force Regulation

AFR Air Force Regulation
AFSC Air Force Specialty Code
AFMC Air Force Material Command

AFOTEC Air Force Operational Test and Evaluation Center

AFSPACECOM Air Force Space Command

AETC Air Education Training Command
CAPL Critical Alloy Parts List

CDRL Contract Data Requirements List

CEM Civil Engineering Manual

CTOCU Central Technical Order Control Unit
DCAS Defense Contract Administration Services

DID Data Item Description
DoD Department of Defense

DSIWG Development/Support/Interface Working Group

ECP Engineering Change Proposal

ICBM Intercontinental Ballistic Missile

IM Item Manager

IPB Illustrated Parts Breakdown

IPR In-Process Review

ITOFCN Interim Technical Order Field Change Notice
JNWPS Joint Nuclear Weapons Publication System

LSA Logistics Support Analysis MOA Memorandum of Agreement

NWSSG Nuclear Weapons System Safety Group

OO-ALC Ogden Air Logistics Center

ORA Operational Requirements Analysis

PPR Prepublication Review

PTO Preliminary Technical Order

PTOCN Preliminary Technical Order Change Notice

RGL Reading Grade Level

RPIE Real Property Installed Equipment

SE/TA System Engineering/Technical Assistance

SMC Space and Missile Systems Center

SM System Manager

SOP Standard Operating Procedures
SRA System Requirements Analysis
TCTO Time Compliance Technical Order

TO Technical Order

TOCN Technical Order Change Notice
TOCU Technical Order Control Unit

TOFCN Technical Order Field Change Notice
TOMA Technical Order Management Agency

TORB Technical Order Review Board

TOVCR Technical Order Verification Completion Record
TOVR Technical Order Verification Recommendation

TOVT Technical Order Verification Team

TPA Test Planning Analysis
TRC Technical Repair Center

#### 4. GENERAL REQUIREMENTS

- 4.1 <u>Program Management.</u> AFMC SMC is the TOMA responsible for ICBM technical publications/data development. Management objectives are achieved primarily through a quality assurance and configuration control program.
- 4.1.1 Management Objectives. The management objectives are as follows:
  - a. Establish an organization to plan, coordinate and implement the ICBM technical publications/data quality assurance and quality control programs.
  - b. Ensure that ICBM program events and requirements are supported with appropriate technical publications/data.
  - c. Monitor contractor technical publications/data development and validation activities to ensure that technically adequate and accurate data are delivered on time.
  - d. Demonstrate by verification that the technical publications/data supports operation and maintenance activities.
  - e. Establish procedures and controls to ensure timely update and fast reaction change processing of technical publications/data.
- 4.1.2 <u>Organizational Interfaces</u>. The organizational interfaces required to implement the quality assurance and configuration control program are described in the following paragraphs.
- 4.1.2.1 <u>TOCU Interface</u>. The TOCU is defined in 3.1.2 and 3.1.22. The TOCU implements, directs and manages the technical publications change request program (including validation and verification) for a given location, under direction of the CTOCU. The TOCU processes AFTO Forms 22, ITOFCNs and other change requests generated at the site.
- 4.1.2.2 <u>TORB Interface.</u> The TORB is defined in TO 00-5-3. The CTOCU (see 3.1.2 and 4.1.2.3) is responsible for conducting the functions of the TORB in accordance with TO 00-5-3.
- 4.1.2.3 Ogden Air Logistics Center (OO-ALC) Interface. OO-ALC is the ALC System Manager (SM) for ICBM weapon systems. OO-ALC provides permanent members on the DSIWG, the CTOCU and the TOCU.
- 4.1.2.4 <u>AETC Interface</u>. AETC provides a permanent member on the DSIWG and the CTOCU.
- 4.1.2.5 <u>AFSPACECOM Interface</u>. AFSPACECOM provides permanent members on the DSIWG, the CTOCU and the TOCU. Membership on the CTOCU and TOCU may be satisfied

by a single representative designated by AFSPACECOM. Membership on the DSTWG may include representatives from more than one AFSPACECOM agency.

- 4.1.2.6 <u>AFOTEC Interface</u>. AFOTEC provides permanent members on the DSIWG, the CTOCU and the TOCU.
- 4.1.2.7 <u>AFMC Test Organization Interface</u>. The AFMC Test Organization provides permanent members on the DSIWG and the CTOCU. If an AFMC Test Organization is established at a location where a TOCU is established, the Test Organization provides a permanent TOCU member.
- 4.1.2.8 <u>AFCC Interface</u>. AFCC provides permanent members on the DSIWG, the CTOCU and the TOCU, if requested by the TOMA.
- 4.1.2.9 <u>SE/TA Contractor Interface</u>. The SE/TA contractor shall provide permanent members on the DSIWG, the CTOCU and the TOCU.
- 4.1.2.10 <u>Associate Contractor Interface</u>. Associate contractors shall provide the necessary qualified personnel and services to support the technical publications/data quality assurance and configuration control program as directed by contract, and as specified in this standard.
- 4.1.2.11 Other Government Interfaces. Other Air Force, Department of Defense (DoD), or government agencies may be invited to participate in DSIWG activities, on an as-required basis, for consideration of certain specific subjects.
- 4.2 <u>Program Implementation</u>. The detailed requirements of this standard may be implemented by separate plans, directives or Standard Operating Procedures (SOPs). Specifically, the following separate implementing documents shall be prepared.
- 4.2.1 <u>DSIWG SOP</u>. The TOMA shall develop, coordinate and distribute a SOP to define the detailed operation of the DSIWG within the framework of this standard.
- 4.2.2 <u>CTOCU SOP</u>. The TOMA shall develop, coordinate and distribute a SOP to define the detailed operation of the CTOCU within the framework of this standard. This SOP shall also define the operation of the TOCU under the direction of the CTOCU.
- 4.2.3 Memorandum of Agreement (MOA). The TOMA shall initiate MOAs, as required, to define and establish support requirements from applicable agencies.

#### 5. DETAILED REQUIREMENTS

- 5.1 <u>Contractor Quality Assurance Program.</u>
- 5.1.1 <u>General</u>. Each associate contractor shall plan for a program for in-house quality assurance (see 3.1.14) and configuration control (see 3.1.4) of technical publications/data.
- 5.1.2 <u>DSIWG/CTOCU/TOCU Support.</u> The contractor shall support the activities of the DSIWG, CTOCU and TOCU as directed by contract. All contractor representatives on the DSIWG, CTOCU and TOCU shall be authorized to act for their company on all matters involving ICBM weapon system technical publications/data with regard to content, accuracy, adequacy and configuration of the data, or other related subjects as may arise.
- 5.1.3 Technical Publications/Data Validation. Validation, as defined in TO 00-5-3, shall be accomplished by the contractor (see 6.2). Contractor draft editions of technical publications/data may be used for validations. Issues used for validation must be compatible with equipment and latest released engineering data. Differences in equipment used in validation shall be by exception and shall be documented for review by the TOMA or the CTOCU. Prior to verification, repeated validations shall be accomplished for critical and complex operations.
- 5.1.3.1 <u>Validation Procedure</u>. The contractor shall observe the following:
  - a. Validation shall be in accordance with TO 00-5-3.
  - b. Fault isolation, troubleshooting and repair procedures shall be validated during predelivery maintenance resulting from testing or A&CO as opportunities arise. No item of equipment shall be deliberately "broken" to validate such procedures.
  - c. Procedures for accomplishing checkout of a number of similar equipment, such as console drawers, shall be validated using each individual piece of equipment, regardless of similarity. The accomplishment of a typical procedure shall not serve as blanket approval for other similar procedures.
  - d. Changes and revisions to basic issues of technical publications/data are to be validated in the same manner as data in the basic issue.
- 5.1.3.2 <u>Validation Accomplishment</u>. Validations accomplished at a contractor's facility may be in accordance with the contractor's in-house quality assurance program to satisfy the requirements of this standard. Validations at test or operational sites shall be accomplished in accordance with this standard.
- 5.1.3.3 <u>Witnessing Validation</u>. Contractor validations shall be witnessed by designated representatives of the TOMA in accordance with TO 00-5.3. Normally,

this shall be accomplished by the Air Force Plant Representative Office/Defense Contract Administration Office (AFPRO/DCAS) as established in applicable MOAs and AFCMDR 74-1. However, selected validations may be witnessed by other TOMA-designated representatives. The contractor shall notify the TOMA in advance of the validation so as to allow TOMA representatives to schedule validation attendance. Witnessing of these validations shall be on a noninterference basis. Nonsupport by such witnesses of a validation shall not restrict contractor validation accomplishment. Designated representatives must be government employees.

- 5.2 <u>Air Force Quality Assurance</u>. The DSIWG shall establish program policy and operating procedures to ensure that a consistent and quality product is delivered to the Air Force. The policies and procedures adopted shall be kept in consonance with established Air Force basic policies and criteria established by AFR 8-2 and TO 00-5-3.
- 5.2.1 <u>Support Personnel</u>. All agencies (AFMC/AFSPACECOM/AFOTEC/AETC/AFCC and SE/TA contractor) shall ensure the continuity of support personnel during all development phases of a particular technical publication (or series of similar technical publications) in accordance with TO 00-5-3. This requirement is mandatory to establish a common baseline for technical publications/data that is not subject to concept/philosophy changes during latter stages of development.
- 5.2.2 <u>Technical Publications/Data Reviews</u>. Quality assurance of technical publications/data shall include conduct of reviews in accordance with TO 00-5-3. The DSIWG shall schedule, and the TOMA should chair, the following reviews to be performed by Air Force review teams. Review teams shall use AFTO Form 158, Technical Order Review Comment Sheet, to record all review comments.
- 5.2.2.1 <u>In-Process Reviews (IPRs)</u>. IPRs are performed to achieve technical adequacy and accuracy of each technical publication during the course of its preparation. The TOMA shall conduct a minimum of three (3) IPRs, as scheduled by the DSIWG, for each specific technical publication/data. At least one (1) IPR shall have been held and the review comments incorporated into the affected technical publication, prior to validation (see 5.1.3).
- 5.2.2.1.1 <u>Review Material</u>. Review teams shall use material as provided by the contractor in accordance with his contract.
- 5.2.2.1.2 Review Team Minutes. The review team chairperson shall record comments from the review in a proposed set of minutes reflecting actions taken, major problem areas, deficiencies and discrepancies noted during the review, and other pertinent remarks as appropriate. The proposed minutes shall be presented to, discussed with, and finalized by the review team in a caucus during the last day of the review. Following approval in the caucus, the minutes shall be presented to the contractor for critique and discussion. The minutes also shall reflect the results of the contractor and Air Force discussion. Copies shall be reproduced by the contractor for each review team member.

- 5.2.2.1.3 <u>Comment Compliance</u>. Compliance with all review comments is mandatory unless justified exceptions are provided by the contractor and approved by the TOMA. The contractor may take exceptions to the review comments by letter to the TOMA no later than fourteen (14) working days following the review. The TOMA shall allow review team members to rebut the contractor's exceptions, prior to approving or rejecting the exceptions. The exceptions shall be considered approved if there is no reply within fourteen (14) working days following receipt of the request by the TOMA. Comments from a previous review shall be incorporated into the technical publication prior to any subsequent review.
- 5.2.2.1.4 Reading Grade Level (RGL) Computation. An IPR shall include computation of RGL as established in MIL-M-38784 (also see 3.1.16). The review team shall use AFTO Form 124, Computation of Technical Order Reading Grade Level, to record RGL. If the contractor utilizes a computer-derived product for RGL determination, such product is acceptable for use by the review team. If the calculated RGL does not conform to the established criteria, the contractor shall rewrite the manuscript as necessary to meet the criteria. Such rewriting shall be accomplished by the contractor prior to any ensuing reviews.
- 5.2.2.2 <u>Prepublication Review (PPR)</u>. At least one (1) PPR shall be performed after Air force verification (see 5.2.3) to provide assurance that the technical publication/data complies with Air Force directions as given in military specifications, standards, exhibits, contract work statements, etc., and that verification results and IPR comments have been incorporated. The PPR shall be scheduled by the CTOCU and chaired by the TOMA. The TOMA shall notify all concerned military agencies and, if appropriate (as in the case of integrated manuals), other associate contractors.
- 5.2.2.1 <u>Review Material</u> The form of data to be used for the PPR shall be as agreed by the contractor and the TOMA.
- 5.2.2.2.2 Review Team Minutes. Comply with 5.2.2.1.2
- 5.2.2.3 <u>Comment Compliance</u>. Contractor compliance with all PPR comments is mandatory and no exceptions shall be allowed.
- 5.2.2.3 <u>Conduct of Review.</u> The post-publication review shall follow the procedures of 5.2.2.2, except that the material to be reviewed is a formal TO and AFTO Form 22, Technical Order System Improvement Report, shall be used to document recommended changes. Process AFTO Forms 22 in accordance with TO 00-5-3.
- 5.2.3 <u>Technical Publication/Data Verification</u>. Verification of operation and organizational and intermediate level maintenance technical publications/data shall be accomplished in accordance with TO 00-5-3 as implemented by this standard. Figure 9 illustrates a sample TO verification flow.
- 5.2.3.1 <u>Establishing Verification Requirements.</u> Selection of technical publications/data elements (see 3.1.6) requiring verification shall be based upon criticality and complexity. Initial verification requirements shall be

identified by the contractor to the DSIWG and documented on DSIWG worksheets in accordance with the DSIWG SOP. Also see 5.2.3.1.2. Final approved verification requirements shall be established by the CTOCU.

- 5.2.3.1.1 <u>Verification Identification</u>. Initial verification requirements shall be identified by the contractor based upon System Requirements Analysis (SRA), Operational Requirements Analysis (ORA) and Logistics Support analysis (LSA) functions and tasks. Contractor recommended verification requirements shall be reviewed, coordinated and documented in the DSIWG worksheets. Details on completing the DSIWG worksheets are provided in the DSIWG SOP.
- 5.2.3.1.2 <u>Verification Recommendation</u>. The contractor shall recommend verifications to the CTOCU (see 6.2). The contractor recommendations shall be identified on a Technical Order Verification Recommendation (TOVR) (see Figure 1). Detailed information on processing verification recommendations is provided in the CTOCU SOP.
- 5.2.3.1.3 <u>Prior Review.</u> Several reviews of the technical publications/data shall have been accomplished prior to the verification (see 5.2.2.1). Also, proof of validation completion shall be provided to the CTOCU by the contractor prior to verification (see 5.1.3.1), except as indicated in 5.2.4.3. In addition, the format of the technical publications/data shall have been converted into a Preliminary Technical Order (PTO) (see 3.1.13).
- 5.2.3.2 <u>Verification Assignment</u>. Upon CTOCU approval of a TOVR, the CTOCU shall assemble a TOVR package in accordance with the CTOCU SOP. The TOVR package shall then be assigned to the appropriate verification team chief for scheduling and conducting the verification.
- 5.2.3.2.1 <u>Verification Location</u>. For verifications accomplished at locations where a TOCU or AFMC Test Organization exits, one of these agencies shall normally be assigned responsibility as the verification team chief. For verifications to be performed at locations where these agencies do not exit, the CTOCU shall assume the responsibility of verification team chief.
- 5.2.3.2.2 <u>Verification Coordination</u>. The verification team chief shall coordinate with concerned agencies to assure availability of required facilities, equipment and personnel and shall establish and disseminate complete scheduling information. The scheduling shall include a preverification meeting, verification performance and post-verification meeting.
- 5.2.3.3 <u>Verification Accomplishment</u>. The verification team chief shall assemble the Technical Order Verification Team (TOVT). The TOVT shall include representation from AFMC, AFOTEC, AFSPACECOM, and concerned contractors. AETC, AFCC, the SE/TA contractor, and other agencies may participate in the verification, when requested by the CTOCU.

- 5.2.3.3.1 <u>Preverification Meeting.</u> The verification team chief shall convene a preverification meeting with all members of the TOVT. A complete description of the verification effort shall be provided and specific assignments made so that each team member fully understands individual responsibilities.
- 5.2.3.3.2 <u>Verification Performance</u>. During the verification, the TOVT shall assure that the procedures are performed exactly as stated in the technical publications/data. If the procedures cannot be performed in accordance with the instructions, the instructions shall be changed prior to verification completion so that they accurately reflect the proper procedure.
- 5.2.3.3.3 <u>Checklist Verification</u>. Where checklists are prepared covering the procedure to be verified, the checklists shall be verified concurrently with the basic technical publication/data.
- 5.2.3.3.4 <u>Post-Verification Meeting</u>. At the conclusion of the verification, the verification team chief shall convene a post-verification meeting. TOFCNs reflecting changes resulting from the verification shall be prepared, reviewed and approved. The Technical Order Verification Completion Record (TOVCR) (see Figure 2) shall be completed and signed by the verification team chief and other affected agencies.
- 5.2.3.4 <u>Verification Certification and Approval.</u> Upon receipt of the TOCN incorporating the TOFCNs, cognizant CTOCU personnel shall review the TOCN for proper incorporation of the TOFCNs. The TOVCR shall then be presented to the CTOCU chairperson for final acceptance signature and filing in the verification records.
- 5.2.3.5 <u>Verification Limitations and Exceptions.</u> The following paragraphs describe limitations and exceptions applicable to verifications performed in accordance with this standard.
- 5.2.3.5.1 <u>Verification Changes</u>. Changes made to technical publications/data as a result of verification shall be restricted as follows:
  - a. Editorial changes shall be made only if they improve understandability. Typographical errors shall be corrected by the contractor prior to the PPR (see 5.2.2.2.).
  - b. Information shall not be added that is considered elementary.
  - c. Addition of information shall be made only if within the scope of the technical publications/data. The scope of coverage shall be determined by the TOMA.
  - d. Controversial items shall be resolved by the CTOCU chairperson.
- 5.2.3.5.2 <u>Substitutions</u>. The verification team chief may authorize the use of substitute equipment, facilities and draft editions of technical

publications/data. This authorization may be given when hardware or released technical publications/data are not available and no appreciable changes to procedures would result. Equipment differences must be documented on the TOVCR. Draft technical publications must be compatible with released engineering data, unless the exceptions are approved by the CTOCU.

- 5.2.3.5.3 <u>Contractor Data.</u> When a publication is not current with the latest released engineering data, contractor technical data may be used to conduct verification if prior written authorization is obtained from the CTOCU and a master copy of the data to be used is on file in the CTOCU library. The data, in all other ways, shall conform to applicable military specifications.
- 5.2.3.5.4 <u>New Equipment</u>. If during the verification, a new item of Air Force supplied equipment (including a locally manufactured item) is identified, a TOFCN shall be generated for the fabrication or use of the equipment to expedite the verification effort.
- 5.2.3.5.5 <u>User Participation</u>. The CTOCU or verification team chief through AFOTEC, shall arrange for user personnel of the appropriate skill level to perform the procedures to be verified.
- 5.2.3.5.6 <u>Verification Exemptions</u>. Specifically exempt from the verification requirements of this standard are the publications listed in 5.4.
- 5.2.4 <u>Verification/Validation</u>. Verification shall not be performed simultaneously with validation; however, verification may be performed immediately following validation provided:
  - a. Contractor equipment/facilities availability does not permit validation to be performed in advance.
  - b. Procedures are relatively simple and the possibility of errors is slight.
  - c. Contractor personnel perform the validation.
  - d. Validation comments are incorporated prior to verification, or a validation mark-up copy is approved for use.
  - e. Air Force personnel perform the verification.
  - f. Approval is obtained from the acquiring agency.
- 5.3 <u>Technical Acceptance Demonstrations</u>. Validated and verified technical publications/data shall be available for use during Class I and II Technical Acceptance Demonstrations. Recommended technical publications/data changes resulting from the demonstrations shall be submitted to the CTOCU, or TOCU, via AFTO Form 22.

- 5.4 <u>Technical Publications/Data Configuration Control and Accountability.</u> The CTOCU is responsible for configuration control and accountability for all ICBM weapon system technical publications/data, except those listed below.
  - a. Depot technical data.
  - Commercial manuals and contractor data incorporated into the Air Force TO system.
  - c. Weapon System Illustrated Parts Breakdown (IPB).
  - d. Index Type TOs (for example, List of Applicable Publications).
  - e. Critical Alloy Parts List (CAPL).
  - f. Any TO issued under the Joint Nuclear Weapons Publication System (JNWPS).
  - g. Technical publications/data used by, but not specifically prepared for ICBM weapon systems.
  - h. Other individual technical publications/data specifically approved for exemption by the TOMA in coordination with the AFMC/SM.
  - i. Civil Engineering Manuals (CEMs).
- 5.4.1 <u>Technical Publications/Data Control</u>. Technical publications/data subject to configuration control and accountability shall come under CTOCU control after release through the Technical Order Index, or at the start of the verification, whichever occurs first. Configuration control and accountability is the responsibility of the cognizant associate contractor prior to that time.
- 5.4.2 Change Control. Changes (TOCNs, TOFCNs, ITOFCNs) shall not be made to technical publications/data subject to CTOCU control without prior approval of the CTOCU. Exceptions to this requirement are changes resulting from hardware or contract changes (for example, engineering change proposals, change in specification compliance, change in scope, etc.). The contractor shall be responsible for technical accuracy and adequacy of these changes. However, these changes shall be submitted to the CTOCU in preliminary TOCN (PTOCN) form for configuration accountability and reviewed to determine validation and verification requirements.
- 5.4.3 Fast Reaction Change Processing. Fast reaction change processing shall be accomplished by the CTOCU during the acquisition phase. Data affecting manuals shall be processed as they are received rather than accumulated and processed at scheduled intervals. Changes that have been approved by the CTOCU for incorporation into technical publications/data shall be processed as described in TO 00-5-3 the CTOCU SOP and this standard.

- 5.4.3.1 <u>TOFCN Processing</u>. TOFCNs approved by the CTOCU for incorporation into hard copy shall be processed within the timelines specified in the contract. Approved routine AFTO Forms 22, shall be processed into TOCNs as soon as practical, but not later than one hundred and eighty (180) calendar days after CTOCU approval.
- 5.4.3.2 Engineering Change Processing. For Engineering Change Proposal (ECP) changes, Air Force policy and contractual compliance requires the issuance of TOCNs to affected technical orders concurrently with or prior to modification kit/Time Compliance Technical Order (TCTO) delivery. Prior to modification kit/TCTO distribution, CTOCU review is required for verification impact (see 5.4.2). TOMA approval is required for any deviation to this policy. Any requests for release of interim changes to support kit delivery shall be submitted through the CTOCU with sufficient justification to enable TOMA consideration of contract noncompliance approval.
- 5.4.4 <u>Revisions</u>. Revisions shall not be made to technical publications/data subject to CTOCU control without prior approval of the TOMA/CTOCU.
- 5.4.4.1 Revision Criteria. The primary criteria for revising a technical publication is usability. A revision shall be considered any time the utility of the technical publication/data is impaired due to extensive changes. Revisions shall also be considered when over eighty (80) percent of a publication, including backup pages, is affected by outstanding or proposed changes. Technical publications consisting of eight or fewer pages shall be revised in every instance instead of changed. No prior approval is required for these revisions.
- 5.4.4.2 <u>Revision Recommendation</u>. When it is determined that a revision of a technical publication is required, the contractor shall submit a revision recommendation to the TOMA. The revision recommendation shall include the following information using Contractor Furnished Equipment/Contractor Furnished Aeronautical Equipment (CFE/CFAE) Notice (see 6.2):
  - a. Number and title of publication.
  - b. Reason for revision recommendation.
  - c. Approximate number of pages changed, or requiring change, and approximate percentage of total pages affected.
  - d. List of all TOCNs and TOFCNs involved.
  - e. Description of any proposed rearrangement of contents (see 5.4.4.3).
  - f. Proposed delivery date.
  - g. Identification of any proposed changes, not previously approved by the CTOCU, to be incorporated into the revision.

- 5.4.4.3 <u>Revision Approval</u>. TOMA approval is required when recommended revisions involve proposed rearrangement of contents, changed scope of coverage, specification deviations or other contractual implications. This approval must be obtained prior to submitting a recommendation for revision. The request for approval with substantiating material, including a detailed outline of the proposed revision, shall be submitted to AFMC SMC, with a copy to the CTOCU.
- 5.5 <u>Quality Assurance and Configuration Control Documentation</u>. The following documentation is required in support of the technical publications/data quality assurance and configuration control program. Detailed information for these documents is provided in the CTOCU SOP.
- 5.5.1 <u>Technical Order Verification Recommendation (TOVR)</u>. The TOVR (use Figure 1 as an example and modify accordingly) shall be prepared by the contractor to identify specific elements in a technical publication recommended for verification (see 6.2). The elements recommended shall be those coordinated with the DSIWG and identified on the DSIWG worksheets.
- 5.5.2 Technical Order Verification Completion Record (TOVCR). The TOVCR (use Figure 2 as an example and modify accordingly) is an interim record used by the CTOCU to document those technical publication/data elements that have been verified. When signed by the CTOCU chairperson, the TOVCR documents approval of the verification of the elements listed thereon. Collectively, all of the TOVCRs approved for technical publications/data identify the verification completion status of that publication at any point in time. The TOVCR shall be prepared in accordance with the CTOCU SOP.
- 5.5.2.1 <u>Technical Order Verification Completion/Acceptance Certificate, AFTO Form 4.</u> The CTOCU, acting as the Technical Order Review Board (TORB), shall complete AFTO Form 4 in accordance with TO 00-5-3 and the CTOCU SOP, and submit same to the TOMA prior to the PPR for the specific technical publication/data.
- 5.5.3 Technical Order Field Change Notice (TOFCN). TOFCNs (use Figure 3 as an example and modify accordingly) shall be prepared and issued by the CTOCU in accordance with the CTOCU SOP. TOFCNs are printed on green stock, depending on the contents of the change. TOFCNs are coded, indicating to the contractor whether the TOFCN is or is not to be incorporated as a hard copy TOCN. TOFCNs are incorporated into hard copy TOCNs in accordance with the timelines established in the CTOCU SOP and the contract.
- 5.5.4 Interim Technical Order Field Change Notice (ITOFCN). ITOFCNs (use Figure 4 as an example and modify accordingly) are prepared and issued by the TOCU in accordance with the CTOCU SOP. ITOFCNs are printed on pink stock and distribution is limited to the initiation base and the CTOCU. ITOFCNs remain in effect for a period of time prescribed by the CTOCU SOP, or when replaced by a TOFCN.

- 5.5.5 TOFCN Index. A TOFCN Index (use Figure 5 as an example and modify accordingly) shall be issued by the CTOCU for each technical publication/data under their control. The TOFCN Index identifies all active TOFCNs against the technical publication/data and provides pertinent data for each TOFCN, including recision information. A new TOFCN Index is issued concurrently with, or prior to, release of each TOCN against a technical publication/data. No TOCN is posted until a matching TOFCN Index is received. The TOFCN Index is printed on blue stock.
- 5.5.6 <u>ITOFCN Index.</u> An ITOFCN Index (use Figure 5 as an example and modify accordingly) shall be issued by the TOCU each time an ITOFCN (see 5.5.4) is prepared and distributed. The conditions applicable to an ITOFCN, apply also to an ITOFCN Index (see 5.5.4).
- 5.5.7 <u>Technical Order Change Notice (TOCN)</u>. A TOCN (use Figure 6 as an example and modify accordingly) shall be prepared by the contractor (see 6.2). The TOCN is printed on yellow stock as a cover sheet for each hard-copy change or revision to technical publications/data. The TOCN identifies the authority for all changes included in hard-copy (i.e., TOFCNs, ECPs/TCTOs, AFTO Forms 22, and AFMC Forms 252.)
- 5.5.8 <u>Verification Status Page ("B" Page)</u>. A "B" page (use Figure 7 as an example and modify accordingly) shall be provided in each technical publication/data that contains elements requiring verification. The "B" page lists all unverified procedures, against specific locations or configurations, that cannot be used by operational personnel in an operational environment pending completion of verification. The "B" page is included in the technical publication/data immediately following the "A" page.
- 5.5.9 Technical Order/Equipment Configuration Status Record ("C" Page). Each change to a technical publication/data, as approved by the CTOCU, shall be reported against a basic publication freezeline maintained by the applicable associate contractor. The freezeline lists the configuration of the publication as it is released under the Technical Order Index distribution system. (The freezeline is part of the contractor's in-house configuration accountability records.) After the freezeline is established, any changes incorporated into the technical publication/data are recorded on the "C" page. The "C" page (use Figure 8 as an example and modify accordingly) is prepared in accordance with specific instructions in the CTOCU SOP. The "C" page follows the "B" page (or "A" page, if there is no "B" page) in each technical publication/data. Only TCTOS/ECPs that affect the content of the technical publications/data are listed. For retrofit modifications, the "C" page data is not changed to delete information after the retrofit has been completed.

#### 6. NOTES

- 6.1 <u>Intended Use.</u> Standards conforming to the requirements of this standard are intended for use as military standardization documents and are listed in the DoDISS. The purpose of this standard is to standardize the preparation of military standards and handbooks, to ensure the inclusion of essential data descriptions essential to the selection and application of items and processes, and to aid in the use and analysis of DoD standardization documents.
- 6.2 <u>Data Requirements</u>. When this standard is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL), the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL incorporated into the contract. When the provisions of the DoD FAR Supplement Part 27, Sub-Part 27.475-1 are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this standard is cited in the following paragraphs.

Paragraph No.	Data Requirement Title	Applicable DID
5.1.3	Validation Completion Report, Technical Manuals	DI-TMSS-80070
5.2.3.1.2, 5.5.1	Technical Order Verification Recommendation	DI-TMSS-80607
5.4.4.2	Technical Manual CFE/CFAE Notices	DI-TMSS-80067

6.3 <u>Changes From Previous Issue.</u> Vertical lines or asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

#### 6.4 Subject Term (Key Word Listing).

Associate Contractor
Central Technical Order Control Unit
Configuration Control
Intercontinental Ballistic Missile
Quality Assurance
Standard Operating Procedures
Technical Order
Technical Order Management Agency
Technical Publications
Validation
Verification

Custodian:

Air Force - 19

Preparing Activity: Air Force - 19

Project Number 14GP-F128

Review Activities:

Air Force - 15, 99, AS, MI

FSC 14GP

# MIL-STD-1767B (USAF) PAGES 4 PAGE REMARKS **TECHNICAL ORDER VERIFICATION RECOMMENDATION** DATE DATE NON. CONCUR CONCUR TITLE SMC/DET 10 AFSPACECOM AFOTEC AFMC CTOCU 욷 NUMBER TAB | | | | | FIGURE VERIFICATION NEED DATE CONTROL NUMBER WING EFFECTIVITY CHANGE DATE CONTRACTOR T. O. NUMBER VAFB ONLY T. O. TITLE PARA

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AFMC ACCEPTANCE - CTOCU

VERIFICATION TEAM CHIEF

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# **TECHNICAL ORDER FIELD CHANGE NOTICE**

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Figure 3. Example of Technical Order Field Change Notice (TOFCN)

# INTERIM TECHNICAL ORDER FIELD CHANGE NOTICE

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Figure 4. Example of Interim Technical Order Field Change Notice (ITOFCN)

# TOFCN INDEX

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NOTE

CTOCU APPROVAL:

FILE THIS PAGE FACING THE "A" PAGE OF THE T. O. NO TOFCN SHALL BE POSTED UNTIL RECEIPT OF MATCHING TOFCN INDEX. REMOVE YOUR LAST TOFCN INDEX BEFORE INSERTING THIS SHEET. TOFCN ANNOTATED, DELETED OR NOT LISTED SHALL BE REMOVED FROM THE T. O. THIS INDEX DOES NOT INCLUDE TOCU ISSUED ITOFCNS. IF ADDITIONAL COPIES OF THIS PAGE ARE REQUIRED, THEY MAY EITHER BE OBTAINED FROM THE CTOCU OR REPRODUCED LOCALLY.

#### **TECHNICAL ORDER CHANGE NOTICE**

T. O. TITLE		
T. O.NUMBER	T. O. DATE (BASIC)	EFFECTIVITY
CHANGE NUMBER	CHANGE DATE -	
WRITER	APPROVED	DATE

Refer to the "A" page for listing of pages affected by this Technical Order Change Notice.

#### **EXAMPLES:**

This TOCN incorporates the following TOFCN(s):

50FEDTM0980284R-1 (VB-80B) 20F41DET001020U-1 (VB-81, VB-82) 20S3901SME1201U-1 (VB-83, VB-84)

This TOCN incorporates the following OGDEN ALC Approved AFLC Forms 252:

20YS2150CS0133R (M81-384) 20YS3901SM0515R (M81-385) 50FEDTM0981267R

This TOCN incorporates the following ECPs/TCTOs:

ECP 1806R1 1808R1/TCTO 21M-LGM30-1283 1809/TCTO 21M-LGM30-1278 1810/TCTO 21M-LGM30G-1279 1812R1/TCTO 21LBM30-1280 TCTO 31R2-2FR-518 31R2-2FRR-513 31W4-2FR-505 31R2-2FRR78-504

31R2-2FRR78-505

#### (YELLOW STOCK)

- Do not post the contents of this change until in receipt of the TOFCN Index from the CTOCU authorizing
  use of this change.
- Applicable only to those organizations receiving CTOCU interim changes.

<sup>\*</sup> Refer to the TOFCN Index authorizing use of this change for listing of current TOFCNs.

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Figure 7. Example of Verification Status Page (\*B\* Page)

ECPs AND TCTOS AFFECTING THIS TECHNICAL ORDER ARE LISTED BELOW						
ECP/TCTO NUMBER	INITIAL TOCN NUMBER	REMARKS				
WS-133B-Boe-8622 (TCTO 21M-LGM30G-726)	6	Hybrid Explicit Multiplexer				
WS-133B-Boe-8623 (TCTO 21M-LGM30G-730)	6	PBV/Stage III Jumper				
WS-133B-Boe-8507R1	9	Deletion of Tin Plate Finish from Mod 7 Section				
WS-133B-Boe-1619R1 (TCTO 21M-LGM30F-1385)	17	Installation of Adapter Ring Debris Deflectors for LGM30F Missiles				
WS-133-Boe-1672R2	17	Modification of LER Shock Isolated Floor at LF00-0				
WS-133-Boe-1733	17	ILCS Configuration Control of LF-00-04 Modification				
WS-133-Boe-1763	17	Incorporation of ERCS Program Modification into LF00-04				
FECP-3501	17	LF00-04 Facility Modifications for Integrated Progr				
CCP-4234	17	Incorporate ILCS Modification in LF00-04				
CCP-4235	17	Incorporate ILCS Modification in LF00-04				
CCP-4296	17	Revise Tier II Test Program for LF00-04				
WS-133-Boe-1788	21	Incorporate Thrust Termination Event to Diagnosti Data Package				
WS-133-Boe-5188	22	Modify GP R/V for Combat Training Launch				
WS-133-Boe-1798	25	Incorporate ERCS Battery Monitor at LF00-04				

Figure 8. Example of Configuration Accountability Record ("C" Page)

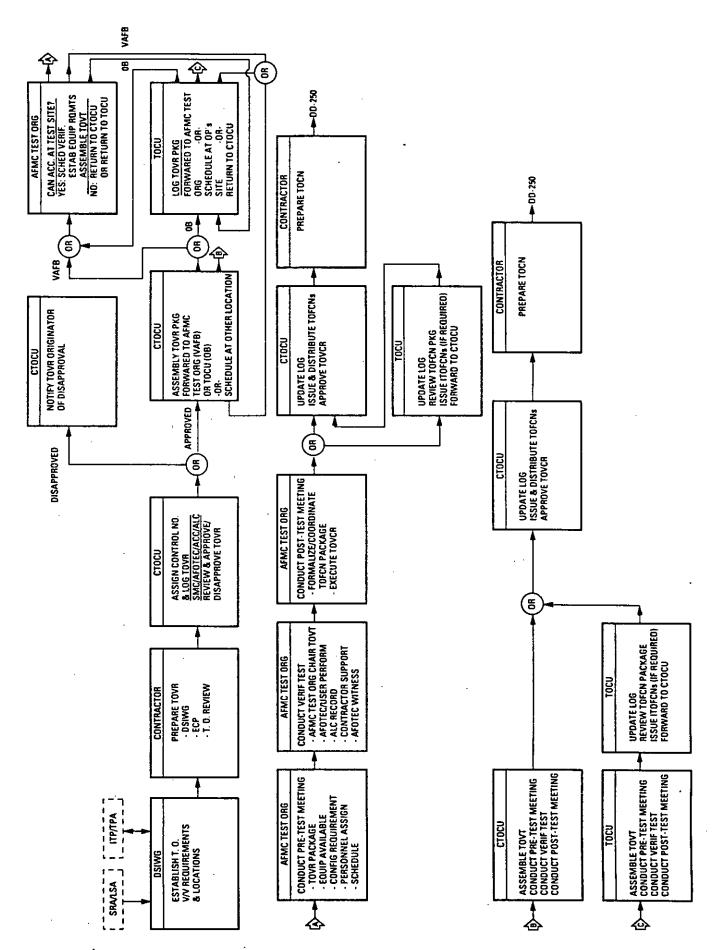


Figure 9. Sample TO Verification Flow

# 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

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3. DOCUMENT TITLE PROCEDURES FOR QUALITY A		ROL OF ICBM WEAPON	
SYSTEM TECHNICAL PUBLICATIONS/DATA			
NATURE OF CHANGE (Identify paragraph number and in	clude proposed rewrite, if possible. Attach extra s	heets as needed.)	
REASON FOR RECOMMENDATION	··-	······································	
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	b. ORGANIZATION		
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NAME (Last, First, Middle Initial)  ADDRESS (Include Zip Code)  PREPARING ACTIVITY  NAME  BALLISTIC MISSILE ORGANIZATION  ATTN: SDC (SPECS & STDS)	d TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)  b. TELEPHONE (Include Area Code) (1) Commercial (909) 876-5131	(2) AUTOVON 876-5131	
and the second of the second o	d TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)  b. TELEPHONE (Include Area Code) (1) Commercial	(2) AUTOVON 876-5131 HIN 45 DAYS, CONTACT:	

5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466

Telephone (703) 756-2340 AUTOVON 289-2340