Headquarters
Department of the Army
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*Army Regulation 750–43

Effective 15 August 2024

Maintenance of Supplies and Equipment

Army Test, Measurement, and Diagnostic Equipment

By Order of the Secretary of the Army:

RANDY A. GEORGE
General, United States Army
Chief of Staff

Official:

MARK F. AVERILL
Administrative Assistant to the Secretary of the Army

History. This publication is a major revision. The portions affected by this major revision are listed in the summary of change.

Authorities. The authorities for this regulation are DoDI 5000.91, DoDD 4151.18, and DoDM 4151.25.

Applicability. This regulation applies to the Regular Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve, unless otherwise stated. This publication is applicable during mobilization.

Proponent and exception authority. The proponent of this regulation is the Deputy Chief of Staff, G–4. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this regulation by providing justification that includes a full analysis of the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25–30 for specific requirements.

Army internal control process. This regulation contains internal control provisions in accordance with AR 11–2 and identifies key internal controls that must be evaluated (see appendix B).

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to the Deputy Chief of Staff, G–4 at usarmy.pentagon.hqda-dcs-g-4.mbx.publications@army.mil.

Distribution. This regulation is available in electronic media only and is intended for the Regular Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

*This regulation supersedes AR 750–43, dated 24 January 2014. Army Directive 2018–07–16, dated 5 November 2018, is rescinded upon publication of this regulation.

SUMMARY of CHANGE

AR 750–43
Army Test, Measurement, and Diagnostic Equipment

This major revision, dated 15 July 2024—

- Incorporates Army Directive 2018–07–12, Prioritizing Efforts-Readiness and Lethality (Update 12), dated August 20, 2018; and rescinds Army Directive 2018–07–16, Prioritizing Efforts-Readiness and Lethality (Update 16), dated 5 November 2018 (chap 2).

- Updates responsibilities for the Assistant Secretary of the Army (Acquisition, Logistics and Technology); Commanding General, U.S. Army Materiel Command; and commanders with a calibration and repair support mission (chap 2).

- Updates Test Equipment Modernization Working Group and Calibration Sets Joint Working Group meetings to a biennial meeting (para 2–2*f*).

- Updates requirement to validate the Test Equipment Modernization and Calibration Sets prioritization lists (para 2–4*c*).

- Adds responsibilities for Commanding General, U.S. Army Futures Command (para 2–7).

- Adds requirement for the test program set management plan to be included in the depot maintenance support plan (para 2–9*h*).

- Adds responsibilities for commanders of Army commands, Army service component commands, and direct reporting units (para 2–11).

- Adds information on workload workshop (para 3–8).

- Transfers the prescribed use of DA Form 4062 (TMDE Acquisition Approval Analysis Data) to DA Pam 750–43 (para 4–5*c*).

- Updates test, measurement, and diagnostic equipment calibration and repair support program administration (para 6–2).

- Adds requirement for Army maintenance turnaround time standards (para 6–3).

- Adds measurement traceability levels (para 6–4*a*).

- Updates calibration and repair support activities (para 6–9).

- Updates test, measurement, and diagnostic equipment and calibration standard failures (para 6–11).

- Updates special purpose test, measurement, and diagnostic equipment medical (para 6–16).

- Updates small arms and ammunition gages (para 6–17).

- Adds radiation, detection, indication, and computation (para 6–19).

- Updates foreign military sales (para 6–20).
- Establishes the procedures set forth in DA Pam 750–43 as mandatory (throughout).

Contents (Listed by chapter and page number)

Chapter 1
Introduction

1–1. Purpose
This regulation establishes policies, assigns responsibilities, and establishes objectives applicable to the development, selection, acquisition, management, sustainment, and support of Army test, measurement, and diagnostic equipment (TMDE) and test program sets (TPSs), embedded diagnostics (ED), and embedded prognostics (EP). It assigns responsibilities for planning, directing, managing, and executing the TMDE program and establishes policy for the development, acquisition, and maintenance of calibration standards to provide direct measurement traceability to the International System of Units (SI).

1–2. References, forms, and explanation of abbreviations
See appendix A. The abbreviations, brevity codes, and acronyms (ABCAs) used in this electronic publication are defined when you hover over them. All ABCAs are listed in the ABCA database located at https://armypubs.army.mil/abca/.

1–3. Associated publications
Procedures associated with this regulation are found in DA Pam 750–43.

1–4. Responsibilities
Responsibilities are listed in chapter 2.

1–5. Records management (recordkeeping) requirements
The records management requirement for all record numbers, associated forms, and reports required by this regulation are addressed in the Records Retention Schedule—Army (RRS–A). Detailed information for all related record numbers, forms, and reports are found in Army Records Information Management System (ARIMS)/RRS–A at https://www.arims.army.mil. If any record numbers, forms, and reports are not current, addressed, and/or published correctly in ARIMS/RRS–A, see DA Pam 25–403 for guidance.

Chapter 2
Responsibilities

2–1. Assistant Secretary of the Army (Acquisition, Logistics and Technology)
The ASA (ALT) is responsible for overall TMDE procurement and Army acquisition policy and will—

a. Integrate TMDE considerations, including Army standard automatic test equipment (ATE) and TPS requirements, ED, EP, and TMDE support concepts into supported end-item acquisition strategies.

b. Investigate new test, measurement, and diagnostic technology through an Armywide program of research and development.

c. Ensure that TMDE requirements, plans, and issues are addressed in the Army Systems Acquisition Review Council process, when applicable.

d. Ensure TMDE policy and requirements are addressed in regulatory documents for which the ASA (ALT) is the proponent agency.

e. Ensure that TMDE requirements, plans, and issues are agenda items at all in-process reviews where the Army is the approving authority on general TMDE considerations.

f. Coordinate acquisition and support strategies requiring TMDE with the Deputy Chief of Staff (DCS), G–4; DCS, G–3/5/7; and DCS, G–8.

g. Ensure that planning and integration of Army Human Systems Integration (HSI) is performed in accordance with AR 602–2.

h. Ensure that integrated product support is implemented per AR 700–127.

i. Ensure participation with other Services concerning activities relative to Department of Defense (DoD) standard ATE mission.

j. Ensure TMDE used on Army systems meets the required polices for serialized item management.

k. Assign an office to administrate and coordinate TPS development with program executive offices (PEOs), program managers, and U.S. Army Futures Command (AFC) TMDE capabilities developers (CAPDEVs) within existing resources.

2–2. Deputy Chief of Staff, G–3/5/7

The DCS, G–3/5/7 will—

a. Direct implementation and maintenance of approved DoD automatic test language standards and related actions.

b. Coordinate TMDE requirements and authorizations with the Commander, AFC; ASA (ALT); DCS, G–4; and DCS, G–8.

c. Ensure TMDE policy and requirements are addressed in regulatory documents for which DCS, G–3/5/7 is the proponent agency.

d. Remove obsolete TMDE from authorization documents.

e. Review and prioritize requirements.

f. Participate in the biennial Test Equipment Modernization (TEMOD) and Calibration Sets (CALSETS) Joint Working Group (JWG) meetings.

2–3. Deputy Chief of Staff, G–4

The DCS, G–4 will—

a. Provide advice on the approval and publication of policy that applies to the TMDE program.

b. Serve as the Headquarters, Department of the Army (HQDA) staff lead for TMDE policies and coordinating actions.

c. Ensure that TMDE and sustainment plans and issues are addressed in the Army Systems Acquisition Review Council process, when applicable.

d. Ensure that Army HSI analysis for TMDE is integrated and considered throughout the integrated product support development in accordance with AR 602–2.

e. Participate in the biennial TEMOD and CALSETS JWG meetings.

2–4. Deputy Chief of Staff, G–8

The DCS, G–8 will—

a. Coordinate TMDE requirements and authorizations with the Commander, AFC; ASA (ALT); DCS, G–3/5/7; and DCS, G–4.

b. Ensure an active program is implemented to modernize the Army's inventory of TMDE and calibration equipment.

c. Validate the TEMOD and CALSETS prioritization lists that are developed biennially by TEMOD JWG and CALSETS JWG.

2–5. Chief, National Guard Bureau and the Chief of Army Reserve

The CNGB and the CAR will—

a. Establish and maintain a command TMDE management program that provides for the support and control of TMDE in accordance with this regulation, DA Pam 750–43, and Technical Bulletin (TB) 43–180.

b. Be responsible for management of TMDE equipment policy and guidance that applies to the Army National Guard (ARNG) and the U.S. Army Reserve.

c. Will ensure ARNG modified table of organization and equipment and table of distribution and allowances facilities provide calibration and repair support (C&RS) per TB 43–180 and within authorized measurement traceability level (MTL).

d. Manage and execute responsibilities for calibration and repair of general purpose (GP) TMDE and selected special purpose (SP) TMDE.

e. Coordinate TMDE procurement requirements with Product Director-Test, Measurements, and Diagnostic Equipment (PD TMDE).

f. Participate in the biennial TEMOD and CALSETS JWG meetings.

2–6. Commanding General, U.S. Army Materiel Command

The CG, AMC, as the lead for the Army TMDE program, will—

a. Through the Director, U.S. Army Test, Measurement, and Diagnostic Equipment Activity (USATA)—

(1) Oversee the Army TMDE Program to ensure measurement traceability to the SI.

(2) Manage and execute all responsibilities for worldwide C&RS of GP TMDE and selected SP TMDE and perform all required actions to meet coordinating responsibilities given to USATA throughout this regulation.

(3) Manage and execute responsibilities for the U.S. Army Primary Standards Laboratory (USAPSL) and Department of the Army Civilian TMDE C&RS activities within AMC.

(4) Provide nucleonic, radiation dosimetry, and health physics services in accordance with DA Pam 750–43 and AR 385–10.

(5) Manage and direct the Army Dosimetry Center.

(6) Maintain an expeditionary civilian TMDE C&RS capability in accordance with this regulation, ATP 4.33, and ATP 4.98.

(7) Plan, program, budget for and execute the TMDE C&RS program, to include unique calibration standards and associated equipment in support of the operational Army; institutional Army; Organic Industrial Base; and research, development, test, and evaluation (RDT&E) missions.

(8) Participate in the biennial TEMOD Working Group (WG) and CALSETS JWG meetings.

(9) Coordinate the procurement of TMDE for all components of the Army CALSETS with PD TMDE.

(10) Conduct a metrology RDT&E program for developing enabling technologies.

(11) Review calibration support capability requests from C&RS organizations outside of AMC.

(12) Review and coordinate maintenance and life cycle sustainment plans (LCSPs) and participate in pre-acquisition reviews, evaluations, and verification of hardware and associated publications required for operation, calibration, and maintenance of systems unique to ATE–TPS.

b. Plan, program, and budget for—

(1) Acquisition of TMDE line item numbers that are within the Army Working Capital Fund (AWCF).

(2) Establishing and maintaining a TPS center that organically acquires, develops, fields, and sustains TPS solutions in support of Army managed ATE.

(3) Coordinating interoperability specifications between interactive electronic technical manuals (IETMs) and Army At-Platform Automatic Test Systems.

(4) Sustainment of ED and EP specifications and standards and management of data standards for IETMs.

2–7. Commanding General, U.S. Army Futures Command

The CG, AFC, as the lead for TMDE requirements, will—

a. Provide capability developments for all ATE, C&RS instrumentation, and TMDE requirements.

b. Support and provide comments on all materiel acquisition documents relating to ATE, C&RS instrumentation, and TMDE.

c. Participate and verify all LCSP events relating to ATE, C&RS instrumentation, and TMDE.

d. Co-chair the biennial TEMOD JWG and CALSETS JWG to establish a modern TMDE inventory.

e. Review and coordinate maintenance and LCSP and participate in pre-acquisition reviews, evaluations, and verification of hardware and associated publications required for operation, calibration, and maintenance of systems unique to ATE–TPS within the AMC subordinate commands.

f. Maintain organic capability for deployment, maintenance, and support of subordinate command-managed ATE-TPSs.

g. Establish and maintain TPS centers for the coordination of TPS development, acquisition, fielding, requisition, sustainment, and support with AMC. TPS center managers or supervisors will develop a charter within 6 months of release of this publication.

2–8. Commanding General, U.S. Army Training and Doctrine Command

The CG, TRADOC, as capability and training developer, will—

a. Develop doctrine and organizational concepts for field operations and application of TMDE, to include maintenance support.

b. Provide training developments for all ATE, C&RS, and TMDE requirements. Review supported end-item requirements to ensure that they are consistent with training and doctrine policy.

c. Support and comment on all materiel system acquisition documents relating to C&RS and TMDE.

d. Support all LCSP events relating to ATE, C&RS, and TMDE.

e. Ensure new concepts, doctrine, and organizations affecting TMDE and calibration are coordinated with the DCS, G–4; DCS, G–3/5/7; DCS, G–8; Director, G–3/5/7; AMC; USATA; ATE; and TPS centers, materiel managers, and the PD TMDE.

f. Participate in the biennial TEMOD and CALSETS JWG meetings.

2–9. Materiel developers, program executive officers, program managers, project managers, and product managers

Materiel developers (MATDEVs), including program executive officers, program managers, project managers, and product managers assigned logistics support or materiel acquisition missions and the MATDEVs listed in AR 70–1, will—

a. Ensure TMDE and C&RS requirements of assigned acquisition programs are considered during all phases of materiel acquisition and equipment life cycle in accordance with DoDI 5000.02 and provide for TMDE considerations during program reviews, type classification (TC), and reclassification.

b. Ensure coordination of TMDE requirements with assigned TRADOC capability developer and training developer.

c. Use existing TMDE, including standard ATE and TMDE as identified within the preferred item list (PIL), which is available at https://pd-tmde.us.army.mil/ prior to developing new TMDE solutions or procuring commercial off-the-shelf (COTS) test equipment (see DA Pam 750–43 for instructions). Ensure GP TMDE and SP TMDE, TPSs, ATE, calibration procedures, maintenance manuals, and IETMs are included on all program review agendas. PD TMDE and USATA TMDE CAPDEVs will participate in program reviews.

d. Provide USATA with applicable engineering requirements and logistics data to develop calibration support and to certify supportability prior to fielding.

e. Coordinate with PD TMDE in the identification and development of TMDE solutions and with USATA in the identification and development of C&RS requirements.

f. Coordinate TPS requirements and associated TPS management plans with PD TMDE and supporting ATE–TPS centers.

g. Ensure Army HSI analysis is performed on each item of equipment covered by this regulation (see AR 602–2).

h. Conduct an annual program review to ensure PEOs, program managers, project managers, and product managers follow this policy guidance in the design, development, acquisition, and integration of TMDE. PEOs are to conduct periodic audits of MATDEV test program set management plans (TPSMPs) and ensure incorporation of the TPSMP into the Weapons Platform LCSP and depot maintenance support plan.

i. Ensure foreign military sales (FMS) requiring TMDE are coordinated with PD TMDE.

j. Attain PD TMDE written approval for at-platform system and off-platform system automatic testers and calibration requirements prior to Milestone B.

k. Fulfill responsibilities in paragraph 7–3, as applicable.

2–10. Commander, U.S. Army Test and Evaluation Command

The Commander, ATEC will—

a. Execute TMDE operational test and evaluation functions identified in the test and evaluation master plans. This includes consideration of TMDE issues in test reports and independent evaluation reports.

b. Coordinate with PD TMDE to ensure that TMDE requirements are included in the test and evaluation master plans when applicable.

2–11. Commanders of Army commands, Army service component commands, and direct reporting units

Commanders of ACOMs, ASCCs, and DRUs will—

a. Ensure critical assigned military occupational specialties (MOSs) 94H and 94W are utilized in their respective duty positions.

b. Support the TMDE workload workshop (WW) when requested by AMC and USATA (see paragraph 3–8).

c. Coordinate TMDE support for subordinate units when there is no calibration laboratory in the geographical area.

d. Participate in biennial TEMOD and CALSETS JWG.

2–12. Commanders at all levels

Commanders at all levels will—

a. Identify their TMDE support requirements to the TMDE organic support organizations (military area test, measurement, and diagnostic equipment support team (ATST)). Where no organic TMDE support exists within the ACOM, ASCC, and DRU, report to and request support from the USATA regional C&RS activity.

b. Ensure quality assurance inspection requirements are scheduled in the command's training plan.

c. Ensure all TMDE is identified to include TMDE that may be embedded in sets, kits, outfits, or other assemblages. Initial identification of TMDE requiring C&RS will be coordinated with the C&RS activity for proper documentation in accordance with DA Pam 750–43.

d. Take appropriate actions to remove unnecessary and outdated TMDE. Turn-in TMDE, to include all operator documentation and basic issue items in excess of authorizations, through appropriate channels, for redistribution.

e. Establish and supervise training programs utilizing TMDE for operator, crew, and maintenance personnel.

f. Coordinate replacement of unserviceable TMDE through the appropriate item manager with the MATDEV.

2–13. Commanders with a calibration and repair support mission

Commanders with a C&RS mission will—

a. Coordinate war, emergency, and contingency plans and rotational deployments with assigned sustainment military command, per ATP 4–33, and USATA.

b. Manage and execute calibration and repair of GP TMDE and selected SP TMDE.

c. Ensure a derivative unit identification code and unique DoD activity address code is assigned for each ATST under their command to facilitate relocation to areas other than the parent unit's area of responsibility, if applicable.

d. Plan and budget for commercial shipping of TMDE that requires manufacturer, contract, or higher levels of measurement traceability calibration capability.

e. Support the TMDE WW and coordinate deployment workload impacts with AMC and USATA.

f. Ensure evaluation of calibration is included in the Command Inspection Program.

g. Develop and execute training programs that will attain and maintain the highest level of proficiency among personnel in the use, maintenance, and calibration of TMDE.

Chapter 3
Test, Measurement, and Diagnostic Equipment Administration and Policy

Section I

Administration

3–1. Test, measurement, and diagnostic equipment basics

a. TMDE encompasses—

(1) Equipment and instruments capable of performing one or more functional capabilities involving testing, measurement, and diagnostics.

(2) ATE.

(3) Physical, dimensional, radiological, optical, photometry, electrical, and electronic type instruments and equipment.

b. A TPS encompasses—

(1) Test program software.

(2) Test program hardware (TPH).

(3) Test program documentation.

c. ED and prognostics encompass—

(1) Sensors, including micro-electromechanical systems.

(2) Databases and data storage devices.

(3) Platform and equipment central processing units.

(4) Smart wiring technologies.

(5) Compatible automatic identification technologies.

(6) Diagnostic functionality of health monitoring systems and IETMs.

(7) Prognostics functionality, as it relates to equipment and platform health.

d. Diagnostic and prognostic information associated with embedded or separate platform software and IETMs encompasses—

(1) Data standards.

(2) Handling and archiving of technical data, including diagnostic specific data.

(3) Fault isolation and diagnostic trees, wiring diagrams, and related tools.

(4) Standards for repair procedures.

(5) Embedded training for component replacement, system repair, and related maintenance checks and services.

3–2. Use of test, measurement, and diagnostic equipment and the role of calibration

a. TMDE is essential to maintenance because of its distinctive ability to test, adjust, synchronize, repair, and verify accuracy, safety, readiness, and information assurance of weapon platforms and equipment using highly precise measurements across the physical, dimensional, radiological, electrical, electronic, electromagnetic, and electro-optical spectrums. The Army recognizes TMDE as a unique commodity of equipment requiring centralized acquisition and support considerations.

b. Calibrated TMDE used in maintenance replicates the precision, performance, and safety built into equipment during the manufacturing process. The capability of weapon platform mechanical systems, radio and communication devices, radar systems, targeting devices, fire control systems, missiles, and aviation platforms to operate accurately and effectively depends on the synchronization of these precise measurements against known standards.

c. To ensure standards are consistently maintained, the Army uses calibration equipment and calibrations sets as the transfer mechanism for traceability to national standards and fundamental natural phenomena in TMDE and weapon platforms.

d. The chain of custody (see MIL–STD–1839 for traceability) for these standards begins at the National Institute of Standards and Technology (NIST) and the USAPSL at USATA. Because of this critical requirement, materiel acquisition will not be accomplished without carefully reviewing existing capability and coordinating with the AFC, TRADOC, USATA, and the PD TMDE for C&RS requirements prior to technology and maturation phase or no later than Milestone B.

e. TMDE that is used by Army organizations is expected to provide reliable results in the operational environment. The safety of military personnel and equipment is paramount and only suitable equipment will be admitted into the U.S. Army TMDE program. If an item's manufacturing quality, cost, or reliability is questionable it will not be designated acceptable TMDE for use by Army organizations. Equipment primarily designed to only withstand limited or household usage will not normally be accepted. Chapter 4 of this regulation includes policy for acquisition of TMDE. Organizations with questions regarding procurement of acceptable TMDE should contact USATA or the PD TMDE.

3–3. Management structure

a. The TMDE management structure is centralized to aid in the effective development, distribution, calibration, repair, funding, and modernization of all TMDE. The DCS, G–4 is the proponent for Army TMDE policy.

b. The CG, AMC, as the lead for the Army TMDE program, will oversee the logistics management of the Army TMDE program.

c. The TMDE management structure identifies the principal agents for executing TMDE policy and the Army TMDE program (see figure 3–1). Within the management structure, each agent is designated authority to recommend TMDE policy and to plan, program, budget, acquire, deploy, sustain, and otherwise manage TMDE functions within their assigned areas of responsibility.

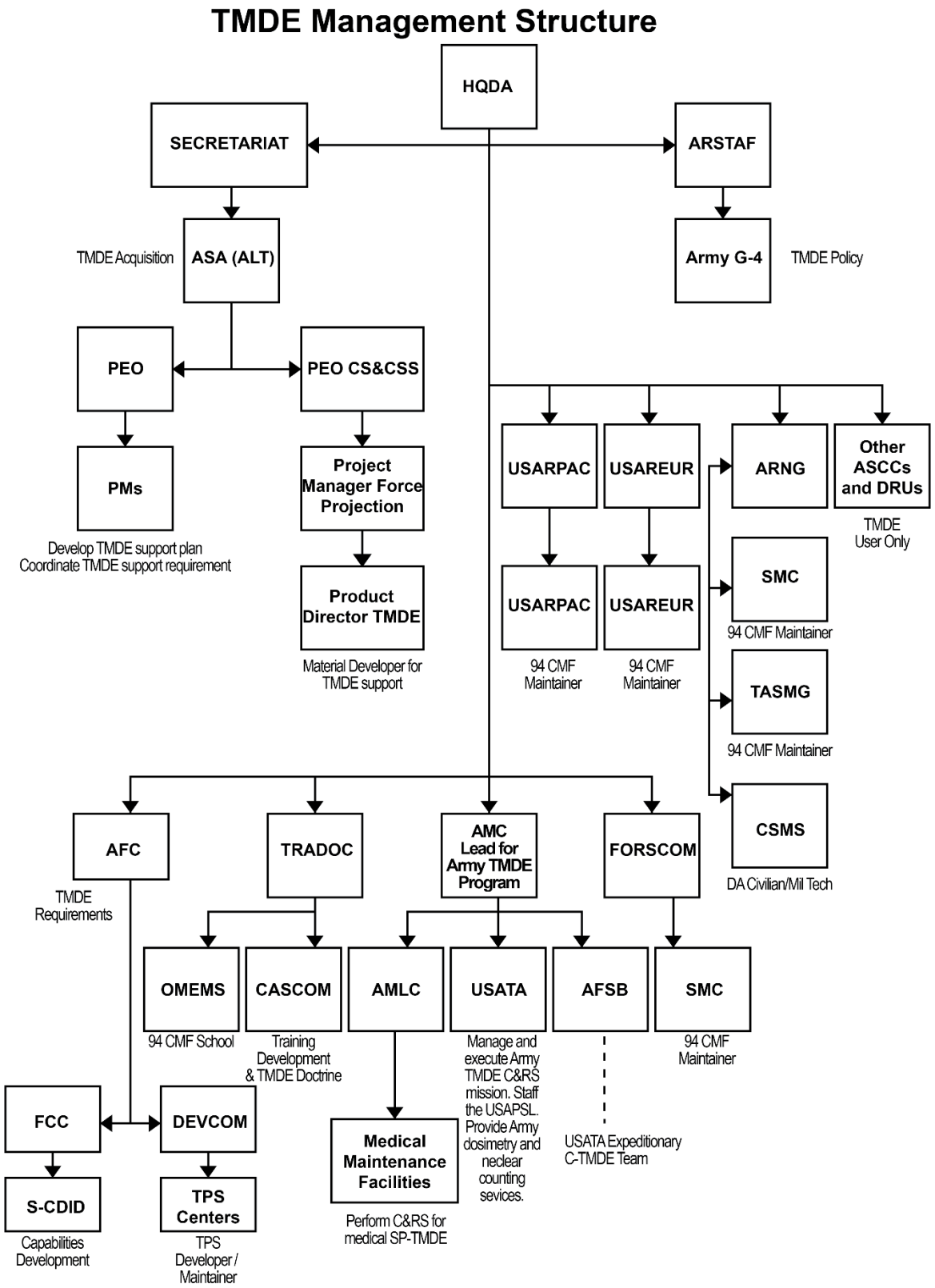

Figure 3–1. Test, measurement, and diagnostic equipment management structure

d. To facilitate effective execution of the TMDE mission, the following organizations are designated as key for executing TMDE policy:

(1) AFC.

(2) TRADOC.

(3) PEOs, program managers, project managers, and product managers.

(4) PD TMDE.

(5) USATA.

(6) ARNG.

(7) AMC or subordinate commands.

(8) ACOMs, ASCCs, and DRUs with TMDE C&RS mission capability.

e. ACOMs, ASCCs, DRUs, and subordinates are the users of the TMDE.

3–4. Automatic test equipment program

The PD TMDE, under the direction of the Program Executive Office Combat Support and Combat Service Support (PEO CS&CSS), will maintain an ATE program to—

a. Manage the standard ATE family and acquisition of standard ATE.

b. As part of the standard ATE family, develop and maintain at-platform ATE to enhance readiness and support IETM requirements.

c. As part of the standard ATE family, develop and maintain a standard off-platform tester to enhance readiness and reduce the logistics footprint.

d. Maintain an active research and development program to promote an open ATE system architecture and incorporate commercial standards into the ATE environment, as needed.

e. Provide assistance to MATDEVs in their efforts to employ standard ATE in support of their systems.

f. Interface with the other Services in a continuous effort to achieve maximum beneficial inter-Service standardization.

3–5. Test equipment modernization program

a. The PD TMDE, under the direction of PEO CS&CSS, will maintain a TEMOD program to—

(1) Introduce a minimum ensemble of different types and models of commercial standard TMDE into the Army inventory to support the requirements of numerous weapon platforms and equipment end-items.

(2) Replace multiple generic types of TMDE with a single new item of Army standard TMDE, where feasible, practical, and cost effective.

(3) Provide direction to the Army for disposition of items being displaced by a TEMOD fielding.

(4) Assess the Army inventory to identify TMDE or families of TMDE that require replacement and new TMDE that would fill gaps in existing TMDE capability.

b. The CG, AFC, will co-chair with the PD TMDE a biennial TEMOD JWG which will include representatives from the U.S. Army Combined Arms Support Command (CASCOM), U.S. Army Forces Command (FORSCOM), HQDA, National Guard Bureau (NGB), MATDEVs, and USATA to ensure requirements for the modernization of TMDE inventory are identified and properly prioritized. The TEMOD JWG will prioritize the resulting requirements and submit their recommendation to the DCS, G–8 for approval.

3–6. Calibration sets and standards program

a. The PD TMDE, under the direction of the PEO CS&CSS, will maintain a CALSETS modernization program to—

(1) Develop, in coordination with AMC, USATA, ARNG, and AFC (CAPDEV), the required calibration standards and associated equipment to perform the total TMDE C&RS mission.

(2) Assess the TMDE inventory annually to ensure its adequacy and to ensure that the accuracy of calibration standards is traceable from the user to NIST.

b. The PD TMDE will provide sets of calibration standards and repair equipment for all tables of organization and equipment and tables of distribution and allowances C&RS missions and related standards for the USAPSL.

c. The CG, AFC, will co-chair with the PD TMDE, a biennial CALSETS JWG which will include representatives from the CASCOM, FORSCOM, HQDA, NGB, MATDEVs, and USATA to ensure requirements for the modernization of TMDE inventory are identified and properly prioritized. The CALSETS JWG will prioritize the resulting requirements and submit their recommendation to the DCS, G–8 for approval.

3–7. Management assessment

a. Product managers will include the PD TMDE, USATA, and AFC (CAPDEV) in materiel system or equipment meetings or reviews (for example, command and program reviews, supportability strategy, product support manager integrated product teams, in-process reviews, and test integration WGs where TMDE is an agenda item). Product managers will provide one copy of each materiel system, equipment, or TMDE program management document to USATA and PD TMDE for review and coordination, before fielding and publication.

b. The PD TMDE, ACOMs, ASCCs, ARNG, AFC (CAPDEV), and USATA will conduct or participate in assessments of developmental, non-developmental, product improvement, and fielded TMDE and supported end-item programs. These assessments will verify TMDE performance, program status, logistic supportability, and conformance to TMDE program requirements and objectives.

c. Commanders of ACOMs, ASCCs, and DRUs will conduct staff assistance visits to field units using equipment readiness assessments and provide unit status reports to identify TMDE shortcomings to assess their TMDE programs (see AR 220–1). Field commanders are encouraged to use maintenance assistance and instruction teams, logistic assistance offices, and direct contact with AMC in resolving TMDE mission issues. Adequacy of TMDE, availability, support, utility, and related issues will be topics of special interest for all field visits conducted under AR 50–6 and AR 750–1.

3–8. Workload workshop

a. USATA will host an annual WW with each ATST and higher headquarters (support operations, calibration laboratory leadership, and so forth) to formulate workload distribution in support of garrison operations and other activities associated efficient and effective operations of the calibration laboratory. The WW is required to plan workload distribution between the ATSTs and the USATA calibration laboratories while operating in a garrison location and will include formalizing activities and timelines of home station TMDE backup support during all phases of area ATST deployment.

b. USATA will host, in coordination with the respective ACOM and ASCC, the WW with each ATST and higher headquarters to formulate workload distribution and other activities noted below. The WW will be held annually for each Regular Army ATST.

c. Procedures for the workshop found in DA Pam 750–43 are mandatory.

d. The ATSTs are resourced for a battlefield mission of area C&RS that can accommodate the requirements of an Army division. Per ATP 4–33, TMDE backup support for home station customers will be provided by a geographically collocated USATA C&RS activity and pre-deployment timelines are based on ready to load date. Post deployment timelines will be based on the equipment arrival date.

Section II

Acquisition Considerations, and Policy

3–9. Requirements identification

The capability developer and MATDEV will begin TMDE requirement planning early in the supported end-item acquisition program. DA Pam 750–43 covers identification of requirements and provides mandatory procedures and guidance.

3–10. Reduction of test, measurement, and diagnostic equipment inventory

PD TMDE, in coordination with AFC, TRADOC, and USATA, will develop and implement procedures to optimize the capability of TMDE, prevent proliferation, and reduce the inventory at all levels of maintenance. Procedures will include—

a. Identification of marginally effective or non-utility TMDE through a process of requirements validation.

b. Recommend replacement of marginally effective TMDE or TMDE with significant support or operational deficiencies.

3–11. Test, measurement, and diagnostic equipment preferred items list

The PIL consists of identified TMDE that are considered the most advance, acceptable for Army use, supportable, and type classified. PD TMDE will maintain the TMDE PIL for the ASA (ALT) and operational force to prevent redundant procurement and proliferation of test equipment. The PIL will be utilized prior

to procuring test equipment. The TMDE PIL is the preferred acquisition guideline for procurement of TMDE. Implementing procedures and objectives for the PIL are in DA Pam 750–43.

3–12. Hot mockups

Use of hot mockups or the substitution of known good subcomponents, in lieu of suitable TMDE, is not authorized.

Section III

Test, Measurement, and Diagnostic Equipment Logistics Support Guidelines, Considerations, and Policy

3–13. Test, measurement, and diagnostic equipment calibration and repair support

a. To ensure that the objectives of the materiel release process are met and to obtain a material release for a system, the program manager or program director will coordinate with USATA to provide for a review for supportability.

b. The program manager or program director will request a TMDE supportability statement to determine if any TMDE is being utilized on the system and if the identified TMDE is then supportable via the USATA enterprise prior to system release.

c. Non-applicability statements are no longer being issued and USATA enterprise will have final determination for identification any TMDE associated with the system based on data submitted for review in the material release process.

d. The program manager or program director will also coordinate with PD TMDE when introducing or acquiring new TMDE and will ensure that coordination with USATA is done as well to ensure any new TMDE is capable of being supported by the USATA enterprise.

e. The supportability statement will address the adequacy of—

(1) Calibration and repair procedures.

(2) Supply support.

(3) Maintenance and training.

(4) TMDE calibration equipment specified to accomplish the repair and calibration mission.

(5) Technical data.

f. The TMDE supportability statement will be an integral part of the documentation package prepared to support a TC, production, or fielding decision. Release of TMDE to the user will not occur without a favorable supportability statement. Chapter 6 contains additional policy concerning C&RS.

3–14. Test, measurement, and diagnostic equipment management information systems

a. The USATA will maintain a comprehensive Test Equipment Modernization Management Information System (TEMIS) to assist in effective planning and execution of the TMDE program.

b. The USATA and AMC will transition TEMIS functionality and information requirements to appropriate logistics Enterprise Business System when these functions are available.

c. The management information system will—

(1) Provide users and managers with comprehensive data related to the planning, budgeting, development, acquisition, testing, use, and disposition of TMDE.

(2) Provide an automated means to collect and maintain TMDE management information.

3–15. Security considerations

a. All TMDE will be acquired and fielded consistent with AR 380–5 security provisions. Protection of classified information handled by automated TMDE will be accomplished in accordance with AR 380–40.

b. Classified TPSs will require the user to have satisfied regulatory security provisions for the locations where the TPS will be run and the TMDE user has satisfied regulatory security provisions. The user's capability and costs associated with the operation and storage of classified TPSs will be addressed when deciding to develop and field classified TPSs.

3–16. Calibration and repair manpower requirements

Manpower requirements in support of the C&RS military mission are determined using an allocation rule-based process for Total Army Analysis documentation. During the Total Army Analysis process,

CASCOM will coordinate with AFC, NGB, PD TMDE, and USATA for C&RS allocation recommendations using the TMDE enterprise manpower data stored within TEMIS.

3–17. Equipment improvement report and maintenance digest

The USATA will publish, as required, an equipment improvement report and a digest of technical information, maintenance instructions, and administrative and management guidance of interest to the TMDE developer, materiel manager, user, and maintainer.

Chapter 4
Test, Measurement, and Diagnostic Equipment Acquisition

Section I

General

4–1. General

This chapter applies to all types of TMDE and TPS. Weapon system developers and system managers requiring TMDE and TPS will obtain acquisition approval, as documented in this regulation for all TMDE and TPS procured for Army use Acquisition procedures in DA Pam 750–43 for TMDE, ATE, and TPS are mandatory.

4–2. Test, measurement, and diagnostic equipment research, development, test, and evaluation controls

Managers will send all requests for conduct of metrology research and exploratory development and for development of SP TMDE to PEO CS&CSS, PD TMDE, reds.pmectechteam@redstone.army.mil, (phone: 256–842–9906) for review prior to initiation of the project. The review requirement is applicable for all programs involving test, measurement, and diagnostic functions and equipment.

Section II

Test, Measurement, and Diagnostic Equipment Selection Process

4–3. General

Once the MATDEV identifies the need for TMDE in accordance with chapter 3, section II, the MATDEV, in coordination with the PD TMDE, will use the process in figure 4–1 to select the TMDE. Throughout the selection process, cost effectiveness and supportability will be prime considerations.

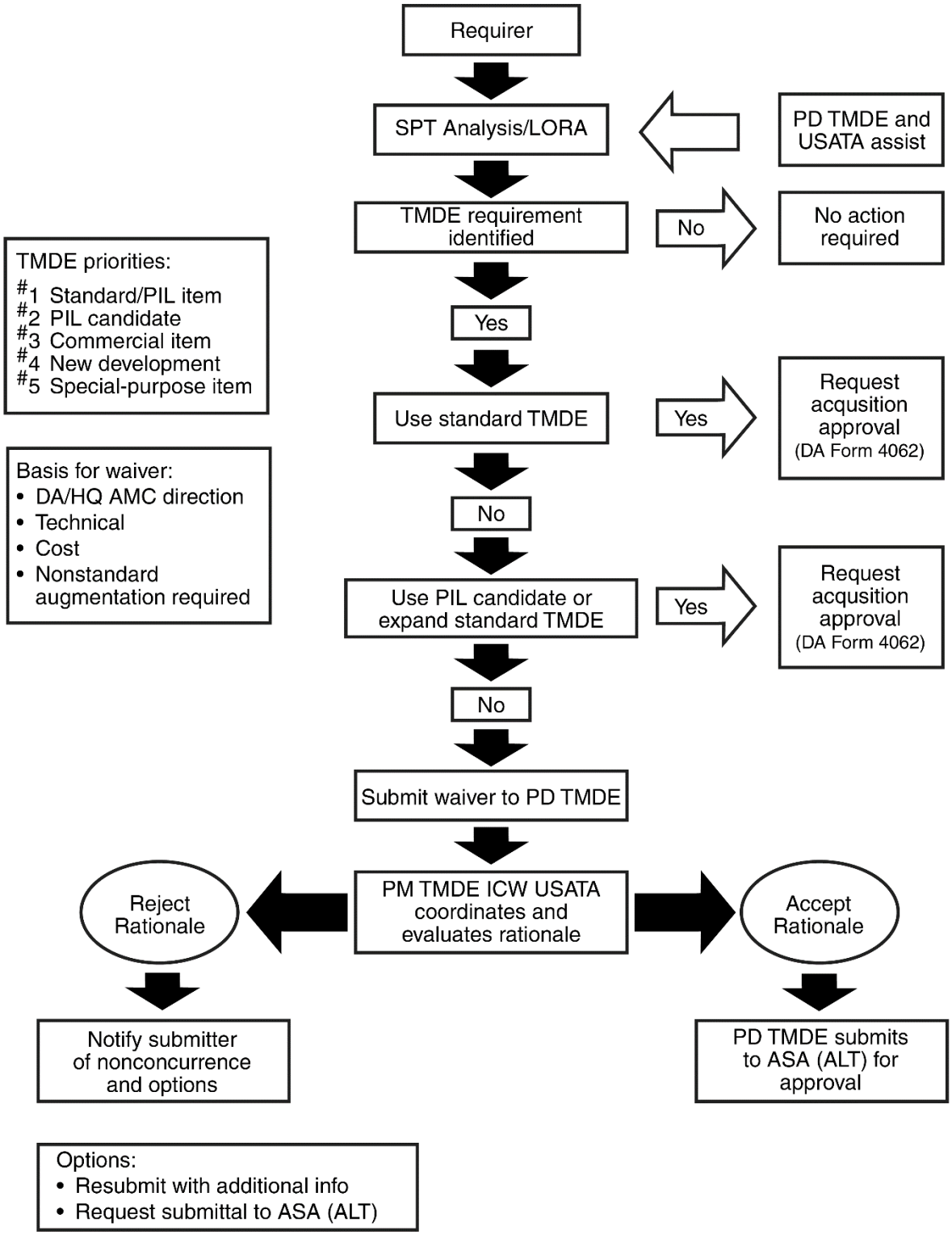

Figure 4–1. Test, measurement, and diagnostic equipment selection process

4–4. Selection process

a. The selection process defined in figure 4–1 is to encourage—

(1) TMDE standardization.

(2) Elimination of duplicate TMDE development efforts.

(3) Prevention of TMDE makes and model proliferation.

b. The most modern and effective TMDE available within the inventory will be the preferred selection. The TMDE PIL items and PIL candidates, include TMDE and ATE designated as standards.

c. The standard is the required selection unless a waiver is approved in accordance with paragraph 4–6.

Section III

Standardization of Test, Measurement, and Diagnostic Equipment

4–5. Test, measurement, and diagnostic equipment acquisition process

a. TMDE acquisition approval constitutes an agreement that the specified configuration and quantity of TMDE will be acquired for the purpose intended. Weapon system developers and system managers will request and receive acquisition approval for TMDE—

(1) Prior to notifying the PD TMDE of the need for procurement.

(2) For all TMDE purchased, including TMDE to be used in contractor facilities or by other Government organizations.

(3) For leased TMDE.

b. Acquisition approval signifies approval to procure a TMDE item that—

(1) Satisfies the application requirement as identified in the acquisition request.

(2) Satisfies the technical and cost constants and specifications of the TMDE item identified in the acquisition request.

c. Acquisition requests for TMDE will be submitted on DA Form 4062 (TMDE Acquisition Approval Analysis Data) in accordance with DA Pam 750–43.

d. Weapon system developers and system managers will forward requests to the PD TMDE at least 90 days (120 days for ATE) prior to anticipate contractual or in-house commitment to procure the TMDE.

e. The PD TMDE will approve requests for items complying with the established selection process (see fig 4–1). Requests that deviate from the established selection process will be forwarded to the responsible official for sustainment within ASA (ALT) for a final decision.

f. Results of each acquisition request reviewed will be provided to the originator and the TMDE materiel manager. An alternative with supporting rationale will be recommended where the requested TMDE is not deemed appropriate.

g. For TMDE not type classified standard, the materiel manager will follow the applicable TC policy in AR 770–3 and provide to the PD TMDE a TC milestone schedule with DA Form 4062. Submission is completed through the PD TMDE register website.

h. Product managers and TMDE materiel managers will ensure that a DA Form 4062 is submitted for all conceptual and developmental TMDE. An updated form will be submitted annually, at a minimum, or when major characteristics change, until the conceptual and developmental item is approved for full-rate production.

4–6. Test, measurement, and diagnostic equipment waiver

On determination that TMDE is required and the designated standard TMDE, ATE hardware, and software cannot be used or expanded in capability or that it is not cost effective to accommodate the test requirements, the system developer will prepare a memorandum request for waiver.

a. The developer or requiring activity will determine the basis for a waiver and will identify alternate or candidate TMDE systems based on the priorities established in figure 4–1 and schedule.

b. The waiver must include a legal review.

c. The developer or requiring activity will submit memorandum request for waiver to PEO CS&CSS, PD TMDE, SFAE–CSS–FP–TM, Bldg. 3651, Redstone Arsenal, AL 35898–5400. PD TMDE will in turn direct the developer or requiring activity to submit DA Form 4062 electronically.

d. On receipt of the request for waiver, the PD TMDE will confirm the basis for the waiver request and coordinate the request with other agencies' (for example, TRADOC) appropriate program managers and

project managers to establish waiver validity. The PD TMDE will complete a technical evaluation of the waiver request.

e. If the request for waiver is accepted and approved, the approval will be reported to the proponent of this regulation. If the waiver is not endorsed, the PD TMDE will advise the originator of the rationale for non-concurrence. The originator may withdraw the request, submit an updated waiver request, or recommend the request be submitted to the proponent of this regulation for a final decision.

4–7. Test, measurement, and diagnostic equipment funding and procurement

a. The PD TMDE will be funded for and will procure standard TMDE that is designated as part of the CALSETS, Integrated Family of Test Equipment (IFTE) Program, and TEMOD programs.

(1) This includes TMDE funded through the AWCF.

(2) Item managers will identify the required procurement quantity to PD TMDE and provide the AWCF based funding to support procurement of AWCF supported TMDE.

b. Weapon system developers, system managers, and other activities receiving approval for acquisition of TMDE will provide funding to the PD TMDE for procurement. The PD TMDE will procure and provide items in accordance with the approved acquisition request.

Section IV

Automatic Test Equipment Policy and Management

4–8. General

All ATE procured for use in the field, a depot, or a contractor's production facility must be acquired in accordance with this regulation and current policy directives.

4–9. Automatic test equipment policy

The IFTE Program was established to provide a suite of Army standard at-platform system and off-platform system automatic testers to satisfy test and diagnostic requirements for weapon systems. IFTE (next generation at-platform test set (NGATS) and maintenance support device) is the standard ATE and is designated as a DoD standard. The Army will use the standard ATE to satisfy automatic test and diagnostic requirements unless the proponent of this regulation approves a deviation waiver is approved in accordance with paragraph 4–6.

4–10. Determination of automatic test equipment requirements

System developers will, in coordination with AFC, CASCOM, and the PD TMDE, determine ATE requirements. Determination procedures in DA Pam 750–43 are mandatory.

4–11. Automatic test equipment system software

The ATE materiel manager will manage software embedded in the ATE consistent with policy. The materiel manager will decide how the software will be accessed, modified, and maintained. The ATE system software developed for and issued with the ATE is considered to be part of the ATE. See DA Pam 750–43 for details of system software management. Changes to GP ATE system software will be coordinated with—

a. Product managers and commands having equipment supported by the ATE.

b. The capability developer for the supported equipment.

c. The PD TMDE.

d. USATA.

e. AMC and AFC subordinate commanders and their respective ATE–TPS centers.

4–12. Automatic test equipment interface

The supported end-item will have ATE interface design with the necessary diagnostic connector assemblies and data buses that provide the minimum number of test connection points necessary to satisfy end-item testability constraints. The design objective will be to minimize the number of TPS interconnection devices and cables necessary to diagnose and fault isolate quickly and easily a failed line replaceable unit or shop replaceable unit at the location of the failed replaceable item.

Chapter 5
Test Program Set Policy and Management

Section I

Test Program Set Policy Requirements

5–1. General

a. TPSs are a combination of interface devices, software test programs (for example, those residing in logic storage media or in permanent digital memory), and documentation (for example, technical manuals and technical data packages) that together allow the ATE operator to perform the testing or diagnostic action on the unit under test (UUT).

b. All TPSs procured for use in the field, at a depot, or in the system developer's production facility must be acquired in accordance with this regulation and current DoD and Army policy directives.

c. TPS requirements in DA Pam 750–43 are mandatory.

5–2. Determination of test program set requirements

The MATDEV and CAPDEV, in coordination with the appropriate AFC and AMC subordinate commands ATE–TPS centers, PD TMDE, and TRADOC, will determine their TPS requirements. A system-level supportability analysis will be performed early in the acquisition life cycle to determine the level, economy, and functionality of TPS implementation at each level of maintenance. Supportability will be given equal consideration with performance, schedule, and life cycle cost (see DA Pam 750–43 for TPS process chart). The AFC/AMC ATE–TPS centers will assist system developers in the preparation and analysis of the system supportability analysis summaries. The TPS systems supportability considerations are further provided in DA Pam 750–43.

5–3. Test program set acquisition

a. The MATDEV will coordinate acquisition, development, sustainment, and disposal requirements for TPSs with the appropriate AFC/AMC ATE–TPS center and will document the complete TPS life cycle management plan in the TPSMP. The content of the TPSMP is outlined in DA Pam 750–43.

b. The MATDEV will program and budget for TPS life cycle acquisition and support of required TPSs.

c. The AFC/AMC ATE–TPS centers will maintain an organic capability to acquire, develop, and sustain TPSs.

d. MATDEVs will utilize acquisition management services of the commodity-oriented AFC/AMC ATE–TPS centers.

e. The MATDEV will require contractors who have a requirement for TPS development and validation or special acceptance and inspection equipment to document those requirements for—

(1) Performance specifications allocating test requirements for production and tactical environments.

(2) Technical testability requirements in both hardware and embedded software design.

(3) Consideration to use standard ATE for production line testing of electronic assemblies and subassemblies to reduce life cycle costs.

f. The MATDEV will ensure in the case of non-NGATS TPS development that interoperability with NGATS is emphasized and audited by the appropriate ATE–TPS center.

5–4. Test program set development

Development of TPS is possible during any stage of the materiel system acquisition framework (see DA Pam 750–43). Funding for TPS development will be programmed according to the materiel system life cycle phase. TPS development for any UUT will proceed only when the design of the target UUT has begun to stabilize to reduce risk and cost. An evolutionary development program is the preferred method for TPS development as the UUT matures and risk is reduced. The MATDEV must closely monitor and control UUT design stability consistent with TPS support requirements and the TPS schedule. The items below are necessary to initiate a TPS development program, either by contractor or organic AFC/AMC TPS center. The following items will be supplied by the MATDEV to the TPS developer and coordinated with the AFC (Sustainment Capability Development Integration Directorate) capability developer to reduce the cost and schedule risks associated with inadequate data or resources to support the TPS development process:

a. Unit under test requirements.

(1) Current configuration of the UUT (for example, system, line replaceable unit, line replaceable module, shop replaceable unit, and circuit card assembly).

(2) Performance and product specifications.

(3) Theory of operation and maintenance manuals.

(4) Failure modes, effect, and criticality analysis data.

(5) Testability requirements data for production and tactical certification.

b. Data and data rights. These will include maintenance and repair procedures, source files required to regenerate the test program executable, test software embedded or downloaded to UUTs, and code and software development station configuration information.

Section II

Test Program Set Life Cycle

5–5. General

The MATDEV will address TPS requirements as a major element in all phases of the supported system life cycle (see fig 5–1 for materiel system TPS management timeline). The TPS life cycle management will be a separate and distinct action in the supported system's life cycle. DA Pam 750–43 addresses specific TPS management requirements.

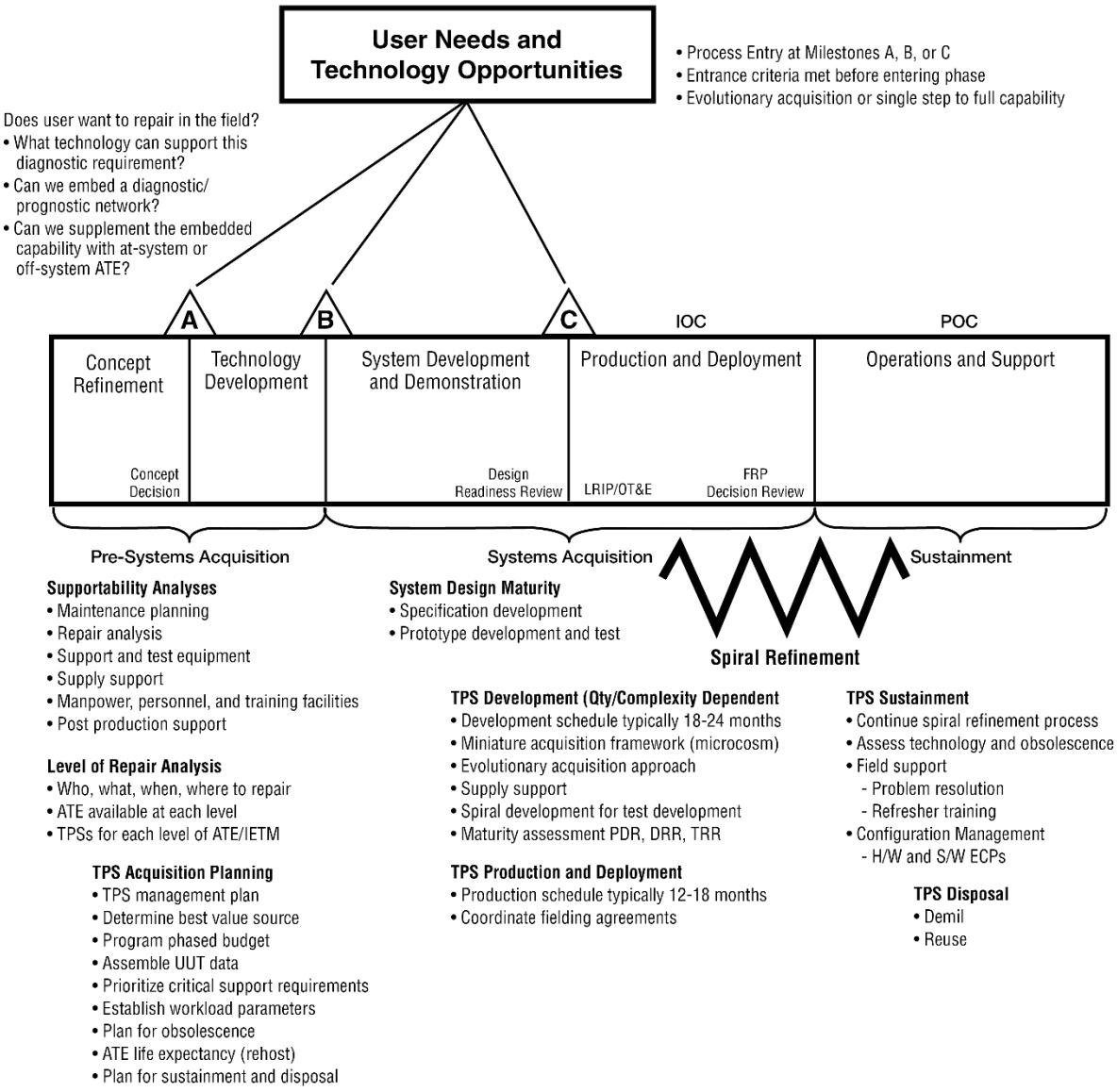

Figure 5–1. Materiel system acquisition framework for test program set considerations

a. All TPS planning will be initiated as early in the supported system's life cycle as is practical. All TPS management responsibilities will be included in the prime system acquisition strategy.

b. The central document for planning, monitoring, and controlling TPS development, acquisition, and maintenance throughout the system life cycle is the TPSMP (documented in the LCSP).

c. The MATDEV is responsible for developing a TPSMP. The TPSMP will be coordinated with the appropriate AFC/AMC ATE–TPS center and PD TMDE.

d. The AFC/AMC ATE–TPS center manager will act as the principal staff advisor to the MATDEV and will actively assist in the development of the TPSMP.

e. The AFC/AMC ATE–TPS centers will support management of TPSs. MATDEVs under Total Life Cycle System Management or AMC must program funding for matrix support from the appropriate ATE–TPS center to provide logistics supply support service and management.

f. A formal configuration management and quality program will be established to identify, control, account for, and audit the functional and physical characteristics of each TPS. The AFC/AMC ATE–TPS center will act as the repository for TPSs and can assist in providing configuration management for TPSs.

g. The ATE–TPS product assurance personnel will certify the TPS against development contract requirements and mission requirements. Developmental testing and operational test will not be required. Acceptance testing by the AMC major subordinate commands' (MSCs) quality assurance organization will be sufficient to show acceptable field use. User representatives will participate in the acceptance testing.

h. TPS suitability for release will be addressed during the materiel release process for the materiel system.

i. The MATDEV will coordinate with the AFC/AMC ATE–TPS center to address fielding of TPS in the program's materiel fielding plan. The ATE fielding schedule for new TPS development, for use on a new ATE, will be coordinated with PD TMDE and the ATE–TPS center.

j. To ensure TPS suitability, TPS development for use with a new ATE will be coordinated with PD TMDE and the AFC/AMC ATE–TPS center. Onsite acceptance by the gaining unit will be accomplished when the TPH passes a self-test. Performance verification tests on UUTs may be performed but will not automatically be required.

k. TPS developed in accordance with military performance specification MIL–PRF–32070 and MIL–PRF–49503 have no special training requirements for TPS. MATDEVs will not be required to provide TPS training assets (for example, TPH and UUTs), except under special circumstances. Support will be tailored based upon the complexity of the system.

5–6. Test program set program hardware

TPH will be designed to be interoperable with the Army standard integrated family of ATE (NGATS). TPH design, development, performance, and sustainment considerations are addressed in DA Pam 750–43.

5–7. Test program software

The test program will be developed, or re-hosted from legacy ATE, to run on the Army standard IFTE family of ATE (NGATS).

5–8. Test program set sustainment

TPS sustainment requirements will be addressed throughout the supported system life cycle and documented in the TPSMP. See DA Pam 750–43 for TPS sustainment procedures.

Chapter 6
Test, Measurement, and Diagnostic Equipment Calibration and Repair Support Program

6–1. Program objectives

a. Provide TMDE C&RS and ensure that all measurements performed using calibrated TMDE are traceable to the SI.

b. Ensure that TMDE complies with specifications and meet or exceed 90 percent of Army readiness standards for TMDE available for utilization.

c. TMDE C&RS programs, objectives, concepts, and administrative procedures are in DA Pam 750–43 and are mandatory.

6–2. Program administration

The primary organization to oversee the execution of the Army metrology and TMDE C&RS program is USATA. The Director, USATA will manage, direct, and provide technical control and execution of the TMDE C&RS program. Commanders with a calibration mission will ensure traceability is maintained with technical support from USATA. Deployment of C&RS of assets (equipment and personnel) will be coordinated between the owning command and USATA. The execution of the C&RS program is described in DA Pam 750–43 and is mandatory.

6–3. Support concept

All C&RS will be accomplished utilizing Army resources or support agreements with other DoD departments or agencies to optimize the use of existing workload capacity. The C&RS concept of TMDE is based on a one-stop service for supported customers and provides a single interface for all calibration support except for items designated in TB 43–180 as "F-level." TMDE owners submit their equipment requiring C&RS to a supporting C&RS activity. The one-stop C&RS concept allows TMDE owners to deliver

and pick up TMDE assets from the same location and minimize turnaround time per AR 750–1. Calibration intervals, traceability levels, and support locations are certified by USATA and CALSETS and documented in TB 43–180. TMDE assets that are not documented within TB 43–180 and are identified by the TMDE owner or supported C&RS are required to submit DA Form 3758 (Calibration and Repair Requirements Worksheet) to USATA for calibration support consideration. Instructions for use of DA Form 3758 can be found in DA Pam 750–43 and are mandatory. Commercial contracts may be used to provide C&RS when the required support is not available from the above organizations in coordination with USATA. When providing TMDE support, whether commercial or organic, C&RS requirements described in DA Pam 750–43 are mandatory to ensure quality of measurements for the Army's TMDE program.

6–4. Calibration measurement traceability levels and laboratory types

The Army TMDE program is comprised of multiple MTLs that ensure all U.S. Army TMDE receive measurement results that are metrologically traceable to national standards of measurement (SI units) through an unbroken chain of calibrations. The number of calibration steps required to reach the SI units establish the links in the traceability chain and determine the designated MTL. The NIST is considered the highest MTL and has the responsibility to maintain the SI units used in the United States. The Army TMDE program also includes various calibration lab types. See DA Pam 750–43 for more information.

a. Measurement traceability levels. There are four recognized MTLs consisting of Field (F) MTL, Transfer (T) MTL, Secondary (S) MTL, and Primary (P) MTL. Primary (P) MTL is C&RS that is performed using calibration standards that were verified directly to SI units and calibrated by NIST or intrinsic standards. This is considered one MTL below NIST. Secondary (S) MTL is C&RS that is performed using calibration standards that were calibrated at or have accuracy traceable to the Primary (P) MTL. This is considered two MTLs below NIST. Transfer (T) MTL is C&RS that is performed using calibration standards that were calibrated at or have accuracy traceable to the Secondary (S) MTL. This is considered three MTLs below NIST. Field (F) MTL is TMDE with C&RS traceability requirements that cannot be verified with calibration standards currently contained within the P, S, or T traceability chain. Obtaining support for this TMDE is the owner's responsibility and is normally provided by field units, TMDE owners, medical maintenance facilities, or vendors. Measurement traceability to SI units for these items is required.

b. Calibration laboratory types. C&RS laboratory types are identified in TB 43–180 which specify the type of support capability at a location based on its calibration standards configuration.

6–5. Reimbursable support

C&RS services that are provided to reimbursable customers (for example, select Army, DoD military Services, and Federal and State Government departments and agencies) will be accomplished through support agreements.

6–6. Submitting test, measurement, and diagnostic equipment for calibration and repair support

a. TMDE requiring C&RS will be submitted to the supporting C&RS activity in accordance with the calibration recall schedule and DA Pam 750–43 on or before the calibration void date listed on the calibration label, DA Label 80 (U.S. Army Calibrated Instrument).

b. The TMDE owner will perform field maintenance on their TMDE in accordance with the maintenance allocation chart and designated maintenance manual prior to submitting to their C&RS activity (see AR 750–1).

c. The TMDE owner is responsible for the delivery and pickup of TMDE. The TMDE that is too heavy, bulky, or sensitive to be transported will be serviced on site as agreed upon between the owner or user and the supporting C&RS activity. TMDE must be transported in a manner that provides protection from inclement weather, vibration, and shock. It must be complete with all unique or SP adapters, cables, and accessory items required by the supporting organization to accomplish the calibration or repair.

d. When requested, the TMDE owner or user will provide authorized maintenance and manufacturer's manuals. If the owner or the C&RS activity does not have the appropriate manufacturer's manuals, the supporting C&RS activity will contact USATA for assistance.

e. Army Medical Logistics Command (AMLC) C&RS activities are responsible for SP TMDE medical C&RS and will be performed by the Medical Maintenance Operations Division-California and the U.S. Army Medical Materiel Center-Europe.

6–7. Calibration and repair recall system

The Army TMDE program requires C&RS to be executed utilizing a cyclic scheduling basis with an automated recall system. For out-of-cycle TMDE requirements, TMDE owners will coordinate with the C&RS element.

6–8. Calibration intervals

Calibration intervals are utilized on TMDE assets to ensure the warfighter maintains the measurement accuracy when operating TMDE in support of maintenance operations. USATA, in coordination with MATDEV, is responsible for determining the calibration interval throughout the life cycle of the TMDE item. Calibration intervals are documented within TB 43–180. Instruments required by Army schools' curricula used in providing individual training will not require cyclic calibration unless training efficiency or safety is adversely affected. For further information concerning the calibration interval processes, see DA Pam 750–43.

6–9. Calibration and repair support activities

C&RS support activity is a generic term covering all U.S. Army activities that provide C&RS. See DA Pam 750–43 for further details relating to the USAPSL, area calibration laboratory (ACL), ATSTs, TMDE support centers, and combined support maintenance shops (CSMSs).

a. The USAPSL provides the highest level of metrology and the most accurate level (P-Level) of calibration services within the Army. It is dedicated to advancing state of the art metrology in this unique mission area and to ensuring effective management of the related technical programs, to include support to the radiation safety community by providing program specific services, such as personnel dosimetry support, health physics, personnel radiation exposure database archive records update and maintenance, nuclear wipe and spectrum sample analysis, and management of outside the continental United States (OCONUS) low-level radioactive waste services. The USAPSL support capabilities and technical attributes are detailed in DA Pam 750–43.

b. ACLs are strategically located throughout the continental United States (CONUS) and selected OCONUS locations to perform (S) MTL measurements for supported reference standards, GP TMDE, and selected SP TMDE, as specified in TB 43–180. The ACL core laboratory configuration is quite often a major component of a more extensive laboratory capability supporting a regional area. Such support capabilities may include not only an ACL but also other laboratory elements to include T-Level support and support functions that are unique to an installation.

c. TMDE support center, area TMDE support team, ARNG CSMSs, theater aviation sustainment maintenance groups, and AMLC SP medical TMDE laboratories provide T-Level C&RS. These teams are generally the first TMDE support element that a field customer encounters. The ATST is the principal TMDE support element on the ground during war, contingencies, and operations other than war, to include peacetime support missions.

d. USATA, a table of distribution and allowances organization, provides C&RS for both operating and generating forces through all phases of multi-domain operations. During large scale combat operations and joint all domain operations, the theater commander, if required, may request a C–TMDE team to augment the military area TMDE support teams that are deployed and operating within the combat support area. When this occurs, an operational order is sent through AMC to USATA to provide an augmented C&RS capability that is able to meet the C&RS requirements. This C–TMDE support team will be attached to the theater Army field support brigade for command and control. Defining the augmented calibration team capability will depend on coordination with the assigned Army field support brigade to determine C&RS requirements.

e. Two AMLC TMDE support centers, located in CONUS and OCONUS, provide C&RS services for select SP TMDE Medical, as specified in TB 43–180. The AMLC TMDE support centers calibrate all SP TMDE medical devices to original equipment manufacturer specifications in support of the Safe Medical Device Act of 1990.

6–10. Quality assurance and inspection program

The Director, USATA establishes the TMDE C&RS periodic technical and management inspection program for all organizations that provide C&RS and is the arbitrator for inspection reports. Organizations under this program also include Government-owned, contractor-operated TMDE support organizations and activities. Results of periodic inspection will be reported directly to the Army Inspector General's

Office, in accordance with this regulation, AR 20–1, and AR 702–11. The C&RS quality assurance and inspection procedures are detailed in DA Pam 750–43.

6–11. Test, measurement, and diagnostic equipment and calibration standard failures
If TMDE is found out-of-tolerance during calibration, the activity performing the calibration will inform the TMDE owner of the out-of-tolerance conditions so that appropriate action may be taken in accordance with DA Pam 750–43. TMDE that is damaged or that's performance is suspect will be submitted for calibration immediately. When calibration standards that require intermediate checks are found to be out-of-tolerance, the C&RS activity will also perform actions specified in TB 9–4931–537–24.

6–12. Metrology engineering and research, development, test, and evaluation program
The metrology engineering and RDT&E program is designed to advance the state of the art in metrology and the science of measurement and to maintain pace with advancements in materiel and equipment technology and processes. The program is instrumental in providing for the development of calibration standards and the investigation and testing of new and unique measurement systems and techniques.

6–13. Test, measurement, and diagnostic equipment technical assistance program
The USATA will establish and maintain a TMDE technical assistance program designed to provide a central point of information relative to TMDE C&RS.

6–14. Test, measurement, and diagnostic equipment management information system
TEMIS is designed, managed, and maintained by the USATA and dedicated to the total TMDE C&RS data collection, storage, and analysis. The National Instrument Historical Database is a TEMIS support element for USATA to leverage calibration and traceability decisions. The system also provides the software programming needs for production control processes, financial management, and management data information requirements in support of the TMDE C&RS program. Commanders can obtain unit TMDE readiness information using Logistics Data Analysis Center SABRE Maintenance Readiness Metrics application on the Army Enterprise Portal.

6–15. Test, measurement, and diagnostic equipment integrated materiel management system
As an integral part of TEMIS, the USATA-managed test, measurement, and diagnostic equipment integrated materiel management system (TIMMS) provides the C&RS activities with site-specific software to identify TMDE for recall, provide customer notification of equipment readiness, process equipment through the C&RS shops, account for customer equipment while in the shop, and identify repair parts and associated cost. All activities with TMDE C&RS mission will utilize TIMMS. The Instrument Master Record File (IMRF) is a report that resides within TIMMS and each TMDE C&RS is responsible for establishing and maintaining the IMRF for customer organizations. The IMRF provides enrolled TMDE calibration details for users.

6–16. Special purpose test, measurement, and diagnostic equipment medical
Medical organizations will determine C&RS requirements in accordance with AR 40–61 for SP TMDE Medical used in the testing, calibration, and repair of medical devices. As the life cycle manager for medical materiel, the AMLC is responsible for the following:

a. Serves as the life cycle management command SP TMDE Medical and manages, directs, and controls the Army Medical Department SP TMDE Medical program.

b. Provides C&RS for SP TMDE Medical in accordance with original equipment manufacturer procedures and the NIST or its international equivalent.

c. Designated as the performing unit identification code for SP TMDE Medical where "MED MAINT" is listed in the procedure column of TB 43–180 with IMRF update capabilities for the Army SP TMDE Medical requirements.

d. Establishes and maintains the IMRF database for SP TMDE Medical.

6–17. Small arms and ammunition gages
Small arms and ammunition gages (SAAG) are considered TMDE and will be listed in TB 43–180. SAAG are certified using DA Form 3023 (Gage Record). DA Form 3023 replaces the DA Label 80 as the validation for calibration and is provided by the C&RS activity. To ensure readiness in the event a wartime

contingency, SAAG will not be placed in administrative storage (CBU). SAAG may be placed into Army Pre-Positioned Stock/At Rest. SAAG may also be placed into a training status provided they are clearly identified as training aids and segregated from active SAAG. Responsibilities, instructions, labeling, and guidance for effective calibration and support of SAAG is provided in TB 9–5220–215–24.

6–18. Nuclear weapons support
The U.S. Army Joint Munitions Command, CAPDEV, MATDEV, PD TMDE and USATA coordinate C&RS requirements based on nuclear weapons reliability.

6–19. Radiation, detection, indication, and computation
Responsibilities, instructions, and guidance for effective calibration and repair of radiation, detection, indication, and computation (RADIAC) instrumentation is provided in TB 9–6665–285–24.

6–20. Foreign military sales
All proposals, letters of offer, or letters of acceptance that offer materiel to foreign customers through the security assistance or FMS program will include in the offer TMDE required for maintenance support and will identify the need for C&RS. The following apply:

a. In those cases where TMDE and calibration services are accepted, the activity responsible for letter of acceptance preparation will coordinate requirements with the PD TMDE FMS and Support Office, tmde@redstone.army.mil, phone: 256–955–6084. The International Program manager must be informed during the development of the FMS case to complete applicable price and availability sheets for procurement, materiel fielding, and technical assistance as deemed necessary for the total package approach. The U.S. Army cannot provide assurance of complete supportability unless the PD TMDE FMS and Support Office has identified the C&RS required or verified that an organic capability has been properly evaluated.

b. Periodic calibration of applicable TMDE is required to ensure conformity with maintenance specification and safety requirements and to improve serviceability throughout the end-items life cycle. Calibrations must be traceable to the SI and international standards.

6–21. Test, measurement, and diagnostic equipment calibration and repair support publications
Equipment publications will be developed and published for each maintenance significant instrument introduced into the Army inventory. The use of electronic technical manuals or IETMs is mandatory for all TMDE. Specific considerations toward TMDE maintenance and calibration procedural publications include—

a. Verified, validated, and supplemented field or sustainment maintenance manuals for GP TMDE and SP TMDE will be developed by the MATDEV. Calibration procedures for GP TMDE will be developed by the USATA in coordination with AFC (Sustainment Capability Development Integration Directorate), the PD TMDE, and TRADOC.

b. Field and sustainment maintenance manuals and calibration procedures for SP TMDE will be developed by the SP TMDE MATDEV. They will include the use of TMDE authorized at the supporting field and sustainment maintenance unit or units and activities that provide T-Level C&RS.

c. Contracts that contain the requirement to prepare calibration procedures for GP TMDE or SP TMDE must be coordinated with the USATA and use fielded TMDE and calibration standards. This may occur when no HQDA publication is available and when contractor preparation is more feasible than in-house preparation. These publications will be distributed to the appropriate C&RS activity concurrent with or before issuing TMDE.

d. Drafts of proposed calibration procedures for TMDE will be prepared as a part of a system's or major item's test package. All calibration procedures will be coordinated with USATA prior to initiating final test. The manuals will be evaluated as part of the materiel-testing program before being prepared in final form for publication and general use.

e. The USATA will review all draft TMDE calibration procedures.

f. Calibration procedures will be prepared as stated in MIL–PRF–38793C.

g. Verified commercial service manuals that provide C&RS procedures may be used to accomplish TMDE maintenance incident to achieving first unit equipped status.

6–22. Calibration labels and forms

All forms required for calibration and repair are detailed in TB 43–180. The following labels and forms are used for calibration and repair (not all encompassing): DA Label 80, DA Label 163 (U.S. Army Limited or Special Calibration), DA Form 2417 (U.S. Army Calibration System Rejected Instrument), and DA Form 7372 (TMDE Calibration and Repair Data) will be used by all activities providing C&RS, in accordance with this regulation and TB 43–180. These labels and forms document the current status of TMDE.

a. Unserviceable TMDE normally falls into two categories: TMDE that becomes inoperative during use or TMDE that is determined to require repair during the calibration process. Unserviceable TMDE must have a DA Form 2417 affixed to it, as specified in TB 43–180. For instruments that become inoperative during use, the owner or user will submit that TMDE to their supporting C&RS activity for repair. When condition-coding TMDE for turn-in, the owner or user will receive DA Form 7372 and condition-coding paperwork identifying the condition of TMDE.

b. It is the responsibility of the owner or user to ensure TMDE (all equipment listed in TB 43–180) is in an operating condition and affixed with the appropriate label indicating its calibration status.

(1) A current DA Label 80 or DA Label 163 must be affixed to each item of TMDE that requires calibration. If an instrument becomes unserviceable during use, the TMDE owner or user will void the DA label.

(2) Any TMDE that has exceeded its calibration void date will have the DA Label 80 overprinted with the word “VOID” to identify an uncalibrated instrument to a potential user.

(3) A calibration label overprinted with the letters CNR or CBU will be affixed to all TMDE designated as such.

Chapter 7
Embedded Diagnostics, Embedded Prognostics, Interactive Electronic Technical Manuals, and Related Data Considerations

7–1. General

a. ED consist of capabilities that—

(1) Accomplish self-diagnosis using onboard resources as an integrated system (for example, sensors, analytical software, and embedded devices).

(2) Collect, correlate, synthesize, and report systems performance data to provide a system-level health assessment via onboard processing of existing condition.

(3) Enable condition-based maintenance plus (CBM+), prognosis, and predictive logistics.

(4) Interface with the future Army enterprise logistics system (maintenance module), share information with other information users, identify imminent or existing failures/condition-based services, and provide actionable logistics support direction.

b. EP (capabilities are a further refinement of ED) consist of capabilities that—

(1) Support CBM+, physical and functional failure prediction, and predictive logistics enabled by using software algorithms.

(2) Identify impending failures prior to failure and provide appropriate actionable logistics support direction.

7–2. Determination of embedded diagnostic and embedded prognostics and interactive electronic technical manual requirements

a. The MATDEV, in coordination with the appropriate AMC MSC, AFC, PD TMDE, and TRADOC, will determine the ED, EP, and IETM requirements. A system-level supportability analysis will be performed early in the acquisition life cycle to determine the level, economy, and functionality of ED, EP, and IETM implementation at each level of maintenance. Supportability will be given equal consideration with performance, schedule, and life cycle cost.

b. In determining the life cycle maintenance planning and risk management for the weapon system, the MATDEV, in conjunction with the appropriate AMC MSC, AFC, and TRADOC, is responsible to conduct a risk assessment, to include—

(1) Determination of risk associated with various maintenance concepts, such as—

(a) Organic support.

(b) Period of warranty.

(c) Contractor logistics support or no contractor logistics support.

(d) Performance-based logistics support.
(e) Combination of approaches.
(2) Risks associated with technology maturity and systems integration, such as—
(a) Obsolescence risks and mitigation.
(b) System readiness and sustainment risks.
(c) Continuity of support and economic risks.
(d) Data risks and data rights to permit organic diagnostic support without recourse to any contractor assistance.
(e) Supportability risks associated with commercial items (for example, COTS) and ability to organically sustain test and repair programs.
(3) An ED, EP, and IETM life cycle cost estimation, used to—
(a) Determine phased cost estimate for acquisition, production, deployment, sustainment, and disposal of components of ED, EP, and IETMs.
(b) Perform sensitivity analyses associated with identified risks.

7–3. Embedded diagnostics and embedded prognostics and interactive electronic technical manual acquisition
The MATDEV will—
a. Coordinate acquisition, development, sustainment, and disposal requirements for ED, EP, and IETMs with the appropriate AMC MSC.
b. Program and budget for ED, EP, and IETM life cycle acquisition and associated support.
c. Utilize acquisition management services of the commodity-oriented AFC Combat Capabilities Development Command TPS Center or AMC MSC.
d. Coordinate the Systems Engineering Plan and Interface documentation with PD TMDE to ensure IETMs can be properly operated on and are compatible with the maintenance support device hardware and operating system software.
e. Require contractors who have a requirement for ED, EP, and IETM development and validation or special acceptance and inspection equipment to document those requirements in terms of—
(1) Performance specifications allocating test requirements for production and tactical environments.
(2) Technical testability requirements in both hardware and embedded software design.
(3) Use standard at-platform ATE to host IETMs that are not embedded.

7–4. Embedded diagnostics and embedded prognostics development
a. Development of ED and EP is possible during any stage of the materiel system acquisition framework.
b. Funding for ED and EP development will be programmed according to the materiel system life cycle phase.
c. Platform-Level diagnostics must be interoperable with the maintenance support device and meet MIL–STD–40051–2 and S1000D standards for IETM compatibility and functionality.

7–5. Embedded diagnostics and embedded prognostics and interactive electronic technical manual sustainment
a. Sustainment requirements for ED, EP, and IETM will be addressed throughout the supported system life cycle.
b. MATDEVs will document, plan, and program funds according to the materiel life cycle phase.
c. Commercial specifications and standards will be used when feasible, appropriate, and cost effective. Specifications and standards will foster interoperability and reuse of data.

Appendix A

References

Section I

Required Publications

AR 20–1
Inspector General Activities and Procedures (Cited in para 6–10.)

AR 40–61
Medical Logistics Policies (Cited in para 6–16.)

AR 50–6
Chemical Surety (Cited in para 3–7*c*.)

AR 70–1
Army Operation of the Adaptive Acquisition Framework (Cited in para 2–9.)

AR 220–1
Army Unit Status Reporting and Force Registration-Consolidated Policies (Cited in para 3–7*c*.)

AR 380–5
Army Information Security Program (Cited in para 3–15*a*.)

AR 380–40
Safeguarding and Controlling Communications Security Material (Cited in para 3–15*a*.)

AR 602–2
Human Systems Integration in the System Acquisition Process (Cited in para 2–1*g*.)

AR 700–127
Integrated Product Support (Cited in para 2–1*h*.)

AR 702–11
Army Quality Program (Cited in para 6–10.)

AR 750–1
Army Materiel Maintenance Policy (Cited in para 3–7*c*.)

AR 770–3
Type Classification and Materiel Release (Cited in 4-5*g*.)

DA Pam 750–43
Army Test Program Set Implementation Guide (Cited in para 1–3.)

MIL–STD–1839
Calibration and Measurement Requirements (Cited in para 3–2*d*.)

Section II

Prescribed Forms

This section contains no entries.

Appendix B

Internal Control Evaluation

B–1. Function
The function covered by this evaluation is the Army TMDE program.

B–2. Purpose
The purpose of this evaluation is to assist commanders within the TMDE program in evaluating the key internal controls. It is intended as a guide and does not cover all controls but does cover those controls considered to be the most importance in evaluating the overall effectiveness of the Army TMDE program.

B–3. Instructions
Answers to the below evaluation must be based on the actual testing of controls (for example, document analysis, direct observation, interviewing, sampling, simulation, and evaluation reports). Those answers that indicate deficiencies must be explained, to include corrective action taken, with supporting documentation. These controls must be evaluated at least once every year. Certification that the evaluation has been conducted must be accomplished in accordance with AR 11–2 on DA Form 11–2 (Internal Control Evaluation Certification).

B–4. Test questions
a. Have all TMDE items (including those embedded in sets, kits, and outfits) been identified to the supporting calibration support organization? (Activity/unit)

b. Are doctrine and organizational structures in place to support the TMDE C&RS program?

c. Are MATDEVs including ED and EP requirements in their system-level supportability analysis early in the acquisition life cycle to determine the level, economy, and functionality of ED, EP, and IETM for their system or equipment item? (Materiel system developers/ASA (ALT))

d. Are MATDEVs programming for life cycle support of ED and EP when the supportability analysis supports implementation of ED and EP? (MATDEV and/or ASA (ALT))

e. Are calibration measurements traceable to the SI or an accredited national or international holder of standards? (AMC/USATA/DCS, G–4)

f. Is the overall TMDE program adequately funded to ensure execution of the program? (AMC/DCS, G–4/DCS, G–8)

g. Are adequate numbers of C&RS personnel, military and civilian, trained, and available within the total force structure? (TRADOC/AMC)

h. Are TMDE requirements addressed in the emerging materiel systems acquisition programs? (Materiel system developers/ASA (ALT))

i. Are MATDEVs complying with the policy to use standard ATE and PIL items to meet TMDE requirements?

j. Does the MATDEV use the waiver process when a TMDE requirement cannot be addressed using the standard ATE or preferred item listing? (Materiel system developers/ASA (ALT))

k. Does the ASA (ALT) enforce the standard ATE, PIL, and associated waiver process?

l. Are quality assurance inspections carried out in accordance with this regulation and appropriate technical documents, with the results of such provided to the Army Inspector General's office?

m. Is there a functional TEMIS available to collect and provide performance data reports relative to the effectiveness of the TMDE program? (AMC/USATA)

B–5. Supersession
This evaluation replaces the evaluation previously published in AR 750–43, dated 24 January 2014.

B–6. Comments
Help make this a better tool for evaluating management controls. Please submit comments to the Deputy Chief of Staff, G–4 at usarmy.pentagon.hqda-dcs-g-4.mbx.publications@army.mil.

Glossary of Terms

Area calibration laboratory
An organizational element that provides support for ATSTs, CSMS, TMDE support center metrology equipment, and TMDE beyond their capability to support. The ACL consists of measurement standards and TMDE C&RS metrology equipment and is staffed by civilian personnel.

Area test, measurement, and diagnostic equipment support team
An organizational element within a maintenance support company or aviation support company that provides T-Level TMDE C&RS in a mobile or fixed configuration.

Automated test equipment and test program set center
The central point of focus at the AFC/AMC MSC level for automated test equipment and TPS test issues.

Automatic test equipment
TMDE that performs a predetermined program to test functional or static parameters, to evaluate the degree of performance degradation, or to perform fault isolation of unit malfunctions. As a minimum, ATE must be able to sequentially perform testing or measurements, compare the measurements to predetermined values or ranges, and based on the result of this comparison, branch to other tests without manual intervention.

Automatic test system
ATE, associated system software, all items required for support, and those supported end-items TPSs that may be stored with the ATE.

Built-in-test
Hardware and software that are designed into the end-item to test all or part of that end-item.

Built-in-test-equipment
Any identifiable device that is a part of the supported end-item and is used for testing that supported end-item.

Calibration
The comparison of a measurement system or device of unverified accuracy to a measurement system or standard of known greater accuracy to detect and correct any variation from the required performance specifications of the unverified measurement system or device.

Calibration equipment
Measurement standards and TMDE and accessories used in performance of calibration.

Calibration interval
The period of time that a calibrated instrument can be expected to retain its specified accuracy within a predetermined confidence level before it must be recalibrated.

Calibration procedure
The document that identifies the technical specifications of an instrument to be calibrated, the required measurement standards, and the detailed technical procedure to be used to perform a calibration.

Calibration requirement
The identification of an instrument that requires calibration, a statement of the instrument's specifications that must be verified (for example, accuracies, ranges, and frequencies) and the support application of the instrument.

Calibration standard
An instrument, natural physical constant, or materiel with known performance characteristics used as a reference to establish the value and maintain accuracy of a measurement system or instrument.

Certification
Endorsement of reliability.

Diagnostic equipment
Equipment used to analyze and identify electronic and physical characteristics.

Embedded diagnostics
A capability that accomplishes self-diagnosis using onboard resources as an integrated system (for example, sensors, analytical software, and embedded devices) and collects, correlates, and synthesizes systems performance data to provide a system-level health assessment via onboard processing.

Embedded prognostics
A further refinement of ED to address system condition, support failure prediction, and enable anticipatory logistics by use of software algorithms. Prognostic capabilities identify impending failures and provide appropriate actionable logistics support direction.

Field maintenance
The first operation of the Army maintenance system. Characterized by the performance of maintenance tasks on system in a tactical environment using trained personnel, tools, and TMDE. Field maintenance is typically operator or crew maintenance and repair and return to user maintenance operations.

Hot mockup
Any assemblage of repair parts, components, modules, or similar items configured to simulate an end-item or subsystem for the purpose of testing or checking individual or collective parts, component, modules, or similar items.

Instrument master record file
The data file that contains identifying information about instruments that require cyclic calibration and repair. It also contains identifying information about instruments that require repair but do not require calibration.

Interservice support agreement
Calibration and maintenance service performed by the organic capability of one military service (or element thereof), contractor, and other Government agencies in support of another military service (or element thereof). Such action can be recurring or nonrecurring in character.

Line replaceable unit
An essential support item removed and replaced at field level to restore an end item to an operationally ready condition.

Measurement
Set of operations having the object of determining a value of a quantity.

Measurement equipment
Equipment used to observe a quantitative value or dimension.

Metrology
The science of measurement. The study of measurement involves measuring quantities, calibration of instruments, and determining the uncertainty of a measurement.

National instrument historical database
A database maintained by USATA that contains Armywide information about C&RS actions on each instrument of TMDE.

National standard
A measurement standard maintained by the SI, the U.S. Naval Observatory for time and time interval, constituting the highest level of accuracy and legal basis for measurement in the United States.

Non-developmental item
Those items available for procurement to satisfy an approved materiel requirement from existing sources (such as, commercial items and items developed by other Government agencies, U.S. military Services, or countries) requiring little or no additional development.

Preferred items list
Those TMDE identified that are considered the most advanced and acceptable in their respective families for military use. The TMDE are supportable and procurable in adequate quantities, capable of meeting specific requirements in military environments, and type classified “standard.”

Primary reference standard
Measurement standards representing the highest level of measurement capability within the TMDE Calibration and Repair program that are normally used and maintained by the USAPSL and Army Primary Nucleonic Laboratories.

Radiation, detection, indication, and computation meter
A portable measuring instrument, such as Geiger counter or ionization chamber, used to detect nuclear radiation and dose rate. RADIAC meters may be used to detect or measure (for example, alpha, beta, gamma, x-ray, or neutron radiation).

Sustainment maintenance
Sustainment maintenance is the second operation of the Army maintenance system. Sustainment maintenance is characterized by the performance of maintenance tasks, off system in a secure environment using trained personnel, tools, and TMDE. Sustainment maintenance is typically repair and return to stock and depot maintenance operations.

Test equipment
Equipment used to determine characteristics or values using specific procedures and methods to make a reference measurement.

Test program set
The combination of interface devices, software test programs (for example, those residing in logic storage media or in permanent digital memory), and documentation (for example, technical manuals, and technical data packages) that together allow the ATE operator to perform the testing or diagnostic action on the UUT.

Test program set center
An organization for management of TPS development, acquisition, fielding, requisition, and support. The centers are normally located within AMC MSCs and provide technical and management support to MATDEVs.

Test, measurement, and diagnostic equipment
Any system or device used to evaluate the operational condition of an end-item or subsystem thereof to identify and isolate any actual or potential malfunction. This TMDE includes diagnostic and prognostic equipment; semiautomatic and ATE, to include TPSs (with issued software); and calibration test or measurement equipment. TMDE refers to both GP TMDE and SP TMDE.

Test, measurement, and diagnostic equipment accessories
Used in conjunction with TMDE. These items are cleaned and maintained according to their manufacturer's recommendations but do not have periodic calibration requirements. TMDE accessories are not required to be listed in the IMRF, have a calibration label, or be listed in TB 43–180. Examples of TMDE accessories are cables, extenders, adapters, most oscilloscope probes, many dummy loads, and terminations.

Test, measurement, and diagnostic equipment register
A GP electronic test equipment database that contains the TMDE PIL and ACOM, ASCC, and DRU equipment purchased in accordance with this policy. The website also provides users with means to submit TMDE acquisition requests or waivers for approval.

Test, measurement, and diagnostic equipment support center
A center for TMDE C&RS established at strategic geographic locations.

Test, measurement, and diagnostic equipment-general purpose
Any TMDE that can be used without modification for support operations of more than one end-item or system. Addition of external special accessories, plug-in assemblies, logic probes, attenuators (or TPSs for ATE) are not considered modifications.

Test, measurement, and diagnostic equipment-special purpose
Any TMDE designed specifically for support of and functionally restricted to one end-item or system. To use this TMDE for support of another end-item or system would necessitate modifications to the TMDE. Addition of external special accessories, plug-in assemblies, logic probes, attenuators, or TPSs for ATE are not considered modifications.