Department of the Army
Pamphlet 750–43

Maintenance of Supplies and Equipment

Army Test Program Set Implementation Guide

Headquarters
Department of the Army
Washington, DC
28 June 2006

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SUMMARY of CHANGE

DA PAM 750–43
Army Test Program Set Implementation Guide

This major revision, dated 28 June 2006--

- Updates the pamphlet to reflect changes to Department of Defense 5000 series policy and Army Regulation 70-1.

- Synchronizes this pamphlet with policy outlined in Army Regulation 750-43.

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Maintenance of Supplies and Equipment

Army Test Program Set Implementation Guide

By Order of the Secretary of the Army:

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History. This publication is a major revision.

Summary. This pamphlet provides guidelines and procedures to combat developers, materiel developers and sustainment activities for requirements determination, acquisition, development, and life-cycle management of Army test program sets used in the maintenance of Army materiel.

Applicability. This pamphlet applies to the Active Army, the Army National Guard/Army National Guard of the United States and the U.S. Army Reserve, unless otherwise stated. This pamphlet is applicable only to those activities involved with weapon system repair, automatic test equipment and test program sets. The Civil Works activities of the Corps of Engineers are exempt from this pamphlet. During mobilization, procedures in this publication may be modified to support policy changes as necessary.

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

Suggested improvements. Users are invited to send in comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to the Office of the Deputy Chief of Staff, G–4, ATTN: DALO–SMM, 500 Army Pentagon, Washington, DC 20310–0500.

Distribution. This publication is available in electronic media only and is intended for command levels C, D, and E for the Active Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

Contents (Listed by paragraph and page number)

*This pamphlet supersedes DA Pam 750–43, dated 28 February 1992.

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Chapter 1
Introduction

1–1. Purpose

This pamphlet provides guidance and procedures for determining the requirements, acquisition, development, sustainment and life-cycle management of Army test program sets (TPSs) used in the maintenance and support of Army materiel. It also—

a. Provides guidance for implementing policy established by Department of Defense Directive (DODD) 5000.1, Department of Defense Instruction (DODI) 5000.2, Army Regulation (AR) 70–1, AR 700–127, AR 750–1 and AR 750–43.

b. Applies to all U.S. Army materiel anticipating or requiring off system testing throughout their life cycles with automatic test equipment (ATE) including factory test equipment during production phases or ATE used by contractors during contractor logistics support (CLS).

1–2. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

1–3. Explanation of abbreviations and terms

Abbreviations and special terms used in this pamphlet are explained in the glossary.

1–4. Roles

TPS acquisition will be conducted in accordance with roles and responsibilities identified in AR 750–43.

1–5. Exceptions

Requests to waive procedures outlined in this pamphlet will be submitted to Deputy Chief of Staff, G–4 (DCS, G–4), ATTN: DALO–SMM, 500 Army Pentagon, Washington, DC 20310–0500.

Chapter 2
Program Management Summary

2–1. General

TPS management encompasses the life-cycle administrative and technical management of TPSs for field and sustainment maintenance ATE. TPS life-cycle management is consistent with DODI 5000.2.

a. A TPS consists of the particular software, hardware, and documentation that are used with computer controlled test equipment to detect and isolate failures within a unit under test (UUT).

(1) TPS software may reside on various forms of transportable media.

(2) Test program hardware (TPH) may include any hardware required to interface the UUT to the ATE.

(3) TPS documentation may include—

(a) Technical manuals (TM).

(b) Technical bulletins (TB).

(c) Depot maintenance work requirements (DMWR).

(d) Technical data packages (TDP).

(e) Operator instructions.

(f) Engineering data required for TPS modification and integrated logistic support (ILS).

(g) Missile item specification (MIS).

b. A TPS designed only to detect, not isolate, failures is referred to as a functional, go/no-go, screening or end-to-end (E/E) TPS. Such TPSs are used to reduce false return rates to the next level of maintenance, or to verify failures for items which are not cost effective to repair.

c. A TPS designed to isolate failures is termed a diagnostic or fault isolation TPS.

d. TPS management will be a separate and distinct action in the materiel system's life cycle. When involved in joint service support, depot maintenance interservicing policies and procedures will apply.

e. Figure 2–1 illustrates the TPS life-cycle process and methodology of the procedures, processes, and requirements described by this pamphlet.

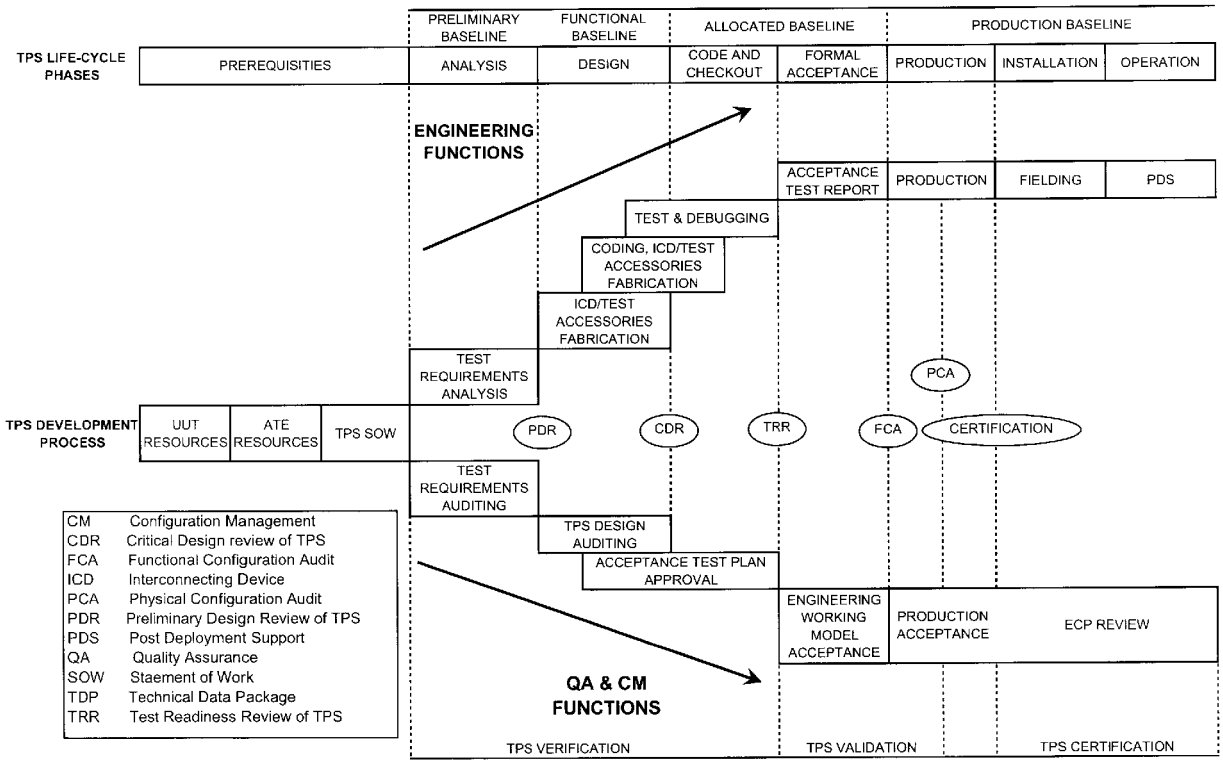


Figure 2–1. TPS life-cycle process

2–2. Test program set management plan

The TPS management plan (TPSMP) is the central document for planning, developing, acquiring, and maintaining TPSs for each materiel system. TPS requirements will be addressed as a major element in all phases of the supported system life cycle. TPS planning will be initiated by the materiel developer (MATDEV) in conjunction with the combat developer during generation of the Capabilities Development Document (CDD) and weapon system maintenance concept. TPS management responsibilities will be included in the prime system acquisition strategy.

a. A TPSMP will be approved for each system requiring TPSs during the technology development phase of the system acquisition or its equivalent if the supported system program accelerates the development life-cycle.

b. The TPSMP will identify TPS acquisition and life-cycle planning factors, and establish management guidelines to ensure that these factors are adequately considered in the acquisition planning process.

c. A significant relationship exists between the TPSMP, the Acquisition Program Baseline (APB), and the Materiel Fielding Plan (MFP). It is essential that all sites requiring TPSs be identified early in the planning stages. The MFP and associated funding requirements reflect the fielding and life-cycle support requirements for TPSs.

d. The TPSMP will be used to support other formal planning documents such as the Integrated Logistics Support Plan (ILSP) and the Test and Evaluation Master Plan (TEMP). The TPSMP will be tailored to the acquisition strategy for the system.

e. Preparation and the processing of the TPSMP is the responsibility of the MATDEV. System acquisition will not proceed into the system development and demonstration (SD&D) phase until the TPSMP has been approved or a waiver processed through the responsible official for sustainment (DCS, G–4).

f. TPS status will be monitored by the MATDEV ILS manager and reported through the Army System Acquisition Review Council process.

2–3. Materiel system life-cycle criteria

The following TPS related criteria will be met at the associated milestone in the materiel system life cycle. Accelerated development programs that omit any intervening milestones between concept and the production decision require an approved TPSMP as soon as the necessary information is known. In general, systems will not pass into SD&D or its

equivalent, or have a request for proposal (RFP) issued, without an Army Materiel Command (AMC)-approved TPSMP.

a. Milestone 0—decision for program initiation. Document the use of qualified TPS personnel in the evaluation of alternative system concepts.

b. Milestone A to milestone B—technology development phase. The following actions are taken:

(1) Draft TPSMP.

(2) TPS funding is planned, programmed, and budgeted according to Army budget policy.

(3) Acquisition strategy, development and planning are drafted. An evaluation comparing acquisition from the prime contractor, independent TPS source, and an inhouse development activity will be conducted and annotated in the TPSMP.

c. Milestone B—decision to enter SD&D. The following actions have been taken:

(1) TPS management plan has been updated and approved.

(2) TPS have been established as a major element in the Integrated Logistics Support Plan (ILSP) and Integrated Logistics Support (ILS) reviews.

(3) Phased development of TPSs will be based on realistic projections of UUT design maturation. TPS design will conform to Military Performance Specification 32070 (MIL–PRF–32070).

(4) Documentation reflecting testing requirements or testing specifications have been acquired or scheduled for each UUT according to the TPS time phasing and the acquisition method as required by this pamphlet.

(5) TPS requirements have been defined and updated in the logistics support analysis (LSA) by a level of repair analysis (LORA).

(6) Sufficient engineering and product assurance resources are available to conduct verification, validation, and acceptance of TPSs.

(7) Configuration management (CM) planning has been accomplished and includes schedules for transfer of configuration control of the TPSs to the Government.

(8) Early UUT design stabilization and CM must be consistent with the supported system operational readiness requirements.

(9) Failure detection and fault isolation requirements for the TPSs are specified in both deterministic (coverage) and probabilistic (confidence) terms. Both specifications must be outlined in the TPSMP and both must conform to MIL–PRF–32070.

(10) Identification of depot maintenance requirements will be processed as early as possible, but not later than 90 days after award of the SD&D contract or the equivalent acquisition milestone.

d. Milestone C—decision to enter production and deployment phase.

(1) TPSMP has been updated and approved.

(2) Required field-level TPSs have successfully completed development test/operational test (DT/OT) II.

(3) Field level TPS results from DT/OT have been evaluated and approved by the Army Test and Evaluation Command (ATEC).

(4) Funding and phasing of additional TPSs are addressed.

(5) Interim contractor logistics support (ICLS), additional spares and other elements of support required prior to a full TPS deployment are included in the production contracts or other system support requirements established. MFPs and agreements will address ICLS and TPS availability.

(6) Support infrastructure including ATE, TPSs, UUTs. TPS development environment and personnel are planned, funded or established.

(7) Methods for TPS identification, accountability, materiel release, maintenance, and deployment have been defined, developed, approved, and implemented in coordination with each gaining command and organization.

(8) Procedures for TPS modification, test, production, and deployment have been defined and approved in the MFP, materiel fielding agreements (MFAs), and the TPSMP.

2–4. Test program set categories

A TPS generally can be categorized by the design level of a UUT which the TPS tests. Categories are as follows:

a. Field level TPSs are used to detect system failures (system go/no-go TPS), and to isolate to the line replaceable unit or cables (system diagnostic TPS).

b. Sustainment level TPSs:

(1) Line replaceable unit (LRU) TPSs are used to screen LRUs, or to determine LRU status after repair (LRU go/no-go TPS) and to isolate to the shop repairable unit (SRU) (LRU diagnostic TPS).

(2) Shop repairable unit TPSs are used to screen SRUs or to determine SRU status after repair (SRU go/no-go TPS) and to isolate to the component or group of components, known as an ambiguity group (SRU diagnostic TPS).

2–5. Unit under test design maturity impact to test program set fieldings

TPS development for any UUT is most efficient when the design of the target UUT has stabilized. Design stabilization

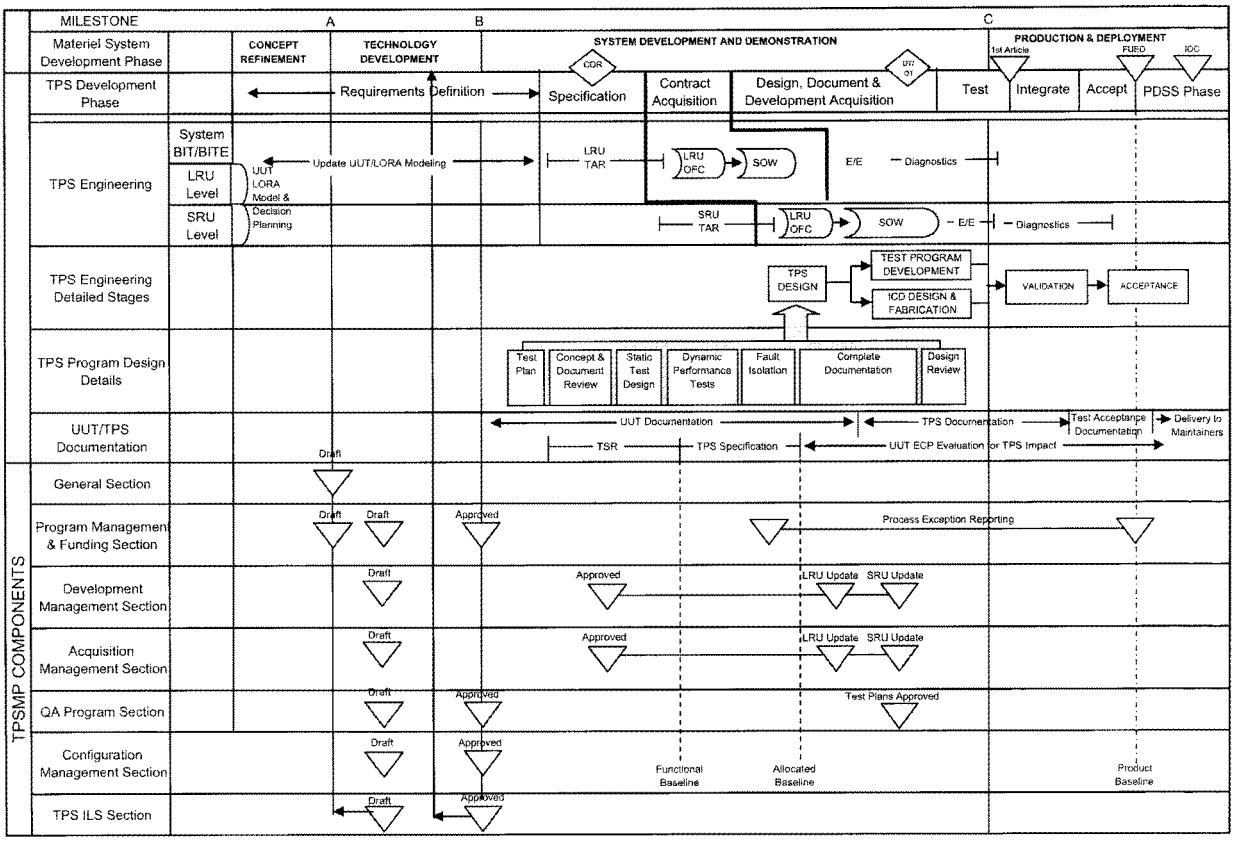
occurs along a continuum from system to component. It generally occurs when the number of engineering change proposals (ECPs) reaches some minimal steady state after the UUT has been in production. If TPS development has begun before UUT stabilization, then the MATDEV must be prepared to accept the tradeoffs implied and closely manage the TPS development process. Completion of TPS development shall be consistent with the TPS support requirements and TPS schedule as follows:

a. System level TPSs, if used, will be fielded with the supported system.

b. LRU and SRU TPSs will be fielded according to the requirements of the supported system.

(1) If LRU and/or SRU TPS availability is mandated at system initial operational capability (IOC), the MATDEV must stabilize the UUT design and enforce UUT design stability consistent with TPS support requirements to assure availability at IOC. Figure 2–2 illustrates the general relationship of the TPSMP and TPS development activities to the materiel system development phases when this alternative is employed. Note that critical TPS decisions must be made and implemented early in the materiel system SD&D phase for this alternative to be implemented.

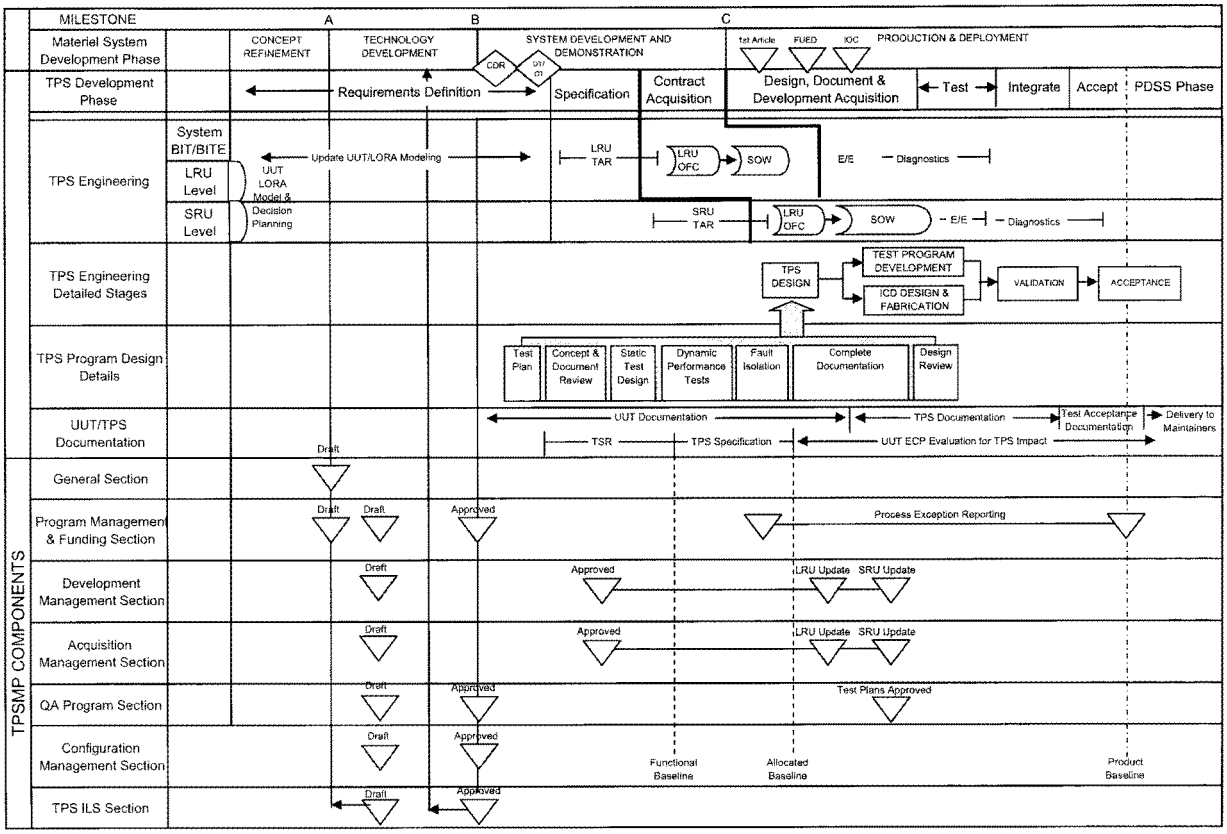
(2) If LRU and/or SRU TPS availability is not mandated at system IOC, alternative means of logistic support must be planned to span the gap between system IOC and delivery of the final TPSs. This will be implemented in the form of ICLS or other support agreement and will be addressed in the system MFP and MFAs. The interim alternative support method will also be addressed in the TPSMP. Figure 2–3 illustrates the general relationship of the TPSMP and TPS development activities to the materiel system development phases when this alternative is employed.



Notes:

[1] Critical TPS decisions must be made and implemented early in the materiel system SD&D phase for this alternative to be implemented.

Figure 2–2. TPS development activities (TPS at initial operational capability)



Notes:

[1] Figure 2–3 refers to an alternative employment method when TPSs are not required at IOC.

Figure 2–3. TPS development activities (TPSs not required at initial operational capability)

Chapter 3
Test Program Set Requirements Determination

3–1. General

Before any TPS development is begun, the requirements for each TPS must be clearly established. These requirements should be addressed using Military Handbook (MIL–HDBK)–2165. This approach adheres to the instruction of DODD 5000.1 and DODI 5000.2 for early identification of requirements that influence the system performance parameters and the system configuration from a support standpoint.

a. The process further requires the development of an optimum diagnostic concept that considers various degrees of built-in test (BIT) and built-in test equipment (BITE), ATE with associated TPS, and a manual test (see figure 3–1).

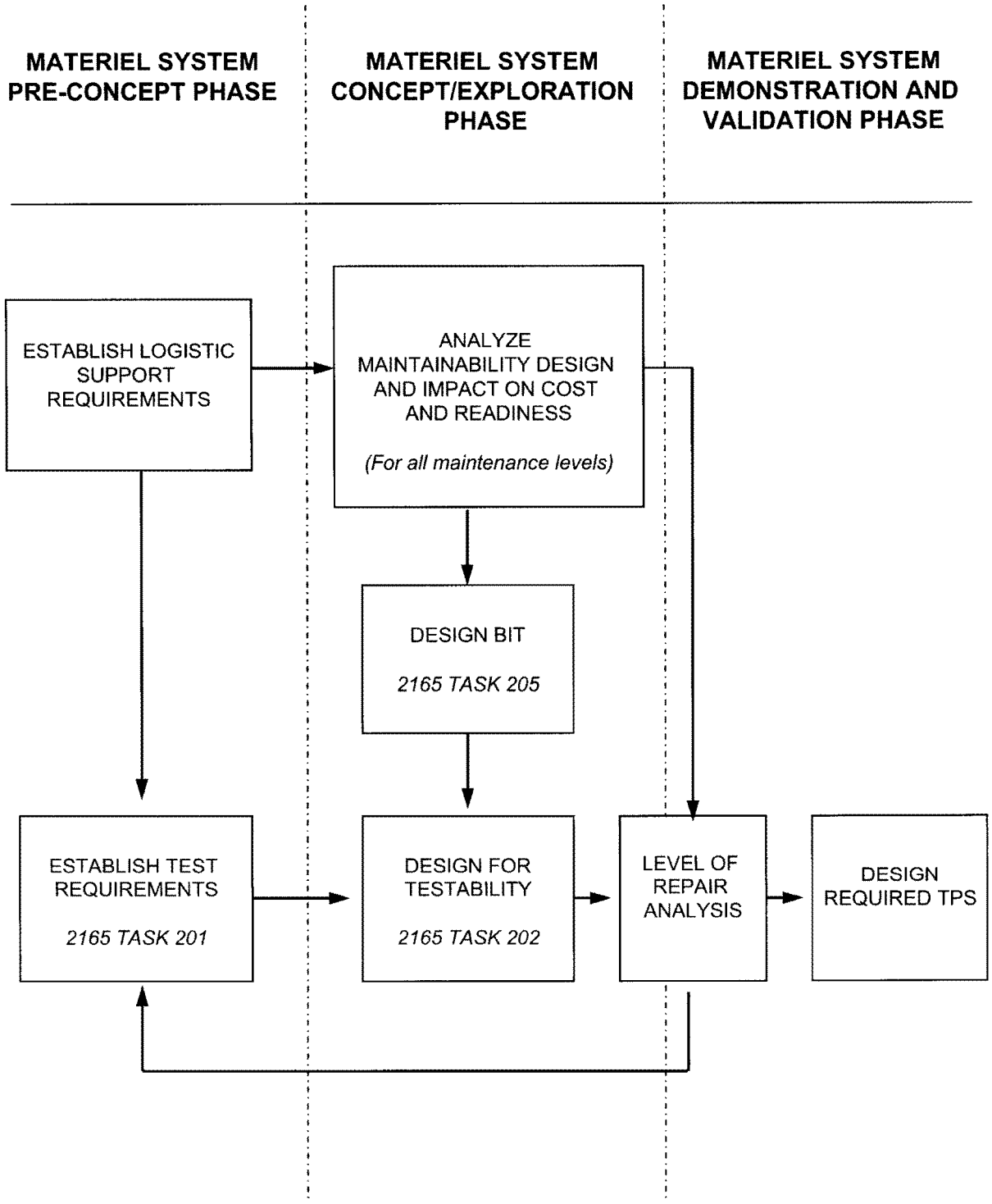


Figure 3–1. BIT/ATE determination

b. Using the support system alternatives, a LORA is performed to determine the most cost-effective alternative.

c. Army Regulation 750–1 requires that, for printed circuit boards (PCBs), discard at failure will be considered by all MATDEVs as a preferred alternative to repair when a business case analysis supports it. All repair/discard analyses are documented and reported in the TPSMP.

3–2. Testability

Historically, the testing of electronic circuits has not been considered until the end of the system design or prototype phase. The result has been increased cost and performance limitations for TPSs. The MATDEV should consider testability early in the conceptual design stages to mitigate these risks.

3–3. Level of repair analysis

As an integral part of LSA, the level of repair analysis (LORA) will be used to determine the initial TPS requirements and to update these requirements as part of the iterative LSA process. The LORA will consider the support alternatives and their interrelationships. This analysis will consider the following minimum factors of a UUT before deciding that a TPS is required:

a. A workload analysis to determine the total testing time for a particular UUT at each level of maintenance for a given period. This is a function of the UUT failure rate, no evidence of failure (NEOF) rate, and inventory size of the particular UUT.

b. A cost-effective analysis to determine the cost for each of the various options. This cost will consider life-cycle costs. The cost elements should include at least the following:

(1) Labor costs (manual versus ATE), including testing time, skill levels, and training costs.

(2) UUT spares and spare parts including cost savings due to reduced inventory when an automatic test is implemented, affect of NEOF rate on the UUT inventory, and transportation costs.

(3) Estimated life-cycle costs (ATE, manual test equipment, TPS, BIT software, and so forth).

(4) Estimated hardware costs, if applicable (ATE augmentation).

3–4. Built-in test/built-in test equipment requirements

The TPS must have the capability to interface and analyze the BIT/BITE.

3–5. Automatic test equipment

In the development of support alternatives, maximum emphasis will be placed on the use of the integrated family of test equipment (IFTE). Any use of nonstandard ATE will require a waiver and approval according to AR 750–43 and will be specifically addressed in the TPSMP.

3–6. Test program set prerequisites

A primary criterion for TPS development by a contractor or organization other than the UUT manufacturer will be the availability of UUT documentation from which a TPS specification can be formulated. Decision makers should consider using the AMC MSC ATE TPS center or one of its contractors as the preferred method for TPS development.

a. The ATE/TPS centers, in concert with the acquisition manager for the UUT, must determine the availability of the UUT test requirements data prior to the development of the TPS acquisition strategy.

b. The minimum data requirements are outlined in chapter 6. If the data are not readily available prior to the projected TPS acquisition, as determined by the ILSP and TPSMP, then the requirement exists for procuring data.

3–7. Integrated logistics support plan

The ILSP is initiated early in the materiel system life cycle. As a minimum, the following TPS-related information will be contained in the ILSP:

a. Interim contractor logistics support plans.

b. Organic support dates.

c. ATE requirements.

d. Milestones schedule.

e. Maintenance plan.

3–8. Classified test program sets

Classified TPSs will not be developed and fielded unless a validated requirement exists. The TPS acquisition manager will verify the correctness of the weapon system classified guide as it affects the classification of TPS. Classification of TPS parameters will be questioned to verify correctness.

a. The TPS acquisition manager will verify the intention to classify parameters beyond development and into

fielding. If weapon system operation discloses a classified parameter, the rationale for imposing a classification requirement on TPSs will be questioned.

b. The TPS acquisition manager will consider the development and fielding of TPSs without the classified portions. If the classified tests in a TPS only account for a small portion of the field failures, then the materiel system developer should consider deleting the classified portion from TPSs that will be fielded. Techniques will be used that avoid TPS classification.

c. A TPS is classified if the program contains classified information (in the source or executable code) or if it requires the displaying/printing of classified information during execution of the test program.

d. A TPS may also be classified if it processes classified information during execution of the test program. The first classification factor is within the control of the TPS developer. For example, dummy stimuli values that are unclassified may be substituted for the actual classified values wherever possible. In cases where classified values cannot be avoided the values will be contained in a separate classified technical manual until the values are entered at runtime.

e. The TPS developer should take steps to ensure that classified parameters are not easily available or extractable from the software routines. The TPS developer can also take steps to assure that classified data will not be displayed or printed. The displaying and printing of classified values will be avoided by using dimensionless values or by only displaying and printing the difference between the entered value and the actual measured value.

f. Another classification factor, processing classified data, are an electromagnetic emanations problem. The Army's standard ATE manager, product manager, test, measurement and diagnostics equipment (PM–TMDE), is responsible for controlling the electromagnetic emanations from the standard ATE and for establishing ATE memory erasure criteria. Guidance will be developed and distributed by the PM–TMDE. If published guidance is not available when needed, the TPS acquisition manager will contact the PM–TMDE for guidance.

3–9. Test program set acquisition strategy

a. The formulation of the TPS acquisition strategy is critical to developing a cost effective TPS that will meet operational requirements in a timely manner. The formulation of the acquisition strategy will be based on a detailed review of TPS needs, budget constraints, and UUT data content and availability. After the materiel system has entered the SD&D phase, the availability of UUT data below can be readily ascertained. If the—

(1) Required UUT data are obtained and a TPS specification can be formulated that completely defines the performance requirements of a TPS, then the acquisition manager has a wide range of procurement options. The acquisition manager may go through the RFP process to industry, or select one of the government facilities available.

(2) UUT data are not readily available or on contract, the cost and time to obtain the data must be assessed. If the UUT prime contractor (and/or subcontractors) permits the TPS contractor to have immediate engineering visibility to design changes, this can be considered.

b. If the UUT data are not available or complete, one of the following options must be evaluated and selected on the basis of the best match with program schedule requirements and availability of data and assets:

(1) Sole source award to the prime contractor or UUT subcontractor for all UUTs without available UUT data. If the TPS for the remaining UUTs can be practically grouped, the TPSs should be procured competitively; otherwise, they should be procured with the sole source award.

(2) Adjust the TPS schedule and wait for the UUT data before procuring TPSs competitively. Interim contractor logistics support for the UUTs may become necessary. The possibility of sole source procurement of some TPSs and competitive procurement of others should be considered.

(3) Reverse engineering by the AMC ATE TPS center may be required.

c. The formulation of the TPS statement of work (SOW) and the TPS specification provides the acquisition manager with the tools to achieve these goals. However, an inherent time delay lies between initiation of the supported item design and initiation of the TPS design.

(1) For field-level category TPS (for example, materiel system developer (MSD)), the initial delay is normally 5 months or longer, depending on the complexity of the system.

(2) Progressively longer delays are associated with the initiation periods of LRU and SRU TPSs. Initial delay is a normal characteristic of systems development and must be taken into account when planning TPS acquisition strategy and availability for use at each level of maintenance.

d. The projected cost and schedule needs for TPS development should be compared with the fiscal year budget funding profile. The comparison should assure that the correct type of funds (see chapter 4) has been budgeted and that the development can be completed within budgeted funds and schedule. If the profiles are not compatible, the acquisition manager, in conjunction with the major subordinate command (MSC) ATE/TPS center, must take appropriate action to change or to extend the TPS development schedule. The delay will also affect the initial support capability and ICLS will have to be provided.

e. The preferred type of contract for TPS development is a firm fixed-price (FFP) or fixed-price incentive fee (FPIF) contract. The firm fixed-price assumes that an adequate TPS specification with UUT data will be available for the proposal.

(1) If it is necessary to have an accelerated schedule that requires concurrent engineering change proposal (ECP)

revision to the UUT and the TPS, then a cost-plus fixed-fee (CPFF) or a cost plus incentive fee (CPIF) contract should be considered. The CPFF or CPIF will permit TPS cost adjustments to be made due to unpredictable UUT design changes.

(2) Premature initiation of TPS development incurs expenditures of critical resources and may be counterproductive. Therefore, in planning for TPS development, the TPS acquisition manager and/or MATDEV will recognize these factors before recommending CPFF or CPIF contracts.

(3) Incentive contracts may be used for stimulating early schedule completion, reduced test program and interface design complexity, and so forth.

Chapter 4
Test Program Set Funding

4–1. General

TPSs are an integral part of the end item and do not have their own individual type classification. Test program set funding is determined by the life-cycle status of the supported (parent) system or the reconfiguration requirement.

a. Research development test and evaluation (RDTE). When an end item is in the development phase or when it undergoes a configuration change that affects the performance envelope, the appropriate funding category of associated TPS development is RDTE.

b. Procurement Army (PA). When an end item is in the production phase, the appropriate funding category is PA except when a configuration change of the end item affects the performance of the end item. In this case, use RDTE funding for TPSs.

c. Operations and Maintenance, Army (OMA). When an end item is out of the production phase, the appropriate funding category is OMA, except when a configuration change of the end item affects the performance of the end item. In this case, use RDTE funding for TPSs.

4–2. Assistance

Funding policy questions that cannot be resolved locally by comptrollers or resource managers will be referred through comptroller channels to HQDA, Deputy Chief of Staff, G–8 (DCS, G–8).

Chapter 5
Test Program Set Acquisition

5–1. General

TPS acquisition will be planned as a separate (program controlled) item consistent with the importance of the TPS and the end system it supports.

5–2. Test program set management plan

The central document for planning, developing, acquiring, and maintaining the TPS is the TPSMP. The TPSMP will be written to reflect the requirements of the materiel system life cycle. The content of the TPSMP is outlined in appendix B. In the TPSMP, the MATDEV will clearly address the procurement alternatives of acquiring TPSs. In addition, the TPSMP will clearly justify and display total TPS quantity requirements. In justifying these quantities, the units to receive TPSs are to be identified for both mission support and wartime contingency requirements.

a. TPS management plan preparation. The MATDEV is responsible for assuring the development of the TPSMP. The AMC ATE/TPS center will act as the principal staff advisor to the MATDEV for the TPSMP. The task of preparing the TPSMP may be assigned to the ATE/TPS center, which may further task the principal matrix support elements of the AMC MSC for appropriate assistance. The AMC ATE/TPS center will coordinate the development of the TPSMP and will ensure final integration of all sections of the TPSMP.

b. TPS management plan submissions. Drafts, approvals, and updates for each element of the TPSMP will be completed at various times during the TPS life cycle. The objectives of each of these elements will be completed according to appendix B.

c. TPS management plan concurrence. Coordination will be achieved prior to formal submission of the TPSMP. This coordination will be made with the supporting AMC ATE/TPS center and PM TMDE. Coordination should reflect concurrence or nonconcurrence and any supporting comments.

5–3. Competitive acquisition

TPS acquisition planning for LRU/SRU levels will give first priority to competitive acquisition, independent of the

supported system materiel developer. This may be from inhouse AMC TPS development activities or from third-party TPS developers in industry.

a. The MATDEV must recognize the extremely important issue of unit under test (UUT) CM required to support competitive TPS procurement.

b. Competitive acquisition of TPSs is encouraged for cost and schedule reasons. This places significant emphasis upon development of a comprehensive UUT TPS Development Plan. Because of this emphasis, the TPSMP will not be approved unless the PM has documented that adequate, technically accurate UUT source technical data will be available prior to the TPS development effort. These data requirements are outlined in chapter 6.

c. Availability of the UUTs and ATE must also be clearly identified during the acquisition planning and in the TPSMP. Knowledgeable procurement of TPSs will provide for the phased development of TPSs according to the timing of UUT design maturity as discussed in chapter 2.

d. An exception to competitive acquisition of TPSs may be made for acquisition of field-level TPSs.

e. Relatively few TPSs are required at the field level and they are usually required for demonstration during development test/operational test II (DT/OT II) in the materiel system SD&D phase. The materiel system developer may be the best source for these initial field-level TPSs.

5–4. Cost and schedule estimates

Managers of every support system must solicit a cost and schedule estimate from at least one inhouse TPS development activity. This estimate will be used in the TPSMP as a benchmark for comparing alternate acquisition strategies.

5–5. Work breakdown structure

All TPS acquisitions will provide a suitable work breakdown structure (WBS) to ensure management visibility in the development process. Figure 5–1 is a sample TPS WBS for a TPS program. As a minimum, WBS elements 1.0 through 8.0, the first row in figure 5–1, should be included in the first submission of the TPSMP for a particular TPS program. The information for figures 5–2, 5–3, and 5–4 is normally obtained from the TPS development contractor's proposal and will be included in updates to the TPSMP.

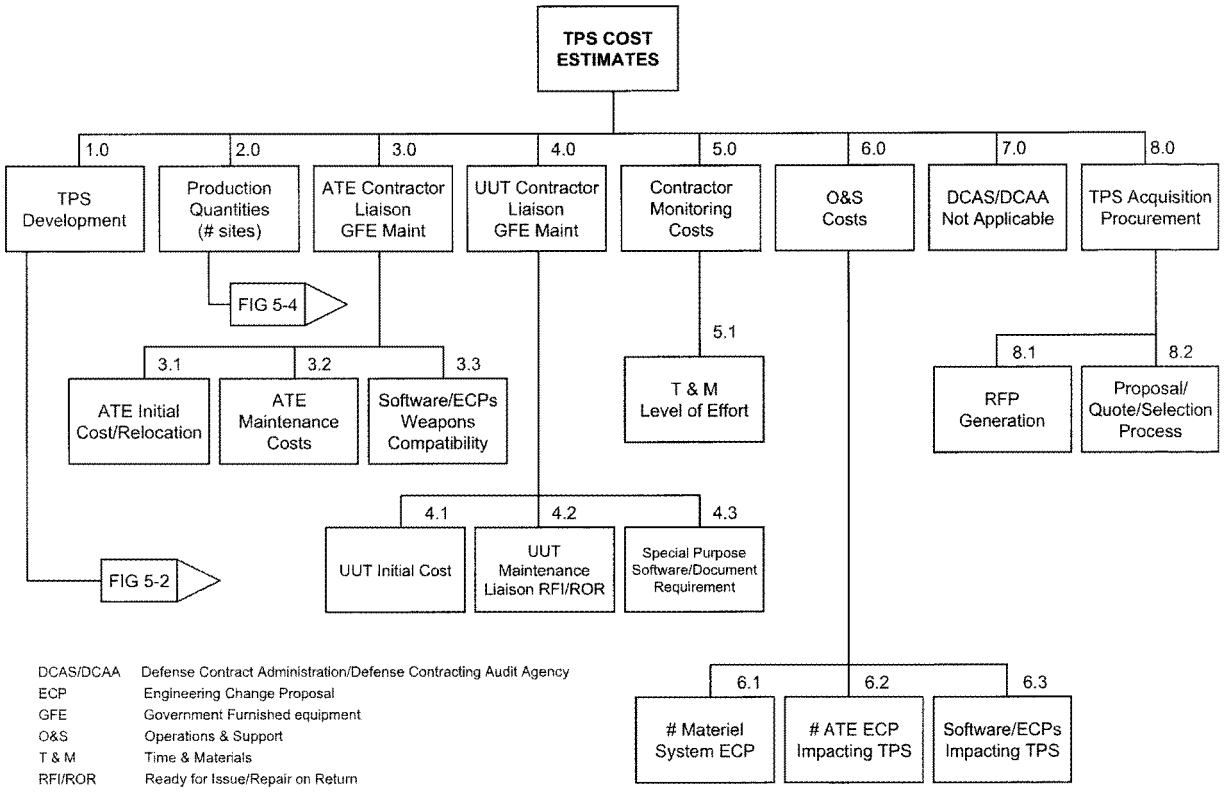


Figure 5–1. Work breakdown structure (TPS cost estimates)

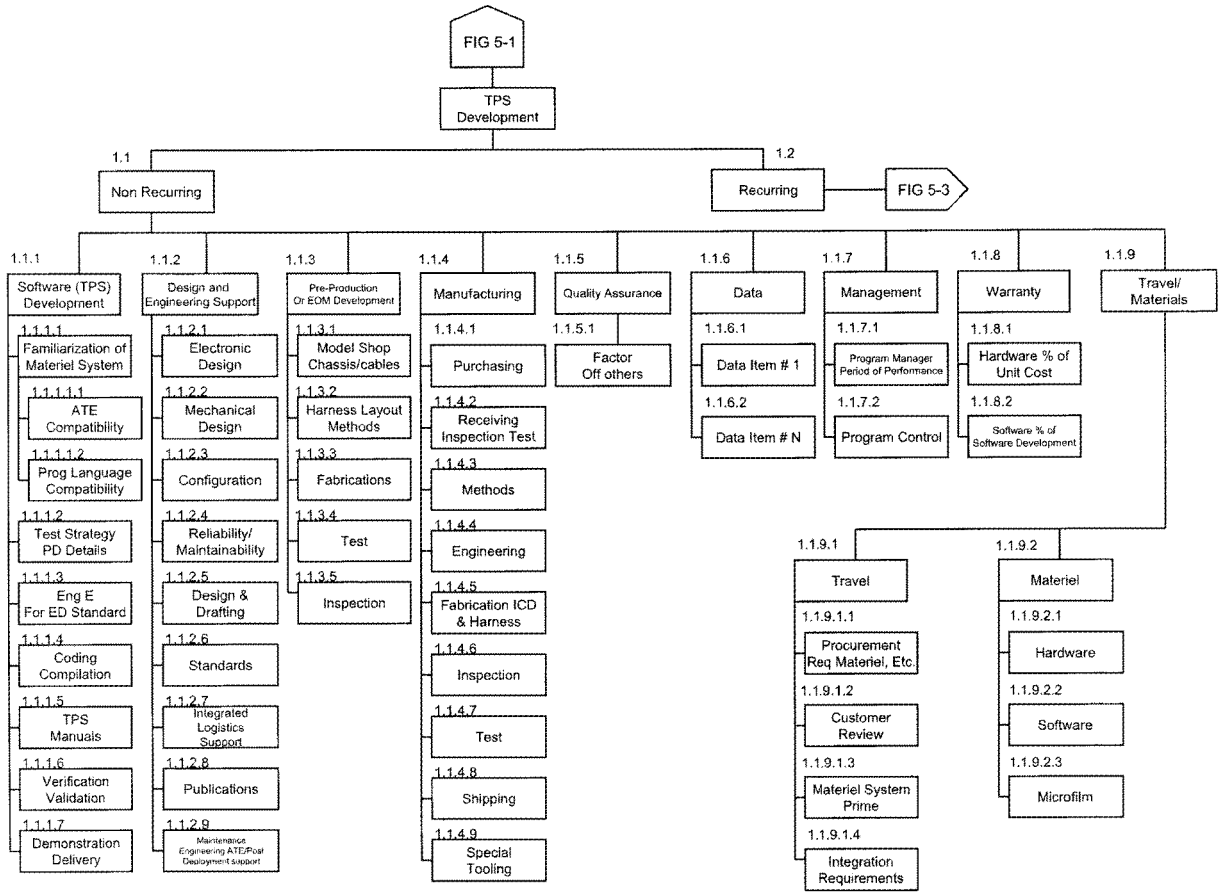


Figure 5–2. Work breakdown structure (TPS development)

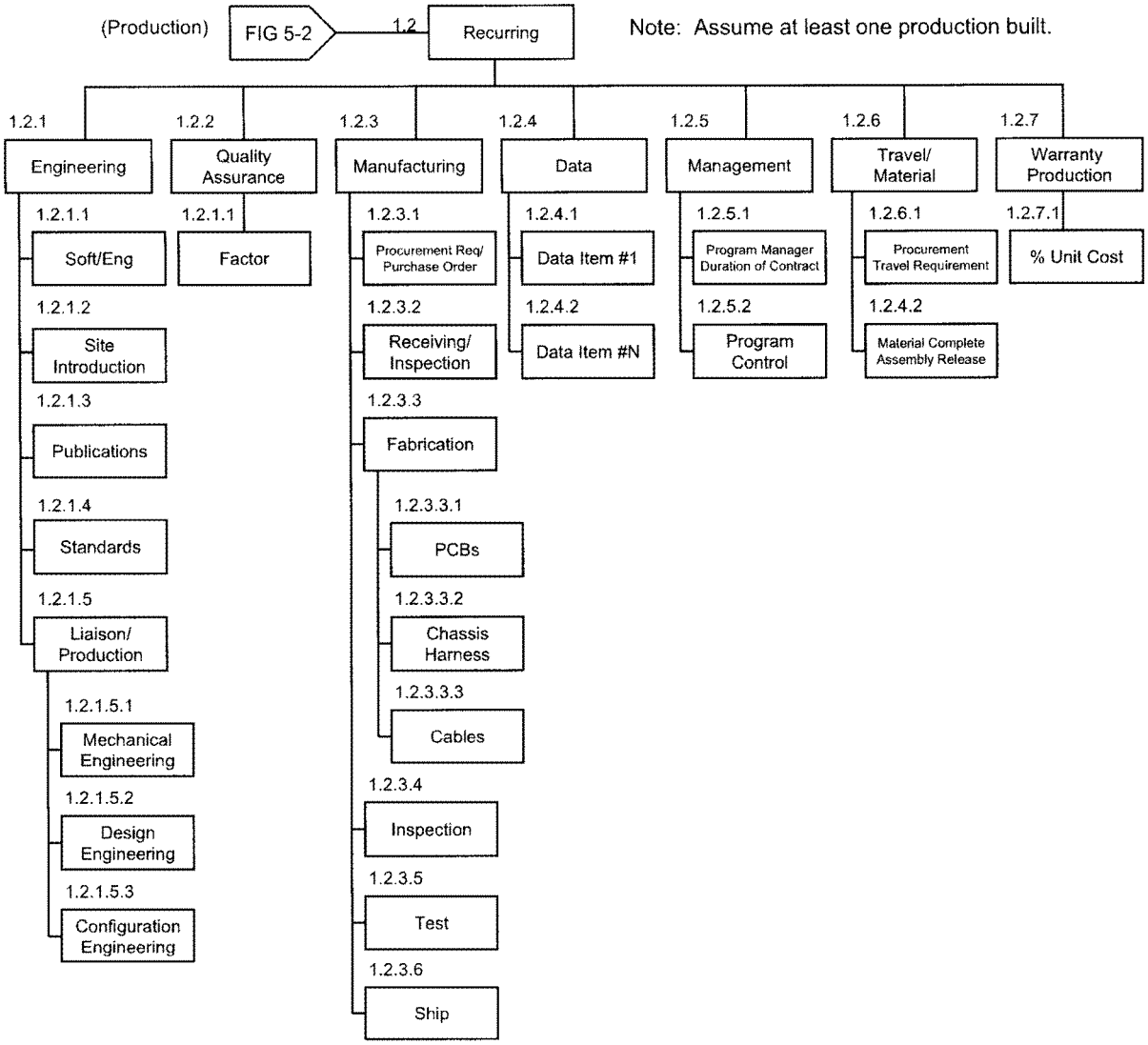


Figure 5–3. Work breakdown structure (recurring costs)

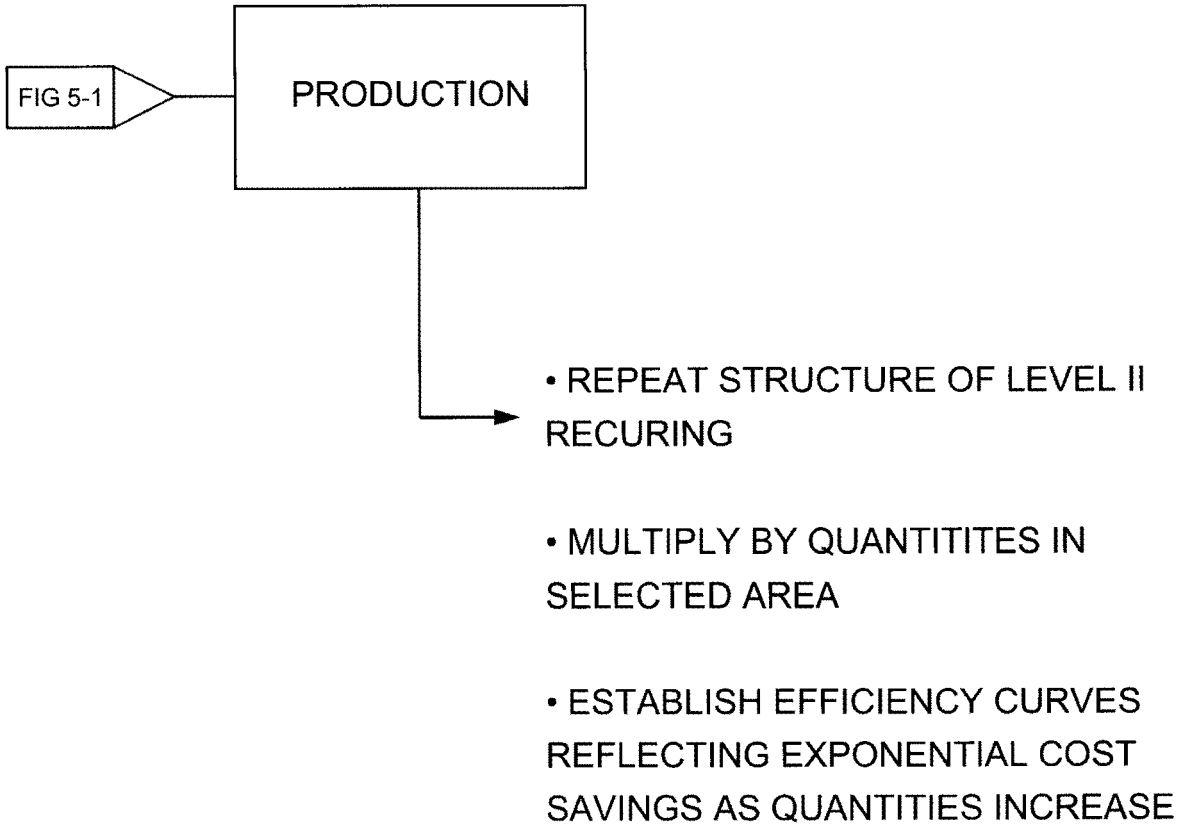


Figure 5–4. Work breakdown structure (production)

Chapter 6
Test Program Set Engineering Development Management

6–1. General

This chapter identifies the MATDEVs responsibilities for the engineering management functions required for TPS development as illustrated in figure 2–1. It focuses on the items needed to begin TPS development, the actions necessary to accomplish TPS development, and the deliverables required at each of the various design reviews. TPS design and test readiness reviews and acceptance participants should include: the MATDEV, TPS developer, product assurance and test (PA&T), PM–TMDE, configuration manager, and ATE/TPS center. Throughout this chapter generic terms are used to describe the type of information and documentation required when more than one definition exists. The intent is to identify the minimum acceptable requirements for TPS development and acceptance as illustrated in figure 6–1.

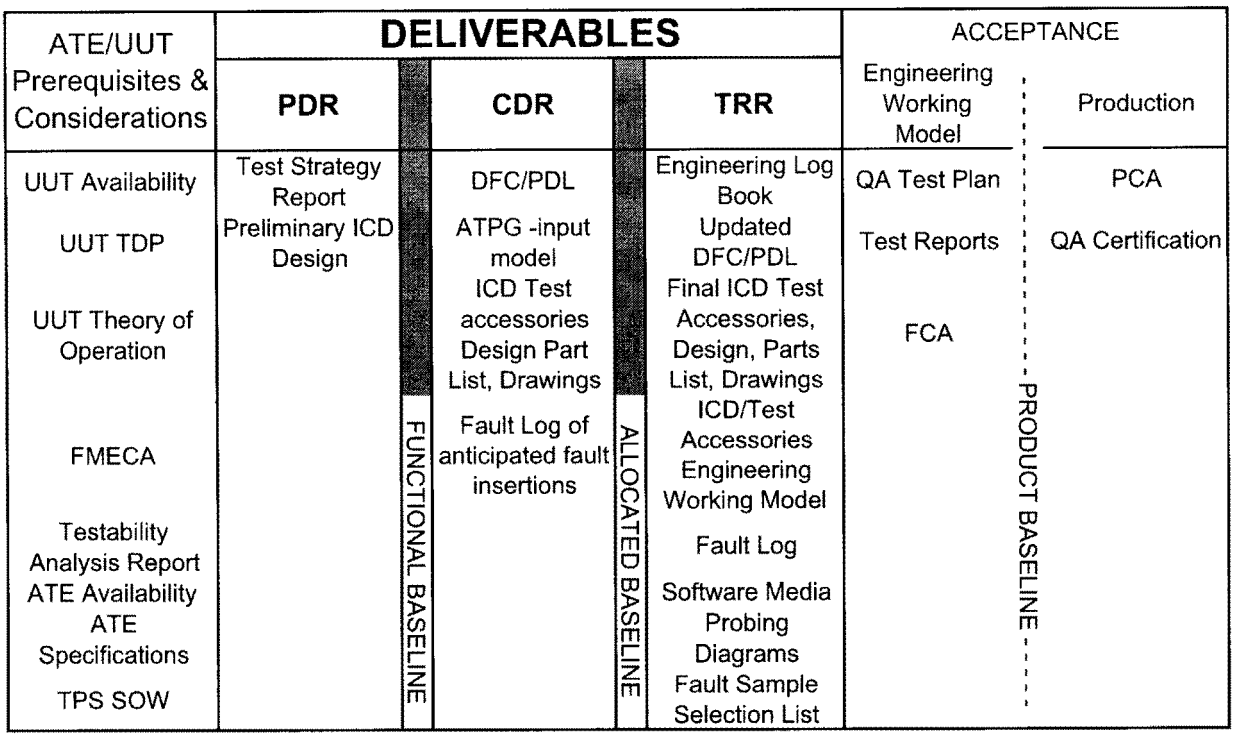


Figure 6–1. TPS minimum requirements

6–2. Test program set engineering design considerations

a. Application development environment (ADE). An ADE is the set of services or interface by which the TPS developer either creates or maintains a TPS, whether captured in the form of a textual or graphical language, for example; LabWindows CVI, Visual Basic, or C++.

b. Allocated baseline. The allocated baseline will consist of the identified and approved documents defining the configuration items (CIs) as illustrated in figure 6–1. Once the allocated baseline is established it cannot be changed except by formal change procedures.

c. Automatic test program generator (ATPG). A program, often based on simulation, which aids in the development of test patterns and diagnostics information from the model of a unit under test (UUT).

d. Functional baseline. As applied to TPSs, the functional baseline is comprised of the documentation illustrated in figure 6–1 and the CM plan (CMP), after successful completion of the preliminary design review (PDR).

e. Functional configuration audit (FCA). The FCA validates that development of the TPS has been completed satisfactorily. Functional configuration audits will be conducted on TPSs to ensure that the functional characteristics reflected in baseline documentation are met.

f. Failure mode, effects, and criticality analysis (FMECA). The FMECA is used to identify potential design weaknesses through systematic, documented consideration of the following:

(1) All likely ways in which a component or equipment can fail.

(2) The causes for each failure mode.

(3) The effects of each failure mode.

g. Interface device (ID). The ID will provide mechanical and electrical connection and signal conditioning between the ATE and the UUT.

h. Physical configuration audit (PCA). The PCA examines the hardware to assure that the documentation reflects the "as built" configuration of the TPS ensuring an accurate product baseline.

i. Product baseline. This is the baseline that describes the necessary "build to" (CI form, fit and function characteristics) requirements for the TPS as defined by figure 6–1. After acceptance, the documentation becomes the product baseline.

j. Technical data package (TDP). A TDP is a technical description adequate for use in procurement of an item. The description defines the required design configuration and assures adequacy of item performance. It consists of all

applicable technical data such as plans, drawings and associated lists, specifications, standards, models, performance requirements, quality assurance provisions, and packaging data. The UUT TDP will include UUT product specification, testing requirements, UUT schematics, UUT assembly drawings, UUT parts list, and UUT system software documentation as required.

k. Test strategy report (TSR). A TSR describes functions and operating modes for each UUT. It identifies the proposed tests and the man/machine interface parameters that affect the tests, and provides additional descriptive reference information for use in testing. The TSR will be the primary reference document for TPS development and review. It provides performance and diagnostic data that are defined independently of the test equipment.

6–3. Test program set prerequisites

The items below are necessary to initiate TPS development. These items must be supplied by the MATDEV to the TPS developer. Any effort to begin TPS development without these items may result in cost increases, schedule delays and poor performance. Availability of each of these items must be addressed in the TPSMP prior to SD&D.

a. UUT requirements.

(1) Current configurations of the UUTs must be made available. A minimum of three new UUTs for every TPS will be furnished as government loaned equipment. These UUTs will be Government loan equipment to the TPS developer. After acceptance testing, one of the UUTs will go to the TPS repository as a "golden" UUT. The second UUT will go to the TPS fielding team (see chap 10). It is preferable that one UUT be modified for fault insertion (that is conformal coating removal, use of sockets to replace or remove integrated circuits (ICs), and so forth).

(2) UUT TDP.

(3) UUT theory of operation.

(4) UUT FMECA. The FMECA will be used to prepare the TPS test strategy so that the most likely faults are detected and isolated first. It will also be used to select a realistic set of UUT failure modes that can be inserted during TPS development and acceptance.

(5) Testability analysis report (TAR).

b. ATE requirements.

(1) The MATDEV must provide the TPS developer access to the designated ATE and provide sufficient time to use the ATE for the timely development of TPSs.

(2) ATE specifications and documents are needed to determine UUT test strategies and ID designs.

c. Statement of work (SOW) considerations. The TPS SOW shall state the requirements against which the TPS will be evaluated at the various design reviews and audits. Reference will continually be made to this document at all phases of TPS development. The SOW must be prepared to accurately reflect the specific requirements, such as programming practices, design practices, schedules, deliverables, and quality assurance (QA) and CM requirements of TPSs.

d. Maintenance manuals. Materiel system technical manuals (TMs) should be closely monitored for any impact that the TPS might have on these manuals.

6–4. Preliminary design review

a. Preliminary design review (PDR) objectives. The PDR will be conducted to determine if the preliminary TPS design can be developed according to Government-furnished test specifications of the target ATE. The following are objectives of the PDR:

(1) Verify that the UUT baseline evaluation is consistent with the TDP provided. All inconsistencies between the UUT and TDP must be resolved by the TPS developer in conjunction with the MATDEV configuration manager prior to the PDR so that a functional baseline can be established.

(2) Verify that the preliminary TPS design will meet the UUT test requirements by performing a UUT/ATE interface evaluation prior to the PDR.

(3) Assess the quality of the test strategy with relationship to the FMECA in detecting and isolating faults. The FMECA identifies the most common failure modes for the UUT. The test strategy will reflect the FMECA by detecting and isolating the most likely faults first, followed by the less likely faults. Through this method a more effective TPS will be developed.

(4) Evaluate test design for compliance with functional test requirements and summarize any automatic test program generator (ATPG) application.

(5) Approve the documentation identified below as PDR deliverables.

b. Preliminary design review deliverables. Timely response to the delivered items by the MATDEV is vital for the TPS developer to maintain the TPS development schedule. The following items are to be delivered to the MATDEV from the TPS developer according to the TPS SOW:

(1) *UUT test strategy.* The TSR addresses the specific LRU/SRU attributes and performance requirements, the related TPS requirements, and the necessary ATE/TPS interface.

(2) *Preliminary ID design and self-test strategy.* The ID self-test strategy must be included whether or not the ID has a separate self-test TPS.

c. Functional baseline. The functional baseline will be established at the completion of the PDR on those CIs illustrated in figure 6–1. Any changes to this baseline following the PDR will be controlled by the configuration manager as detailed in chapter 8.

6–5. Critical design review

a. Critical design review (CDR) objectives. The CDR will be conducted at the completion of the TPS detailed design and ID/test accessories design. The objectives of the CDR are as follows:

(1) Verify that the TPS design meets the UUT test requirements.

(2) Ensure the quality of the program logic reflects the FMECA in detecting and isolating the most likely faults first, followed by the less likely faults.

(3) Ensure the anticipated fault list is a realistic set of UUT failure modes based on the FMECA and engineering development fault insertion log data.

(4) Evaluate the electrical and mechanical design of ID and test accessories to ensure effective use of the ATE.

(5) Ensure that CM practices have been followed, and all changes to the functional baseline have been incorporated.

(6) Approve the documentation given to the MATDEV from the TPS developer.

b. Critical design review (CDR) deliverables. Timely response to the delivered items by the MATDEV is vital for the TPS developer to maintain the TPS development schedule. The following items are to be delivered to the MATDEV from the TPS developer according to the TPS SOW:

(1) Test program (TP) source code to include go-chain tests, diagnostic tests, ATE survey tests, UUT identification, ID identification, and so forth.

(2) ID/test accessories design, parts list, drawings, and ID or ADE.

(3) Automatic test program generator net list model, if applicable.

(4) Fault log of anticipated faults to be inserted by the TPS development engineer during the TPS test and debug phase, based on the most likely UUT faults as identified in the FMECA.

c. Allocated baseline. The allocated baseline will be established at the completion of the CDR. Any changes occurring to this baseline following the CDR will be controlled by the configuration manager as outlined in chapter 8.

6–6. Test readiness review

a. Test readiness review (TRR) objectives. The TRR will be conducted at the completion of the TPS development phase prior to the Government acceptance of the TPS. The objectives of the TRR are to—

(1) Confirm that the TPS software adheres to approved test specifications and utilizes good programming techniques.

(2) Confirm that the TPS hardware schematics adhere to approved test specifications.

(3) Confirm that the TPS documentation reflects the TPS software and TPS hardware.

(4) Ensure that the proposed fault sample selection list (FSSL) to be used during TPS acceptance is a realistic representation of UUT failure modes as reflected in the FMECA, and adequately exercises the TPS fault isolation paths.

(5) Ensure that CM practices have been followed, and all changes to the allocated baseline have been incorporated.

b. TRR deliverables. The following items are to be delivered to the MATDEV from the TPS developer according to the TPS SOW:

(1) Engineering log book containing any relevant information, text, schematics, logic diagrams, and supplementary data necessary for analysis of the TPS and UUT in the event of a problem during the testing process. This log is kept up-to-date by the TPS developer.

(2) Updated test program (TP) source code.

(3) Automatic test program generator documentation shall include all source files (for example; net list, fault list, pattern file and environment and rules files) including local library models and simulation listings (for example; net list, model listings, a list of detected and undetected faults, and a list and explanation of all predetects, and *.tap files (IEEE STD 1445)).

(4) Final ID/test accessories design, parts list, and drawings.

(5) Interface device/test accessories engineering working model(s).

(6) The fault log, including all faults inserted during the TPS development process. The fault log will contain all the faults listed on the approved fault list for TPS acceptance.

(7) Test program instructions as defined in DI–ATTS–80285B.

(8) UUT probing diagrams, if required.

(9) The proposed FSSL that will be used during TPS acceptance, based on the most likely faults as identified in the

FMECA. This list should also specify faults that exercise different sections of the test program, especially long diagnostic chains.

6–7. Acceptance of test program sets

TPS acceptance should be done using the first production model, if available. If a production ID is not available, then the acceptance of a TPS can be performed using the engineering working model ID. The three parts of the acceptance are—

a. Acceptance test plan. An acceptance test must be developed for each TPS. At a minimum, it must address how many announced and unannounced faults are to be inserted during acceptance testing and the conditions that constitute passing and failing the acceptance test. This plan must be completed before the FCAs.

b. Functional configuration audits. Functional configuration audits (FCAs) will verify that development of the TPS has been completed satisfactorily. Functional configuration audits will be conducted on TPSs to ensure that the functional and physical characteristics reflected in the baseline documentation are consistent. In those cases where an ID is used with only one TPS, the FCA is the same as the acceptance test. When an ID is used with more than one TPS, the family of TPSs sharing the ID is known as an operational TPS (OTPS). In this instance, the FCA is conducted after the last TPS and an OTPS is accepted, thus ensuring that no changes were made that would impact a previously accepted TPS.

c. Acceptance test reports. An acceptance test report is a full documentation of all actions that occur during the acceptance test. A report should be completed for each attempt to accept a TPS and attested to by all participants and witnesses.

6–8. Product baseline

The product baseline will be established at the completion of the TPS acceptance. Any changes to this baseline following TPS acceptance on those items illustrated in figure 6–1 will be controlled by the configuration manager as delineated in paragraph 8–4*c*.

6–9. Physical configuration audit

Physical configuration audits (PCAs) establish that the "as built" configuration of the TPS is accurately reflected in the product baseline. A PCA should be performed incrementally as hardware and software are approved and released to be manufactured so that the PCA is completed at the time the first model or unit is presented for Government acceptance.

6–10. Test program set replication

The first production model will be issued a TPS replication QA certification as stated in chapter 7. All remaining production models must be issued TPS replication QA certification prior to installation at user sites.

Chapter 7
Test Program Set Product Assurance and Test

7–1. General

The PA&T program establishes policy, procedures, and guidelines relevant to TPS PA&T. TPSs will be certified by an independent organization prior to fielding and concurred by the U.S. Army Training and Doctrine Command (TRADOC). This is usually the product assurance and test organization of the responsible major subordinate command (MSC).

a. Product assurance and test procedures apply to all phases of the TPS life cycle as illustrated in figure 2–1. PA&T is the independent organization charged with the responsibility for independent evaluation and assessment of the TPS quality, adequacy, and suitability.

b. The QA process consists of verification and validation (V&V) and certification for release both during the initial development and during post deployment support (PDS).

c. Independent V&V is an integral part of the TPS QA duties of PA&T and should be performed concurrently by PA&T personnel witnessing the testing and acceptance of TPSs to conserve resources. The V&V process will be a mandatory requirement in a PA&T program.

7–2. Product assurance and test

a. TPS verification. Verification is the iterative process aimed at determining whether the product of each step in the development cycle fulfills all the requirements levied upon it by the previous step.

b. TPS validation. Validation is the process of executing the software package to exercise the hardware and of comparing test results to required performance.

c. TPS development QA certification. This ensures that the TPS conforms to contractual and mission requirements.

d. TPS replication QA certification. This ensures that the duplication contains the same information as the original.

7–3. Product assurance and test participants

a. The U.S. Army Test and Evaluation Command. The U.S. Army Test and Evaluation Command (ATEC) oversees PA&T policy and the procedures for assuring acceptability and suitability of TPSs.

b. Quality assurance directorate. Each MSC QA directorate performs the following:

(1) Establishes and operates a MSC TPS PA&T QA program.

(2) Maintains a TPS development QA certification independent of the MATDEV.

(3) TPS replication certification.

(4) Addresses the correlation of the QA process to production acceptance requirements.

(5) Logs and tracks the Standard Form 368, Quality Deficiency Report for TPS problem reporting.

c. Materiel developer. Each materiel developer (MATDEV) will establish and maintain a TPS quality assurance program.

7–4. Test program set verification and validation process

The TPS V&V process begins early in supported system development with the preparation of the requirements for the TPS SOW and continues throughout the TPS life cycle.

a. Product assurance and test quality assurance must monitor, review, and assess TPS CM, design, and modification changes throughout the TPS life cycle in conjunction with the CM, engineering, and other MSC functional areas.

b. Product assurance and test quality assurance processes, relevant to key TPS life-cycle tasks shown in figure 7–1 conforms to TPS/QA standards and SOW requirements to—

(1) Ensure that the TPS undergoing V&V has been designed to the current baseline technical data package of the UUT.

(2) Assure that the QA inputs into the TPS SOW are complete, adequate and compliant with policy, procedures, and guidelines.

c. Product assurance and test quality assurance must verify and assure that the QA program plan developed by the contractor conforms to—

(1) Verify that the QA program plan includes the contractor's organization, planning, quality controls, and testing to be performed on the TPS.

(2) Verify that the plan provides a high level of confidence and that the quality and reliability is inherent in the design.

(3) Verify and assure that the TPS test specifications, acceptance test plan, and acceptance test procedures are adequately documented.

(4) Review TPS deliverables for completeness, adequacy, and compliance with SOW requirements.

(5) Validate prototype TPSs, and ensure functional and diagnostic capabilities and conformance to the allocated baseline.

(6) Verify adequacy of any updates to the TPS test specifications, test strategy and associated procedures, and acceptance test plan and/or procedures.

(7) Ensure that the fault-insertion portion of the test plan is in accordance with an approved sampling plan for TPS fault-insertion.

(8) Validate production hardware against the product baseline.

(9) Review the acceptance test report.

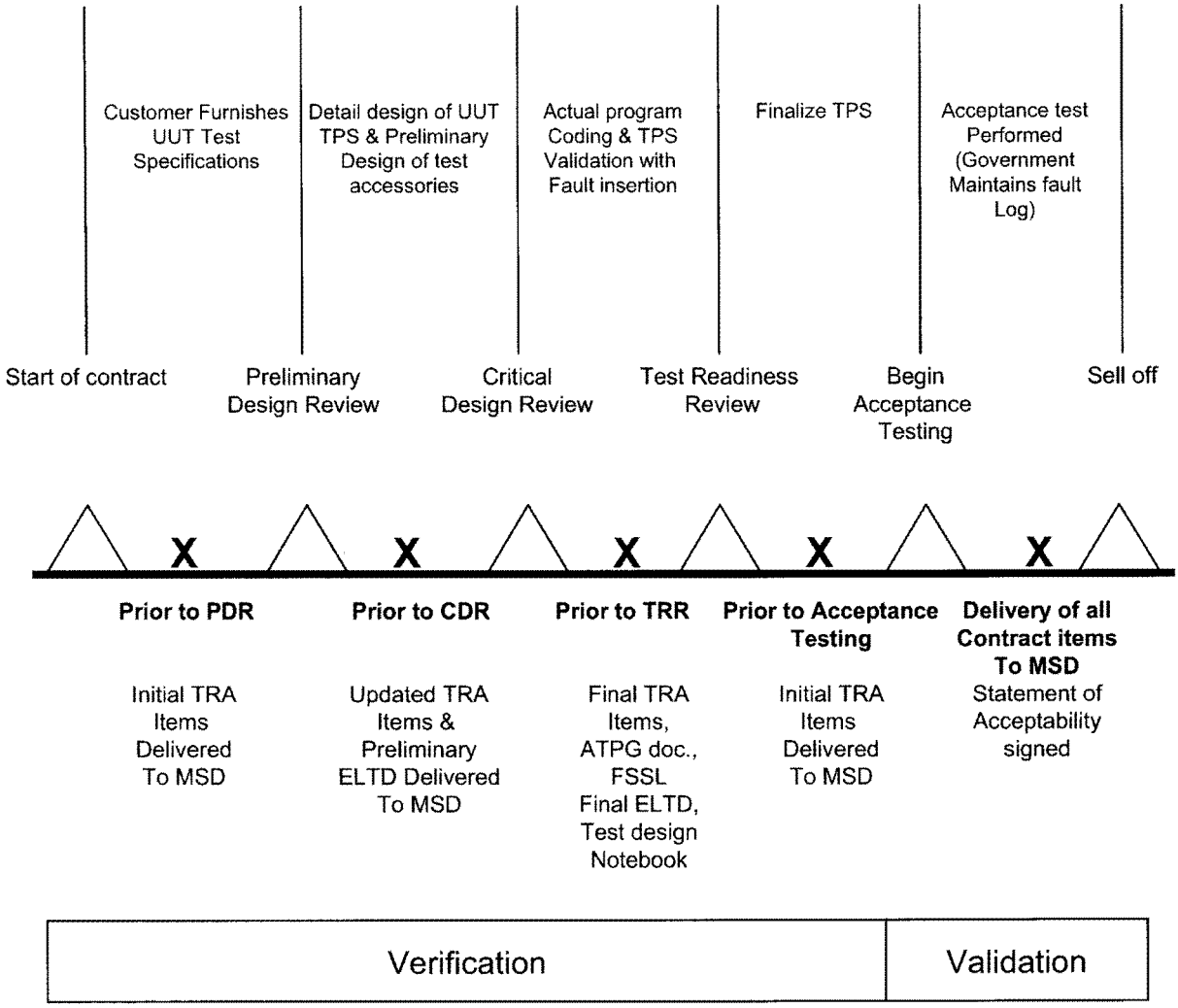


Figure 7–1. TPS activities, phases, and reviews

7–5. Certification and release

a. Certification. The MSC PA&T quality assurance will certify the TPS against development contract requirements, mission requirements, replication, and duplication requirements.

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

c. Test and evaluation. Test and evaluation performed by ATEC and Army Materiel System Analysis Activity (AMSAA) will focus upon materiel system support, not on individual TPS performance. Specific TPS certification is a function only of the appropriate PA&T activity.

Chapter 8
Test Program Set Configuration Management

8–1. General

The purpose of this chapter is to explain CM discipline as applied to TPSs and to separate these functions and procedures from those of the materiel system CM organization.

a. Intrinsic to an understanding of this chapter is a clarification of the distinction between the MATDEVs CM organization and the MSC ATE/TPS center's CM organization.

b. The overall responsibility for CM of the entire materiel system, including support of TPSs, rests with the materiel system configuration manager. The materiel system configuration manager assures adequate budgeting and funding for an appropriate TPS CM organization.

c. Any responsibility for the MSC ATE/TPS center CM organization is limited to that delegated by the materiel system CM manager. The documents describing these responsibilities are the system TPSMP, the ATE/TPS center implementation plan for each MSC, the TPS SOW, and the TPS CMP.

8–2. Test program set configuration management participants

The substance of TPS CM is the formal application of the CM discipline. This discipline identifies, controls, accounts for, and audits the functional and physical characteristics of TPSs throughout their life cycle. Additionally, CM controls inhouse special applications programs used to develop TPSs. An illustration of the TPS CM relationships is provided in figure 8–1 and is further described below.

a. The materiel system configuration manager—

(1) Delegates TPS CM to an organization capable of performance.

(2) Ensures that the TPS configuration manager is notified of ECPs.

(3) Provides approval authority over all actions.

b. The automatic test equipment/test program set center configuration manager—

(1) Coordinates with the materiel system configuration manager for the following:

(a) Action approval requests.

(b) Action notification.

(c) CM problem alerts.

(d) CM problem solutions.

(2) Coordinates with the TPS development activity for the following:

(a) Engineering change proposal (ECP) notification.

(b) Delegation of TPS CM maintenance.

(c) Approval notification.

(d) CM problem alerts.

(3) Coordinates TPS problems identification and solutions with the TPS users.

c. TPS development activity coordinates with the ATE/TPS center configuration manager for—

(1) Action approval requests.

(2) Action notification.

(3) Problem alerts.

(4) Problem solutions.

d. TPS user activities coordinate with the ATE/TPS center configuration manager for—

(1) TPS problem identifications.

(2) TPS solutions.

8–3. Test program set configuration management organization

The ATE/TPS center will ensure that a qualified TPS CM organization commensurate with the magnitude of the TPS workload is in place.

8–4. Test program set configuration baseline system

The system used to manage the configuration of TPSs is the baseline. It is the capturing of the developing TPS at discrete times through identification and control of all the physical and functional aggregates of the TPS composition. These aggregates are defined as configuration items (CIs). A complete description is achieved when all end use functions are satisfied. Electronic Industries Alliance (EIA) 649 defines a baseline as a configuration identification document or as a set of such documents formally designated and fixed at a specific time during the TPS life cycle, including all approved changes. The baselines used for TPS life-cycle management are as follows:

a. TPS functional baseline. This baseline defines the top-level performance functions that are to be achieved by the TPS, usually being quantified in a TSR. This baseline ensures identifying all the documents that were required to derive the performance functions from chapter 6 and the specific configuration of the UUT. These documents are then controlled after completion of the PDR and officially sanctioned as the functional baseline. Once established, this baseline is under control of the configuration manager.

b. TPS allocated baseline. This baseline breaks out and defines the detailed TPS design entities of software and hardware. These entities are identified and controlled as computer software configuration items (CSCIs) and hardware configuration items (HCIs). This baseline ensures that all documents from chapter 6 articulating these CIs are identified

and controlled after completion of the CDR. This identification base is officially sanctioned by CM as the allocated baseline. Once established, this baseline cannot be changed except under formal change procedures.

c. TPS product baseline. This baseline describes the necessary "build to" requirements for the TPS as identified and defined by the above configuration baselines. The acceptance of this documentation at the physical configuration audit, as described in chapter 6, establishes the product baseline. Once established, this baseline cannot be changed except under formal change procedures. Transfer of the management of the TPS to PDS commences at this milestone.

d. Configuration control. The changes to approved TPS baselines are under strict control. Configuration control is defined as the systematic evaluation, coordination, and approval/disapproval of changes after establishing a baseline. The purpose of configuration control is to ensure that a process for implementing the changes agreed to is in effect. During a TPS development effort, this process is defined in the TPS CMP. Throughout the TPS life cycle, the materiel system configuration manager maintains primary responsibility and the right of approval for all CM actions implemented by the MSC ATE/TPS center.

e. General configuration identification. During development of the evolving TPS, a numbering system is used to identify the CIs that comprise the hardware and software configuration. This numbering system is specified in the CMP. Identification becomes more defined as the design matures until eventually a complete description of all CIs is obtained. This numbering system is required by EIA 649 to satisfy CI development, control, and product replication responsibilities for fielding. The numbering system is unique to the development organization. Upon transition to the field, these CIs come under higher commands' positive identification to ensure support for ILS elements. Identify all TPS hardware by part number (PN) and all TPS software by a computer program identification number (CPIN) to be assigned by the MSC ATE/TPS center.

f. TPS configuration status accounting. Configuration status accounting (CSA) provides a recordkeeping system to track the evolving status of the TPS developing baseline and its changes. CSA provides the tracking that managers need to ascertain the implementation status of the baseline at any time. CSA is based on the accepted numbering system defined in the approved CMP. These numbers are used by the development organization to satisfy CM development requirements. Upon transition to PDS, status accounting becomes the focal point for accomplishing change implementation.

g. TPS configuration audits. Compliance with TPS specifications and other contractual requirements will be verified by TPS configuration audits. Each TPS will undergo the following:

(1) *FCAs.* The FCA will verify that development of the TPS has been completed satisfactorily. FCAs will be conducted on TPSs to ensure that the functional characteristics reflected in baseline documentation are met.

(2) *PCAs.* The PCA establishes that the "as built" configuration of the TPS is accurately reflected in the product baseline. The documentation must reflect the approved hardware and software designs.

(3) *Follow-on audits.* Plans for periodic verification of the data bank accuracy will be accomplished by—

(a) CM PCA.

(b) Review and response from recipients through configuration status accounting reports (CSARs).

(c) Configuration item verification reviews.

h. Postdeployment support/repository. Delegation of the fielded or operational phase of the TPS life cycle is illustrated in figure 8–1. CM responsibility for TPS maintenance support is delegated by the materiel system configuration manager by a PDS CMP, a MOU, a tasking assignment, or a SOW to or through the MSC ATE/TPS center as required. Upon the formal establishment of the TPS product baseline, the CI masters that represent the TPS are placed into a designated TPS repository. The physical location of the repository may be different from that of the MSC. The PDS configuration manager is responsible for management and operation of the repository. The CM role during this phase of the TPS life cycle is the maintenance process of the identification, control, accounting for, and auditing of authorized changes to the functional and physical characteristics of the TPS. As approved changes are made to the TPS, the affected baseline must be updated to reflect the current revision level. New software masters must be created and backed up to at least one revision level and high visibility made of the TPS configuration status to the MSC ATE/TPS center.

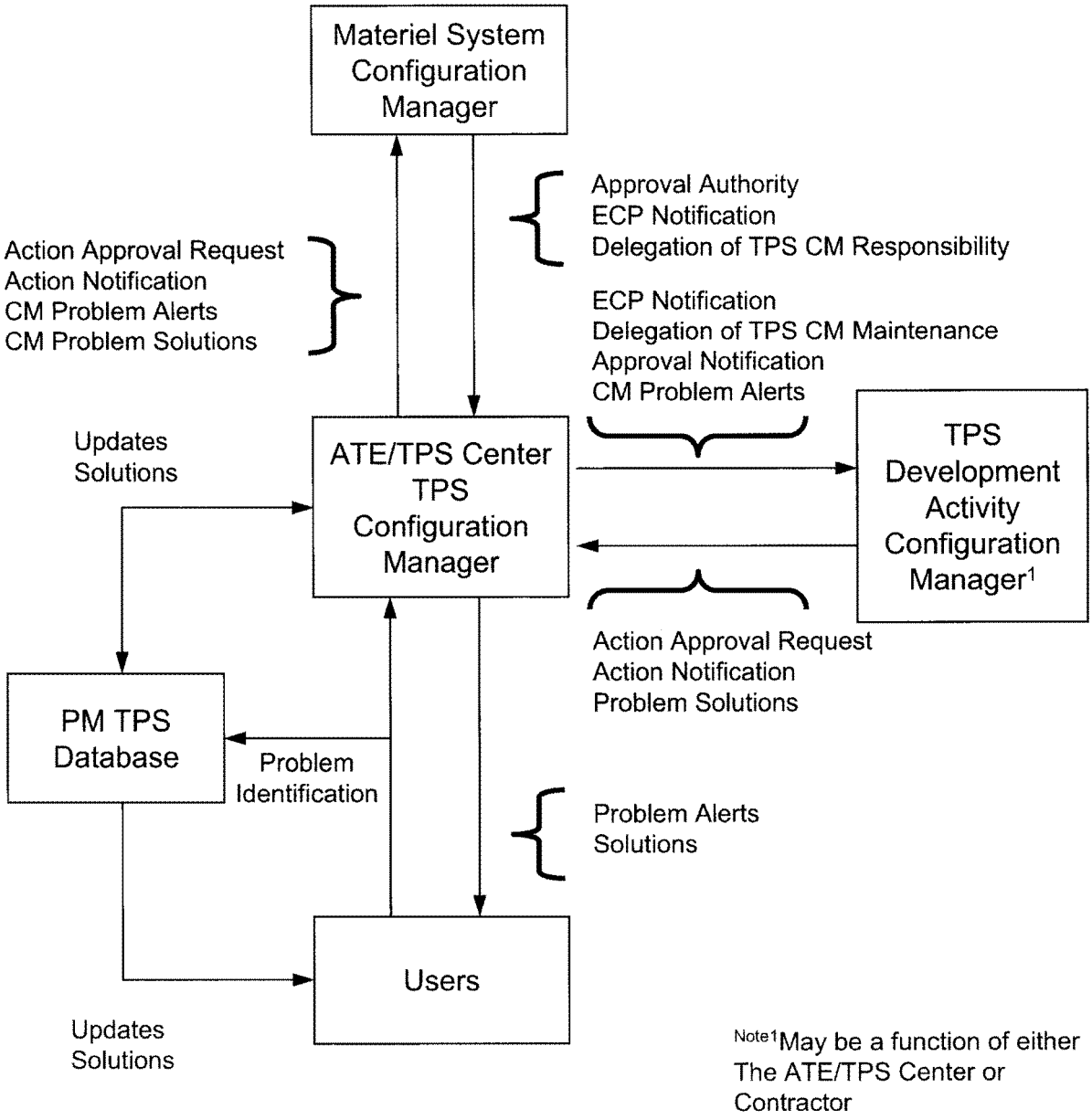


Figure 8–1. TPS configuration management

8–5. Summary

No single set of CM procedures will meet every need. Because of variations in product requirements, staffing, organizations, and working relationships, CM must be tailored to recognize particular product requirements. However, optimum uniformity throughout a broad spectrum of organizations can be achieved through this pamphlet. CM is a formalization of the methods and techniques used by managers in achieving the project goals of time, cost, and performance.

Chapter 9
Integrated Logistics Support Impact of Test Program Sets

9–1. Documentation of planning

Planning documents that will contain TPS ILS issues are as follows:

a. TPSMP. The TPSMP will present a thorough coverage of the selected TPS ILS strategy and provide early ILS guidance and planning. The TPSMP will identify program acquisition and development management disciplines in addition to the total life-cycle support of TPSs.

b. MFP. The MATDEV MFP will contain a TPS annex which will be submitted to PM–TMDE and TRADOC for coordination.

c. ILSP. The system ILSP (and incorporated LSA process) will include TPS requirements in summary form and reference the TPSMP or include the TPSMP as an appendix to the ILSP.

d. Acquisition plan. The acquisition plan will summarize procurement deliverables specified within the TPSMP.

9–2. Accountability

TPSs listed as special tools in the LRU or SRU RPSTL or DMWR are exempt from separate type classification, in accordance with AR 70–1. TPSs automatically assume the type classification of each system they support. TPS will be accountable at the using unit by property book, in accordance with AR 710–2.

9–3. Supported end system integrated logistics support

a. MFP. The initial fielding of the materiel system will be supported by simultaneous fielding of complete, verified TPSs, or an alternative plan will be addressed. The MFP for the materiel system will describe all elements of system support that are related to nonautomatic test equipment support, as well as TPS support. The MFP will specifically identify all of the TPS user sites, consistent with the materiel system maintenance concept and user mission.

b. Supply support. Execution will be successfully accomplished by budgeting for sufficient initial quantity of SRUs to support the end system in the field concurrently with the TPS. This strategy will be supported using standard army supply and transportation systems. Item managers must be of the scheduled TPS fielding timeframe so they can adjust the initial supply support quantity and recipients accordingly.

c. Technical manuals Materiel system technical publications will include removal or replacement of items that will be tested by TPSs. When the TM requires automated testing using a TPS, the appropriate TPS narrative technical publication will provide operator instructions using an ATE display message to the operator. Materiel system technical publications and displayed messages will undergo validation by target ATE military maintenance operators. In the interest of cost reduction, this function may be performed simultaneously with TPS validation testing.

d. Storage. Storage must be adjusted to account for the following:

(1) Additional LRU and/or SRU quantities for those LRU/SRU TPSs that provide only end-to-end (functional) testing according to the materiel system maintenance allocation chart (MAC).

(2) Bench stock requirements at the user site as determined by SRU diagnostic TPSs.

e. Personnel. Personnel manpower authorization requirements criteria (MARC) must include workloading of the ATE personnel.

f. Training. Training for maintenance personnel must be accomplished through TRADOC-approved military occupational specialty (MOS) courses.

g. Assistance. Logistics assistance representatives (LARs) will be provided in the field as the AMC MSC single face to the field.

9–4. Test program set integrated logistics support

Complete and total ILS will be accomplished according to AR 700–127. The ATE/TPS center will perform or task the required ILS functions to ensure adequate support for TPSs. The items below relate to TPS ILS:

a. MFP TPS annex. The MFP TPS annex, as discussed in detail in chapter 10, must be completed and submitted to PM–TMDE and TRADOC for coordination.

b. Supply support for TPSs. TPS elements will be provisioned according to AR 700–18 based upon appropriate factors. Coordination for TPS distribution will be by the MSC ATE/TPS center.

c. TPS storage. TPS storage must be adjusted to account for the following:

(1) Materiel system TPS storage requirements.

(2) Allocated materiel system TPS storage space.

d. TPS support. The TPS maintenance concept will be established through logistic analysis to support initial fielding. A MAC will be prepared. The problem reporting process is detailed in chapter 10. CM procedures are detailed in chapter 8.

e. Personnel. TPS fielding team personnel and duties are described in chapter 10. Personnel requirements must also include additional quantity of logistics assistance representatives (LARs) necessary to support the system workloading

impact on the LAR's function. Logistics assistance representatives will be involved in TPS fielding, TPS problem report preparation, and any additional TPS-related training.

f. TMs. For all maintenance procedures using ATE, normally a TM 40 and TM 40P separate from the overall system publications will be developed in accordance with MIL–STD–40051–2, unless the maintenance procedure is performed only at depot level, in which case a depot maintenance work requirement (DMWR) will be developed. TPS hardware support may require the development of a TM 24 and TM 24P.

9–5. Test program set problem reporting

TPS problem reporting will be accomplished by using SF 368 (Quality Deficiency Report) in accordance with DA Pamphlet 750–8 for TPS hardware and software. Department of the Army (DA) Form 2028 (Recommended Changes to Technical Publications) will be used for technical manual problem reporting. An alternate method of problem reporting will be telecom network by the LAR, followed by written report. The problem report will be prepared by the user with the assistance of the LAR. This will aid in distinguishing problem areas. The problem reports will be directed to the appropriate MSC ATE/TPS center.

9–6. Distribution of test program set

The TPSMP will identify total TPS requirements early in the life cycle so that budget, production quantities, and impacted field organizations can be identified early. This also allows system distribution plan changes to be reflected in modified TPS delivery quantities and schedules. Receiving units will be clearly identified in the first draft of the applicable MFP so that the formal Mission Support Plan can reflect receipt of the TPS support mission.

Chapter 10
Fielding of Test Program Set and Postdeployment Support

10–1. General

This chapter covers TPS ILS beginning with planning and continuing through life-cycle maintenance support. This chapter provides MATDEVs with procedures for TPS planning, fielding, and life-cycle support.

10–2. Test program set requirements

TPS requirements must be determined early in the materiel system development (concept refinement phase). (See figure 2–2 and chap 3). During this process, they will be identified in the appropriate Technical Manual Repair Parts and Special Tools List (RPSTL).

10–3. Materiel fielding plan

After the determination has been made that TPSs will be developed in support of a materiel system, the MFP TPS annex will be developed and submitted to TRADOC and PM–TMDE. The TPS annex will consist of the following:

a. TPS documentation requirements, including separate technical manuals (TM 40, TM 40P, TM 24, TM 24P), developed in accordance with MIL–STD–40051 for TPS maintenance actions.

b. A description of total TPS development effort by fielding milestone and distribution schedules.

c. Maintenance concept for ID repair.

d. TPS component provisioning procedures (for example; IDs, TMs, spare ID parts, software, transit cases, and so forth).

e. Plans for a TPS prefielding team to support materiel system developer new equipment training (NET). Prefielding identifies all TPS efforts until the materiel system first unit equipped date (FUED).

f. Plans for audit/follow-up for subsequent TPS fielding from the MSC ATE/TPS center repository (without a new equipment training team (NETT)).

g. TPS storage space requirements at MSC ATE/TPS center(s) and each user site.

h. Procedures identifying push method of fielding initial TPS deployment and TPS change distribution.

i. Plans identifying workloading impact for user site(s). Planning by site will include—

(1) Quantity of TPSs to be fielded.

(2) Throughput rate of UUTs to be tested based on projected and actual failure rate data.

(3) TPS execution times.

j. Plans outlining coordination with PM–TMDE for consolidated bench stock list (CBSL).

10–4. Test program set fielding

TPS fielding is the term used to identify TPS deployment, which occurs at FUED. On occasion, the complete set of TPSs required to provide materiel system support will not be available. This is usually the case when development for major materiel systems dictates a requirement for a large quantity of TPSs. If this condition exists, the definition of

“fielding” is broadened to include TPS deployment that will occur after FUED. It is recommended that a TPS Materiel Fielding Team (MFT) be established.

a. The MATDEV, TPS developer, and TPS user will determine jointly whether an MFT will be established.

b. TPS fielding team duties will—

(1) Ensure TPSs to be deployed to user site(s) are complete.

(2) Obtain a documented go-chain for each TPS to be fielded using "golden” UUTs at the AMC TPS center.

(3) Coordinate with the designated MSC logistics assistance representative (LAR) at least 30 days prior to fielding to ascertain the following:

(a) Current status of ATE at user site.

(b) Availability of selected user site personnel.

(c) Current status and availability of special support items, for example, TMDE.

(4) Initiates action to deploy TPSs to the user site.

(5) Upon arrival at the user site will—

(a) Verify the operational and calibration status of the ATE to be utilized, is satisfactory.

(b) Confirm availability of user site personnel.

(6) At the user’s site, with the "golden UUT"—

(a) Obtain documented go-chains of TPSs being deployed.

(b) Compare and analyze TPS go-chains achieved at MSC ATE/TPS center with go-chains achieved at user site.

(c) Document and attempt to resolve any discrepancy that precludes a user site go-chain. Resolution of discrepancy will not include revision to the TPS.

(7) Train user personnel to demonstrate competence in the proper use of the TPSs.

c. A complete record of TPSs deployed to the user site will then be made available to MSC ATE/TPS center for incorporation into their database.

10–5. Test program set problems, errors, and suggested improvement reporting

TPS user sites (ATE support activities using the TPSs) will report TPS problems, errors, and suggested improvements to the ATE/TPS center in accordance with chapter 9 of this pamphlet.

10–6. Supply support for test program sets

a. Revised TPSs will be shipped to the field by the MSC ATE/TPS center.

b. TPS stockage requirements will be established in accordance with approved model. Due to the inherently low density of TPSs, limited quantities will be stocked.

c. Requisitions will not be processed for the entire TPS except under unusual circumstances (for example; battle loss, equipment fire, and so forth).

d. Request for individual TPS hardware elements (for example; IDs, cables, and so forth) and TPS software (such as tapes, disks, and so forth) will be by National Stock Number, otherwise by part number and are available through the AMC TPS centers.

10–7. User site hot-line assistance

The AMC TPS centers will establish and maintain a user hotline. Contact numbers will be provided at fielding or through the appropriate AMC MSC LAR and are available in appendix C of this pamphlet.

Appendix A
References

Section I
Required Publications

AR 70–1
Army Acquisition Policy. (Cited in paras 1–1 and 9–2.)

AR 700–127
Integrated Logistics Support. (Cited in paras 1–1 and 9–4.)

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

AR 750–43
Army Test, Measurement and Diagnostic Equipment Program. (Cited in paras 1–1, 3–5 and B–4*b*(3).)

DA Pam 750–8
The Army Maintenance Management System (TAMMS) Users Manual. (Cited in para 9–5.)

Section II
Related Publications

A related publication is a source of additional information. The user does not have to read it to understand this publication. TMs are available at https://www.logsa.army.mil. MIL–HDBK, MIL–PRF, and MIL–STD are available at http://assist.daps.dla.mil/quicksearch.

AR 700–18
Provisioning of U.S. Army Equipment, Internal Control System

AR 710–2
Supply Policy Below the National Level

TM 24
Field and Sustainment Maintenance Manual

TM 24P
Field and Sustainment Maintenance Manual including Repair Parts and Special Tools List

TM 40
Sustainment Maintenance Manual

TM 40P
Sustainment Maintenance Manual including Repair Parts and Special Tools List

MIL–HDBK–2165
Testability Program for Systems and Equipment

MIL–PRF–32070
Test Program Sets

MIL–STD–40051–1
Preparation of Digital Technical Information for Interactive Electronic Technical Manuals

MIL–STD–40051–2
Preparation of Digital Technical Information for Page-Based Technical Manuals

DODD 5000.1
The Defense Acquisition System. (Available at http://www.dtic.mil/whs/directives.)

DODI 5000.2
Operation of the Defense Acquisition System. (Available at http://www.dtic.mil/whs/directives.)

DI–ATTS–80285B
Engineering Support Data. (Available at http://assist.daps.dla.mil/quicksearch.)

EIA 649
National Consensus Standard for Configuration Management. (Available at http://standards.ieee.org.)

IEEE–STD–1445–1998
Standard for Digital Test Integrated Format. (Available at http://standards.ieee.org.)

Section III
Prescribed Forms
This section contains no entries.

Section IV
Referenced Forms

DA Form 2028
Recommended Changes to Publications and Blank Forms. (Available at http://www.apd.army.mil.)

SF 368
Quality Deficiency Report. (Available at http://www.gsa.gov.)

Appendix B
Test Program Set Management Plan Format Guidance

B–1. Role of test program set management plan
The TPS management plan is the central document for planning the budgeting, acquisition, development, deployment, and life-cycle support of TPSs. This appendix identifies important life-cycle planning factors, and describes management guidelines to ensure that these factors are adequately considered during the materiel system acquisition process and are documented in the TPSMP. To this end, an outline of the minimum requirements of a TPSMP is provided in paragraph B–4.

B–2. Participants
The MATDEV is the key player for the preparation, content, and submission of the TPSMP. The ATE/TPS center at each MSC will assist in the preparation of TPSMPs as well as all updates and revisions as required. Contributing organizations, including the MSC PA&T, ILS, CM, technical training, publications organizations, Test Integration Working Group (TIWG), TPS user activities, and TPS developers, will provide inputs to the TPSMP.

B–3. Test program set management plan format
a. The TPSMP is divided into seven sections that include:
(1) General description
(2) Program management and funding
(3) Acquisition management
(4) Development management
(5) Product assurance & test management
(6) CM
(7) ILS management
b. The paragraphs below address the objectives of the TPSMP.

B–4. Test program set management plan outline
a. Section 1 of the TPSMP, General Description provides an overview of the materiel system, its overall TPS requirements, and the relationship of the TPSs to the system BIT/BITE. Section 1 addresses the following in the initial submission of the TPSMP (milestone A of the materiel system life cycle) and updates with each succeeding submission as required.
(1) Provide a general description of the materiel system and any pertinent background information.

(2) Provide an overview of the materiel system maintenance requirements of the TPSs, including an associated testability concept, and the relationship thereto of the system BIT/BITE.

(3) List all applicable documents as referenced throughout the TPSMP, including an approved testability management plan.

b. Section 2 of the TPSMP, Program Management and Funding specifies the organizations and the personnel requirements of those organizations involved in the management of the TPS acquisition. Section 2 also identifies the funding required for the life-cycle acquisition and support of the required TPSs. Address Identification of the MATDEV and the ATE/TPS center with overall management responsibility for the integration of TPSs in the initial submission of the TPSMP (milestone A of the materiel system life cycle). Address the following prior to entering the SD&D phase of the materiel system (milestone B).

(1) Identify the funding requirement for acquisition of required UUTs, technical data, TSRs, test specifications, and so forth for the timely development of TPSs.

(2) Overall funding requirements, sources of funds, and availability of funds will be indicated in the format of table B–l.

Table B–1
Format of test program set funding requirements

Program	FY	FY+1	FY+2	FY+3	FY+4
RDTE funded	1.0M	1.0M	0.0M	0.0M	0.0M
Unfunded	1.0M	1.0M	0.0M	0.0M	0.0M
OPA funded	0.0M	0.0M	1.0M	1.0M	0.0M
Unfunded	0.0M	0.0M	1.0M	1.0M	0.0M
OMA funded	0.0M	0.0M	0.0M	1.0M	1.0M
Unfunded	0.0M	0.0M	0.0M	1.0M	1.0M

(3) Plans for cost modeling, audits, ILS, design for testability studies, testing, and so forth to determine which TPSs and ATE (such as, standard ATE, augmented standard ATE, and nonstandard ATE) are required. Waivers for nonstandard ATE are to be addressed in accordance with AR 750–43.

(4) Plans and justification for acquisition of required ATE, ATPG, and so forth is required for TPS development, deployment, and post deployment support.

(5) Breakout of projected ATE and TPS costs will be provided in the form of a first-level TPS work breakdown structure (WBS). The type of funds should also be identified for each of the WBS elements.

c. Section 3 of the TPSMP, TPS Acquisition Management identifies the TPS acquisition strategy, the risks involved, and the trade-offs to be considered. If additional test programs are identified later in a program, this section will be updated and resubmitted within 60 days. Address the following prior to entering the SD&D phase of the materiel system life cycle (milestone B).

(1) A complete list of UUTs for which TPSs are to be developed will be submitted. Documentation will also be submitted to demonstrate that this selection has been based upon the results of ILS studies, economic analysis, feasibility studies, experience, and/or participating activity inputs. Included in this documentation will be the results of trade-offs between BIT/BITE and TPSs as well as the results of any design for testability studies.

(2) If nonstandard ATE or augmented standard ATE has been selected, then documentation will be submitted to identify the standardization and commonality considerations used in determining which ATE and test program languages will be used. Deviations from the AMC ATE policy must be approved according to that policy. If nonstandard ATE is to be used, then this fact must be clearly identified. If a waiver for nonstandard ATE has been requested or approved, then a copy of the waiver should be attached to the TPSMP. Included will be a detailed justification and a life-cycle impact statement for use of other than standard development concepts, tools, and specifications. Also included will be an evaluation of the impact of anticipated changes to the ATE capabilities/ATE system software.

(3) A master schedule of major milestones, key events, and any critical actions essential to timely development of TPSs in relation to the total system acquisition schedule will be submitted.

(4) Acquisition and support requirements of TPS software, TPS hardware, TPS documentation, and TPS software tools (ATPGs) to be used for TPS development will be identified.

(5) An evaluation of the impact on existing ATE workload at the locations where the TPSs are to be fielded will be documented.

d. Section 4 of the TPSMP, TPS Development Management addresses and documents the TPS developer's approach

for the development of TPS software, hardware, and documentation. Address the following prior to entering the SD&D phase of the materiel system life cycle (milestone B).

(1) Identify the source of TPS development (prime contractor, TPS contractor, or organic TPS developer). In addition, identify the type of contract to be used (that is, fixed price, cost plus and so forth) and state whether the contract method is to be competitive or sole source.

(2) Identify the estimated resources (such as manpower, management personnel, hardware, software, and so forth) necessary for the TPS developer to support the development and testing of the TPSs.

e. Complete and submit the following items within 60 days of the selection of the TPS developer.

(1) Identify the organizational structure of the TPS developer and indicate the responsibilities of the groups developing, designing, and producing TPSs. This is to include, at a minimum, ICD design, ICD testability, ICD fabrication, ICD production, software development, drafting, and TPS checkout.

(a) Further, identify the TPS developer's quality assurance organization and the methodology used by the TPS developer's quality assurance to ensure satisfactory design and testing, and ensure that all performance and design requirements have been implemented by the TPS developer during design reviews.

(b) Also include within the organizational structure the identification of the TPS developer's CM organization. It will address the management, technical controls, and methodology used by the TPS developer's CM. This is to ensure configuration identification, control, and status accounting functions have been implemented by the TPS developer and provided in their CMP. The plan will include identification of security controls and requirements for both classified and unclassified work.

(2) Provide a development schedule for each TPS configuration item indicating when the various reviews and audits will occur. Include a list and description of the deliverables required for each review or audit.

(3) Identify the methods for reporting TPS development activities as follows:

(a) The approach the TPS developer will use for reporting the status of TPS development at the various reviews (PDR, CDR and TRR) and audits (PCA and FCA).

(b) The approach the TPS developer will use for monitoring and reporting the status of TPS development to the MSD at the in-process reviews (IPRs).

(c) The methodology that the TPS developer will use for ensuring satisfactory design and testing during development and design reviews.

(d) The procedure the TPS developer will use for reporting changes to the MSC ATE/TPS center on configuration items after the establishment of the TPS functional baseline.

(4) Identify guidelines and requirements to ensure future TPS maintainability.

(a) TPS software topics will include modularity, readability, simplicity, and self-explanation.

(b) TPS hardware (ID/Test Accessories) topics will include ease of ID modification, simplicity, use of standard parts, expandability, and standard ID design. The greatest number of unique IDs will be specifically addressed.

(c) TPS documentation and TPS technical data to be received from the TPS developer will be identified in the product baseline. Also identified will be the organizations that will review/use the documentation.

(5) Identify the training requirements and associated equipment necessary for the deployment phase.

f. Section 5 of the TPSMP, TPS PA&T Management, addresses the management of the Government product/quality assurance of TPSs throughout the TPS life cycle. Subparagraphs (1) through (4) will be addressed prior to entering the SD&D phase of the materiel system life cycle (milestone B).

(1) Document the identification of the organizations or activities responsible for independent TPS verification. Verification is the iterative process aimed at determining whether the product of each step in the development cycle fulfills all the requirements levied upon it by the previous step. Additionally, identify the methodology and/or process used for TPS verification at each of the various design reviews and audits (PDR, CDR, TRR, FCA, PCA). Include the procedures for documenting and resolving program errors and deficiencies discovered during reviews and audits.

(2) Document the identification of the organizations or activities responsible for TPS validation. Validation is the process of executing the software package to exercise the hardware, and of comparing test results with required performance. Additionally, identify the methodology and/or process used for TPS validation. Include the procedures for documenting and resolving program errors and deficiencies discovered during validation testing.

(3) Identify the TPS production quality control procedures and methods used for TPS replication certification.

(4) Identify the procedures used to verify, validate, and release any TPS modifications after the TPS product baseline has been established.

g. Section 6 of the TPSMP, TPS CM addresses the Government CM procedures necessary to identify, establish, and control the TPS baselines. This phase starts with the TPS functional baseline and continues through the allocated baseline, product baseline, and post deployment support. Subparagraphs (1) through (9) will be addressed prior to entering the SD&D phase of the materiel system life cycle (milestone B).

(1) Identify the organization (materiel system configuration manager) with primary responsibility for the CM of the materiel system prior to materiel system transition.

(2) Identify the organization (materiel system configuration manager) of primary responsibility for the CM of the materiel system after materiel system transition.

(3) Identify the MSC ATE/TPS center (CM controller) that is the primary interface between the configuration manager and the TPS developer/user activity.

(4) Identify the procedures for disseminating UUT modifications/updates that occur after the TPS functional baseline goes to the TPS configuration manager for TPS impact.

(5) Identify the CM responsibilities at each of the various reviews and audits (PDR, CDR, TRR, FCA, and PCA).

(6) Explain approval/disapproval procedures of TPS impact recommendations that are reported by the TPS configuration manager.

(7) Explain procedures for distributing pertinent UUT information that affect the TPS to the TPS developer prior to product baseline.

(8) Explain methods to ensure that all UUT modifications or updates impacting the TPS have been incorporated by the TPS developer at the various reviews and audits (PDR, CDR, TRR, FCA, and PCA).

(9) Explain procedures for reporting to the materiel system configuration manager impacts to TPSs and list recommended solutions.

h. Section 7 of the TPSMP, TPS ILS Management identifies the training, equipment, and procedures necessary to support TPSs after transfer of TPS program management to the MSC ATE/TPS center. This section also addresses the basic agreements between the supporting and using commands for management and support of TPSs. After approval of the TPSMP, this section of the TPSMP will be included as an annex of the MATDEV's MFP. Address the following prior to entering the SD&D phase of the materiel system life cycle (milestone B).

(1) Identify post deployment support organizations.

(a) The organization of primary management for the PDS of TPSs is the MSC ATE/TPS center. Identify the organization primarily implementing the PDS changes as directed by the MSC ATE/TPS center. Include the guidelines the PDS implementation organization will use for distributing information to the TPS user activities.

(b) Include the PDS implementation guidelines and responsibilities for storing, handling, controlling and maintaining the following at the ATE/TPS center repository: TPS software (magnetic, optical, compact disk, and so forth) TPS ID/ test accessories/spare parts; TPS documentation; TPS product baseline; ATE supporting software (software for ATE self–tests); ATE supporting hardware (IDs for ATE self–tests); ATE spare parts/equipment; and a "golden" UUT.

(2) Identify activities using the TPSs and the guidelines for TPS problem reporting and the guidelines for reporting ATE utilization. Identify the guidelines and responsibilities for storing, handling, controlling, maintaining, and providing the following at the TPS user activity:

(a) TPS software (magnetic, optical, compact disk, and so forth).

(b) TPS ICD/test accessories/spare parts.

(c) TPS documentation.

(d) ATE supporting software (software for ATE self–tests).

(e) ATE supporting hardware (IDs for ATE self–tests).

(f) ATE spare parts and equipment.

(3) Identify the qualifications and training requirements needed for personnel required to support the TPS. Also identify the computer equipment and devices required to facilitate TPS software maintenance along with those doing the acquisition.

(4) Identify the qualifications and training requirements needed by personnel who are required to support the ATE equipment. Also identify the computer programs required to support ATE equipment and those who make the acquisition. Identify the plans for supporting the repair and maintenance of the ATE along with those doing the acquisition.

(5) Identify the provisions for system or equipment deployment to user organizations.

Appendix C
Army Materiel Command Test Program Set Center Contact Information

C–1. Purpose

This appendix provides contact information for materiel developers.

C–2. Army Materiel Command test program set center contact information for materiel developers

Table C–1 provides contact information for AMC TPS centers.

Table C–1
Army Materiel Command test program set center ATE product manager contact information

activity	attn:	address	city, state, zip	phone number
Tobyhanna Army Depot	ATTN: AM-SEL–TY–ME–B	11 Hap Arnold Blvd	Tobyhanna, PA 18466	**(570) 895–7167** DSN 795–7167
US Army ARDEC Chief, ATSD	ATTN: AMSRD–AAR–AEF–A,	Bldg 91	Picatinny, NJ 07806	(973) 724–5832, DSN 880–5832
US Army Research, Development, and Engineering Command Aviation and Missile Research and Development and Engineering center Engineering Directorate Engineering Support Division	ATTN: AMSRD–AMR–SE–ES	Building 5400	Redstone Arsenal AL 35898–5000	(256) 876–6112 DSN 746–6112 /6111
Product manager, test, measurement & diagnostic equipment	ATTN: SFAE—CSS–FT–T	Bldg. 3651, Rm. PM1 Army TACMS Dr.	Redstone Arsenal, AL 35898–5000	(256) 876–6829 DSN 746–6829

Glossary

Section I
Abbreviations

ADE
application development environment

AMC
Army Materiel Command

AMSAA
Army Materiel Systems Analysis Activity

ARNG
Army National Guard

ATE
automatic test equipment

ATEC
Army Test and Evaluation Command

ATP
acceptance test plan

ATPG
automatic test program generator

BIT
built-in test

BITE
built-in test equipment

BSTF
Base Shop Test Facility

CBSL
consolidated bench stock list

CD
combat developer

CDD
capabilities development document

CDR
critical design review

CDRL
contract data requirements list

CE
concept exploration

CI
configuration item

CM
configuration management

CMP
configuration management plan

CPFF
cost plus fixed fee

CPIF
cost plus incentive fee

CPIN
computer program identification number

CRMP
Computer Resources Management Plan

CSA
configuration status account

CSAR
configuration status account report

CSCI
computer software configuration item

DA
Department of the Army

DCAA
Defense Contract Audit Agency

DCAS
Defense Contract Administration Services

DCS, G–4
Deputy Chief of Staff, G–4

DCS, G–8
Deputy Chief of Staff, G–8

DFT
design for testability

DID
data item description

DMWR
depot maintenance work requirement

DODD
Department of Defense Directive

DODI
Department of Defense Instruction

DT/OT
development test/operational test

DV
development and validation

E/E
end-to-end TPS

ECP
engineering change proposal

ELTD
English language test document

ESD
electro-static discharge

FCA
functional configuration audit

FFP
firm fixed price

FMECA
failure mode, effects and criticality analyses

FPIF
fixed price incentive fee

FSSL
fault sample selection list

FUED
first unit equipped date

GFE
Government furnished equipment

HQ
headquarters

HCI
hardware configuration items

HQDA
Headquarters, Department of the Army

HRC
Human Resources Command

IC
integrated circuit

ID
interface device

ICLS
interim contractor logistics support

IFTE
integrated family of test equipment

ILS
integrated logistics support

ILSMT
integrated logistics support management team

ILSP
integrated logistics support plan

IOC
initial operational capability

LAR
logistics assistance representative

LASAR
logic and stimulus automatic response

LLTIL
long lead time items list

LORA
level of repair analysis

LRU
line replaceable unit

LSA
logistics support analysis

LSAR
logistics support analysis report

MAC
maintenance allocation chart

MARC
manpower authorization requirements criteria

MATDEV
Materiel developer

MFA
materiel fielding agreement

MFP
materiel fielding plan

MFT
materiel fielding team

MIL–HDBK
military–handbook

MIL–PRF
military–performance specification

MIL–STD
military–standard

MIS
missile item specification

MOS
military occupational specialty

MOU
memorandum of understanding

MSC
major subordinate command

MSD
materiel system developer

NEOF
No evidence of failure

NET
new equipment training

NETT
new equipment training team

NICP
national inventory control point

NSN
national stock number

O&S
operation and support

OBT
on board test

OMA
Operational and Maintenance, Army

OTPS
operational test program set

PA&T
product assurance and test

PA
procurement appropriations

PCA
physical configuration audit

PCB
printed circuit board

PDR
preliminary design review

PDS
postdeployment support

PIP
product improvement program

PM–TMDE
product manager, test measurement and diagnostics equipment

PN
part number

PROM
programmable read only memory

PS
production set

QA
quality assurance

RDTE
research, development, test and evaluation

RFI
ready for issue

RFP
request for proposal

RPSTL
repair parts and special tools list

SD&D
system development and demonstration

SOW
statement of work

SRU
shop replaceable unit

TAR
testability analysis report

TB
technical bulletin

TDP
technical data package

TIWG
test integration working group

TM
technical manual

TMDE
test, measurement, and diagnostic equipment

TP
test program

TPI
test program instruction

TPS
test program set

TPSMP
Test Program Set Management Plan

TRA
test requirements analysis

TSR
test strategy report

TRR
test readiness review

TRADOC
U.S. Army Training and Doctrine Command

USAR
U.S. Army Reserve

UUT
unit under test

V&V
verification and validation

WBS
work breakdown structure

Section II
Terms

Allocated baseline
Identified and approved documents which define the CI.

ATE/TPS center
The central point of focus, at the MSC level, for ATE and TPS automatic test issues.

Baseline
Configuration milestone achieved, marked by controlled documentation.

Certification
Endorsement of reliability.

Diagnostic test
Test that isolates the fault to the level of replaceable item.

Go-chain
Functional test of the UUT.

LASAR
Digital test design tool for ATPG.

Manual test
Test performed using manual equipment.

Product baseline
Describes “build to” requirements.

Repository
A receptacle for storage.

Test accessories
The items required to interface an ATE TPS.

Validation
Official confirmation/approval.

Verification
To ascertain correctness.

Section III
Special Abbreviations and Terms
This section contains no entries.

USAPD

ELECTRONIC PUBLISHING SYSTEM
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PIN: 069324–000
DATE: 06-30-06
TIME: 14:06:48
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DATA FILE: C:\Wincomp\p750-43.fil
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