Department of the Army
Pamphlet 73–1

Test and Evaluation

Test and Evaluation in Support of System Acquisition

Headquarters
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Washington, DC
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SUMMARY of CHANGE

DA PAM 73–1
Test and Evaluation in Support of System Acquisition

This new Army pamphlet implements the policies contained in AR 73-1. Specifically it--

- Provides the Army test and evaluation philosophy and the roles and missions of Department of Defense and Department of the Army activites. (chaps 2 and 3).

- Defines test and evaluation in support of the materiel acquisition process (chap 4).

- Outlines test and evaulation in support of the information mission area life cycle system management model (chap 5).

- Discusses test and evaluation in support of system changes, reprocurements, and science and technology development and transition (chap 6).

- Outlines tailoring test and evaluation for non-developmental items, foreign comparative testing, limited procurement, and accelerated software development process (chap 7).

- Defines the Test Integration Working Group and the Test Support Packages (chaps 8 and 9).

- Describes test incidence and related reporting and instrumentation, targets and threat simulators (chaps 10 and 11).

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Test and Evaluation

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By Order of the Secretary of the Army:

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History. This publication publishes a completely revised pamphlet. This publication has been reorganized to make it compatible with the Army electronic publishing database. No content has been changed.

Summary. This pamphlet provides guidance and procedures to implement test and evaluation policy for materiel and information systems as promulgated by AR 73-1. It outlines the basic Army test and evaluation philosophy; the key organizations that participate in test and evaluation; general test and evaluation guidance in support of materiel system acquisition and information system acquisition;test and evaluation guidance in support of system modifications and nondevelopmental items; the Test Integration Working Group; test support packages; test incidents and related reporting; and instrumentation, targets, and threat simulators.

Applicability. The provisions of this pamphlet apply to the Active Army, the Army National Guard, and the United States Army Reserve.

Proponent and exception authority. The proponent of this pamphlet is the Under Secretary of the Army. The Under Secretary of the Army has the authority to approve exceptions to this pamphlet that are consistent with controlling law and regulation. The Under Secretary of the Army may delegate this authority, in writing, to the head of an office under his or her supervision or to a division chief within the proponent office who holds the grade of colonel or the civilian equivalent.

Supplementation. Supplementation of this pamphlet is prohibited without prior approval from the proponent of this pamphlet.

Suggested Improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to HQDA, Office of the Chief of Staff of the Army, Test and Evaluation Management Agency (DACS–TE), 200 Army Pentagon, WASH DC 20310–0200.

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Glossary

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Chapter 1
Introduction

1–1. Purpose

Developing and deploying Army systems that achieve the required performance and which are operationally effective and suitable represent significant challenges to all involved in the system acquisition process. The procedures and guidelines in this pamphlet—

a. Apply to all systems developed and managed under the auspices of AR 70–1; these systems are referred to as materiel systems in this pamphlet. This category includes systems that contain Materiel System Computer Resources, which are the computer hardware, software, and firmware specifically designed, configured, and acquired as an integral element of the system and needed so that the system can fully perform its mission.

b. Apply to all systems developed and managed under the auspices of AR 25–3; these systems are referred to as information systems in this pamphlet. As used in this pamphlet, the term information system applies to systems that evolve, are acquired, or are developed and that incorporate information technology. It applies to all information systems of the six information mission area (IMA) disciplines not developed and managed under AR 70–1.

c. Apply to all systems developed and managed under the auspices of AR 40–60; these systems are referred to as medical systems in this pamphlet. This category includes systems that contain Materiel System Computer Resources, which are the computer hardware, software, and firmware specifically designed, configured, and acquired as an integral element of the system and needed so that the system can fully perform its intended function.

d. One of the fundamental elements of the acquisition process is test and evaluation (T&E). The structuring and execution of an effective T&E program is absolutely essential to the acquisition and deployment of Army systems that meet the user's requirements. There are many elements integral to a successful T&E program. This pamphlet provides procedural guidance to implement the policies in AR 73–1, with regard to planning, executing, and reporting T&E in support of the acquisition process. Specifically, this pamphlet provides procedural guidance for developing T&E strategies for materiel systems; developing T&E strategies for information systems;developing T&E strategies for system modifications and non-developmental items; establishing and conducting a Test Integration Working Group (TIWG); developing test support packages;preparing and processing test incidents and related reporting; and planning for instrumentation, targets, and threat simulators in support of system testing.

1–2. References

Required and related publicaitons 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.

Chapter 2
Army Test and Evaluation Philosophy

2–1. Overview

a. T&E is an essential part of the development and deployment of all Army systems. The information generated by T&E influences every action taken during the system acquisition process. Defense Acquisition Boards (DABs), Army Systems Acquisition Review Councils(ASARCs), Major Automated Information Systems Review Councils(MAISRCs), and In-Process Reviews (IPRs) use T&E reports generated from test data and analyses to assist in major milestone decisions.Developers require test data to provide feedback on design elements in order to ensure adequate progress towards meeting the user's requirements. System contractors use T&E information to ensure conformity to technical data packages, and to detect manufacturing or quality deficiencies. Finally, T&E information can provide the confidence in their system's performance that users of deployed systems must have. The importance of structuring a sound T&E program during the system acquisition process cannot be over-emphasized. T&E reduces downstream costs (for example, upgrade, retrofit, modernization, and so forth) by exposing problems that can be fixed before the production of large numbers of items.

b. Army T&E policy provides the flexibility to allow each acquisition program to tailor a T&E strategy to achieve maximum support for the program. T&E strategies must be generated concurrent with the acquisition strategy to ensure that T&E is an integral part of the acquisition program. Efficient T&E strategies that are fully integrated into acquisition programs will effectively support event-driven acquisition philosophies.

c. Modeling and simulation will be considered to support the developmental and operational T&E of all systems as they proceed through the life cycle. Use of models and simulations will include, but not be limited to, identifying test parameters and drivers for field tests; determining high risk areas; predicting test results;assisting in allocating scarce test resources; providing entity stimulation in support of interoperability testing; and the assessing system capabilities in situations which cannot be tested because of safety, cost, or other constraints. The extent of the of modeling and simulation; whether existing models and simulations will be used or new ones will be developed; status of models and simulations verification, validation, and accreditation; and the degree to which models and simulations will augment test data to assist in system evaluations and assessments will be documented in the Test and Evaluation Master Plan (TEMP). Models and simulations used for T&E must be accredited and validated before they are used either for extrapolating or predicting system performance (including software, hardware, or man-in-loop).

d. Software and computer resources are essential components of both materiel and information systems. Software T&E for both of these categories of systems is accomplished within the context of the overall system development and test program. The distinction between the two realms is narrowing as more user, system-to-system interface, and decision support functions are imbedded in the software of theater and tactical systems. Criteria for evaluating progress and risk, including metrics, will be established to facilitate determining how well the software supports the goals of system effectiveness and suitability. Commonality in terms and T&E approaches between materiel and information systems will be emphasized.

e. Interoperability is an essential function of Army Command, Control, Communications, Computers, and Intelligence (C4I) systems.Interoperability is achieved among communications-electronics systems or items of communications-electronics equipment when information or services can be exchanged directly and satisfactorily between them or their users (See JCS Pub 1–02).Interoperability is tested at various times during systems development, deployment, and post deployment. All Army C4I systems with interface requirements with the other services and allied forces, must successfully complete interoperability certification and recertification testing on each interface before they can be used within the joint arena.

2–2. Basic test and evaluation elements

Army T&E consists of several basic elements that are essential in the development and conduct of meaningful T&E. These basic elements are as follows:

a. Test Integration Working Group (TIWG). The TIWG is the cornerstone upon which a smart,effective, T&E strategy is built. The TIWG, consisting of members of the acquisition community, coordinates and integrates all T&E planning assuring accurate documentation of the T&E strategy in the TEMP, and assuring that all Army agencies involved in the T&E program are working towards a common goal. The TIWG members are the key players in the T&E program, and collectively structure, document, and execute the T&E program (see chap 8). A primary duty of the TIWG is to ensure that

the minimum T&E is accomplished consistent with producing an optimum product.

b. Test and Evaluation Master Plan (TEMP). The TEMP is the basic planning document for a system's life cycle T&E. With few exceptions, it is required for all acquisition programs. The Program Manager (PM) or Materiel Developer (MATDEV)is responsible for the TEMP, however, all TIWG members contribute to its development and maintenance. The TEMP describes what testing is required, who will perform the testing, what resources will be needed to conduct the testing, and how the evaluation will be performed. Upon approval by the appropriate authority, the TEMP serves as a contract between the PM or MATDEV and the T&E community for executing the T&E strategy. TEMP procedures can be found in DA Pam 73–2, August 1994.

c. Independent Evaluations and Assessments. Critical to the decision making process is the availability of unbiased, objective evaluations and assessments of a system's capabilities. This is achieved using evaluators and assessors who provide reports independent of the PM. The Army T&E community has developmental, operational, and logistics independent evaluators or assessors. AR 73–1 describes which T&E agencies have independent evaluation or assessment responsibilities, and chapter 3 further explains the roles and missions of the independent evaluators and assessors.

d. Developmental Testing (DT) and Operational Testing (OT).

(1) The DT is performed in controlled environments by specially trained individuals to assess the adequacy of the system design, to determine compliance with system specifications and critical technical parameters, determine if the system is ready to enter into the next acquisition phase, and to determine how safe the system is for operation by user troops and civilians. DTs generally require instrumentation and measurements and are accomplished by engineers, technicians, or soldier operator-maintainer test personnel.

(2) The OT is performed in realistic operational environments with typical user personnel to assist in determining the operational effectiveness and suitability of the system. Both developmental testing and operational testing must address all system components(hardware, software, and human interfaces) that are critical to the achievement and demonstration of contract technical performance specifications and minimum acceptable operational performance requirements specified in the Operational Requirements Document(ORD) or Functional Description (FD). Combined developmental and operational testing should be considered when there are time and cost savings while still achieving the objectives of each.

e. Operational issues and criteria. There are two types of operational issues and criteria applicable to the Operational T&E (OT&E) process. Critical Operational Issues and Criteria (COIC) define what is operationally adequate to proceed to full production. COIC are developed by the combat developer (CBTDEV) for materiel systems and for theater and tactical information systems, and by the Functional Proponent (FP)for strategic and sustaining base information systems. COIC are included in the TEMP. Additional Operational Issues (AOI) provide for complete and comprehensive operational evaluation of the system.AOI are developed by the independent operational evaluator and included in the Test and Evaluation Plan (TEP) along with the COIC.AOI complement and supplement the COIC.

f. Critical Technical Parameters (CTP). The critical technical parameters are developed by the independent developmental evaluator or assessor, in coordination with the materiel developer and combat developer. CTPs are derived from the critical system characteristics contained in the ORD along with the associated minimum acceptable operational performance requirements. The critical system characteristics are design features that determine how well the proposed concept or system will function in its intended operational environment. The CTPs are developed in such a way that when achieved, they allow for the attainment of the associated operational requirements in the projected threat environment. CTPs are included in the independent appropriate thresholds, in the TEMP.

2–3. Continuous evaluation

Continuous evaluation (CE) is the process that provides a continuous flow of T&E information on the capabilities of a system to all levels of decision makers. The process encourages early and frequent assessments of a system's status during development, and can significantly reduce test time and costs through comparative analysis, data sharing, and use of all data sources for evaluation.It should begin as early as possible before Milestone 0 and continue through a system's post-deployment activities. The CE process makes use of the basic elements of T&E to create an integrated and continuous flow of information on the status of a system's capabilities. The CE process is applicable to all types of acquisition strategies and all categories of acquisition programs.

a. Objectives. The objectives of CE, as listed below, are to:

(1) Discover critical problems at the earliest opportunity so they may be addressed and resolved before they affect major decisions.

(2) Support the formulation of realistic system requirements and specifications and ensure the system is testable.

(3) Provide for early and frequent assessment and reporting of a system's status during development.

(4) Ensure that the system successfully transitions from engineering into production.

(5) Reduce test time and cost through comparison analyses, data sharing, and use of all data sources for evaluation.

(6) Monitor the corrections applied and assess the adequacy of the corrective actions to identified deficiencies.

(7) Provide assessments of system capabilities after deployment.

(8) Ensure the system is operationally effective,operationally suitable, and able to satisfy the mission need.

(9) Ensure the system meets technical performance.

b. Roles. The PM or MATDEV, the independent developmental evaluator, the independent operational evaluator, and the logistics independent evaluator perform continuous evaluation throughout the life cycle of a system.

c. Scope. Since CE applies to all aspects of a system throughout its life cycle, it has an important role in the requirements process, the acquisition process, T&E, and materiel release.

(1) *CE in Support of the Combat Development Process (Materiel Systems) and the Information Mission Area Planning Process(Information Systems).* Several primary documents, generated by CBTDEV, FP, PM, or the MATDEV initiate the start of and delineate the requirements of the materiel acquisition process (MAP) or the Information Mission Area planning process. These documents identify the need for the system, the functions it is to perform, the necessary operational capabilities, and the information which will be used to select the best alternative. Involvement of the CE participants in the development of these documents in crucial to ensure that the system requirements are properly formed and are addressable by T&E.Figure 2–1 briefly discusses the purpose and content of these documents.

(a) Mission Need Statement (MNS).

(b) Operational Requirements Document (ORD).

(c) Functional Description (FD).

(d) Economic Analysis (EA).

(e) Critical Operational Issues and Criteria (COIC).

(f) Cost and Operational Effectiveness Analysis (COEA) and Cost and Training Effectiveness Analysis (CTEA).

(2) *CE in Support of the Materiel Development Process (Materiel Systems) and the Information Mission Area Development Process(Information Systems).* Program management actions, organizations, and documentation provide the basic structure for CE. Testers, evaluators, and assessors monitor, review, and provide input to ensure that adequate resources are provided for effective T&E and to ensure that CE makes the maximum possible contribution to rapid, effective, and efficient system development and deployment. The following program management elements are discussed in figure 2–2.

(a) Acquisition Strategy (AS).

(b) Decision Review Bodies: Defense Acquisition Board (DAB), Army Systems Acquisition Review Council (ASARC), Major Automated Information Systems Review Council (MAISRC), In-Process Review(IPR).

(c) Project Management Plan (PMP).

(d) System Decision Paper (SDP).

(e) Integrated Program Summary (IPS).

(f) Integrated Program Assessment (IPA).

(g) Agency Procurement Record (APR).

(h) Request for Proposal (RFP).

(i) Preliminary Design Review (PDR), Critical Design Review(CDR), and Physical Configuration Audit (PCA).

(3) *CE in Support of the T&E Process.* The most critical role played by CE is in support of the T&E process. Test programs are structured to support evaluation of issues and system requirements. Planning for T&E is fully coordinated among members of the acquisition team using the TEMP and the TIWG. T&E is accomplished with a cycle of successive actions and documents. For developmental T&E, it includes the independent evaluation plan (IEP) or independent assessment plan (IAP), the test design plan (TDP), the detailed test plan (DTP), the Developmental Test Readiness Review (DTRR), Developmental Test Readiness Statement (DTRS), the Test Report(TR), and the independent evaluation report (IER) or independent assessment report (IAR). For operational T&E, it includes the Outline Test Plan (OTP), the test and evaluation plans (TEP), the Evaluation Operational Plan (EOP), the Tester Operational Plan-(TOP), the DTP, Operational Test Readiness Statement (OTRS), the Operational Test Readiness Review (OTRR), the TR, the Test and Evaluation Report (TER), the Test Data Report (TDR), the Analysis Report (AR), the early operational assessment (EOA), the assessment (OA), and the abbreviated operational assessment (AOA).

4. CE in support of the materiel release process. AR 700–142 provides a discussion of the materiel release process. CE plays a vital role in determining whether materiel is suitable for release.The results of all testing, both developmental and operational, must be considered in all materiel release decisions. The independent evaluators and assessors must present positions to the MATDEV relative to any proposed materiel release, and list the factors that could prevent a full release of the system. These positions should address the following issues:

(a) The ability of the system, when deployed, to meet the contractual specifications.

(b) The ability to meet user requirements in system performance, reliability, logistic supportability, system software design, the human factors engineering design, and all requirements stated in the ORD.

(c) The degree to which the system complies with any special directions or requirements issued by a decision review body.

(d) The sufficiency of corrections to previously disclosed deficiencies, shortcomings, and problem areas.

(e) The safety assessment of the system as to its operating and maintenance procedures.

REQUIREMENTS DOCUMENTS

1. Mission Need Statement (Materiel Systems and Information Systems) (See DoDD 5000.1, DoDI 5000.2, AR 71-9 and AR 25-3). The MNS documents deficiencies in current capabilities and opportunities to provide new capabilities expressed in broad operational terms. Mission needs and resulting acquisition programs shall be based on current, authoritative threat information. The MNS states the purpose of the proposed system, where and how it will be used, the organizations that will employ it, and how it will be integrated into the force structure. It establishes readiness objectives and is the basis for integrated logistics support (ILS) planning. For materiel systems, prior to Milestone 0 (MS 0), the MNS is developed by the CBTDEV in coordination with the MATDEV, the Training Developer (TNGDEV), and the logistician, and is the basis for the ORD. For information systems, prior to MS 0, the MNS is developed by the FP and becomes the basis for the Functional Description (FD). For both categories of systems, it can support the early identification of instrumentation and test requirements, and the initial determination of critical operational issues and criteria. The statement is the basis for early planning and efforts for the TEMP.

2. Operational Requirements Document (ORD) (Materiel Systems) (See DoDI 5000.2, DoD 5000.2-M, AR 70-1, AR 71-9). The ORD is the formal requirements document which must be approved before a program can enter engineering and manufacturing development. It is approved at MS I, updated and expanded at MS II. It is prepared primarily by the CBTDEV in coordination with the MATDEV, TNGDEV, logistician, Manpower and Personnel Integration (MANPRINT) Planner; developmental testers, evaluators, and assessors; and operational testers and evaluators. The ORD states the operational performance requirements to meet the operational need.

3. Functional Description (FD) (Information Systems) (See AR 25-3). The FD is prepared by the PM or MATDEV. The FD provides nonquantified statements of needs to be used in the development of the system specifications. It reflects the definition of the system requirements and provides the users with a detailed statement of the required operational capability. It also describes the technical requirements needed of the system to achieve the operational requirements prescribed. For materiel systems, the ORD, rather than the FD, is the product in the requirements generation process.

Figure 2-1. Requirements documents

4. Economic Analysis (EA) (Information Systems) (See AR 25-1). The EA is conducted to identify and quantify costs and benefits for program alternatives. It considers such factors as productivity, availability, efficiency, safety, quality, morale, security, and supportability.

5. Critical Operational Issues and Criteria (COIC). (Materiel and information systems). The primary purpose of COIC is to focus and support the MS III production decision. They reduce the multitude of operational considerations to a few operationally significant and relevant issues and criteria. COIC reflect the minimum operationally effective and suitable system expectation for an affirmative production decision; however, they are not to be treated as automatic pass or fail absolutes. The total operational system must satisfy the criteria for an affirmative production decision. The total operational system includes the materiel, combat, software and training developer portions. Secondarily, COIC focus and prioritize the operational evaluation, provide operational priority for the acquisition effort, and foster coordination among the acquisition team members. COIC are not test issues, and can be answered using any suitable data source and evaluation technique. The operational evaluator must report system status against the COIC for the production decision. COIC apply to all new materiel systems, class II through V information systems, and applicable modifications to these systems.

6. Cost and operational effectiveness analysis (COEA) and cost and training effectiveness analysis (CTEA) (Materiel Systems) (See DoDI 5000.2, DoD 5000.2-M, and AR 71-9). The COEA and CTEA provide information on system costs and operational and training effectiveness to evaluate the merits of alternatives. The COEA is prepared for the MS I and MS II decision reviews and also update as required for the MS III decision review. The MS I COEA is used to narrow the list of alternatives to the most preferred. The MS II COEA contains a more detailed analysis to determine relative cost and effectiveness of each alternative assessed in the demonstration and validation phase. The criteria and specifications which define the minimum performance characteristics are to be traceable to the MNS and the ORD.

Figure 2-1 (PAGE 2). Requirements documents—continued

PROGRAM MANAGEMENT ELEMENTS

1. Acquisition strategy (AS) (See DoD 5000.2-M, AR 70-1 and AR 25-3). The AS provides a broad, conceptual framework for the execution of an acquisition program. It states the concepts and objectives that direct and control overall development, production, and deployment. An AS is required for all Army acquisition programs. The AS documents how the acquisition program will be tailored and identifies risks and plans to reduce or eliminate the risks. The AS and the TEMP are developed in parallel to ensure that the documents are mutually supporting. The AS, prepared by the MATDEV in coordination with the acquisition team, is a living document that matures throughout the system's life cycle. By MS I for both materiel and information systems, it covers 10 functional areas including MANPRINT, supportability, technical risks, manufacturing and production, cost growth and drivers, human factors engineering (HFE), safety and health, rationalization, standardization, and interoperability (RSI), survivability and endurance, and electrical power and environmental equipment. The AS is approved by the appropriate decision review body either as a stand-alone document or as an element of the IPS (for materiel systems) or the SDP (for information systems).

2. Decision review bodies: Defense Acquisition Board (DAB), Army Systems Acquisition Review Council (ASARC), Major Automated Information System Review Council (MAISRC), In-process Review Panel (IPR) (See DoDD 5000.1, AR 70-1). Major management decisions during the acquisition process are made at milestones by review bodies. The type of review body depends on whether the acquisition has been categorized as an Acquisition Category (ACAT) I, II, III, IV, or MAISRC. For the three program management levels, the review bodies are the DAB, the ASARC, and the IPR Panel. For ACAT ID and Department of Defense MAISRC programs, the DAB reviews the critical issues and provides the Secretary of Defense with recommendations. For ACAT IC and ACAT II programs, the ASARC provides the Secretary of the Army with recommendations on the system; and similarly for Army MAISRC programs. For nonmajor programs, the IPR Panel provides recommendations to the program executive officer (PEO) or MATDEV.

Figure 2-2. Program management elements

3. Project Management Plan (PMP) (Information Systems) (See AR 25-3). The PMP is the primary document used by the PM or MATDEV to describe the development of the information system. The PMP implements the PM's strategy and assigns responsibility to each participating agency, including testers and evaluators, and directs a course of action and method of execution for system development.

4. System Decision Paper (SDP) (Information Systems) (See AR 25-3). The SDP is the primary management document to support an information system through its milestone reviews. It summarizes the project, the alternatives considered, progress toward completion of the project, and the issues. It is required for all class II through V information systems. The SDP contains the AS and the PMP, and also includes the EA and TEMP as annexes.

5. Integrated Program Summary (IPS) (Materiel Systems) (See DoDI 5000.2, DoD 5000.2-M, AR 70-1). The IPS provides a detailed summary of the program. The IPS provides a succinct integrated picture of the program's status for use by the decision review body. The IPS is supplemented by attachments displaying summaries of system acquisition costs and manpower requirements.

6. Integrated Program Assessment (IPA) (Materiel Systems) (See DoDI 5000.2, AR 70-1). The IPA summarizes the results of the independent assessments conducted by the support staff and decision review forums. The IPA is a major issue oriented document. The IPA provides an independent assessment of a program's status and readiness to proceed into the next phase of the acquisition cycle.

Figure 2-2 (PAGE 2). Program management elements--continued

7. Agency Procurement Request (APR) (Information Systems) (See AR 25-3). The APR is prepared by the PM, MATDEV or contracting activity in order to obtain delegation of procurement authority from the General Services Administration for most information systems exceeding certain monetary thresholds. These thresholds should not be confused with those which define the information system classes.

8. Request for Proposal (RFP) (See DoDI 5000.2). The RFP is developed by the MATDEV based on milestone decision reviews and the AS. Specifications in the RFPs are to be traceable to the MNS, ORD, COIC, and other requirement documentation. The developmental evaluators and assessors, and the operational evaluators ensure that there are no unacceptable test limitations driven by the RFP, and that provisions are made in the RFP to provide appropriate contractor test data to the independent evaluators.

9. Preliminary Design Review (PDR), Critical Design Review (CDR), and Physical Configuration Audit (PCA). (See MIL-STD-1521B and MIL-STD-2167). Technical reviews and audits provide a valuable source of data for developing test plans. The PDR, CDR, and PCA are periodic reviews of the detailed design, contractor testing, and operation and support documents for the system under development. In addition, they provide data useful in the evaluation of design compatibility between the system and other systems in the field. A PCA is a technical review of a system prototype to verify that the end item (as built) conforms to the technical documentation which defined the system.

Figure 2-2 (PAGE 3). Program management elements--continued

Chapter 3
Roles and Missions in Test and Evaluation

3–1. Introduction

a. A fully coordinated and integrated T&E effort is necessary for timely, effective, and efficient T&E that is neither fragmented nor redundant. The respective roles and missions of the organizations within the Department of Defense and the Department of the Army that play a role in the T&E of Army systems are identified in this chapter.

b. The functional interactions among organizations of the Army T&E community manage and supervise the T&E process, accomplish the T&E, and provide support for T&E (see fig 3–1). Many of the organizations in the T&E community perform multiple functions in the T&E process.

c. All of the organizations in the T&E community use and review the output of T&E to enhance the MAP and the IMA acquisition process. The T&E community forms a variety of working groups to perform specific planning and coordinating functions for T&E and to participate in decision making bodies such as the DAB, the ASARC, MAISRC, and the IPR panel. These groups oversee progress in the acquisition processes, make recommendations on selection of program alternatives, and recommend whether programs should proceed to the next acquisition phase.

Section I
Department Of Defense Activities

3–2. The Under Secretary of Defense (Acquisition and Technology) (USD(A&T))

The USD(A&T) establishes a disciplined approach and framework for translating broadly stated mission needs into stable, affordable acquisition programs that meet operational users' needs and can be sustained, and an event-oriented management process for acquiring quality products that emphasizes effective acquisition planning. The USD(A&T)—

a. Establishes and publishes acquisition management policies and procedures that supplement and implement the provisions of DoDD 5000.1.

b. Prepares long-range acquisition investment area analyses which provide insights for determining the timing and affordability of proposed new start acquisition programs.

3–3. Director Test, Systems Engineering, &Evaluation (DTSE&E), Office of the Under Secretary of Defense(Acquisition and Technology) (OUSD(A&T))

The DTSE&E—

a. Serves as the principal staff assistant and advisor to the USD(A&T) for technical expertise, oversight, and support to all elements of the DoD acquisition system.

b. Approves, in conjunction with the Director, Operational Test and Evaluation, TEMPs for all ACAT I programs, DOD MAISRC programs, and Office of the Secretary of Defense (OSD) T&E oversight programs.

c. Monitors the conduct and reporting of developmental T&E for ACAT I programs and other systems selected for oversight.

d. Chairs the Defense Test and Training Steering Group(DTTSG).

e. Manages the Foreign Weapon Evaluation Program.

f. Manages the Joint T&E Program.

g. Plans and approves OSD investments in T&E resources and threat simulators.

h. Establishes and maintains DOD policies and instructions for developmental T&E.

i. Manages the DOD Major Range and Test Facility Base.

3–4. Director, Operational Test and Evaluation(DOT&E), Office of the Secretary of Defense

The DOT&E—

a. Approves all operational test and evaluation plans on all acquisition programs for which DOT&E has oversight in accordance with section 2399, title 10, United States Code (10 USC 2399).

b. Reports to the Secretary of Defense and Congressional defense committees on the adequacy of T&E and whether the results confirm the system's operational effectiveness and suitability in support of a final decision to proceed with a major program beyond Low Rate Initial Production (LRIP) in accordance with section 2399, title 10, United States Code (10 USC 2399).

c. Approves, in conjunction with the DTSE&E, Office of the USD(A&T), TEMPs for ACAT I programs, DOD MAISRC programs, and OSD T&E oversight programs.

d. Prescribes policies and procedures governing the conduct of operational T&E.

e. Oversees the OSD Live Fire Test and Evaluation (LFT&E)program and provides the OSD LFT&E report to Congress in accordance with section 2366, title 10, United States Code (10 USC 2366).

f. Prepares the annual operational T&E report to Congress.

g. Prepares assessments on all acquisition programs in which DOT&E has oversight.

3–5. Service Component Operational Test Activities (OTA)

The head of each military department and, as appropriate, defense agency has established an independent OT&E activity (see DoDD 5000.1). These activities:

a. Are separate and independent from the materiel-developing and procuring agency, and the using agency.

b. Oversee planning and conducting OTs, reporting results, and providing evaluations of each tested system's operational effectiveness and suitability.

c. Report directly to the head of the DOD Component, except that the Secretary of a Military Department may delegate supervising this activity to the Service Chief concerned.

3–6. Defense Information Systems Agency (DISA)

DISA oversees the operational T&E of strategic IMA systems for which no lead military department or equivalent has been assigned and prescribes an interoperability certification program to ensure the interoperability of Command, Control, Communications, and Intelligence (C3I) systems and equipment employed in support of joint or combined operations. The Joint Interoperability Engineering Organization (JIEO) is the DISA's responsible operational test agency (OTA). JIEO conducts operational T&E in a mission and threat environment as operationally realistic as possible, in accordance with DoDI 5000.2. In this capacity, the Director, JIEO is the independent test agent for all DISA acquired C3I systems. The Director, DISA, certifies C3I equipment and systems to the appropriate DT and OT organizations and to the Chairman of the Joint Chiefs of Staff.

3–7. Defense Modeling and Simulation Organization (DMSO)

The DMSO promulgates policies to facilitate DOD-wide applications of modeling and simulations, including applications for T&E. The DMSO also implements programs for joint Service modeling and simulation improvements and investments.

Section II
Headquarters, Department Of Army Activities

3–8. Army Acquisition Executive (AAE)

The AAE has authority, responsibility, and accountability for all acquisition functions and programs within the Army as provided in DoDD 5000.1 and, for enforcing the procedures established by the Under Secretary of Defense for Acquisition and Technology.

3–9. Deputy Under Secretary of the Army for Operations Research (DUSA(OR))

The DUSA(OR) is the principal adviser to the Secretary of the Army for matters concerning Army T&E. The DUSA(OR) will—

a. Establish, review, supervise, and enforce Army T&E policy and procedures.

b. Oversee all Army T&E associated with the system research, development, and acquisition as well as T&E associated with doctrine, training, force design, leader development, and materiel requirements programs.

c. Approve all T&E documents requiring Office of the Secretary of Defense (OSD) review.

d. As delegated by the AAE, approve all TEMPs (acquisition categories (ACATs) I and II, other OSD T&E oversight programs, and MAISRC programs) for the Department of the Army (DA).

e. Provide staff management of all test programs of interest to the Office of the Secretary of the Army (OSA).

f. Establish software T&E policy by providing HQDA staff supervision for the preparation, staffing, promulgation, and execution of Army software T&E policy.

g. Establish, review, and integrate pollution prevention into Army T&E policy and procedures.

h. Represent the Army on the OSD forums for coordinating T&E policy and resources.

i. Serve as the chair of the Army Test and Evaluation Committee (ATEC).

j. Recommend candidate systems for live-fire T&E.

3–10. Assistant Secretary of the Army (Research, Development, and Acquisition) (ASA(RDA))

The ASA(RDA) will—

a. Execute RDT&E and OPA funds for T&E.

b. Serve as a member of the ATEC.

c. Assist the DUSA(OR) and TEMA in developing developmental test and evaluation policy.

d. Participate in the Test Schedule and Review Committee(TSARC) process (see AR 15–38).

3–11. Director, Test and Evaluation Management Agency (TEMA)

The Director, TEMA, will—

a. Develop and monitor developmental and operational test policy.

b. Coordinate all T&E policy and resource actions with the Assistant Secretary of the Army (Research, Development, and Acquisition) (ASA(RDA)); other HQDA agencies; OSD; Chief of Naval Operations; Headquarters, United States Air Force; United States Army Operational Test and Evaluation Command (USAOPTEC); United States Army Materiel Command (USAMC); United States Army Training and Doctrine Command (USATRADOC); United States Army Space and Strategic Defense Command (USASSDC); United States Army Information Systems Command (USAISC); United States Army Medical Command(MEDCOM); United States Army Medical Research and Materiel Command(USAMRMC); United States Army Medical Materiel Agency (USAMMA); and United States Army Intelligence and Security Command (INSCOM).

c. Serve as HQDA coordination agent for all T&E policy, resource programming, and related programmatics.

d. Provide staff management of all test programs of interest to the Chief of Staff of the Army.

e. Manage the HQDA staffing and approval process for TEMPs requiring DA approval and OSD approval.

f. Oversee the development, updating, and accreditation of T&E-related models and simulations.

g. Coordinate and facilitate communications with OSD on T&E matters.

h. Develop and monitor Army Major Range and Test Facility management and funding policy.

i. Coordinate and oversee T&E funding for investment research, development, test, and evaluation (RDT&E) and Other Procurement, Army (OPA), accounts and operational test support.

j. Oversee development of T&E personnel strategy plans for identifying and training individuals.

k. Oversee Army joint T&E and T&E for multi-service acquisition programs.

l. Ensure that Army Command, Control, Communications, Computers, and Intelligence (C4I) systems are properly tested and certified for interoperability in accordance with DoDD 4630.5 and DoDI 4630.8.

m. Serve as the Army representative to the Department of Defense (DOD) Executive Committee for threat simulators and targets and the CROSSBOW Committee.

n. Provide HQDA oversight on the funding of the Army Threat Simulator Program (ATSP), Army Targets Program, and Army Instrumentation Program, and interface with the program manager for instrumentation, targets, and threat simulators (ITTS).

o. Ensure that the threat representative targets and threat simulators are validated and accredited.

p. Provide centralized T&E management by establishing and chairing a T&E managers' committee.

q. Manage the Army portion of the Central T&E Investment Program (CTEIP) and Resource Enhancement Program (REP).

3–12. The Deputy Chief of Staff for Operations and Plans (DCSOPS)

The DCSOPS will—

a. Plan, program, and budget Research, Development, Test and Evaluation (RDT&E), Other Procurement, Army (OPA), and Operations and Maintenance, Army (OMA) T&E funds.

b. Participate in the TSARC process and approve the Five Year Test Program (FYTP) (see AR 15–38).

c. Review, coordinate, and approve requirements for ACAT I programs, ACAT II programs, OSD T&E oversight programs, and all information systems having tactical missions. Review, coordinate, and approve COIC for ACAT I and II materiel acquisition systems(systems developed under DoD 5000 series) after Milestone II.

d. Assist the DUSA(OR) and TEMA in developing operational T&E policy.

e. Serve as HQDA point of contact and provide oversight for OSD chartered joint T&E. Manage, solicit, and coordinate Army participation in joint T&E. Provide Army members to the Joint T&E Planning Committee and Joint T&E Senior Advisory Council. Provide Army liaison to OSD on joint T&E issues. Solicit the annual call for Army joint T&E nominations.

f. Serve as a member of the ATEC.

3–13. The Deputy Chief of Staff for Logistics(DCSLOG)

The DCSLOG will—

a. Provide integrated logistics support (ILS) and related T&E policy to include input to program management documents (see AR 750–1 and AR 700–127).

b. Participate in the COIC review and approval process for those COIC requiring HQDA approval.

c. Participate in the ATEC and TSARC process as required.

d. Using the U.S. Army Materiel Systems Analysis Activity(USAMSAA), the DCSLOG will—

(1) Perform the ILS program surveillance for Army materiel systems.

(2) Perform independent logistics supportability assessments.

(3) Evaluate ILS for all materiel acquisition programs and deployed systems, except for medical items for which the United States Army Medical Materiel Agency is responsible.

(4) Oversee and evaluate the logistics aspects of materiel acquisition and modification programs and deployed systems to ensure supportability.

(5) Participate in program reviews, ILS management teams, TIWG and other working and review groups, and in the development of requests for proposal, statements of work, and contract data requirements lists.

3–14. The Deputy Chief of Staff for Personnel(DCSPER)

The DCSPER will—

a. Ensure that Manpower and Personnel (MANPRINT) T&E concerns are addressed in appropriate testing and T&E documents (see AR 602–2).

b. Participate in the ATEC, as required.

c. Participate in the TSARC process (see AR 15–38).

d. Participate in the COIC review and approval process for those COIC requiring HQDA approval.

3–15. The Deputy Chief of Staff for Intelligence(DCSINT)

The DCSINT will—

a. Provide guidance on the representation of threat in testing.

b. Establish threat policy and procedures, and provide HQDA approval of the threat to be used for T&E for ACAT I programs, ACAT II programs, and programs on the OSD T&E oversight list (see AR 381–11).

c. Coordinate Defense Intelligence Agency threat validation for ACAT ID programs and programs on the OSD T&E oversight list.

d. Participate in the COIC review and approval process for those COIC requiring HQDA approval.

e. Participate in the ATEC, as required.

3–16. The Director of Information Systems for Command, Control, Communications, and Computers (DISC4)

The DISC4 will—

a. Manage IMA activities in support of the Army Acquisition Executive, including T&E IMA life cycle management.

b. Plan, program, and budget Operations and Maintenance, Army(OMA) funds for fixed and recurring costs for T&E conducted by United States Army Information Systems Command (USAISC).

c. Assign responsibilities (normally to a functional proponent), for reviewing, coordinating, and approving requirements and COIC for all information systems except those having tactical missions (except in instances where the functional proponent is the assigned operational evaluator). Assist the Deputy Chief of Staff for Operations and Plans (DCSOPS) in reviewing, coordinating, and approving requirements and COIC for information systems having tactical missions.

d. Assign developmental T&E responsibilities for information systems. (USAISC will normally be assigned responsibility for developmental T&E of information systems).

e. Assign OT&E responsibilities for non-MAISRC level information systems through the Enterprise Strategy Control Structure.

f. With assistance from the Deputy Chief of Staff for Operations and Plans as appropriate, ensure that Army C4I systems with joint and combined interoperability requirements are scheduled through the Army Participating Test Unit (APTU) for joint certification or recertification testing.

g. Designate the OT&E responsibilities for strategic information systems when the Army is assigned as the lead military department. Designation will be in coordination with the Defense Information Systems Agency (DISA) and USAOPTEC.

h. Serve as a member of ATEC.

i. Assist the DUSA(OR) and TEMA in developing IMA-related test and evaluation policy.

j. Participate in the TSARC process in support of Information Mission Area systems, as required.

3–17. The Surgeon General (TSG)

The TSG will—

a. Provide support to testers and evaluators concerning health hazards.

b. Provide recommendations concerning the use of humans as volunteers (see AR 70–25).

c. Perform health hazard assessments (see AR 40–10).

d. Review and provide medical input to safety releases for tests, as required.

e. Serve as a program manager for tests of medical materiel.

f. Using the United States Army Medical Materiel Agency(USAMMA), TSG will—

(1) Perform the ILS program surveillance for Army medical materiel systems.

(2) Perform ILS assessments for Army medical materiel.

(3) Evaluate all medical materiel acquisition programs and deployed medical systems.

(4) Monitor tests of medical materiel on an exception basis.

g. Participate in the ATEC, as required.

h. Participate in the TSARC, as required (see AR 15–38).

3–18. The Chief of Engineers (COE)

The COE will—

a. Support program managers in the development of materiel for operation in extreme climatic conditions in accordance with AR 70–38.

b. Provide policy, guidance, and support of T&E environmental effects on Army materiel and operations.

c. Execute T&E of those commercial items of equipment procured for engineer maintenance and supply activities.

d. Review digital terrain data for accurate representation in demonstrations and tests.

e. Participate in the ATEC, as required.

f. Act as program manager for the Chief of Engineers acquisition programs.

g. Establish and maintain a Human Use Committee (HUC) in accordance with AR 70–25.

h. Participate in the TSARC as required (see AR 15–38).

3–19. Director of Army Safety

The Director of Army Safety (DASAF) has primary Army staff oversite for system safety (see AR 385–16). The DASAF will be assisted by the United States Army Safety Center (USASC), which ensures that system safety issues are monitored and evaluated during testing. The USASC will provide an independent safety assessment before milestone decisions.

Section III
Commanders of Major Army Commands

3–20. Commanding General, U.S. Army Training and Doctrine Command (USATRADOC)

The Commanding General (CG), USATRADOC, is the Army's principal combat and training developer and trainer for materiel systems and theater and tactical information systems. The CG, USATRADOC, will provide a member to ATEC.

a. As the combat and training developer, the CG, USATRADOC, will—

(1) Develop, evaluate, and approve United States Army doctrine, training, organization, leader development, and materiel requirements, and plan and evaluate these products as required to support decisions.

(2) Prepare and coordinate COIC for materiel systems and information systems having tactical missions and approve COIC for those systems that are not reserved for approval by the Office of the DCSOPS (ODCSOPS) and DISC4.

(3) Develop a doctrinal and organizational test support package.

(4) Participate in the TSARC process.

(5) Provide centralized T&E management by establishing a T&E manager.

b. As the trainer for materiel systems and information systems having tactical missions, the CG, USATRADOC, will—

(1) Define the training concept and develop training literature to support individual and crew training.

(2) Develop training test support packages.

(3) Develop the requirements for instrumentation to support training at Army training ranges.

c. As a developer for system threat assessments, the CG, USATRADOC, will—

(1) Develop, coordinate, and obtain approval and validation of the initial System Threat Assessment Report (AR 381–11).

(2) Develop, coordinate, and obtain approval and validation (if required) of Threat Test Support Packages (TTSPs) for operational testing (see AR 381–11).

d. As the proponent of Battle Labs, the CG, USATRADOC, will—

(1) Provide horizontally integrated requirements for doctrine, training, leader development, organization, and materiel focused on the soldiers.

(2) Provide linkage between technology base efforts and warfighting concepts via experiments, simulations, or prototypes.

(3) Expedite high payoff solutions to priority operational requirements through early experimentation.

(4) Integrate operational test planning early in Battle Lab experimentation and, where possible, use data collected to reduce requirements for future operational testing.

3–21. Commanding General, U.S. Army Materiel Command (USAMC)

The CG, USAMC, will act as a materiel developer for assigned materiel systems required by the Army.

a. The CG, USAMC, will—

(1) Assist the DUSA(OR) and provide staff support to TEMA in developing and promulgating developmental test and evaluation policy.

(2) Provide a member to ATEC and a member and support to the TSARC process.

(3) Appoint a T&E manager to serve as Executive Secretary to the T&E managers' committee.

b. Through the CG of a major subordinate command or a direct reporting program manager, the CG, USAMC, will—

(1) Plan, program, and formulate budgets associated with the developmental T&E function in support of designated program executive officers, program managers, laboratories, and centers.

(2) Provide centralized T&E management by establishing T&E managers at USAMC major subordinate commands.

(3) Develop system threat assessment reports after milestone I(AR 381–11).

(4) Develop TTSPs as required for developmental testing of Army materiel systems (AR 381–11).

(5) Maintain a long-range plan for T&E resource requirements.

c. Using a developmental tester (TECOM), the CG, USAMC, will—

(1) Perform the duties of developmental tester for Army materiel systems (except medical materiel assigned to USAMRMC, and systems assigned to INSCOM and the Chief of Engineers).

(2) Provide test facilities and technical expertise in support of life-cycle developmental T&E activities.

(3) Maintain the Army's Major Range and Test Facility Base(except for the U.S. Army Kwajalein Atoll).

(4) Provide testers with a safety release for all systems before the start of pretest training for any test that uses soldiers as test players, except for systems developed by USAISC, MEDCOM, and United States Army Medical Research and Development Command.

(5) Provide safety confirmations.

(6) Research, develop, and acquire instrumentation, and develop new and improved test methodology to increase the efficiency, validity, and reliability of developmental testing.

(7) Establish and maintain an HUC in accordance with AR 70–25.

(8) Ensure that all developmental testing complies with the Intermediate-Range Nuclear Forces (INF) Treaty.

(9) Ensure that developmental tests conducted by other Army activities are effectively planned, conducted, and reported.

(10) Review TEMPs for adequacy, and together with the independent evaluator or assessor, prepare specific portions of the T&E Resource Summary of the TEMPs.

d. Using an independent developmental evaluator (the United States Army Materiel Systems Analysis Activity (USAMSAA)), logistician, or developmental assessor (TECOM), the CG, USAMC, will—

(1) Perform the duties of developmental evaluator or assessor for Army materiel systems (except medical materiel assigned to USAMRMC, and systems assigned to INSCOM and the Chief of Engineers).

(2) Review TEMPs for adequacy, and prepare the developmental T&E portion of the TEMP together with the developmental tester.

e. Using an element participating in the C3I interoperability process (United States Army Communications-Electronics Command(USACECOM) APTU)), the CG, USAMC supports interoperability testing of C3I systems conducted by the Defense Information Systems Agency for system certification and recertification. The USACECOM APTU will arrange for and coordinate all Army interoperability testing with the DISA and coordinate the participation of all Army elements and systems.

f. Using the program manager for ITTS, the CG, USAMC, will—

(1) Serve as the Army's single manager and as a proponent for major test ITTS, and represent the Army on joint Service programs.

(2) Plan, program, budget, defend, and oversee the execution of major test ITTS funding.

(3) Coordinate and consolidate customer technical and functional requirements in an Operational Requirements Document(ORD) for instrumentation, targets, and threat simulators.

(4) Monitor threat representative targets and threat simulators to ensure they are programmed for validation.

(5) Plan, program, budget, and execute the CTEIP.

(6) Maintain a capability inventory of current Army test ITTS.

(7) Initiate the development, engineering, procurement, and modification of major ITTS programs, and deliver them to user organizations for accountability, operation, and maintenance.

(8) Serve on Validation and Threat Accreditation Working Groups for targets and threat simulators.

(9) Consolidate, coordinate, and recommend development priorities for requirements established by Army and DOD user agencies, and document them in a long-range plan.

(10) Manage foreign materiel required to support developmental and operational test and evaluation not managed by the USAOPTEC Threat Support Activity (OTSA).

3–22. Commanding General, U.S. Army Information Systems Command (USAISC)

The CG, USAISC, will act as the materiel developer of assigned information systems required by the Army. The CG, USAISC, will provide a member to the ATEC and a member and support to the TSARC process. USAISC assists the DUSA(OR) and DISC4 to develop and promulgate developmental testing policy. The CG, USAISC, will—

a. Act as a program manager for assigned information systems.

b. Plan, program, and formulate budgets associated with the developmental T&E function for assigned information systems.

c. Perform the duties of developmental tester and evaluator of assigned information systems.

d. Provide technical expertise in support of life-cycle T&E activities for information systems.

e. Provide a safety release before the start of pretest training for any test that uses soldiers as test players for USAISC developed systems.

f. Establish and maintain an HUC in accordance with AR 70–25.

g. Provide centralized T&E management by establishing a T&E manager.

3–23. Commanding General, U.S. Army Intelligence and Security Command (INSCOM)

The CG, INSCOM, will conduct developmental T&E, serve as an operational tester and evaluator for assigned classified or secure systems, and will participate in the TSARC process, as required.INSCOM is the CBTDEV for strategic SIGINT systems and represents the DCSINT on study advisory groups, special task forces, and special study groups. The CG, INSCOM, establishes materiel development objectives and requirements for assigned classified or secure systems, prepares requirements documents and serves as the Army representative during development and fielding of assigned classified or secure systems, and provides user troops and resources for operational testing of EAC intelligence systems. Specifically, INSCOM:

a. Provides the overall design of SIGINT systems that have sole application to the SIGINT system.

b. Coordinates with the Commanding General, AMC, on matters related to acquiring INSCOM user intelligence, security, and electronic warfare systems.

3–24. Commanding General, U.S. Army Medical Command (MEDCOM)

The CG, MEDCOM, will—

a. Provide operational T&E of medical materiel (see AR 40–60).

b. Conduct the health hazard assessment program (see AR 40–10).

c. Establish and maintain an HUC in accordance with AR 70–25.

d. Participate in the TSARC process (see AR 15–38).

e. Provide a safety release before the start of pretest training for any test that uses soldiers as test players for MEDCOM developed systems.

3–25. Commanding General, Military Traffic Management Command (MTMC)

The CG, MTMC, will—

a. Execute the Army transportability agent mission.

b. Review and analyze the transportability engineering aspects of test-related documents.

c. Ensure that appropriate transportability testing is planned, conducted, and reported by the program manager.

d. Provide technical expertise at the test site for transportability testing.

3–26. Commanding General, U.S. Army Space and Strategic Defense Command (USASSDC)

The CG, USASSDC, will act as a materiel developer for assigned materiel systems required by the Army. The CG, USASSDC, provides a member to the ATEC and a member and support to the TSARC process. The CG, USASSDC, will assist the DUSA(OR) and ASA(RDA) to develop and promulgate developmental T&E policy. Additional duties of the CG, USASSDC, are described in *a* through*c* below.

a. The CG, USASSDC, will—

(1) Provide test facilities and technical expertise in support of strategic, and, where requested, theater missile defense life-cycle developmental T&E activities.

(2) Maintain the Army's Kwajalein Atoll and the United States Army Kwajalein Missile Range.

(3) Provide centralized T&E management by establishing a T&E manager.

(4) Ensure that all strategic missile defense testing complies with the INF Treaty and the Anti-Ballistic Missile Treaty.

b. Using a direct reporting program manager, the CG, USASSDC, will—

(1) Exercise program management for assigned systems.

(2) Plan, program, and formulate budgets associated with the developmental T&E function in support of designated program executive officers, program managers, laboratories, and centers.

(3) Develop system threat assessment reports after milestone I for assigned programs (AR 381–11).

(4) Develop Threat Test Support Packages (TTSPs) for developmental testing of designated Army materiel systems.

(5) Maintain a long-range plan for T&E resource requirements of designated Army materiel systems.

c. By means of a program manager for strategic and theater ballistic missile targets, the CG, USASSDC, will—

(1) In coordination with PM ITTS, serve as a manager and proponent for strategic and theater missile defense test targets, and represent the Army on joint service programs.

(2) Plan, program, defend, and oversee the execution of strategic and theater missile defense test target budget.

(3) Document technical requirements in appropriate requirement documents.

(4) Maintain an inventory of current Army strategic and theater missile defense test targets.

(5) Serve on validation and threat accreditation working groups for strategic and theater missile defense targets and threat simulators.

d. By means of the Commander, United States Army Space Command, the CG, USASSDC, will—

(1) Provide technical experts to participate in developmental and operational testing of space systems or systems dependent upon space based sensors and communications

(2) For space systems in which USARSPACE participates in T&E efforts throughout the acquisition process, develop and provide user perspectives and requirements, refine requirements, ensure space users' interests are included in the mission area analysis, and participate in product improvement initiatives.

3–27. Commanding General, U.S. Army Forces Command (FORSCOM)

The CG, FORSCOM, provides user troops for operational testing, and developmental testing, when required. Because FORSCOM is the ultimate user of new materiel, its participation in T&E is essential throughout the acquisition process. In the program initiation phase, FORSCOM ensures that its interests as the ultimate user of the equipment are considered during mission area analysis.Throughout the acquisition process, FORSCOM refines requirements for user troops. During the production and deployment phase, FORSCOM provides user comments, usage data, and requests for product improvements.

Section IV
Heads of Other Army Elements

3–28. Commanding General, U.S. Army Operational Test and Evaluation Command (USAOPTEC)

The CG, USAOPTEC, supports the system acquisition and force development processes through overall management of the Army's operational test and continuous evaluation programs reporting directly to the Chief of Staff, United States Army. The USAOPTEC mission is stated in detail in AR 10–88. The CG, USAOPTEC, will—

a. Using an operational tester (Test and Experimentation Command (TEXCOM)), perform the duties of an operational tester for all materiel systems (except pharmaceutical or biological systems assigned to USAMRMC, and systems assigned to United States Army Medical Command (MEDCOM), INSCOM and the Chief of Engineers), all MAISRC-level information systems, and joint and multi-service systems; and perform the duties of an operational tester for these systems in support of doctrine, training, organization, leader development, and materiel requirements activities.

b. Using an operational evaluator (Operational Evaluation Command (OEC)), perform the duties of an operational evaluator for systems covered by *a* above.

c. Use functional expertise throughout the Army for operational T&E of MAISRC-level information systems. Coordinate this effort and retain system evaluation responsibility.

d. Plan, program, execute, and report on scientific field experimentation in support of HQDA.

e. Ensure that operational tests conducted by other Army activities are effectively planned, conducted, and reported.

f. Coordinate test resources to include chairing the TSARC and the User Test Instrumentation Subcommittee (see AR 15–38).

g. Develop the requirements for operational test instrumentation, and manage the acquisition of sustaining test instrumentation.

h. Develop and promulgate operational T&E methodology, and assist the DUSA(OR) and TEMA in developing and promulgating operational test and evaluation policy.

i. Serve as the Army manager and resource coordinator for joint T&E, which includes chartered phases, and coordinate the nomination and selection of the Army Joint Test Director or Deputy Test Director for approval by ODCSOPS.

j. Review programmed tests for possible use of modeling and simulation to enhance evaluations and reduce costs.

k. Establish and maintain an HUC in accordance with AR 70–25.

l. Chair operational test readiness reviews (OTRRs) as appropriate.

m. Review TEMPs for adequacy for all systems, and prepare part IV of TEMPs for systems assigned for evaluation.

n. Manage and fund the USAOPTEC Threat Support Activity.

o. Serve as a member of the ATEC.

p. Ensure that all operational testing complies with the INF Treaty.

q. Maintain a long-range plan for operational T&E resource requirements.

r. Provide centralized T&E management by establishing a T&E manager.

s. Support the validation and accreditation of targets and threat simulators.

t. Prepare Army input to the Resource Enhancement Program(REP).

3–29. Commanding General, U.S. Army Medical Research and Materiel Command (USAMRMC)

a. The CG, USAMRMC, will perform the duties of developmental tester and evaluator of items of medical materiel (AR 40–60).

b. As the developmental tester for TSG, the CG, USAMRMC, will establish and maintain an HUC in accordance with AR 70–25.

c. USAMRMC is not required to develop a TEMP for any pharmaceutical and biological products.

d. The CG, USAMRMC, will provide a safety release before the start of pretest training for any test that uses soldiers as test players for USAMRMC developed systems.

3–30. Commander, U.S. Army Medical Materiel Agency (USAMMA)

As the medical mission assignee, the Commander, USAMMA will coordinate developmental and operational testing for all non-developmental and commercial off-the-shelf medical materiel systems, items, and medical assemblages (AR 40–60).

Section V
Other Department of the Army Activities

3–31. USAOPTEC Operational Threat Support Activity (OTSA)

OTSA, a subordinate element of USAOPTEC, assists and advises the Commanding General, USAOPTEC in the fulfillment of the USAOPTEC assigned responsibility for the Army Threat Simulator Program (ATSP) actions. OTSA operates and maintains operating replica simulators and actual threat systems and ensures that realistic threat environments are used in support of free-play, force-on-force, real-time casualty assessment testing and training.OTSA works toward continuous improvement of processes for optimizing resources and improving products.

3–32. USAOPTEC Test and Evaluation Coordination Offices (TECO)

TECOs are subordinate elements of USAOPTEC and provide on-site coordination between USAOPTEC and the USATRADOC Proponent Center. TECOs provide operational T&E expertise to the USATRADOC proponent activity. TECOs work toward continuous improvement of processes for optimizing resources and improving products.

3–33. U.S. Army Research Laboratory (USARL)

USARL is a major subordinate command of USAMC established to conduct basic and applied research, exploratory development and analysis in the areas of sensors, signatures, signal and information processing; electronics and power sources; battlefield environments;vehicle propulsion; materials; vehicle structures; weapons technology; human research and engineering; advanced computing and software; and survivability/lethality and MANPRINT analyses. The Survivability/Lethality Analysis Directorate (SLAD), within ARL, serves as the principal activity in the Army for determining the survivability, lethality, and vulnerability of Army systems to the full spectrum of battlefield threats and supports the Live Fire Test and Evaluation (LFT&E) program.

3–34. USATRADOC Analysis Command (TRAC)

TRAC supports the CG, USATRADOC by conducting research and analyses. The analyses, modeling, and research performed by TRAC and its subordinate activities support the planning, execution, and evaluation of operational testing.

3–35. U.S. Army Concepts Analysis Agency(USACAA)

USACAA is a field operating agency reporting to the Director of the Army Staff, Office of the Chief of Staff, Army.USACAA will formulate test requirements to generate performance data for required analyses and will assist the tester and evaluator by using contractor studies and analyses and by developing models and simulations. These analyses may be used to establish the context for lower-level systems and for issues and criteria used in OT&E.USACAA contributes to the CE program through its modeling, simulation, and studies efforts.

3–36. United States Army Logistics Evaluation Agency (USALEA)

USALEA is a field operating agency of the DCSLOG. The Commander, USALEA will assist the DCSLOG in executing automated logistics system functional proponent responsibilities. USALEA will assist USAOPTEC and functional proponents with evaluation and assessment of automated logistics systems under MAISRC control.

Section VI
Reviewing Forums

3–37. Defense Acquisition Board (DAB)

The DAB is the primary forum for resolving issues and facilitating Department of Defense decisions for Acquisition Category I (ACAT I) programs. In support of the DAB, the appropriate committee of the board will conduct a pre-DAB review.The Office of the Secretary of Defense Cost Analysis Improvement Group and the Joint Requirements Oversight Council also support the Defense Acquisition Board in its review process. The DAB is chaired by the Under Secretary of Defense (Acquisition and Technology).Detailed discussions on the DAB process and procedures are contained in DoDI 5000.2, Part 13.

3–38. Army Systems Acquisition and Review Council (ASARC)

The ASARC is the Army's senior-level review body for ACAT I and II programs. The ASARC will be convened at formal milestones to determine a program or system's readiness to enter the next phase in the materiel acquisition cycle. An ASARC may also be convened at any time to review the program status. ACAT I programs are subsequently reviewed by the DAB. The ASARC is co-chaired by AAE and Vice Chief of Staff, Army. ASARC membership, functions and procedures are outlined in AR 70–1.

3–39. Major Automated Information Systems Review Council (MAISRC)

a. Department of Defense (DOD) MAISRC. The DOD MAISRC is the primary forum for resolving issues and facilitating Department of Defense decisions for major automated information systems. The DOD MAISRC is chartered by the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence under the overall guidance of DoDD 5000.1, and operates in accordance with DoDD 8120.1 and DoDI 8120.2. Automated information systems that meet the thresholds for acquisition category I (ACAT I) programs are reviewed by the DAB.

b. Army MAISRC. The Army MAISRC serves as a review for management to obtain current status of automated information systems and to provide additional guidance and give milestone approval to the program. The Army MAISRC provides the Army position for input to the DAB for Class I information systems. Army MAISRC functions and procedures are outlined in AR 25–3.

3–40. In-Process Review (IPR)

The IPR is the review forum for all ACAT III and IV programs and is chaired by the Milestone Decision Authority (MDA) or his or her designee. General policies for reviews of IPR programs are the same as for ACAT I and II programs. Reviews are conducted at formal milestones and at other times deemed necessary by the MDA.IPR members include the MATDEV, CBTDEV, independent operational and developmental evaluator, logistician, trainer (if different from the CBTDEV), functional support organization or staff, and others, as determined by the IPR Chair.

3–41. Materiel Release Review Board (MRRB)

Materiel release policy is stated in AR 700–142. The testers and evaluators inform the MATDEV, CBTDEV, and ILS program participants of potential materiel release, fielding, or transfer problems, and recommend solutions to the problems. The developmental, operational, and logistics evaluator or assessor submits an independent evaluation or assessment or a statement that a previously provided report remains valid. These evaluations or assessments address the ability of the system to fulfill the requirements in the approved requirements document and specifications. A safety confirmation will be included with the developmental evaluation or assessment. Materiel release prerequisites must be met before materiel release. To ensure that the objectives of the materiel release process are reached, the MATDEV will provide the logistician, CBTDEV, and other participants in the MRRB, a copy of the documentation showing that the materiel release prerequisites have been met.

3–42. Test Schedule and Review Committee (TSARC)

The TSARC is the formal process through which Outline Test Plans (OTPs) are approved and included in the Five Year Test Program-(FYTP). The TSARC provides high-level centralized resource management by maximizing the use of limited resources and minimizing the impact on unit operational readiness. The Commanding General, USAOPTEC, chairs the TSARC; prepares, coordinates, and presents proposed changes to the FYTP; and publishes the FYTP after ODCSOPS approval. The CG, USAOPTEC also develops policy guidance for conduct of TSARC. The TSARC process is discussed in AR 15–38.

3–43. Test Integration Working Group (TIWG)

A TIWG must be chartered for every acquisition program (see AR 73–1). Details concerning TIWG purpose, composition, and procedures are contained in Chapter 8.

3–44. Test and Analysis Integration Group (TAIG)

A TAIG is required after MS 0 for all ACAT I, ACAT II, and other OSD T&E oversight programs for which a Cost and Operational

Effectiveness Analysis (COEA) is planned. The DCSOPS will establish each TAIG and its membership. The purpose of the TAIG includes:

a. Ensuring linkage between ORD development, COEA study plan and Critical Operational Issues and Criteria (COIC) development.

b. Conducting crosswalks between the TEMP, ORD, COEA, and COIC.

c. Examining planned modeling and simulation efforts to ensure linkage with test events.

d. Advising the TIWG regarding incorporation of pertinent analyses into TIWG efforts.

3–45. Operational Test Readiness Review (OTRR)

For each acquisition program, OTRRs are conducted by the operational tester before each OT to allow the tester to assess readiness to test the system. The OTRR determines the readiness of the system, support packages, instrumentation, and test planning, to support the OT. It includes identification of any problems which may impact the start or adequate execution of the test. The objective of the review is to determine if any changes are required in planning, resources, training, equipment, or timing to successfully proceed with the test. Principal attendees include the operational tester, operational evaluator, materiel developer, combat developer or functional proponent, training developer, user(FORSCOM or other activity providing test players), logistician, developmental tester, developmental evaluator or assessor, HQDA staff element representatives, host installation representatives, and contractor representatives. The primary OTRR is conducted before resource deployment to test site.

3–46. Developmental Test Readiness Review (DTRR)

The DTRR is conducted by the program manager or materiel developer to determine if the materiel system is ready for the Production Qualification Test or the information system is ready for SQT. Principal attendees are the TIWG members.

3–47. Concept Evaluation Program (CEP) Schedule and Review Council (CEPSARC)

The CEPSARC is a USATRADOC operated and chaired council which meets at least annually to review and prioritize its CEP projects (both new submissions and previously approved) to recommend the CEP program to the Deputy Chief of Staff for Combat Developments, USATRADOC, for approval to execute. CEPSARC attendees typically include representatives from Headquarters USATRADOC, and TRADOC Commands, Centers, Schools, and Battle Labs; USAOPTEC; and FORSCOM.

3–48. Army Test and Evaluation Committee (ATEC)

The ATEC is a senior-level committee chaired by the Deputy Under Secretary of the Army (Operations Research). The ATEC charter identifies the ATEC membership and discusses relevant administrative functions and procedures. The members of the ATEC will—

a. Provide a forum where all elements of the Army T&E community, acting as a committee of the whole, may formulate recommendations to the Army senior leadership regarding T&E policy, T&E procedures, organization, and resources.

b. Study and review specific T&E matters such as, but not limited to, the test instrumentation program, development of automated test data retrieval systems, and quality assurance of T&E products.

c. Review the missions, functions, composition, responsibilities, and concept of operations of all T&E activities within the Army and provide recommendations for change to the senior Army leadership.

d. Provide senior-level focus on and centralized guidance to the management and coordination for all major T&E policy and resource issues.

e. Develop and review Army T&E policy and procedures.

f. Review Army T&E requirements and recommend allocation of available resources across functional lines.

g. Review, forecast, and prioritize future Army T&E instrumentation requirements.

h. Review and coordinate modernization of T&E facilities.

i. Ensure that proper coordination is implemented between the T&E community and the program executive officers so that requirements for T&E resources unique to a specific program are resourced by the program executive officer.

3–49. Test and Evaluation Managers Committee(TEMAC)

The TEMAC serves as a centralized working group supporting the Army T&E community. The TEMAC strives to foster efficient and effective working relationships among system developers, testers, evaluators, user representatives, and others participating in the T&E process. The Deputy Director for Policy, TEMA, will serve as the chair of the TEMAC. The TEMAC charter identifies the TEMAC membership and discusses relevant administrative functions and procedures. The TEMAC will—

a. Undertake studies and reviews as directed by the senior Army leadership on specific DA T&E matters regarding policy, procedures, organization, and resources.

b. Support the senior Army leadership regarding DA input to DOD T&E strategy and action plans.

c. Provide coordination on T&E matters between TEMA and program executive officers; major subordinate command project managers; and Army research, development, and engineering centers, and their respective matrix support activities.

d. Act as a working group to study and review T&E issues raised by any command, activity, agency, or office within the Army acquisition community.

3–50. Operational Test Agency (OTA) Commanders Conference

The OT Commanders include the Commander General, USAOPTEC, the Navy Operational Test and Evaluation Force Commander, the Air Force Operational Test and Evaluation Agency Commander, and the Marine Corps Operational Test and Evaluation Agency Commander. The group meets twice a year to discuss topics of mutual interest relating to OT&E.

3–51. Data Authentication Group (DAG)

The DAG is a team of test and evaluation subject matter experts with a broad spectrum of technical disciplines assembled to assess and monitor OT data reduction, quality control, and the identification and analysis of anomalies in the system, instrumentation, and test data. The principal goal of a DAG is a validated database that accurately reflects how a system performed during test. The DAG supports the independent operational evaluator in conducting the OT&E mission.

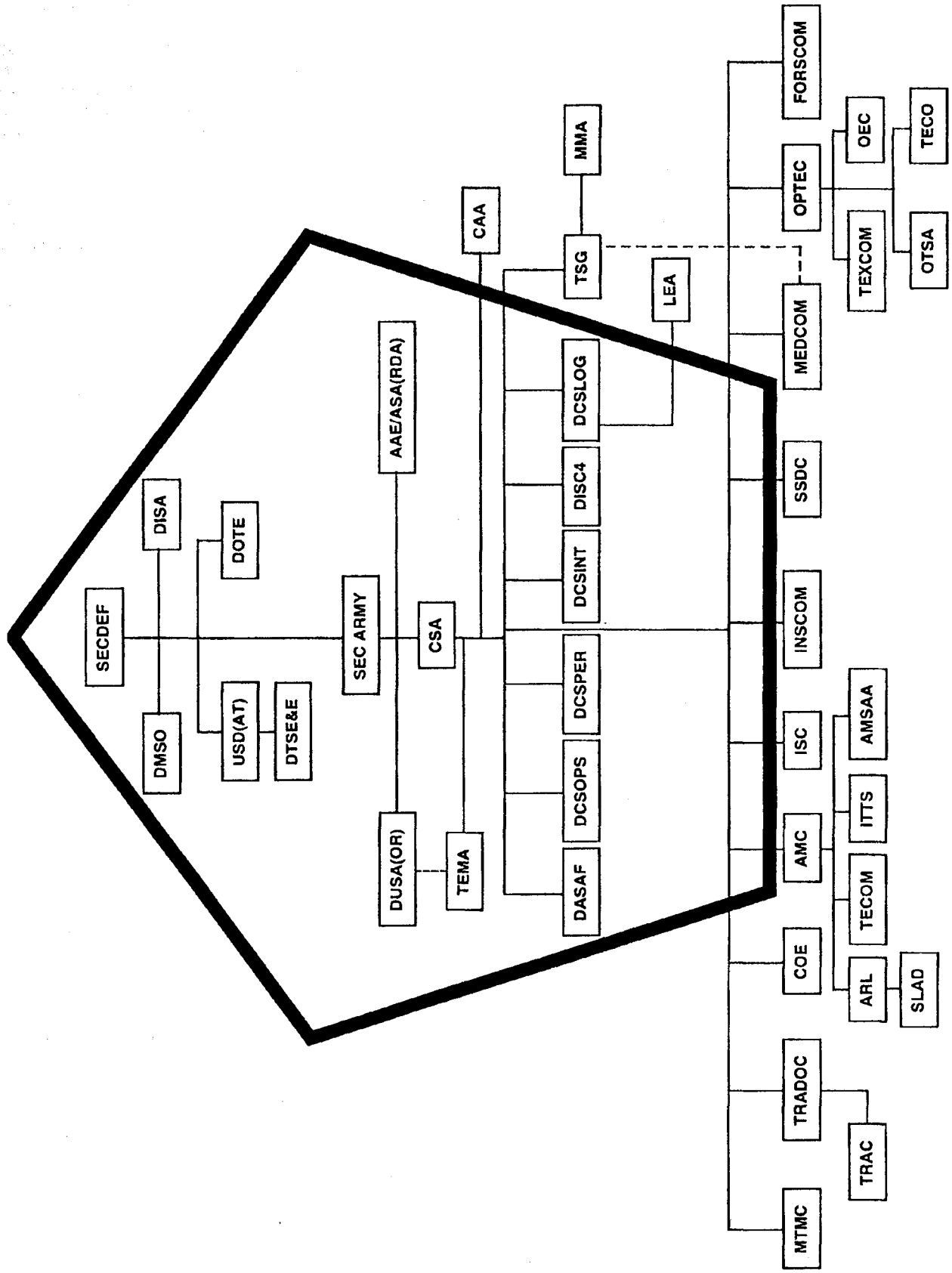

Figure 3-1. Test and evaluation functional interactions

Chapter 4
Test and Evaluation in Support of the Materiel Acquisition Process (MAP)

Section I
Introduction

4–1. Determination of mission needs

a. T&E is an essential activity in support of the Materiel Acquisition Process (MAP). It plays a key role in the life cycle of Army materiel systems, providing information that assists in selecting, acquiring, using, and disposing of Army materiel. T&E is inherent in the technology base activities that provide new technologies to be exploited. It is used to support the selection of best solutions to satisfy a mission area deficiency. It verifies that the Army is designing, developing, producing, and stockpiling materiel that satisfies the users' needs; and it assists in ensuring that materiel which is no longer usable can be disposed of safely.

b. Comprehensive developmental and operational T&E, to include use of other previously run test results and modeling and simulation, shall be conducted on all materiel systems. Early detailed T&E planning is critical to meaningful evaluations and assessments, as well as to successfully developing the system. The T&E strategy shall specify the impact on risk of the technologies and processes selected for system development during the entire life cycle of the system.

c. Developmental test and evaluation (DT&E) shall be planned and incorporated into the materiel system's development process to verify conformity to contract specifications and critical technical parameters in order to meet technical objectives and requirements.DT&E shall encompass all aspects of the system hardware, software, performance, integrated logistics support (ILS), survivability, safety, human factors engineering (HFE), users' manuals, training material, interfaces, compatibility, and interoperability with existing or planned systems. DTs generally require instrumentation and measurements. Engineers, technicians, or soldier operator-maintainer test personnel perform DTs. Operational test and evaluation (OT&E) shall examine system effectiveness and under operationally realistic conditions when the system is operated by typical users. In addition, the OT&E should address the system's compatibility and interoperability with users and other systems.

d. Continuous evaluation (CE) as discussed in chapter 2 is a major ingredient in the T&E which supports the MAP. It should begin as early as the battlefield functional mission area analysis and continue through the materiel system's post-deployment activities.

e. This chapter provides a comprehensive and chronological listing of T&E activities from which an efficient and effective T&E strategy can be built for a given materiel system. It is not intended that all programs include all activities. The T&E strategy selected should be commensurate with the degree of complexity and maturity of the program.

f. The phases and milestones for the life-cycle system management model (LCSMM) for materiel systems is illustrated in figure 4–1.

4–2. Pre-Milestone 0 Phase (Determination of Mission Need Activities)

All acquisition programs are based on identifying mission needs. A mission need may be to establish a new operational capability or to improve an existing capability. The USATRADOC Battle Labs (see AR 73–1) may be employed during this phase to experiment with changing methods of warfare, which focuses doctrine, training, leader development, organization design, materiel, and soldier systems on battlefield dynamics. The Battle Labs conduct appraisals of critical operational capability requirements needed to meet the changing nature of warfighting captured in the battlefield dynamics. If a mission need cannot be satisfied by a nonmateriel solution (that is, changes in doctrine, operational concepts, tactics, training, and organization), then a Mission Need Statement(MNS) is developed. The MNS is a broad statement of mission need, expressed in terms of an operational capability rather than a system-specific solution. This phase ends at Milestone 0 (MS 0), which formally approves the MNS.

a. Key events. In this phase, the Combat Developer (CBTDEV) determines whether a mission deficiency or an opportunity to improve an existing system is important enough to warrant further analysis and development of a system. The CBTDEV ensures that proper planning and evaluation are successfully carried out. Key activities associated with the determination of mission needs process are depicted in figure 4–2.

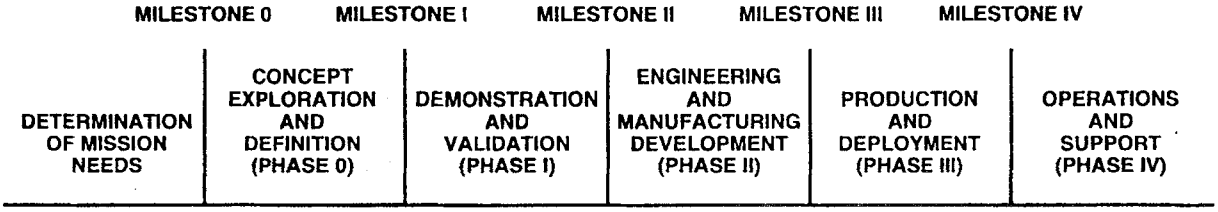

Figure 4-1. Life cycle management model for materiel systems

DETERMINATION OF MISSION NEEDS
KEY ACTIVITIES

- Identification of mission deficiencies or improvement opportunites.
- Evaluation of nonmateriel solutions to satisfy mission deficiencies.
- Development of MNS if nonmateriel solutions are not feasible.

Figure 4-2. Determination of mission needs key activities

b. T&E activities. T&E activities during this phase usually involve the evaluation of nonmateriel solutions to satisfy an identified mission need. The CBTDEV, assisted by the independent operational evaluator, may utilize the Battle Labs to execute Advanced Warfighting Experiments (AWEs) to support a Concept Evaluation Program (CEP) to aid in this evaluation. The CEP can provide the CBTDEV with a quick reaction and simplified process to examine and resolve combat development, doctrinal, and training issues. Within a CEP, tests may be executed to provide experimental databases for an MNS and subsequent requirements documents. In addition, a Force Development, Test, and Experiment (FDTE) may be conducted to support the development of concepts and doctrine, training, and organizations not specifically tied to a materiel system acquisition. Coordination should also be effected with the DT&E community to facilitate early T&E planning, possible support to FDTE, and documentation preparation.

c. Continuous evaluation activities. The CBTDEV, assisted by the independent operational evaluator, should evaluate the merits of a nonmateriel solution to satisfy an identified mission need. If AWEs, CEP tests, or FDTEs are conducted, test reports are to be written and provided to the CBTDEV. The CBTDEV should also assist in developing any exit criteria that may be presented at MS I.

4–3. Milestone 0 T&E Requirements

The MNS must be developed and submitted to the milestone decision authority for approval.

Section II
T&E Activities During the Concept Exploration and Definition Phase (Phase 0)

4–4. Phase 0 Activities

A successful MS 0 decision allows the program to advance into the Concept Exploration and Definition Phase (Phase 0).Approval at MS 0 allows for the study of alternative concepts to meet the need identified in the MNS. Phase 0 explores various materiel alternatives in satisfying the documented mission need.USATRADOC Battle Labs can, through the use of AWEs, facilitate integrated requirements definition and, when conducted concurrently with concept development, can streamline the process of fielding new capabilities.

a. Key acquisition events. The key acquisition activities conducted during this phase are depicted in figure 4–3.

b. T&E activities. T&E planning will formally begin in this phase.Appropriate T&E shall be accomplished and documented in test and evaluation reports and the TEMP to assist in selecting the preferred alternative system concept, associated technologies, and designs.In particular, the use of modeling and simulation is encouraged in this phase to aid in assessing alternatives. T&E will provide data for concept evaluation of a potential requirement, tactics, doctrine, organization, training, transportability, and logistic support for the preferred system concept; identify and assess high risk areas, critical components and subsystems; establish safety for operational testing; and assess the operational impact of the preferred concept. Figure 4–4 illustrates the typical T&E planning, execution, and reporting activities conducted during this phase.

(1) Planning.

(a) The TIWG shall be established upon receipt of the approved MNS. It will be chaired by the PM, or by the appropriate MATDEV until a PM has been chosen (see chap 8). A draft Operational Requirements Document (ORD) will be prepared and used with the System Threat Assessment Report (STAR) to assist in developing the initial COIC and preliminary TEMP. The TIWG will also contribute to the T&E portions of the AS, the RFP, and other supporting documentation for decision authority approval at MS I. Special efforts should be made by the TIWG membership to characterize the realistic environment of the proposed system, including organizational structures, skill levels, manpower requirements, threat, mobility and deployability requirements, climatic extremes, electromagnetic environmental effects, and concepts of operation and maintenance.

(b) The acquisition team, or PM (if designated, coordinates all facilities and initiate necessary test technology activities. This coordination facilitates the generation of the DT requirements as well as determining the extent and nature of contractor services, if required. This decision and rationale will be documented in the TEMP.

(c) Developmental and operational testing will be planned to provide data to support evaluations of the system in its intended environment. As early as possible in this phase, the independent developmental evaluator or assessor shall develop an Independent Evaluation Plan (IEP) or Independent Assessment Plan (IAP) to support the developmental evaluation of the proposed system during this phase. Typical developmental tests include technical feasibility tests, which assist in determining safety and the establishment of proposed system performance specifications. Test Design Plans (TDPs) will be developed for these tests by the independent developmental evaluator, and Detailed Test Plans (DTPs)will be developed for these tests by the developmental tester.Typical operational tests may include CEP tests and FDTEs.

(2) Execution. Technical feasibility tests, CEP tests, and FDTEs shall be executed by the appropriate testers in accordance with the approved test plans.

(3) Reporting. After each DT, the developmental tester writes a test report (TR) and provides it to the independent developmental evaluator or assessor for use in developing the Independent Evaluation Report (IER) or Independent Assessment Report (IAR). The independent operational tester shall prepare TRs for each CEP test and FDTE. An Early Operational Assessment (EOA) or Abbreviated Operational Assessment (AOA) may be used by the independent operational evaluator to provide a status of the system in support of MS I.

c. Continuous evaluation activities. Figure 4–5 contains the CE activities to be conducted during this phase.

CONCEPT EXPLORATION AND DEFINITION
Phase 0
KEY ACQUISITION ACTIVITIES

- Definition and evaluation of the feasibility of alternative concepts.
- Definition of the most promising system concept.
- Establish a proposed Concept Baseline.
- Development of a proposed acquisition strategy for the most promising concept.
- Development of key system characteristics and operational constraints.
- Development of proposed program-specific exit criteria that must be accomplished during Phase I.

Figure 4-3. Key acquisition activities

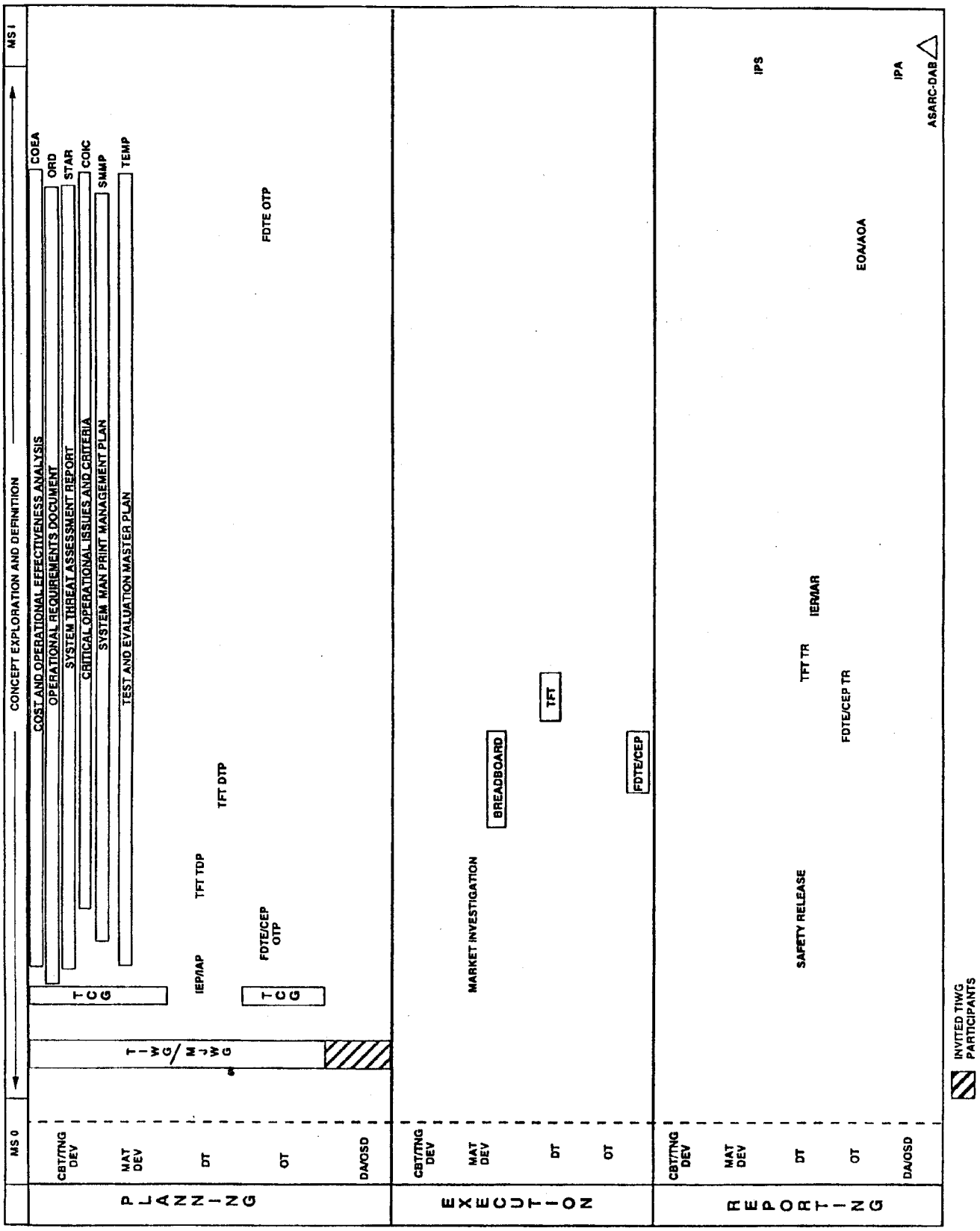

Figure 4-4. Phase O concept exploration and definition

CONTINUOUS EVALUATION (CE) ACTIVITIES DURING
CONCEPT EXPLORATION/DEFINITION
Phase 0

- Participate in the TIWG.
- Assist in selecting the preferred alternative to resolve mission area deficiencies.
- Participate in ORD development efforts.
- Support the initial COIC development and approval process.
- Assist in developing system characteristics and exit criteria.
- Participate in development, staffing, and approval of the TEMP.
- Plan and execute all required developmental and operational tests.
- Develop and provide developmental IER or IAR to appropriate decision makers.
- Develop and provide EOA or AOA to support MS I decision.

Figure 4-5. Continuous evaluation activities during phase 0

MILESTONE I T&E REQUIREMENTS

- Draft ORD.
- Approved initial COIC.
- Preliminary TEMP.
- Developmental IER or IAR; EOA or AOA.

Figure 4-6. Milestone I test and evaluation requirements

4–5. Milestone I T&E Requirements

Figure 4–6 contains the T&E requirements to support MS I.

Section III
T&E Activities During the Demonstration and Validation Phase(Phase I)

4–6. Phase I activities

Approval at MS I establishes a new acquisition program and Concept Baseline, and authorizes entry into the Demonstration and Validation Phase (Phase I). The key objective of Phase I is to demonstrate that the technologies critical to the most promising concept can be incorporated into the system design.

a. Key acquisition events. The key acquisition activities conducted during this phase are depicted in figure 4–7.

b. T&E activities. T&E conducted in this phase includes DT of prototypes and early operational assessments of critical systems, subsystems, and components. Developmental T&E will assist in identifying and reducing design risk and indicate the degree to which new or emerging technologies pose a risk to the program. Operational T&E will assess the degree to which the selected design approach will operate in the intended operational environment. Appropriate T&E shall be accomplished and documented in test and evaluation reports and the TEMP. The use of modeling and simulation is strongly recommended in this phase to aid in the assessments. T&E will also be conducted to address doctrine, training,

organization, leader development, materiel requirements and logistics support aspects of the system using surrogate systems if necessary. T&E shall produce information with which to establish realistic program performance and suitability thresholds. Figure 4–8 illustrates the typical T&E planning, execution, and reporting activities conducted during this phase.

(1) Planning.

(a) The TIWG should be expanded as necessary to include the appropriate subgroups, and interfaces with other working groups should be established (see chap 8). In particular, the Live Fire Test and Evaluation Working Group (LFTEWG) is an example of a key working group with which the TIWG must interface during this time.TIWG meetings should be held often, preferably prior to execution of each test to ensure that test details are integrated and problems resolved. The update of the COIC and TEMP to support MS II can be conducted during these TIWGs, or at specially designated TIWGs. The ORD and STAR will be updated, and shall be used by the TIWG in the updating of the COIC and TEMP. The TIWG can assist in the update of such other documents as the System MANPRINT Management Plan (SMMP)and the Integrated Logistics Support Plan (ILSP). The TIWG will continue to contribute to the T&E portions of the AS, the RFP, and other supporting documentation for decision authority approval at MS II. Sufficient funds will be programmed early by the program manager to ensure that adequate prototypes and ancillary equipment and components (that is, training devices, ground support equipment, physical structures, ammunition to test systems, field maintenance test sets, targets, simulators, stimulators, models and instrumentation) are available and adequately tested. Outline Test Plans (OTPs) must be developed and participation in the Test Schedule and Review Committee (TSARC) is required if the planned testing requires user troops and resources (see AR 15–38).

(b) Developmental and operational testing will be planned to provide data to support evaluations of the system in its intended environment. As early as possible in this phase, the existing developmental IEP or IAP should be updated to reflect information resulting from Phase 0 T&E activities and the MS I decision review.Typical developmental tests include engineering development tests(EDTs), which provide data on safety, the achievability of critical technical parameters, refinement and ruggedization of hardware configurations, and determination of technical risks. TDPs will be developed for these tests by the independent developmental evaluator, and DTPs will be developed for these tests by the developmental tester. Typical operational tests include Early User Test and Experiments (EUTEs) and, if necessary, FDTEs. Operational Test Readiness Reviews (OTRRs) and Operational Test Readiness Statements (OTRSs) are required before the start of each EUTE. The independent operational evaluator and operational tester jointly develop a Test and Evaluation Plan (TEP) for each EUTE in this phase.

(2) Execution. EDTs, EUTEs, and FDTEs shall be executed by the appropriate testers in accordance with the approved test plans. All required support packages must be developed and in place before test execution (see chap 9).

(3) Reporting. After each DT, a test report (TR) shall be written by the developmental tester and provided to the independent developmental evaluator or assessor for use in developing the Independent Evaluation Report (IER) or Independent Assessment Report(IAR). A TDR/TR will be written after the conduct of each EUTE/FDTE by the independent operational tester. An EOA, AOA, or Operational Assessment (OA) will be used by the independent operational evaluator to provide a status of the system in support of MS II. MS II decisions to commit funds for production of long-lead items or low-rate initial production (LRIP) must be supported by an EOA, AOA, or OA.

c. Continuous evaluation activities. Figure 4–9 contains the CE activities to be conducted during this phase.

DEMONSTRATION AND VALIDATION
Phase I
KEY ACQUISITION ACTIVITIES

- **Better define the critical design characteristics and expected capabilities of the system concept.**
- **Refinement of the AS.**
- **Establish a proposed Development Baseline.**
- **Development of proposed program-specific exit criteria that must be accomplished during Phase II.**
- **Determine plan for committing to low-rate initial production.**

Figure 4-7. Phase I key acquisition activities

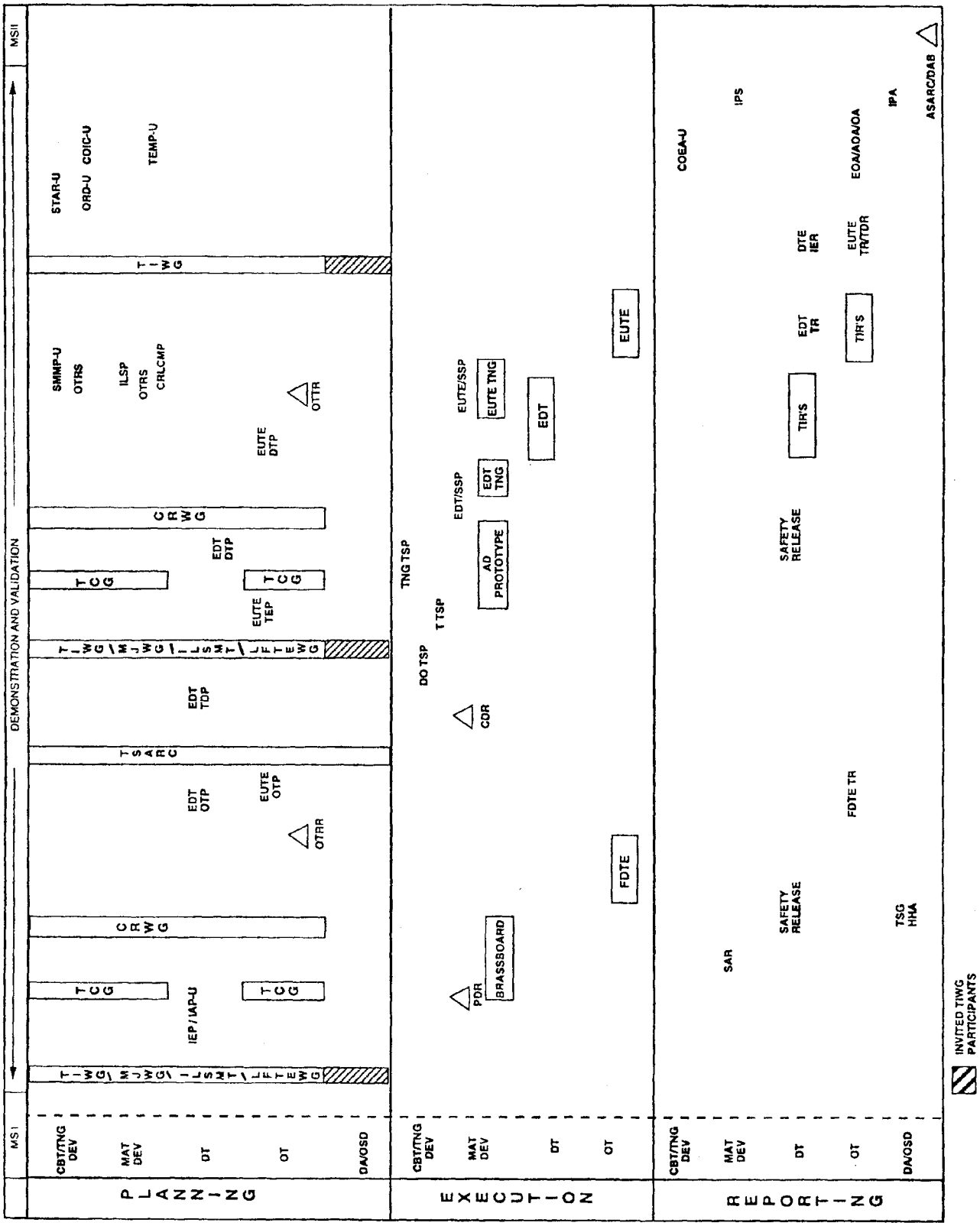

Figure 4-8. Phase I, demonstration and validation

CONTINUOUS EVALUATION (CE) ACTIVITIES DURING
DEMONSTRATION AND VALIDATION
Phase I

- Continued participation in the TIWG.
- Support the COIC update and approval process.
- Support the ORD update and approval process.
- Participate in the update, staffing, and approval of the TEMP.
- Support COEA update efforts.
- Assist in the development of exit criteria.
- Plan and execute all required developmental and operational tests.
- Develop and provide developmental IER or IAR to appropriate decision makers.
- Develop and provide EOA, AOA, or OA to support intermediate decision and MS II decision.

Figure 4-9. Continuous evaluation activities during Phase I

MILESTONE II T&E REQUIREMENTS

- Updated ORD.
- Updated COIC.
- Updated TEMP.
- Developmental IER or IAR; EOA, AOA, or OA.

Figure 4-10. Milestone II T&E Requirements

4–7. Milestone II T&E Requirements

Figure 4–10 contains the T&E requirements to support Milestone II. Section IV T&E Activities During the Engineering and Manufacturing Development Phase (Phase II)

4–8. Phase II Activities

Approval at MS II authorizes entry into the Engineering and Manufacturing Development Phase (Phase II). The key objective of Phase II is to translate the design approach developed in Phase I into a stable, producible, and cost-effective design.

a. Key acquisition events. The key acquisition activities conducted during this phase are depicted in figure 4–11.

b. T&E activities. During this phase, the system (including necessary training devices, threat simulators, test equipment, and computer resources)is engineered, integrated, tested, evaluated, and documented to assure that the system design is stable, the system meets contract specifications and technical parameters, is operationally effective and suitable in its operational environment, meets user requirements, and is ready for production. T&E is conducted on prototype, production-representative, or production systems. Both developmental and operational tests are conducted during this phase.Developmental testing ascertains whether engineering is complete(including design and maintenance engineering), identifies design problems, recommends redesign, ascertains that solutions are in hand, supports decision makers and provides recommendation as to readiness of the system to enter OT. It reduces design risks, supports the evaluation of the critical technical parameters, establishes contractual compliance, provides information for the type classification determination, and validates general and detailed specifications, standards, and drawings for use in production. Operational testing determines the degree to which the system is operationally effective and suitable. The system design must be sufficiently mature to provide adequate support packages for testing, and to ensure that the system tested is representative of the production system to enable valid assessments of the system which is expected to be produced. If a low-rate initial production(LRIP) decision was made at MS II, then this phase may see the delivery of production systems for use in the IOT. Figure 4–12 illustrates the typical T&E planning, executing, and reporting activities conducted in this phase.

(1) Planning.

(a) As this phase is the most test-intensive phase of the acquisition process, TIWGs should be held often, preferably prior to the

execution of each test to ensure the test details are integrated and problems are resolved (see chap 8). If necessary, updates of the ORD, STAR, and COIC will support the TEMP update, which can be conducted during these TIWGs, or at a specially designated TIWG.The TIWG should assist in the update of such other documents as the System MANPRINT Management Plan (SMMP) and the Integrated Logistics and other supporting documentation for decision authority approval at MS III. Outline Test Plans (OTPs) must be developed and participation in the Test Schedule and Review Committee (TSARC) is required if the planned testing requires user troops and resources(see AR 15–38).

(b) Developmental and operational testing will be planned to provide data to support evaluations of the system in its intended environment. As early as possible in this phase, the existing developmental IEP or IAP should be updated to reflect information resulting from Phase I T&E activities and the MS II decision review.Typical developmental tests include production-proveout tests(PPTs), live-fire tests (for designated systems), logistics demonstrations, and the Production Qualification Test (PQT). Also, for C3I systems having interfaces or interoperability requirements with other systems, interoperability certification testing may be required. TDPs will be developed for each DT by the independent developmental evaluator or assessor, followed by the DTPs written by the developmental tester. Developmental Test Readiness Reviews(DTRRs) shall be conducted, and the PM shall formally certify via the Developmental Test Readiness Statement (DTRS) that the system is ready for the PQT to be conducted. Typical operational tests include Limited User Tests (LUTs) and the Initial Operational Test(IOT). FDTEs may also be conducted in this phase. Except for FDTEs, the independent operational evaluator and operational tester will develop a TEP for each operational test in this phase, and OTRRs and OTRSs are required prior to the start of each test. The Director, Operational Test and Evaluation (DOT&E), Office of the Secretary of Defense (OSD), will approve adequacy of IOT test plans for the OSD oversight systems prior to conduct of the test.

(2) Execution. The PPT can consist of a series of tests on less than system-level components, or on early prototypes of the complete system. These tests should be tailored to meet the needs of the specific program. The PQT is the principal developmental test in this phase, serving as the final developmental test prior to the IOT. The C3I interoperability certification test consists of simple demonstrations using message analysis or parsing software with limited interface connectivity, or extend to full-scale scenario-driven exercises with all interfaces connected. The IOT must be conducted on production or production-representative systems to support independent evaluation of the system's operational effectiveness and suitability. The system tested must be sufficiently representative of the expected production system to ensure that T&E validity supports the production decision.

(3) Reporting. After each DT, the developmental tester writes a test report (TR) and provides it to the independent developmental evaluator or assessor to use in developing the IER or IAR. The operational tester will prepare a TR after conduct of the FDTE. A Test and Evaluation Report (TER) will be developed by the independent operational evaluator after conduct of the IOT to provide a status of the system in support of MS III. Reports for Limited User Tests (LUTs) that are designed as less than full Initial Operational Test Evaluation (IOTE) equivalents may be reported by operational assessments (OAs) in lieu of a TER. An OA will be used by the independent operational evaluator to report on system status at intermediate decision reviews, or where a particular test is ongoing and results are incomplete.

c. Continuous evaluation activities. Figure 4–13 contains the CE activities to be conducted during this phase.

4–9. Milestone III T&E Requirements

Figure 4–14 contains the T&E requirements to support MS III.

Section V
T&E Activities During the Production and Deployment, and Operations and Support Phases (Phases III and IV)

4–10. Phase III and Phase IV Activities

A favorable MS III decision represents approval to build, deploy, and support the system, and authorizes entry into the Production and Deployment Phase (Phase III). The key objective of Phase III is to establish a stable, efficient production and support base, and achieve an operational capability for the system which satisfies the mission need. If a major modification or upgrade is warranted as a result of T&E conducted in Phase III, an MS IV(Major Modification Approval) review will be held. Otherwise, Phase III transitions smoothly into the Operations and Support Phase (Phase IV) without an intervening milestone.

a. Key acquisition events. The key acquisition activities conducted during these phases are depicted in figure 4–15.

ENGINEERING AND MANUFACTURING
DEVELOPMENT
Phase II
KEY ACQUISITION ACTIVITIES

- Validate the manufacturing and production process.
- Refinement of the AS.
- Establish a proposed Production Baseline.
- Establish system configuration baseline.
- Demonstrate through testing that system capabilities meet contract specifications, satisfies the mission need, and meets the minimum acceptable operational performance requirements.
- Demonstrate that the low-rate initial production provides assurance that the design is stable and capable of being produced efficiently.
- Development of proposed program-specific exit criteria that must be accomplished during Phase III, if appropriate.

Figure 4-11. Phase II key acquisition activities

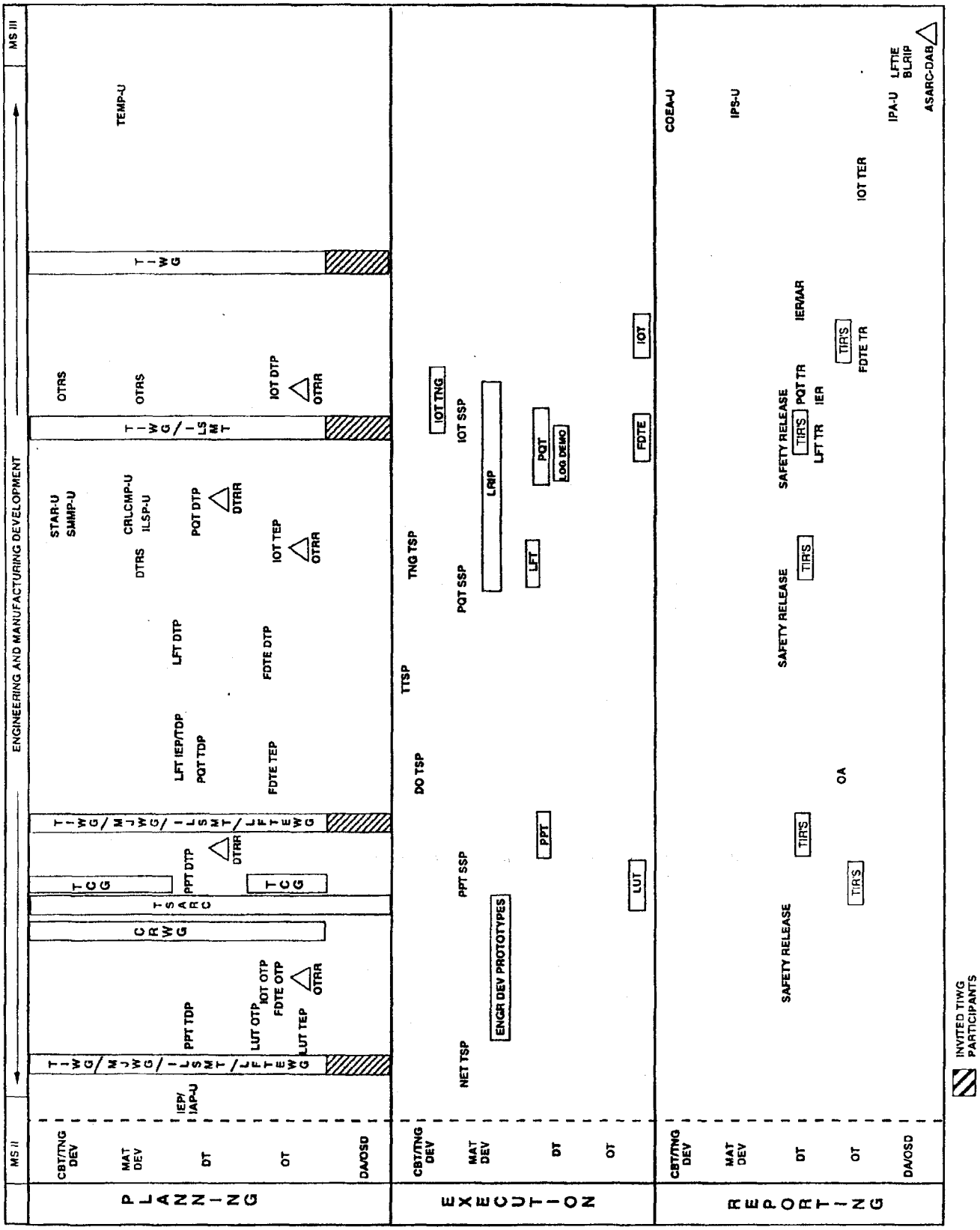

Figure 4-12. Phase II engineering and manufacturing development

CONTINUOUS EVALUATION (CE) ACTIVITIES DURING
ENGINEERING AND MANUFACTURING DEVELOPMENT
Phase II

- Continued participation in the TIWG.
- Support the COIC update and approval process.
- Support the ORD update and approval process (if appropriate).
- Participate in the update, staffing, and approval of the TEMP.
- Support COEA update efforts.
- Assist in the development of exit criteria, if appropriate.
- Plan and execute all required developmental and operational tests.
- Develop and provide developmental IER or IAR to appropriate decision makers.
- Develop and provide operational TER to support MS III decision, and OAs to support intermediate decision reviews.

Figure 4-13. Phase II engineering and manufacturing development

MILESTONE III T&E REQUIREMENTS

- Updated ORD, if appropriate.
- Updated COIC.
- Updated TEMP.
- Developmental IER or IAR; Operational TER and OA.

Figure 4-14. Milestone III requirements

PRODUCTION AND DEPLOYMENT
Phase III
OPERATIONS AND SUPPORT
Phase IV
KEY ACQUISITION ACTIVITIES

- Update configuration baseline.
- Refinement of cost information.
- Through testing, confirm and monitor performance and quality and verify correction of defieciencies.
- Ensure the fielded system continues to provide the capabilities required to meet the identified mission need.
- Identify the need for major upgrades to the system currently in production that require a MS IV, Major Modification Approval, review.

Figure 4-15. Phase III and IV key acquisition activities

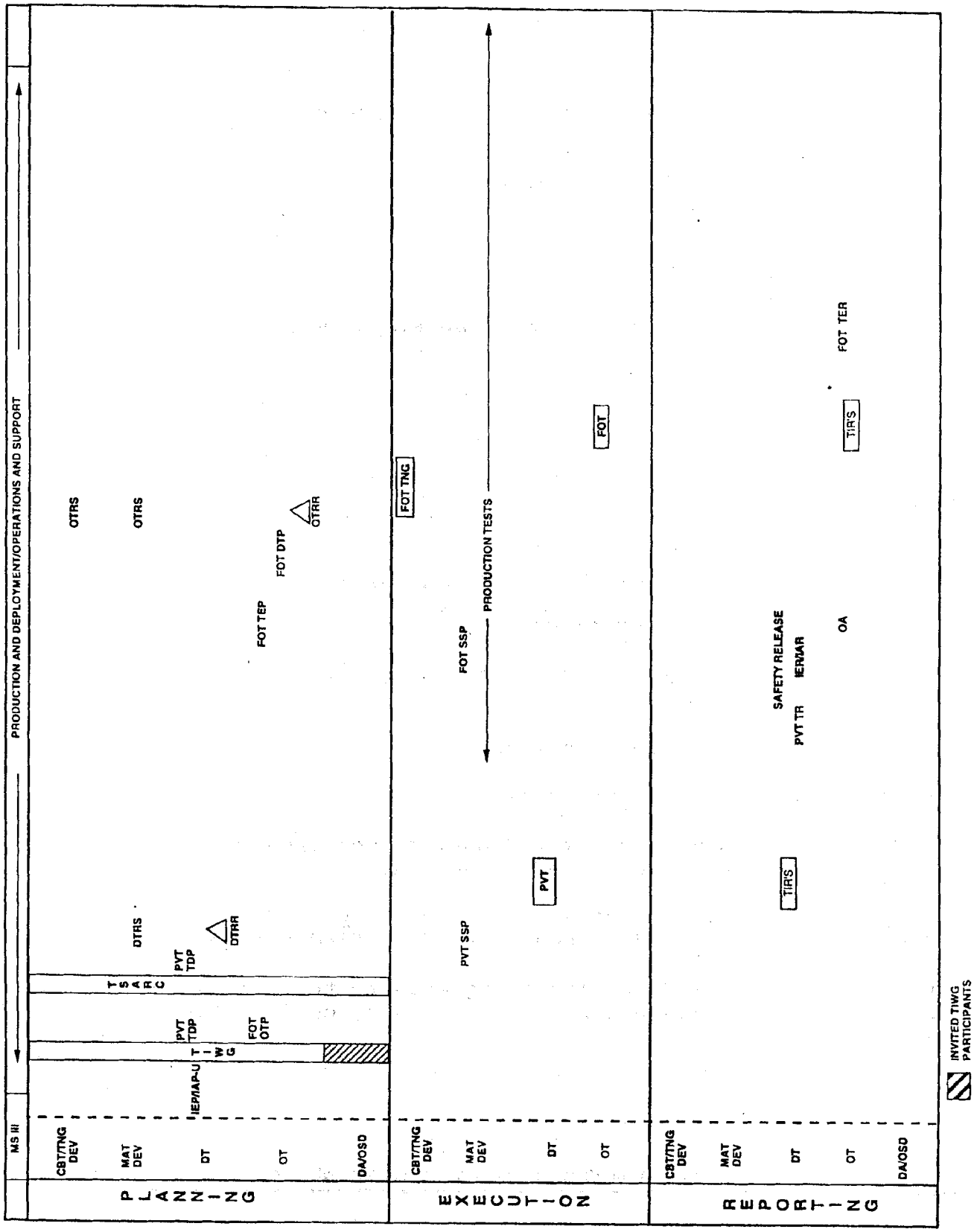

Figure 4-16. Phase III production and deployment/Phase IV operations and support

CONTINUOUS EVALUATION (CE) ACTIVITIES DURING
PRODUCTION AND DEPLOYMENT
Phase III
OPERATIONS AND SUPPORT
Phase IV

- Continued participation in the TIWG.
- Plan and execute all required developmental and operational tests.
- Develop and provide developmental IER or IAR to appropriate decision makers.
- Develop and provide operational TER and OAs to support intermediate decision reviews.
- Assist in the identification of deficiencies which may warrant a MS IV (Major Modification Approval) review.

Figure 4-17. Continuous evaluation activities during Phases III and IV

b. T&E activities. T&E shall be an integral part of the acceptance and introduction of system changes to improve the system, react to new threats, and reduce life-cycle costs. Production verification testing and follow-on operational testing will be conducted to confirm and monitor performance and quality and to verify the correction of deficiencies. These tests include testing on the complete system necessary to verify that requirements specified in the technical data packages and the production contracts for hardware or software are met. Production testing also provides a baseline for follow-on post-production testing. Feedback of test data, including sample data collection, is required to assess the as-built quality of the production items and to determine the need to change test methodology, equipment, and facilities. Figure 4–16 illustrates the typical T&E planning, executing, and reporting activities conducted in these phases.

(1) Planning. TIWG meetings should be held often, preferably before each test is executed to ensure the test details are integrated and problems are resolved (see chap 8). Outline Test Plans (OTPs) must be developed and participation in the TSARC is required if the planned testing requires user troops and resources(see AR 15–38). DT and OT will be planned to provide data to support evaluations of the system in its intended environment. As early as possible in Phase III, the existing developmental IEP or IAP should be updated to reflect information resulting from Phase II T&E activities and the MS III decision review. Typical developmental tests in Phase III include the Production Verification Test (PVT), follow-on production tests, comparison tests, quality conformance inspections, C3I interoperability recertification tests, and testing to support Post-Deployment Software Support(PDSS). TDPs will be developed, when applicable, for each test by the independent developmental evaluator or assessor, followed by the DTPs written by the developmental tester. DTRRs may be conducted to certify that the system is ready for the PVT to be conducted. DT in Phase IV consists of post-production testing, a follow-on to production testing, and includes those surveillance and reconditioning tests required to measure the ability of materiel in the field, in storage, and after maintenance actions (to include repair, rebuild, retrofit, overhaul, and modifications) to meet user requirements. The typical operational test conducted in Phase III is the Follow-on Operational Test (FOT). The independent operational evaluator and tester develop a TEP for the FOT. OTRRs and OTRSs are required before beginning a FOT. Operational testing may not be required during Phase IV. Results of Army Training and Evaluation Programs (ARTEP), Field Training Exercises (FTX), Return of Forces to Germany (REFORGER), and Sample Data Collection (SDC), are all sources of information which the independent operational evaluator can use to continually monitor the systems' ability to meet the identified mission need.

(2) Execution. The PVT is the principal DT in Phase III. PVTs are system-level tests conducted to verify that the production item meets critical technical parameters and contract specifications, to determine the adequacy and timeliness of any corrective action indicated by previous tests, and to validate the manufacturer's facilities, procedures, and processes. The PVT will also provide a baseline for the test requirements in the TDP for post-production testing. Follow-on PVTs may be conducted as necessary if the production process or design is significantly changed or to verify the adequacy and timeliness of corrective actions indicated by the PVT. Comparison tests and quality conformance (acceptance)inspections may be conducted to verify that the contractor can manufacture an item which meets the TDP in a production environment.The interoperability recertification test for C3I systems is conducted if major hardware and software modifications to the C3I system have been made that impact on previously established joint interface requirements. DTs in support of PDSS for software intensive materiel systems parallel those described for Pre-MSIII, but are usually abbreviated based on the number, magnitude, and complexity of the modifications or maintenance. The FOT, the principal operational test conducted during this phase, shall be conducted as necessary to ensure that the production version of the performance and reliability improvement, evidences correction of deficiencies identified during earlier tests, ensures that new problems have not been injected by the production process, and determines overall readiness of the system to be fielded. For software intensive systems, the FOT typically serves as the operational test in support of PDSS.

(3) Reporting. After each DT in Phase III, the developmental tester writes a TR and provides it to the independent developmental evaluator or assessor to use in developing the IER or IAR. A TER will be developed by the independent operational evaluator to provide a status of the system resulting from the FOT. An OA will be used by the independent operational evaluator to report on system

status at intermediate decision reviews, or if the FOT is ongoing and results are incomplete.

c. Continuous evaluation activities. Figure 4–17 contains the CE activities to be conducted during Phase III and Phase IV.

4–11. Milestone IV T&E Requirements

A MS IV, Major Modification Approval, review is required only if major upgrades to the system currently in production are warranted. This need may be brought about by a change in the system's threat, a major deficiency identified during FOT or operational training and support, or by an opportunity to reduce the cost of ownership. If a major modification program is approved, the milestone decision authority will determine which acquisition phase the program should enter (see DoDI 5000.2).

Chapter 5
Test and Evaluation in Support of the Information Mission Area

Life Cycle System Management Model

Section I
Start-up Test and Evaluation Activities

5–1. Overview

a. T&E is an essential activity in support of the acquisition of information systems, that incorporate information technology, whether they evolve, are acquired, or are developed. These information systems belong to the Information Mission Area (IMA)disciplines discussed in AR 25–3. T&E in support of the IMA life cycle process plays a key role in the information systems, providing data to assist in their selection, development, acquisition, use, maintenance and support. T&E strategies should be developed in order to support program strategies such as grand design, incremental, and evolutionary (see DoDI 8120.2). T&E is inherent in the activities that provide new information technologies to be exploited; it is used to support the selection of best solutions to satisfy an IMA deficiency; and it verifies that the Army is designing, developing, producing, deploying, and maintaining information systems that satisfy the users' needs.

b. Comprehensive developmental testing (DT) and operational testing (OT) shall be conducted on all information systems. Early detailed software T&E planning is critical to meaningful evaluations and assessments, as well as to the successful development of the system. The T&E strategy shall specify the impact on risk of the technologies and processes selected for system development during the entire life cycle of the system. Test methodologies shall include realistic software test environments and scenarios.

c. Developmental test and evaluation (DT&E) shall be planned and incorporated into the information system's development process to verify conformance to technical specifications and performance attributes to technical objectives and requirements. DT&E shall encompass the system hardware, software, code documentation, users manuals, training material, interfaces, compatibility, and interoperability with existing or planned systems. Operational test and evaluation (OT&E) shall examine system effectiveness and suitability under operationally realistic conditions when the system is operated by typical users. In addition, the OT&E should address the system's compatibility and interoperability with users and other systems.

d. Continuous evaluation (CE) as discussed in chapter 2 is a major ingredient of the T&E which supports the IMA acquisition process. It should begin as early as the Project Management Plan(PMP) process and continue through the system's post deployment activities.

e. Most large information systems are not fielded in one increment. Usually the program manager develops a block development and fielding strategy. Each block will require appropriate T&E to ensure that the acquisition objections are being met.

f. This chapter provides a comprehensive and chronological listing of T&E activities from which an efficient and effective T&E strategy can be built for a given information system. It is not intended that all programs include all activities. The T&E strategy selected should be commensurate with the degree of complexity and maturity of the program.

g. The phases and milestones for the life-cycle system management model for information systems are illustrated in figure 5–1.

5–2. Pre-Milestone 0 Activities

During this phase the mission need is defined, documented, and validated. This phase begins when a mission deficiency is identified or an opportunity is recognized to improve mission performance. This phase ends at MS 0, which formally approves the Mission Need Statement.

a. Key acquisition events. In this phase, the functional proponent (FP) determines whether a mission deficiency or an opportunity to improve an information system is important enough to warrant further analysis and development of a system. The FP ensures that proper planning and evaluation are successfully carried out. The key acquisition activities conducted during this phase are depicted in figure 5–2.

b. T&E activities. T&E is usually not conducted until after the MS I decision.However, in those cases where T&E may be applicable, T&E generally consists of demonstrations to assist in the identification of mission deficiencies; evaluation of the impact of the deficiencies on the performance of the mission; and evaluation of the impact of essential functional and technical constraints affecting potential alternative solutions.

c. Continuous evaluation activities. If applicable, CE activities during this phase consist of an evaluation of the impact of deficiencies on the performance of the mission.

5–3. Milestone 0 T&E Requirements

The MNS must be developed and submitted to the milestone decision authority for approval.

5–4. Phase 0 Activities

A successful MS 0 decision allows the program to advance into the Concept Exploration and Definition Phase (Phase 0). Phase 0 identifies and evaluates alternative functional and technical concepts that satisfy the approved MNS, and, based on the results of these evaluations, selects the best functional or technical concept.

a. Key acquisition events. The key acquisition activities conducted during this phase are depicted in figure 5–3.

b. T&E activities. Initial planning for T&E shall begin in this phase, including the establishment of requirements for independent T&E and quality assurance programs. Modeling and simulation, rapid prototyping, and any other techniques shall be considered to reduce program risks and future costs. Metrics for cost and schedule shall be developed and integrated into the T&E strategy. In those cases where T&E is necessary, it will support the evaluation of alternative concepts that satisfy the approved MNS and support the selection of the best functional or technical concept. Figure 5–4 illustrates the typical planning, execution, and reporting activities conducted during this phase.

(1) Planning. The PM shall establish the TIWG during this phase (see chap 8). The functional description (FD) will be developed and used together with the MNS to develop and finalize initial COIC. The preliminary TEMP will also be developed by the TIWG. T&E planning will be incorporated in the acquisition strategy, the System Decision Paper (SDP), and other supporting documentation for the milestone decision review for MS I.

(2) Execution. Typically no developmental or operational testing is conducted during this phase.

(3) Reporting. If appropriate, an Early Operational Assessment(EOA) or Abbreviated Operational Assessment (AOA) may be required to assess the potential of the selected concept with respect to operational effectiveness and suitability.

c. Continuous evaluation activities. Figure 5–5 contains the CE activities to be conducted during this phase.

5–5. Milestone I T&E Requirements

Figure 5–6 contains the T&E requirements to support MS I.

Section IV
T&E Activities During the Demonstration and Validation Phase(Phase I)

5–6. Phase I Activities

A successful MS I decision allows the program to advance into the Demonstration and Validation Phase (Phase I). The purpose of Phase I is to complete the technical specifications of the information system and to validate the selected system design.Commercial-off-the-shelf (COTS) software may be considered during this phase to support the selected acquisition strategy.Consequently, the associated T&E strategy should consider commercially available benchmarks in order to develop the most efficient test strategy possible.

a. Key acquisition events. The key acquisition activities conducted during this phase are depicted in Figure 5–7.

b. T&E activities. T&E will support the completion of the technical specifications and support those remaining demonstration and prototyping activities. Adequate T&E shall be accomplished to complete the identification of the technical risks associated with the selected design, and shall establish realistic system performance and suitability thresholds. Modeling, simulation, and prototyping are encouraged to support an EOA or AOA prior to MS II.In addition to the metrics developed in the previous phase, metrics for computer resource utilization (CRU), software engineering environment (SEE), requirements traceability, and requirements stability shall be developed and integrated into the T&E strategy.Figure 5–8 illustrates the typical T&E planning, execution, and reporting activities conducted during this phase.

(1) Planning. TIWG meetings should be held as required to continue planning for developmental and operational T&E, and to update the TEMP in support of MS II. The FD will be finalized and used to update the COIC.

(2) Execution. Typically no developmental or operational testing is conducted during this phase.

(3) Reporting. An EOA or AOA, based on demonstrations, modeling, simulation, and other analytical techniques, will be provided by the independent operational evaluator in support of the MS II decision review.

c. Continuous evaluation activities. Figure 5–9 contains the CE activities to be conducted during this phase.

5–7. Milestone II T&E Requirements

Figure 5–10 contains the T&E requirements to support MS II.

Section V
T&E Activities During the Development Phase (Phase II)

5–8. Phase II Activities

A successful MS II decision allows the program to advance into the Development Phase (Phase II). The purpose of Phase II is to develop the information system, test the total system to ensure it satisfies the user's requirements, and to prepare the information system for deployment.

a. Key acquisition events. The key acquisition activities conducted during this phase are depicted in Figure 5–11.

b. T&E activities. T&E will be conducted during this phase to determine the degree to which the system meets technical specifications, meets user requirements, and to provide a valid estimate of the system's safety, operational effectiveness and suitability in the user environment in support of a MS III fielding decision. T&E may also include testing required to confirm that all deficiencies have been identified and that solutions to these problems are available. All remaining required software metrics shall be developed and integrated into the T&E strategy. TIWG meetings should be held as required to continue planning for developmental and operational T&E(see chap 8). Figure 5–12 illustrates the typical T&E planning, execution, and reporting activities conducted during this phase.

(1) Planning.

(a) As early as possible in this phase, the independent developmental evaluator shall develop an IEP to support the developmental evaluation of the system in this phase. Typical developmental tests include software development tests (SDT) and the software qualification test (SQT). Also, for C3I systems having interfaces or interoperability requirements with other systems, interoperability certification testing may be required (see chap 4).A TDP will be developed for the software qualification test, followed by the DTP, written by the developmental tester. DTRRs and DTRSs are required prior to execution of the software qualification test. Typical operational tests include the LUT and the IOT. The independent operational evaluator and the operational tester jointly develop a TEP for each operational test in this phase. OTRRs and OTRSs are required to verify that the system is ready for the IOT to be conducted.

(b) The SDT, SQT, and either the LUT or IOT form a testing sequence for an information system of specified functionality. If the acquisition strategy separates this system into multiple blocks of functionality, then this sequence is repeated for each resulting block. In this case, each iteration terminates with the LUT, with the exception of the last iteration during this phase, which terminates with the IOT. Otherwise, testing consists of only one iteration of the testing sequence and terminates with the IOT. TIWG meetings should be held as required to continue planning for developmental and operational T&E (see chap 8).

(c) The DOT&E will approve the adequacy of the IOT TEP for OSD MAISRC systems prior to the conduct of the test. The TEMP must be updated to support the MS III decision, and if necessary, the COICs are also updated. OTPs must be developed and participation in the TSARC process is required if the planned testing requires user troops and resources (see AR 15–38).

(2) Execution. Developmental tests in this phase include SDTs and the SQT. SDTs, which consist of unit or module tests and cycle or system tests, concentrate on the functional and technical correctness of the information system. Unit or module tests are executed on local testbed hardware using benchmark test files. Cycle or system tests involve testing the combination of linkage of units or modules into major processes. The SQT, a total system test, follows to validate the system on target hardware with user involvement. The developmental tester conducts this test using live data files supplemented with user-prepared data and executed on target hardware. The PM shall formally certify via the DTRS that the system is ready for the SQT to be conducted. In recognition of the need to make limited changes to software at the test site, the PM may negotiate a number of software drops with the operational tester and evaluator. It is also usual to leave an information system at the user site after a favorable LUT or IOT for use as a continuous evaluation testbed pending a formal fielding decision.The TIWG plans for this and documents it in the TEMP. A signed memorandum of agreement after completion of the test among the program manager, operational evaluator, and testing unit will confirm the use of the system as a testbed.

(3) Reporting. The developmental tester writes a TR after the SQT and provides it to the independent developmental evaluator for input into the IER. The independent operational evaluator shall write an OA after each LUT, and a TER after the IOT. An OA will be written if any operational test is incomplete or a review prior to MS III is requested. Before the MS III review, the results of testing shall confirm that all deficiencies have been identified;that solutions to these problems are available; and that the system tested is effective and suitable for its intended use.

c. Continuous evaluation activities. Figure 5–13 contains the CE activities to be conducted during this phase.

5–9. Milestone III T&E Requirements

Figure 5–14 contains the T&E requirements to support MS III.

Section VI
T&E Activities During the Production and Deployment, and Operations and Support Phases (Phases III and IV)

5–10. Phase III and Phase IV Activities

A successful MS III decision allows the program to advance into the Production and Deployment Phase (Phase III). The purpose of Phase III is to complete development of the objective system and field it according to the approved fielding plan. Transition into the Operations and Support Phase (Phase IV) occurs when program control is passed from the PM/MATDEV to the Operations Manager.There is no milestone required for this action. Phase IV objectives are to operate and maintain the system, evaluate its effectiveness and benefits, implement the short-term post deployment modernization plan, and plan for long-term modernization. The majority of Phase IV activities are in post deployment software support (PDSS).

a. Key acquisition events. The key acquisition activities conducted during these phases are depicted in Figure 5–15.

b. T&E activities. T&E will be conducted to support the completion of the objective system development; fielding and operation of the information system; evaluation of the effectiveness and benefits of the system; implementation of the short-term post deployment modernization plan; and the long-term existing modernization. T&E will also be conducted to support PDSS, by testing the modifications to and the maintenance of software in deployed systems. TIWG meetings should be held as required to continue planning for developmental and operational T&E (see chap 8). Figure 5–16 illustrates the T&E planning, execution, and reporting activities conducted during these phases.

(1) Planning.

(a) The independent developmental evaluator shall update the IEP to support the developmental evaluation of the system in these phases. As in Phase II, typical developmental tests during these phases are SDTs and the SQT, C3I interoperability recertification tests (see chap 4), and testing to support Post deployment Software Support (PDSS). Typical operational tests include the LUT and FOT, and a functional proponent-conducted user acceptance test (UAT)which is limited in scope relative to the FOT. As in Phase II, the appropriate developmental and operational test planning documentation shall be written and reviews conducted.

(b) In those cases where the system acquisition strategy calls for the fielding of additional blocks of functionality, the SDT, SQT, and either the LUT or FOT form the testing sequence. This sequence is repeated for all additional blocks. In this case, each iteration terminates with the LUT, with the exception of the final iteration, which terminates with the FOT. Otherwise, testing consists of only one iteration of the testing sequence and terminates with the FOT.

(c) The PDSS implementations of these tests involve iterations of sequences of testing as described in (b) above, however, each iteration concludes with a UAT. These iterations test the current system change package (SCP) in progress and are intended to test only that functionality modified by each SCP. A Memorandum of Agreement (MOA) is developed prior to the UAT and used to document the major command acceptance after a favorable UAT. In those cases where a system modification creates significant operational effectiveness or suitability issues requiring independent operational evaluation, the test iteration concludes with an FOT or LUT as appropriate instead of an UAT.

(2) Execution. During both phases, a cycle consisting of SDT, SQT, UAT, and distribution to the user is repeated, one iteration per SCP. After the SDT, the PM shall certify that the system is ready for the software qualification test to be conducted. A readiness review is also held after the SQT to determine whether to proceed to the UAT, involving the PM, FP, tester, and evaluator.The UAT is replaced with an FOT or LUT in those situations where independent operational evaluation is needed. In recognition of the need to make limited changes to software at the test site, the PM may negotiate a number of software drops with the tester and evaluator. As in Phase II, the SCP is left at the user site after a favorable acceptance test pending the distribution of the change to all other sites. This action is documented when the MACOM attendees sign the MOA at the conclusion of the UAT.

(3) Reporting. The independent operational evaluator writes a TER if either an FOT or LUT is performed. Before the SCP is released, the results of testing shall confirm that all deficiencies have been identified; that solutions to these problems are available; and that the items or components actually tested are effective and suitable for their intended use.

c. Continuous evaluation activities. Figure 5–17 contains the CE activities to be conducted during this phase.

5–11. Milestone IV T&E Requirements

Figure 5–18 contains the T&E requirements to support MS IV. At MS IV, a decision is made to continue operation and support, modernize, or terminate the AIS. Depending on the decision, the information system re-enters the life cycle at either Phase 0 (modernize) or Phase IV (continue operation and support), or is terminated.

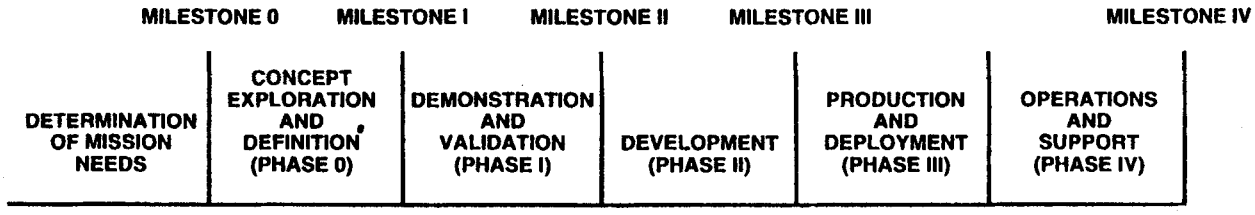

Figure 5-1. Life cycle management model for information systems

DETERMINATION OF MISSION NEEDS
KEY ACQUISITION ACTIVITIES

- Identification of mission deficiencies or improvement opportunites.
- Identification of essential functional, technical, and financial constraints and assumptions which affect potential alternative solutions.
- Integration of the results of these activities into the MNS.

Figure 5-2. Determination of mission needs key acquisition activities

CONCEPT EXPLORATION AND DEFINITION
Phase 0
KEY ACQUISITION ACTIVITIES

- Assessments of alternative functional and technical concepts.
- Selection of the best functional or technical concept to satisfy the mission need.
- Evaluation and selection of the appropriate acquisition strategy to implement the recommended program.
- Initial planning for the design, development, testing, deployment, training, maintenance, and modernization (if appropriate) of the proposed information system.

Figure 5-3. Phase 0 key acquisition activities

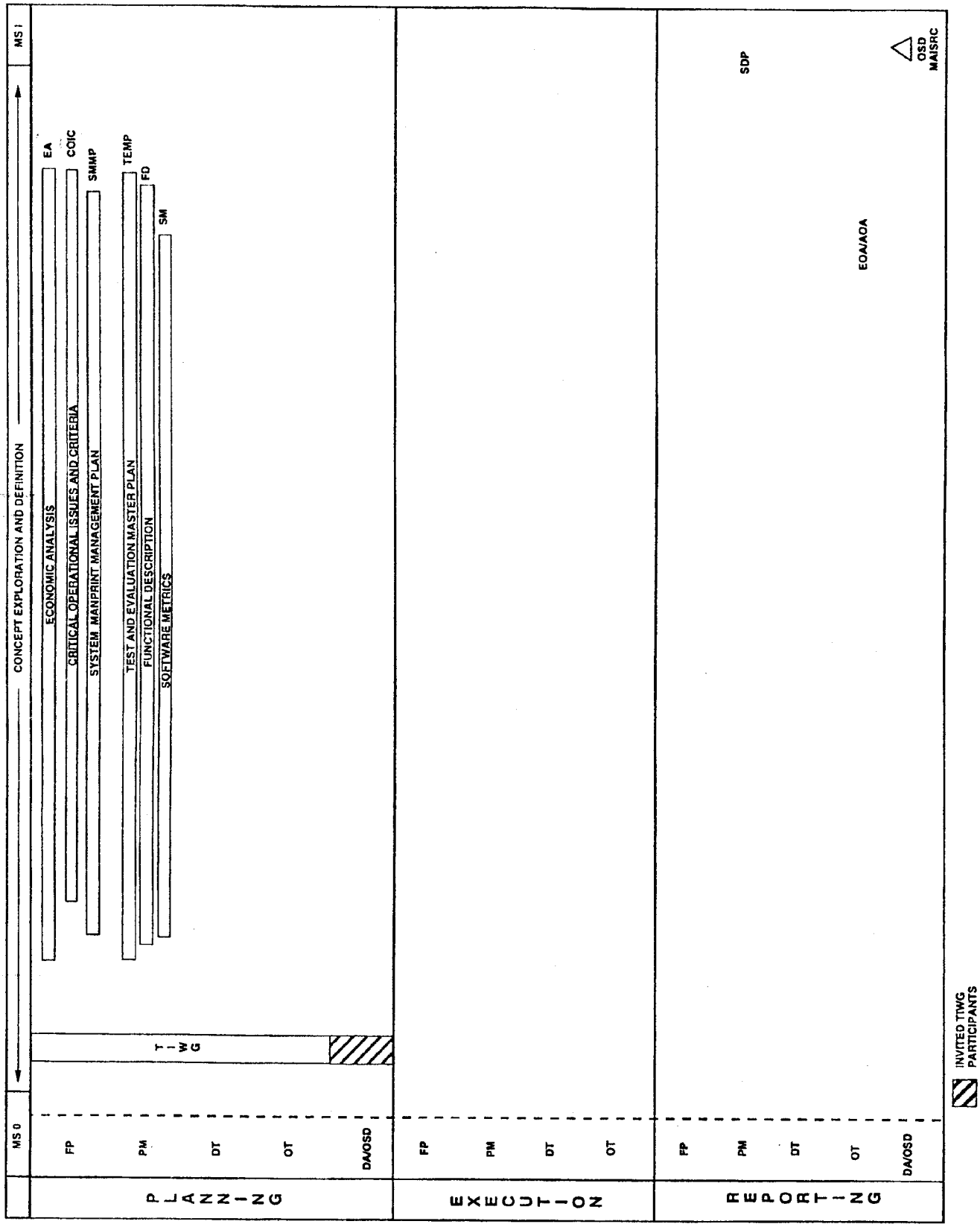

Figure 5-4. Phase 0 conception, exploration, and definition

CONTINUOUS EVALUATION (CE) ACTIVITIES DURING
CONCEPT EXPLORATION AND DEFINITION PHASE
Phase 0

- Determine if the system requirements are testable, and that measurable criteria are established.
- Ensure that user requirements are traceable to the system specifications.
- Ensure that the cost and schedule software metrics are properly developed and incorporated into the T&E strategy.
- Develop and provide EOA to appropriate decision makers.

Figure 5-5. Continuous evaluation activities during Phase O

MILESTONE I T&E REQUIREMENTS

- Updated and revalidated MNS.
- Draft FD.
- Initial COIC.
- Preliminary TEMP.

Figure 5-6. Milestone I test and evaluation requirements

DEMONSTRATION AND VALIDATION
Phase I
KEY ACQUISITION ACTIVITIES

- Ensure that the system design is based on functional requirements, including the FD.
- Integrate of results of remaining demonstrations and prototyping activities into the system design.
- Select modern development technologies to be used in system development.
- Develop a product baseline in accordance with the CMP.

Figure 5-7. Phase 1 key acquisition activities

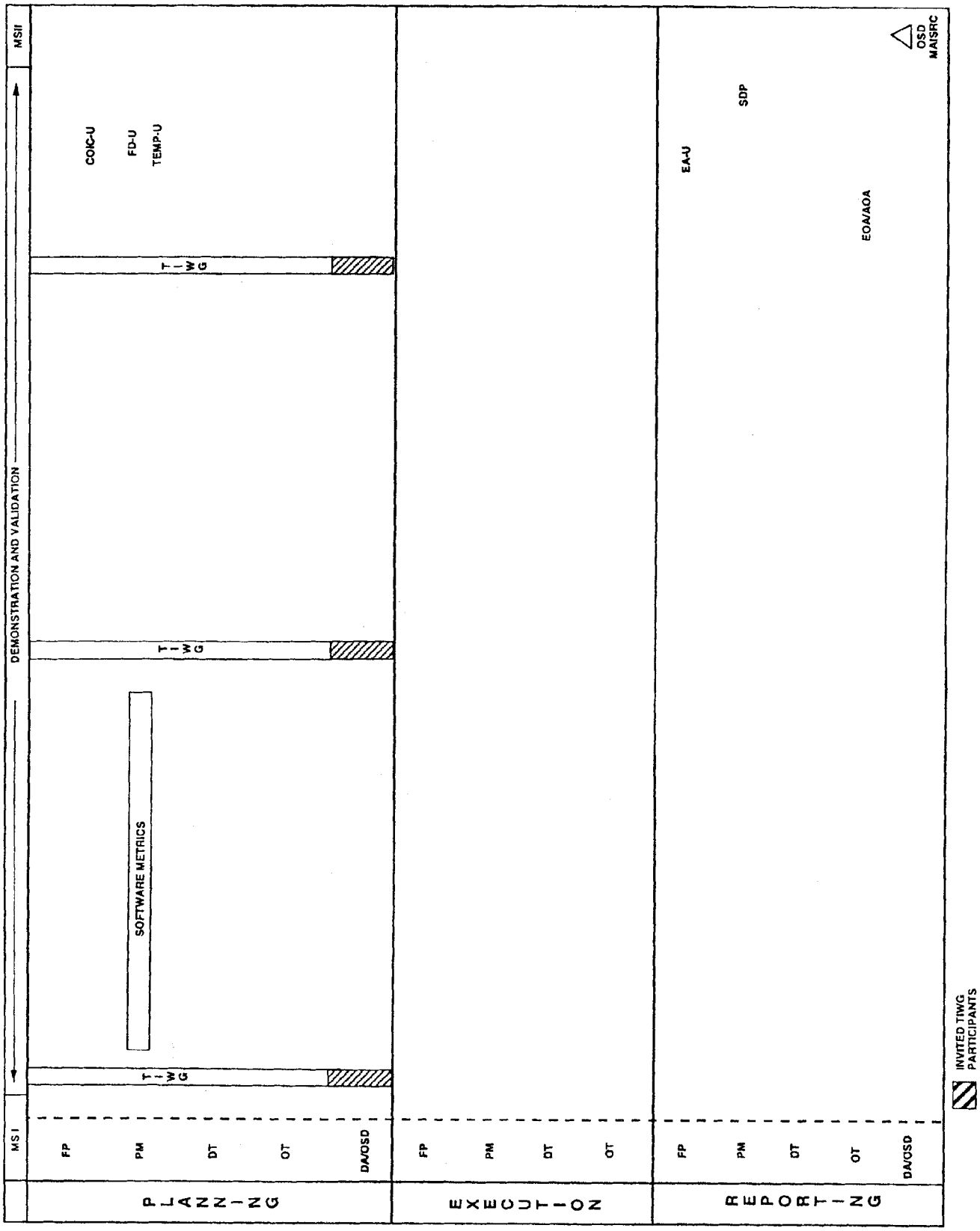

Figure 5-8. Phase I demonstration and validation

CONTINUOUS EVALUATION (CE) ACTIVITIES DURING
DEMONSTRATION AND VALIDATION PHASE
Phase I

- Ensure that the requirements in the FD, and MNS are traceable to the system specification and among each other.
- Ensure that performance and suitability thresholds have been properly determined and are reflected in the TEMP.
- Ensure that the required software metrics are properly developed and integrated into the T&E strategy.
- Develop and provide EOA to appropriate decision makers.

Figure 5-9. Continuous evaluation activities during Phase I

MILESTONE II T&E REQUIREMENTS

- Finalized and validated FD.
- Updated COIC.
- Updated TEMP.
- EOA provided by the independent operational evaluator.

Figure 5-10. Milestone II test and evaluation requirements

DEVELOPMENT
Phase II
KEY ACQUISITION ACTIVITIES

- Full-scale information system development.
- Conduct developmental and operational testing to validate that the system design is stable and that it meets user functional requirements.
- Validate that the information system is ready for peacetime, mobilization, and wartime operational use.
- Plan for deployment, training, operations, maintenance, and logistic support of the information system.

Figure 5-11. Phase II key acquisition activities

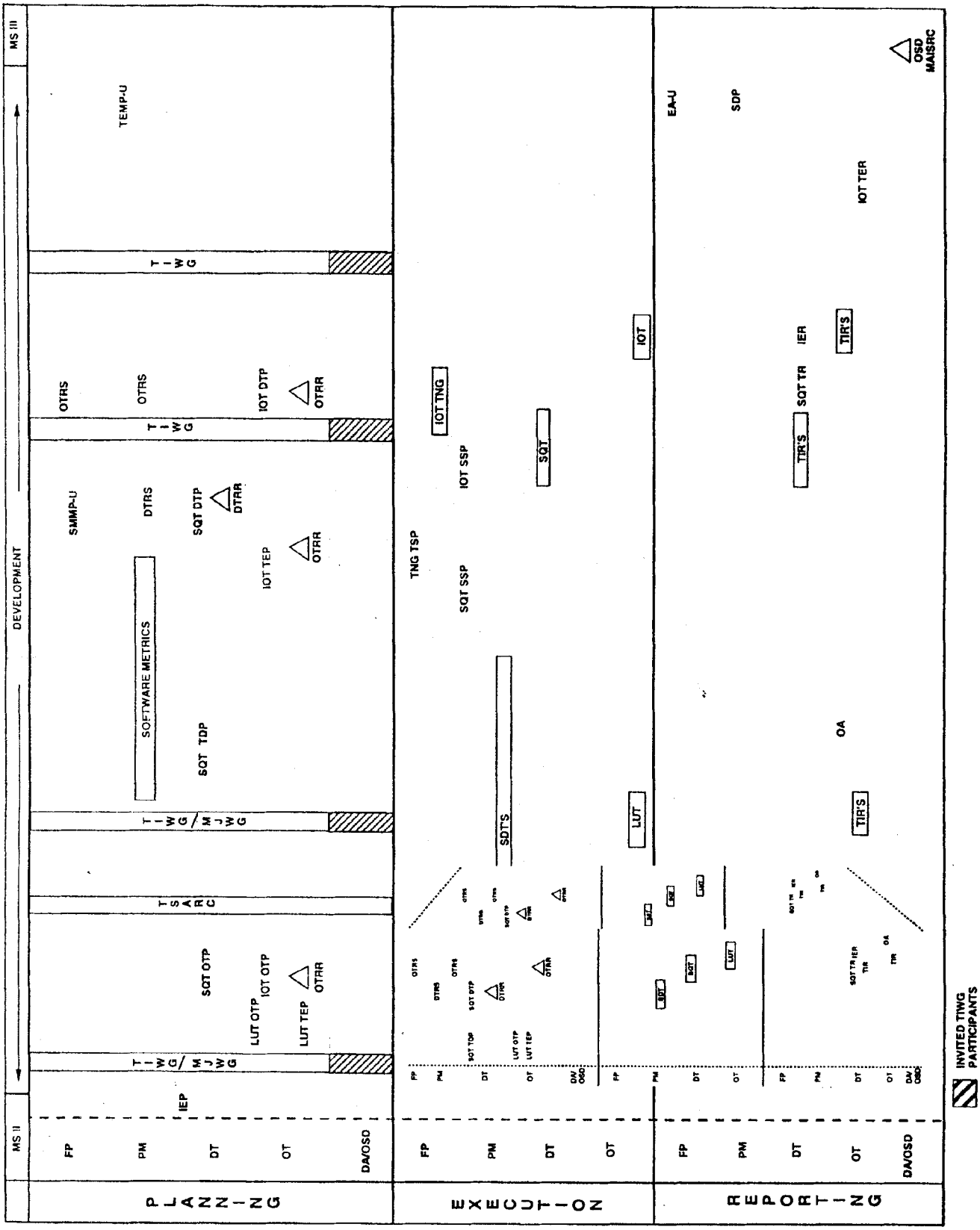

Figure 5-12. Phase II development

CONTINUOUS EVALUATION (CE) ACTIVITIES DURING DEVELOPMENT PHASE
Phase II

- Continue participation in the TIWG and TEMP update process.
- Plan and execute all required developmental and operational tests.
- Ensure that all required software metrics are properly developed and integrated into the T&E strategy.
- Develop and provide developmental IER to appropriate decision makers.
- Develop and provide OA to support intermediate decisions.
- Develop and provide TER to support MS III decision.

Figure 5-13. Continuous evaluation activities during Phase II

MILESTONE III T&E REQUIREMENTS

- Developmental IER, operational TER.
- Updated COIC (if necessary).
- Updated TEMP.

Figure 5-14. Milestone III test and evaluation requirements

PRODUCTION AND DEPLOYMENT
PHASE III,
OPERATIONS AND SUPPORT
Phase IV
KEY ACQUISITION ACTIVITIES

- Transition planning from the PM/MATDEV to the information system Operations Manager.

- Availability of resources to satisy the requirements of the proposed deployment schedule and full operations and maintenance.

- Postdeployment operational assessment planning for the MS IV decision review.

- Planning for existing system modernization assessment.

- Effective operating procedures are developed to evaluate benefits, correct malfunctions, and respond to user needs.

Figure 5-15. Phases III and IV

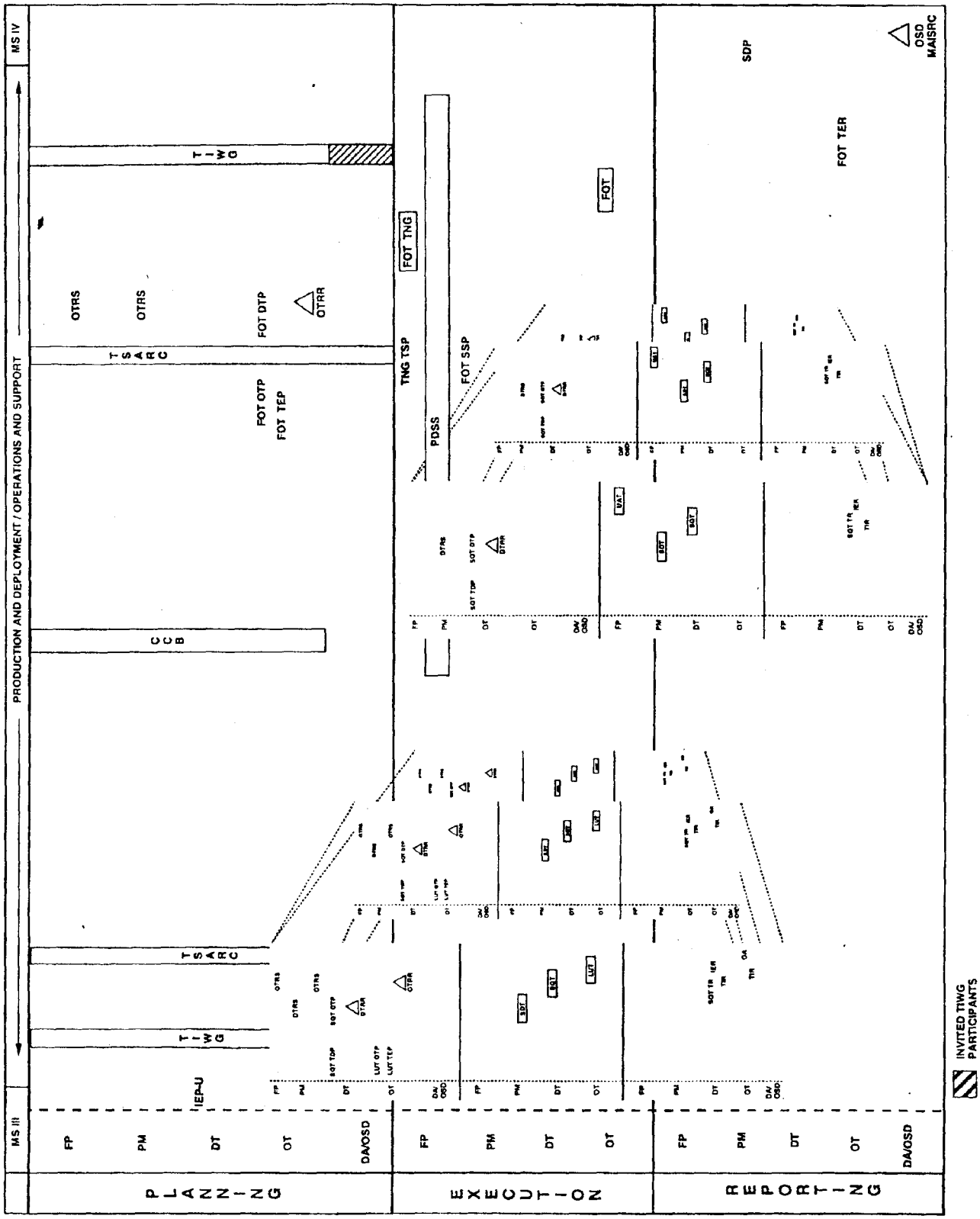

Figure 5-16. Phase III production and support; Phase IV operations and support

CONTINUOUS EVALUATION (CE) ACTIVITIES DURING
PRODUCTION AND DEPLOYMENT AND
OPERATIONS AND SUPPORT
Phase III and Phase IV

- Continue participation in the TIWG.
- Plan and execute all required developmental and operational tests.
- Develop and provide developmental IER to appropriate decision makers.
- Develop and provide operational TER and OAs to support intermediate decision reviews.

Figure 5-17. Continuous evaluation activities during Phases III and IV

MILESTONE IV T&E REQUIREMENTS

- Developmental IER, operational TER.
- Updated COIC (if necessary).
- Updated TEMP.
- Any OAs (as necessary).

Figure 5-18. Milestone IV test and evaluation requirements

Chapter 6
Test and Evaluation in Support of System Changes, Reprocurements, and Science and Technology Development and Transition

Section I
Introduction

6–1. System Changes
A system change encompasses all hardware, firmware, and software modifications or upgrades to materiel and information systems after the Milestone III decision, except Class II Engineering Change Proposals (ECP) for materiel systems. System changes apply only to systems either in full-rate production or out of production.

6–2. System Reprocurements
Reprocurements apply to systems procured to a Government controlled technical data package (military standard item) and those procured to a system performance specification (non-developmental item). Reprocurement of an item is authorized when a continuing need has been identified and validated by the combat developer or functional proponent and, when applicable, the milestone decision authority (see ARs 70–1 and 25–3).

6–3. Science and Technology Development and Transition
Technology advances which are not modifications or upgrades to systems, either in full-rate production or out of production, typically take the form of Advanced Technology Demonstrators (ATDs)or Advanced Concept Technology Demonstrators (ACTDs). These demonstrators are typically premilestone 0 efforts to demonstrate and evaluate technical feasibility and performance of a new technology (ATD) or to evaluate the military potential of a new technology or concept (ACTD).

Section II
System Change Management

6–4. Definition of System Changes
a. Changes to an existing system consist of modifications and upgrades. A modification is a change to a system which is still in production. An upgrade is a change to a system which is out of production. Changes can be improvements to system capabilities or fixes to correct deficiencies after the system Milestone III.Changes before Milestone III are part of the system acquisition program.

b. A major modification is defined as a program that in and of itself meets the criteria of Acquisition Category I (ACAT I) or ACAT II or is designated as such by the milestone decision authority (see DoDI 5000.2). A major modification (Milestone IV) review is held to approve a major modification and to determine which acquisition phase the major modification program should enter.

c. System modifications and upgrades include multi-system changes (that is, application of a common technology across multiple systems), block changes, preplanned product improvements, Class I Engineering Change Proposals (ECP) per MIL STD 973, and System Change Packages (SCP).

d. Software changes to deployed systems are typically generated because of latent defects, doctrinal requirements, threat changes, weapon or munitions upgrades, interoperability requirements, product improvements and new system functions. Change requests are

normally generated by the using agency, combat developer, or functional proponent and forwarded for approval, prioritization, and implementation.

6–5. Levels of Management of System Changes

Changes to system hardware, firmware, and software are managed at one of four levels depending on the cost, complexity, criticality or oversight. The change process has four levels of management as follows:

a. Changes with the Configuration Control Board (CCB) or Configuration Manager (CM) as the decision authority.

b. Changes with a program manager (PM) assigned the decision authority (based on CCB recommendation). The term "program manager" is used to indicate the actual manager of the change effort. The program manager could be a PM or project officer for systems that have not transitioned into production, or the item manager for developed systems (that is, pre-planned product improvement changes). Changes to systems that have transitioned into production but that require a significant effort may be assigned to a PM for development or implementation. In these cases, the initial activities of the change effort will be conducted by the item manager until assignment of a PM.

c. Changes with a Program Executive Officer (PEO) or Major Subordinate Command (MSC) commander as decision authority (based on recommendation from CCB, PM, or In-Process Review (IPR) as appropriate).

d. Changes with the Army Acquisition Executive (AAE) as decision authority (based on recommendation from an Army System Acquisition Review Council (ASARC) or Major Automated Information System Review Council (MAISRC)).

6–6. Classification of System Change Programs

Three classes of system change programs apply for test and evaluation purposes.

a. Changes with significant operational impact. These changes typically respond to a new or revised operational requirement or are preplanned product improvements to fill existing operational requirements, and provide increased operational functionality. These changes normally entail major technical configuration changes and have significant operational effectiveness and suitability impact. Those change programs which are major modifications normally reenter the acquisition process prior to Milestone III with appropriate milestone decision reviews and acquisition documents.

b. Changes with operational impact. These changes correct an operational deficiency, reduce operations and support costs, or support continued procurement. The change does not increase operational functions to satisfy existing operational requirement per a Milestone III approved acquisition strategy preplanned product improvement requirement or respond to a new or revised operational requirement. The change is determined by the combat developer or functional proponent to have (or have significant potential for) operational impact, either effectiveness or suitability.

c. Changes with no operational impact. These changes are configuration changes with either no or insignificant operational impact. The change either reduces operation and support cost or supports continued production. The change may be a significant configuration change without operations impact for which the combat developer, logistician, or functional proponent have no significant logistics concerns. These changes do not respond to a new or revised operational requirement.

6–7. Test and Evaluation for System Change Programs

A valid T&E program for system changes will be developed and documented in accordance with the DoDI 5000.2, DoD 5000.2–M, AR 73–1, this pamphlet, and supporting documentation. The actual T&E strategy developed for a given change will depend on the impact of the change. All system changes must undergo evaluation, and most will require some level of testing to gather the requisite data.

a. T&E strategies for system changes vary depending on whether the modification or upgrade is classified as having significant operational impact, having operational impact, or having no operational impact. For those changes with operational impact(significant or otherwise), independent evaluators must draw upon military expertise, systems acquisition knowledge, and current Army policy when making recommendations for T&E strategy to the TIWG. The checklist at figure 6–1 will aid in determining which classification applies to a given modification.

SYSTEM CHANGE CLASSIFICATION CHECKLIST

1. IS THIS CHANGE IN RESPONSE TO A NEW OR REVISED OPERATIONAL REQUIREMENT (AN MNS FOR AIS OR AN ORD FOR MATERIEL SYSTEM)?

IF "YES" - SYSTEM CHANGE WITH SIGNIFICANT OPERATIONAL IMPACT
IF "NO" - GO TO QUESTION 2

2. IS THE CHANGE A PREPLANNED PRODUCT IMPROVEMENT LISTED IN THE CURRENT APPROVED ACQUISITION STRATEGY FOR THE PURPOSE OR ACHIEVING EXISTING OPERATIONAL REQUIREMENTS?

IF "YES" - SYSTEM CHANGE WITH SIGNIFICANT OPERATIONAL IMPACT
IF "NO" - GO TO QUESTION 3

3. DOES THIS CHANGE AFFECT SYSTEM OPERATIONAL CHARACTERISTICS, PERFORMANCE OR TACTICAL EMPLOYMENT AND LOGISTICS SUPPORT BY THE USER?

IF "YES" OR "NOT SURE" - GO TO QUESTION 3A
IF "NO" - SYSTEM HAS NO OPERATIONAL IMPACT
(GO TO QUESTION 4)

3A. BASED ON COORDINATION WITH USER REPRESENTATIVE, IS AN NEW OR REVISED OPERATIONAL REQUIREMENT (A MNS FOR AIS OR AN ORD FOR MATERIEL SYSTEM) NEEDED?

IF "YES" - SYSTEM CHANGE WITH SIGNIFICANT OPERATIONAL IMPACT
IF "NO" - GO TO QUESTION 3B

3B. BASED ON COORDINATION WITH USER REPRESENTATIVE, DOES THE CHANGE HAVE OPERATIONAL IMPACT?

IF "YES" - SYSTEM CHANGE WITH OPERATIONAL IMPACT
IF "NO" - SYSTEM HAS NO OPERATIONAL IMPACT
(GO TO QUESTION 4)

Figure 6-1. System change classification checklist

SYSTEM CHANGE CLASSIFICATION CHECKLIST, continued

4. DOES THIS CHANGE SIGNIFICANTLY ALTER THE CONFIGURATION OF THE SYSTEM OR END ITEM IN ANY OF THE FOLLOWING AREAS?

- TECHNICAL MANUALS
- TMDE OR TEST PROGRAM SETS
- SPECIAL TOOL SETS
- TRAINING DEVICES
- RAM CHARACTERISTICS
- TECHNICAL SURVIVABILITY, VULNERABILITY, OR LETHALITY CHARACTERISTICS
- HUMAN FACTORS OR SAFETY CHARACTERISTICS
- NEW OR NOT FULLY DEVELOPED TECHNOLOGY EMPLOYED
- INTEROPERABILITY
- MULTISERVICE IMPACT

IF "YES" - SYSTEM WITH SIGNIFICANT TECHNICAL CHANGE
IF "NO" - SYSTEM WITH OTHER TECHNICAL CHANGES ONLY

Figure 6-1 (PAGE 2). System change classification checklist--continued

b. T&E is conducted to ensure that the change achieves the desired effect without degrading performance, reliability, safety, or system logistical characteristics. Adequate T&E will be conducted on all changes. The level of T&E required to verify each change will vary from one change to another depending on the extent of the change and the effect of the change on technical characteristics and operational effectiveness and suitability.

c. As a general rule, some form of developmental test and evaluation (DT&E) will apply to all system changes. If there is any change in the operational performance envelope, then an approach consisting of DT&E and operational test and evaluation (OT&E)normally applies. If there is no operational impact, then normally only DT&E applies. Between these two extremes, the T&E requirements are determined by coordination with the TIWG members.

d. In all cases, the need for and intensity of the testing must reflect the level of the evaluation required to address the impact of incorporating the change. In particular, for computer resources (software, hardware, or firmware), the proportion of the change and the criticality of affected computer software units must be considered.

6–8. Testing in Support of Change Programs

Changes to materiel systems and information systems may require developmental and operational testing, depending on the level of the change as described in paragraph 6–7.

a. Changes to materiel systems.

(1) Premilestone III developmental tests (AR 73–1) apply as appropriate to verify achievement of change objectives without degradation in other technical areas before decision to release to production. This could include a cut into an existing production line, procurement of Modification Work Order (MWO) kits, or new improved system production. The specific tests would be those appropriate for the technical issues and, when applicable, to the acquisition phase. These include TFT, EDT, PQT, LD and LFT as applicable to the change. A tailored PQT (including inspection, test, or series of tests) may be conducted on a proposed change during system production to confirm the achievement of specified technical parameters (including embedded software performance) and any requirements for compatibility or interoperability with remaining components, subsystems, and systems prior to the approval of the proposed configuration change. Likewise, an LD may be used to verify adequacy of the modified logistics package for system changes during production.

(2) Postmilestone III developmental tests (AR 73–1) apply to system changes to be verified during a new or existing production. The T&E strategies are integrated with ongoing and planned procurements to provide appropriate verification of the change. These include PVT, comparison test, quality conformance inspection, and C3I interoperability recertification test. The PVT is most frequently used since this is the initial test during procurement, but other tests may be applicable dependent on the stage of procurement. A comparison test could be used as final confirmation of a modification during production with a tailored PQT providing initial confirmation for cut into production.Developmental tests in support of Post Deployment Software Support(PDSS) for software intensive materiel systems parallel those described for premilestone III, but are

usually abbreviated based on the number, magnitude, and complexity of the modifications or maintenance.

(3) Premilestone III operational tests (AR 73–1) apply to system changes which have significant operational impact or when otherwise determined necessary by the TIWG and included in an approved TEMP to support acquisition decision reviews. Normally these programs reenter the acquisition process before Milestone III.These tests include EUTE, LUT, and IOT. The specific testing required would be that appropriate for the acquisition decision.

(4) The postmilestone III FOT applies to system changes to be verified during a new or existing production. The test is conducted on system changes when the need for such a test is identified by the TIWG and included in an approved TEMP for the changes.

(5) The Concept Evaluation Program (CEP) is a TRADOC controlled experimentation program used to evaluate materiel concepts for defining operational requirements. TRADOC may use a CEP Test to define requirements for a change.

(6) FDTE is a TRADOC controlled test and experimentation program that may be used to support development and release of doctrinal, training, leader development, and materiel requirements products. TRADOC may use FDTE as required for system change programs.

b. Changes to information systems. Appropriate T&E will be conducted to support changes to information systems by testing the modifications to the software in deployed systems. Changes to information systems usually occur as part of the PDSS process after Milestone III and usually consist of change packages, or as preplanned block improvements to generate new or additional capability in the system. Information system change management principles, including change classification and change priorities, are contained in DA Pamphlet 25–6.

(1) There are generally two types of change packages for information systems. These are listed below (see DA Pamphlet 25–6).

(a) System change package. A system change package (SCP) is a change package which provides one or more changes approved and scheduled for implementation by the appropriate Configuration Control Board (CCB).

(b) Interim change package. An interim change package (ICP) is a software change which, because of urgency, regulatory requirement, or special need, must be provided before the availability of the next SCP.

(2) Testing of change packages and block improvements to information systems involves iterations of the sequence of tests consisting of the SDT, SQT, and either a UAT, LUT, or FOT, depending on the significance of the changes. This sequence is repeated for each additional change package or block improvement and is intended to test only that functionality modified by the change. A Milestone IV modernization decision may be made which causes the information system to re-enter the life cycle in phase 0. In this case, T&E follows the procedures outlined in chapter 5.

c. Developing a T&E strategy. In developing a T&E strategy to apply to changes to software-intensive materiel systems and theater and tactical information systems, it may be appropriate to select tests from*a.* and *b.* above.

6–9. Test and Evaluation for Changes Having Significant Operational Impact

Any change which responds to a new or revised operational requirement or is a preplanned product improvement to fill an existing operational requirement is considered to have significant operational impact. In this case, independent developmental, operational, and logistics evaluations are required to support the decision to apply the change to the system.

a. Material systems. For materiel systems, this would normally result in the development of a T&E strategy as outlined in paragraph 6–8a, and include the formation of a TIWG, development of Critical Operational Issues and Criteria (COIC), and development of an update to the system TEMP (see chap 4).

b. Information systems

(1) Preplanned block improvements are typically the drivers resulting in significant operational impact to the system. This would normally result in developing a T&E strategy as outlined in paragraph 6–8b, however, the test iteration for any interim block (that is, a block not resulting in the objective system or capability) concludes with a LUT. The test iteration for the final block which results in the objective system or capability concludes with an FOT.

(2) In addition, any test iteration may conclude with an FOT when major changes to the information system baseline occur, since the magnitude of change may create an essentially different system.Criteria for determining a major baseline change consist of a total estimated budgetary cost for the change greater than $5 million; a significant change in program cost, schedule, performance, operational capability or to the COIC as determined by the CCB; or high-level interest (for example, DOD, Congress). The USAOPTEC determines whether conditions satisfying any of these criteria require an FOT.

6–10. Test and Evaluation for Changes Having Operational Impact

If the case described in paragraph 6–9 does not apply, but the combat developer or functional proponent determines the change to have (or to have significant potential for)operational impact (operational effectiveness or suitability), then the level of the developmental, operational, and logistics evaluation is determined by the TIWG members. These changes typically will impact mission or support operations. TIWG members will review and determine the T&E strategy. The existing approved system COIC do not require revision since there is no change to the operational requirement nor is the change a preplanned product improvement. The combat developer or functional proponent will review the COIC for applicability to the change. Tailored PQT or PVT are required to assess technical adequacy for materiel systems.FDTE may be conducted as needed by the combat developer. SDT, SQT and UAT may apply for information systems. The system TEMP will be updated.

6–11. Test and Evaluation for Changes Having No Operational Impact

If a change has no operational impact, then the procuring command will determine the T&E actions necessary to support the decision to apply the change. Such changes do not respond to changes in operational requirements and thus do not change COIC.

a. For materiel systems, tailored PQT and PVT apply. The proposed test strategy will be defined by the procurement organization T&E staff and attached to the ECP during review processing. The CCB will review and approve the ECP package. The specific PQT and PVT testing requirements will vary based upon the significance associated with the technical change.

(1) A significant technical change is a major configuration or functional change to a materiel system which is operationally transparent to the user (see fig 6–1 for significant change check list). The change can be supported within existing logistics concepts and infrastructure. Tailored PQT or PVT apply, but normally there will be comprehensive testing because of the magnitude of configuration change and potential for other impact.Those changes involving significant logistics changes will require a LD. Specific test requirements will be documented in a T&E strategy attached to the ECP (or ECP package for multiple modifications) and summarized in the Integrated Program Summary (IPS) if necessary. No formal TIWG or TEMP update is required, but the independent evaluator or assessor must concur with the adequacy of planned DT&E.The developmental independent evaluators or assessors will provide assessments to support materiel release.

(2) Other technical changes which are developmental and are transparent to the user or do not represent any major configuration change or functional changes should have tailored PQT or PVT which focus on verification of achievement of the objective without concern for adverse impact on other features. Tailored PQT or PVT can normally focus on verification of achievement of the objective without concern for adverse impact on other features. Specific verification requirements will be documented in a T&E strategy attached to the ECP (or ECP package for multiple changes). No

formal TIWG or TEMP update is required. The independent evaluators or assessors normally are not involved with these changes.

b. For information systems, SDT and SQT apply. No formal TIWG or TEMP update is required, but the independent evaluator or assessor must concur with the adequacy of planned DT&E.

Section III
Management of Reprocurements

6–12. Decisions to Reprocure

Reprocurement of an item is authorized when a continuing need based on an updated performance specification or purchase description from the last procurement has been identified and validated by the combat developer or functional proponent. The combat developer or functional proponent will provide a statement that a continuing need exists for the item and the milestone decision authority will determine if the item is eligible for reprocurement. If there has been a significant break in production, for example, over 2 years, a milestone decision review will be conducted and the decision documented in the Acquisition Decision Memorandum. The following paragraphs apply to systems procured under the AR 70–series and, where applicable, the AR 25–series.

6–13. Characteristics of System Reprocurement Programs

Materiel and software changes are common on reprocurement programs and may have one or several drivers.

a. Changes to a Government controlled technical data package may be made to incorporate previous ECPs, accommodate new requirements (that is, emission standards, requirements for air transportability) or to correct previous deficiencies.

b. In a Non-Developmental Item (NDI) acquisition strategy to a current performance specification or if commercial item specifications are used, changes are driven by the commercial industry's need to constantly improve commercial hardware or software, changes in vendors, and the fact that frequently several contractors provide the same capability with different designs.

6–14. Combat Developer or Functional Proponent Review of Requirements

When a reprocurement of a system is authorized, the combat developer or functional proponent must certify the continuing need for the item.

a. Associated with this certification will be a review of the supporting operational and performance requirements (MNS, FD, ORD, and specifications). If this requirements review indicates that a change in the requirements is needed, the program will be treated like a system change program from a T&E standpoint.

b. If the results of the review indicate that no change in the requirements is warranted, the required T&E program can be greatly simplified. On these programs, the T&E program normally satisfies requirements for a PVT to assure compliance with the specification.

6–15. Test and Evaluation in Support of Reprocurements

T&E requirements for reprocurements vary depending on degree of configuration stability and whether the reprocurement is for an NDI or military standard item (a Government controlled technical data package), an item from a contractor different from the original item contractor, or an item with a significant break in procurement.

a. A valid T&E program for reprocurements will be developed and documented in accordance with the DoDI 5000.2, DoD 5000.2–M, AR 73–1, this pamphlet, and supporting documentation.

b. Configuration changes are a normal part of reprocurements and are treated as system changes. If the reprocurement generates any significant changes in the operational performance envelope, then a tailored DT&E and OT&E cycle with an associated TEMP update applies. If the reprocurement generates configuration changes which are transparent to the user, generally only limited DT&E, usually in the form of a PVT, is performed. If the reprocurement generates changes with operational impact, then TIWG principals determine test requirements. In all cases, the change and reprocurement T&E programs must be appropriately integrated.

c. When the reprocurement is from the same contractor for the same model (no significant configuration change) with no significant break in production, the PVT and other production developmental tests may be tailored considering past contractual performance.

6–16. Testing in Support of System Reprocurements

Reprocurements of materiel systems and information systems may require developmental and operational testing, depending on the level and type of configuration changes, as described in paragraph 6–15. The following paragraphs discuss testing options for materiel system reprocurements. Testing options to support reprocurement of information systems generally follow those options outlined for information system changes.

a. Premilestone III developmental tests (AR 73–1) would apply to reprocurements of NDI system when significant configuration changes are identified during market investigations or significant adaptation of NDI apply. Technical Feasibility Test (TFT) may support the market investigation and revisions to the system specification. PQT may be required to verify adequacy of any adaptation before production. Logistics demonstration (LD) would be used when adaptation or configuration changes cause significant logistics changes. The specific tests would be those appropriate to the acquisition phases for the change. T&E principles for NDI acquisition are used wherever possible.

b. Postmilestone III developmental tests (AR 73–1) apply to all reprocurements. The full array of postmilestone III tests are options to apply (includes PVT, comparison test, LD, quality conformance inspection, and C3I interoperability recertification test). These tests will be tailored based on considerations of previous contractor experience, continuity of production, configuration stability and manufacturing stability.

c. Premilestone III operational tests (AR 73–1) which apply to reprocurements include LUT and IOT. These tests may apply to NDI adaptation before release to production. The specific testing required would be that appropriate for system acquisition status. T&E principles for NDI acquisition are utilized wherever possible.

d. The postmilestone III FOT is conducted rarely and only as needed for reprocurements.

e. CEP is a TRADOC controlled experimentation program used to evaluate materiel concepts to define operational requirements.TRADOC may use a CEP test to redefine requirements for reprocurement to include testing in support of NDI market investigations.

f. FDTE is a TRADOC controlled test and experimentation program that may be used to support development and release of doctrinal, training, leader development, and materiel requirements products. TRADOC may use FDTE as required for system reprocurement.

6–17. Reprocurement to a Current Military Technical Data Package

These reprocurements require only the appropriate DT&E(normally PVT) determined by the procuring agency to verify production compliance with the specifications and to ensure no degradation of overall system performance.

a. If either the materiel developer or combat developer (or functional proponent) induces system changes relative to the current military technical data package, the system modifications or upgrades will be treated as system changes and T&E requirements are as described in Section II.

b. The T&E requirements for any system changes and for the reprocurement will be integrated into a single test program. PVT is normally the only testing required in these cases. The proposed test strategy will be defined by the procurement organization T&E staff and attached to the MDA acquisition decision documentation.

6–18. Reprocurement of an NDI (Off-the-Shelf or Modified Off-the-Shelf)

In an NDI acquisition strategy (performance specification)or if commercial item specifications are used, changes are driven by the need to constantly improve commercial hardware or software, changes in vendors, and the fact that there are always several contractors providing the same capability with different designs.

a. NDI reprocurements to a current performance specification from the original contractor (make and model) without significant break in production requires only the appropriate DT&E determined by the procuring agency to verify production compliance with the specifications. PVT is normally the only testing required in these cases. The proposed test strategy will be defined by the procurement organization T&E staff and attached to the MDA acquisition decision documentation.

b. NDI reprocurements to a current performance specification from a contractor different from the original contractor (different make) or to the original contractor (different model), or to a performance specification modified or upgraded by the materiel developer or combat developer, require appropriate DT&E determined by the procuring agency to verify production compliance with the specification and will be coordinated with the TIWG principals to determine the need for any DT&E or OT&E in addition to the PVT.

(1) If the TIWG principals agree that a PVT is the only test required for the reprocurement, the proposed test strategy will be defined by the procurement organization T&E staff and attached to the acquisition decision documentation. Independent developmental, operational, and logistics evaluations or assessments will be required to support materiel release.

(2) If the TIWG principals require additional testing in the form of a technical feasibility test (TFT), LD, or any form of operational testing, a TIWG will be convened and a formal TEMP prepared. Independent developmental, operational, and logistics evaluations will be required to support the milestone decision authority and the materiel release.

(3) Independent developmental, operational, and logistics evaluations or assessments will be required to support the milestone decision authority in determining whether to authorize a reprocurement when there has been a significant break in production and to support materiel release.

c. Independent developmental, operational, and logistics evaluations may be required to support milestone decision reviews if market investigations reveal that an item previously procured is no longer available and significant configuration changes or technology advances have occurred which may result in a new acquisition strategy. Market investigations supporting such reprocurements may include necessary DT&E and OT&E to support updates to the system specification.

Section IV
Management of T&E in Support of Science and Technology Development and Transition

6–19. T&E in Support of Science and Technology Development and Transition

A T&E strategy should be developed to support each advanced technology demonstration (ATD) and advanced concept technology demonstration (ACTD). These demonstrations are typically premilestone 0 efforts to demonstrate and evaluate technical feasibility and performance of a new technology (ATD) or to evaluate the military potential of a new technology or concept (ACTD).

a. T&E strategies shall be developed for new ATDs and ACTDs and documented using the TEMP format. No formal TIWG meetings are required, and the documents do not require formal staffing or approval. The strategies should consider including development and operational testing as appropriate.

b. Where possible, data collected during Battle Lab experimentation will be used to reduce operational test requirements, decreasing the time required for the acquisition cycle and conserving resources. Usually experimentation will not provide all data required for system acquisition. However, to the maximum extent possible, experimental design will be used to reduce overall operational test requirements. Operational testing will then be conducted to provide the data that could not be obtained through Battle Lab experimentation.

Section V
T&E Documentation and Review Requirements

6–20. Overview

Documentation and reviews to support T&E for system changes, reprocurements, and science and technology development and transition should be consistent with the level of activity prescribed by the effort, and generally follow guidance in AR 73–1 and chapters 4 and 5 of this pamphlet.

6–21. T&E Documentation Requirements for Changes and Reprocurements

Documenting the T&E strategy for each change or reprocurement can be done either as an update to the basic system TEMP or as a stand-alone document.

a. It is essential that the materiel developer involve the TIWG principals early in the change or reprocurement process. The results of any T&E will be used by the independent evaluators and the logistician to render assessments supporting or opposing the production decision of the change or reprocurement. Additionally, evaluators and logisticians will use the T&E information gathered to render opinions on materiel release.

b. Where no TEMP will be prepared, informal coordination between the materiel developer and the TIWG principals is sufficient. Where a formal TIWG is required, maximum use of correspondence TIWG, teleconference TIWG, and other expedited forms is encouraged.

c. To achieve maximum efficiencies, testing of multiple changes in a single system or end item is encouraged. This process should be planned thoroughly early in the change process. One comprehensive TEMP should integrate as many minor changes as possible.

d. The use of the basic system TEMP is the preferred approach.Where there is an archive version of an existing TEMP for a system, T&E requirements for system changes and reprocurements are documented as modifications to the existing TEMP. Preplanned product improvement programs shall have a TEMP to document their T&E programs. If the preplanned product improvement program is near term, the T&E program should be defined in the basic system TEMP, as applicable.

e. If the system change is large, complex, or is based on its own program guidance, a new separate TEMP is considered for the change program. When there is no archive version of a TEMP, a new TEMP must be written.

f. When several changes are being made on one system, consolidation of the T&E effort is desirable. One comprehensive, consolidated TEMP should be prepared outlining the planned T&E and all data should be shared to ensure maximum efficiency.

g. If a stand-alone TEMP is used to describe the change program, it will follow prescribed format, content, and staffing procedures.

h. If a preplanned product improvement program uses emerging technologies or for some other reason is to be implemented quite a few years out, the program manager may choose to use a stand-alone TEMP to define the applicable T&E program.

i. Where there is no operational impact of a change or reprocurement, and no testing beyond tailored PQT for verification of changes and PVT for conformance to specifications is planned, the T&E strategy may be documented without using a TEMP.

(1) System change T&E may be documented as an enclosure to the engineering change proposal (ECP) package.

(2) System reprocurement T&E may be documented as an enclosure to the acquisition decision documentation.

6–22. T&E Documentation Requirements for Science and Technology Development and Transition

a. The TEMP format should be used to document the T&E strategy for each ATD and ACTD. No formal TIWG meetings are required, and the documents do not require formal staffing nor approval. The documents will be maintained by the science and technology program advocate, usually a research, development, and engineering center, with assistance from the combat developer, logistician, and the developmental and operational testers and evaluators.

b. Programs beyond MS I having approved TEMPs but which have been redesignated as ATDs or ACTDs shall continue to maintain TEMPs.The TEMPs shall reside with the materiel developer and shall be maintained by the materiel developer. If a program is directed to reenter the formal acquisition process, the materiel developer will follow the formal policy and procedures in obtaining TEMP approval by the appropriate approval authority.

Chapter 7
Tailoring Test and Evaluation for Non-Developmental Items(NDI), Foreign Comparative Testing (FCT), Limited Procurement(LP), and Accelerated Software Development Process (ASDP)

Section I
Introduction

7–1. Overview

The Army often uses expedited acquisition processes to reduce the acquisition cycle time for the following reasons:

a. To save development and acquisition costs by streamlining the acquisition process for low-risk items through NDI acquisitions, to include adoption of items developed by other DOD components and items foreign countries use.

b. To quickly field systems to meet urgent operational needs accepting moderate to high risks through DA-directed LP acquisitions.

c. To develop, test, and field parts of software intensive systems in incremental blocks of functionality.

7–2. Tailoring Test and Evaluation

Program managers and the developmental and operational evaluators and logisticians are encouraged to make maximum use of prior test information (including information from commercial manufacturers, users, other Services, agencies, or countries)supporting NDI acquisitions. Market investigations supporting NDI acquisitions (including reprocurements) may include developmental and operational testing when the materiel and combat developers (or functional proponents) find it necessary to support development and updates to the system specification. However, all NDI T&E programs shall be structured in accordance with the policies and procedures used for new acquisition T&E programs.

Section II
Non-Developmental Item Acquisition Process

7–3. NDI Features

An NDI acquisition provides a preferred alternative if the market surveillance reveals that items are available which have a high probability of meeting the user's requirements. NDI acquisition procedures are discussed in DoDI 5000.2, Part 6.

a. NDI feasibility may surface before preparation of the(mission need statement) MNS or may be identified during the market investigation. This is based upon continuous market surveillance, front-end analysis, responses to deficiencies, and the proposed solution. The market investigation becomes much more important as a data source for NDI systems and often is the only source before a combined milestone decision review.

b. T&E requirements to support NDI acquisition approaches do not differ appreciably from T&E requirements for a traditional developmental program. A TIWG must be formed, a TEMP is required, test data must be available, and developmental, operational, and logistics evaluations or assessments must be performed.

7–4. NDI Tailoring Opportunities

NDI invites considerable tailoring of the acquisition process, depending on the extent of trade-offs and testing required to verify achievement of critical technical parameters and operational effectiveness and suitability. Maximum use should be made of existing documentation, verification data, modeling and simulation, and related evaluations to tailor the acquisition.Documented results of market surveys or market investigations and data from contractor testing may be adequate to evaluate the system.

7–5. Acquisition of NDI

NDI acquisition is a generic term that covers systems or pieces of equipment which may require limited or no development effort by the Army. NDI includes materiel developed and in use by other military services or Government agencies, materiel developed and in use by other countries, and commercially available materiel.

a. NDI feasibility surfaces during the normal requirements generation process with the preparation of a MNS and a preliminary determination of whether NDI is a viable option. This determination by the materiel developer is based on an initial analysis of the operational requirements in the MNS versus technology or materiel already developed and in existence (for example, foreign-made materiel).

b. The criteria for a viable option is that a facsimile system or elements of a system are already operationally successful and are adaptable to the operational requirements specified in the MNS.

7–6. Categories of NDI

There are two general categories of NDI and a third level of effort not designated as a separate category.

a. An NDI that fully meets the user need without modification can undergo a single decision review (combined milestone (MS) I, II, and III). The review verifies the sufficiency of the item against the requirement and initiates type classification with reduced milestone decision documentation. This category consists of off-the-shelf items (for example, commercial, foreign, other services) which will be used in the same environment for which they were designed and will require no modification (see DoDI 5000.2, Part 6).

b. An NDI requiring minor modification to an off-the shelf item may involve an abbreviated engineering and manufacturing development phase to add necessary modifications. Here, limited testing may be required to verify how the modifications affect performance and reliability. This approach may involve a combined MS I and II decision with an MS III decision to approve production.This category consists of off-the-shelf items to be used in an environment different from that for which designed. Modifications may also be required to correct problems discovered during the engineering and manufacturing development phase (see DoDI 5000.2, Part 6).

c. The integration of NDI components into larger parent systems, both developmental and non-developmental is encouraged. The integration of NDI components and systems resulting in a new system can be designated as NDI. This category is focused on integration or assemblage of existing proven components (commercial part integration). These systems may be candidates for tailored T&E.

(1) To be considered as NDI, any integration effort should involve only minor modifications to each NDI component or subsystem to achieve successful integration. When pursued as an NDI strategy, integration of NDI components and subsystems requires an early and realistic assessment of the size of the integration effort and the associated risks. Since an NDI integration results in an essentially new system and involves increased levels of test and evaluation over more classic forms of NDI, focused risk management is essential throughout the acquisition process.

(2) This category may require some hardware and software development and integration. MS I and II decisions occur very close together in these acquisitions and may be combined.

7–7. Advantage of NDI

An important advantage of NDI alternatives is reduced acquisition cycle time. This is accomplished, in part, by maximizing existing test data. As general guidance, when existing data (contractor or other sources) afford an estimate of system performance at a level of confidence appropriate to the mission, additional testing is not required. It is imperative that independent evaluators get involved early, participate in the formulation of the acquisition strategy and market survey or investigation plans, and provide developmental, operational, and logistics evaluation and assessment reports. Early involvement of the testers and evaluators in the planning process can significantly reduce the time and resources required.

7–8. NDI Type Classification Actions

Type classification (TC) is required for NDI acquisitions, unless specifically exempted by regulation (see AR 70–1 and DA Pam 70–3).

Section III
Test and Evaluation Process for NDI Acquisitions

7–9. Test and Evaluation in the NDI Acquisition Process Flow

The process described herein is a typical listing of activities that would normally take place in an NDI acquisition.Actual process activities may differ somewhat on a case-by-case basis, tempered by program specific requirements and degree of tailoring.

a. After a preliminary decision on an NDI approach, the materiel developer conducts a market survey or investigation based upon the MNS to determine viability of an NDI approach or of the existence of other streamlining opportunities. The market survey or investigation is tailored to the situation, and involves interaction between, and participation by, the materiel developer, user, independent evaluators, testers, threat integrator, industry, and logistician. The materiel developer should ensure that the independent evaluators review the market survey or investigation questionnaire so that all required data may be collected. The materiel developer should coordinate the requirement with the International Materiel Evaluation Division, International Cooperative Program Activity at the United States Army Test and Evaluation Command (USATECOM) to determine what is available on the foreign market. The combat developer uses the results of the effort to evaluate effectiveness and suitability of NDI as a potential solution.

b. Concurrent with initiation of the market survey or investigation, the materiel developer establishes a TIWG and initiates preparation of the TEMP.

(1) The TIWG determines the type and amount of testing required to verify achievement of critical technical parameters, and operational effectiveness and suitability. The TIWG plans and coordinates all T&E to be conducted during the acquisition process and assists in developing the acquisition strategy and all supporting documentation with T&E implications.

(2) The TEMP identifies critical operational issues and critical technical parameters and outlines the approach that will be used to capture required data to perform the developmental and operational evaluations. The TEMP also captures the materiel developer's evaluation.

(3) As with all acquisition programs, the T&E community is encouraged to make maximum use of existing data and sources to minimize testing. Potential data sources include commercial testing, commercial user data, foreign governments, foreign contractors, third party participants, and independent evaluation agencies such as Underwriters Laboratories and Consumer Reports.When data are not available, or when data are suspect, testing can and should be conducted.

c. The independent developmental evaluator or assessor will prepare independent evaluation plan (IEP) (or independent assessment plan (IAP)). The independent operational evaluator will prepare a test and evaluation plan (TEP) as required to document specific data requirements and sources. These documents are prepared in Phase 0.The evaluators complete their evaluations and prepare an IER or IAR or operational assessment (or early operational assessment (EOA)) as prescribed by the milestone decision review documentation. Although the evaluators are not required to prepare plans and reports to support the market survey or investigation, the materiel developer should share market data and information with the evaluators and solicit their input to the conclusions to be presented at the milestone decision review.

d. The materiel developer initiates development of an NDI acquisition strategy, including any recommendations to the milestone decision authority for tailoring the T&E process. If the NDI solution involves foreign materiel, the Foreign Comparative Test Program should be considered.

7–10. Test and Evaluation in Support of Reliability, Availability, and Maintainability for NDI Acquisitions

Quantitative or qualitative reliability, availability, and maintainability (RAM) requirements should be developed for the NDI.Qualitative RAM requirements typically are used only for commercial off-the-shelf acquisitions. Before the milestone decision review, a tailored RAM Rationale Report (RRR) should be prepared by the combat developer based on mission needs and a thorough user analysis of market survey and investigation results. RAM parameters in the RRR will be considered against characteristics of items available in the marketplace.

a. Many approaches can be taken to gather valid RAM data from the market. One approach is to review any RAM analysis that the manufacturer performed in the development of the item. In market surveys or investigations, a range of values limiting RAM requirements may be used as a baseline for the RAM assessment. When quantitative RAM data are not available, it may be possible to assess relative RAM values or to perform a qualitative assessment of RAM based on subjective feedback from existing commercial users.

b. If either independent evaluator determines that the market survey or investigation did not provide data adequate to resolve RAM issues, testing may be required. The TIWG should be convened to provide alternative solutions to satisfy RAM issues for the system.Evaluators should be flexible in accepting and adapting available market data that can be used to answer the essential questions.

c. When market surveys or investigations or Army testing demonstrate that commercially available materiel cannot meet the combat developer's RAM requirements, several alternatives exist.Existing commercial equipment may be modified to meet RAM requirements, or user acceptable modifications may be made to the existing mission profiles to allow acceptance of commercially demonstrated RAM values. When RAM is a critical design characteristic and the commercial RAM parameters are far inferior to the requirements, a tailored NDI strategy may not be adequate and a more traditional development strategy may be appropriate.

7–11. Testing and Product Assurance of NDI

Every effort should be made to evaluate the achievement of the critical technical parameters and operational effectiveness and suitability using existing data from the contractor or any other credible source.

a. Tests by manufacturers and contractors, previous performance data, and market analysis information may validate acceptability of critical system characteristics and provide evidence of system operational effectiveness and suitability.

b. If contractor and commercial user data are not sufficient, the minimum amount of testing should be conducted to support independent developmental and operational evaluations.

c. A developmental IER or IAR and operational test and evaluation report (TER) (or abbreviated operational assessment(AOA)) will be required to support a MS III decision.

d. No acquisition, including NDI, is exempt from that DT&E and OT&E necessary to verify the MANPRINT, quality, safety, RAM, performance, logistics supportability and transportability characteristics of a system.

e. OT&E of NDI systems is subject to congressional statutes with regard to system contractor involvement.

7–12. Testing before Milestone I

Testing should be limited to that which is essential to support a decision to pursue an NDI solution. These tests are sponsored by the materiel developer (usually a technical feasibility test (TFT) by USATECOM) or the combat developer (usually CEP tests by the United States Army Operational Test and Evaluation Command(USAOPTEC)) rather than the independent evaluators. These tests are extensions of market survey and investigation efforts. Evaluations or assessments will be provided. Every effort should be made to perform these evaluations using existing data.

a. Before any dedicated Army testing, external sources should be searched for relevant data. The Army will minimize testing by obtaining and assessing contractor test results, obtaining usage and failure data from other customers, observing contractor testing, and obtaining test results from independent test organizations (for example, Underwriters Laboratory, National Bureau of Standards.)

b. If, based on this initial data collection, more information is needed to make a sound NDI decision, the market investigation may enter into an evaluation phase. NDI candidates may be bought or leased, and DT or OT (including RAM and logistic support) should be conducted. Safety release procedures, in accordance with AR 385–16, must be followed before conducting OT. The results will directly support the acceptance or rejection of the NDI alternative, influence preparation of requirements documents, and assist in preparation of solicitation documents. The test results will not be used to select a specific contractor or product.

7–13. Testing After Milestone I

The type and amount of testing will be determined by the TIWG members and documented in the TEMP. Testing and independent evaluations will done be in accordance with the IEP or IAP and the TEP. The TIWG members will minimize testing needs as much as possible and maximize the use of existing data to perform the evaluations and assessments.

a. DT and OT. DT and OT can be limited to data acquisition that is essential to the decision making process, and for which there are no existing data available. When both DT and OT are required, maximum effort should be made to combine the testing.

b. Independent developmental and operational evaluation. NDI acquisitions require evaluations (or assessments) by the independent development and operational evaluators. Evaluations or assessments are provided at each milestone decision review by the evaluators. Every effort should be made to perform these evaluations using existing data.

7–14. Testing After Milestone III

Testing, if required, is oriented to qualification of the manufacturing process and compliance with the technical data package, validation and refinement of operating and support cost data, RAM characteristics, logistics support, training, and provisioning.

7–15. DT&E for NDI

DT&E is tailored to each specific system. DT&E should be conducted, as a minimum, to verify integration and interoperability with other system elements and to evaluate and control risk. The independent developmental evaluator (or assessor) will identify any need for specific information that has not been satisfied by contractor or other test data sources, and will accept and adapt available data that answer essential questions.

a. Risks associated with hardware and software modifications for modified off-the-shelf and for integration of NDI components will be carefully considered when determining test requirements. DT requirements should be tailored to each specific system.

b. DT&E should be conducted to verify integration and interoperability with other system elements. Additional DT&E, as appropriate, will be conducted to evaluate and control risk. PQT and PVT should be identically designed. If the PQT is completely successful, the PVT can be conducted as a first article test. If the PQT is partially successful, the PVT can be redesigned to address only those parameters which are still in question.

c. The following general guidance is provided relative to the testing activities appropriate for the following NDI options.

(1) NDI items to be used in the same environment for which they were designed (no development or modification of hardware or software is required) will normally not require developmental testing before MS III; however, available data must be sufficient to assess safety, RAM, performance, producibility, supportability, and transportability. TFT may be conducted to support the MS III decision. When the production contract is awarded to a contractor who has not previously produced an acceptable finished product and the item is assessed as high risk, a PVT will be required.

(2) Those off-the-shelf items which require modification of hardware or operational software will require TFT, unless the milestone decision authority indicates that further testing is not required. PQT is required if feasibility testing results in the necessity for fixes to the item. PVT is required to support materiel release.

(3) A research and development effort is required for integration of NDI subsystems, modules, or components which contribute to a materiel solution. Systems engineering, software modification, and testing are required to ensure a total system meets user requirements and is producible as a system. TFT is required in a military environment. A system-level PQT, hardware and computer software integration tests, and a PVT is required. PQT and PVT should be similarly designed. If the PQT is completely successful, the PVT may take the form of a first article test. If the PQT identifies required fixes, the PVT will address only those parameters which are still in question.

d. Some follow-on testing of the NDI may be required to verify the adequacy of corrective actions indicated by the PVT.

7–16. OT&E for NDI

Operational testing may or may not be required for NDI. If the materiel developer demonstrates through market survey or investigation data that NDI products will satisfy the requirements document, OT may not be required provided the independent operational evaluator concurs. This determination must be included in the initial milestone decision review documentation, including the TEMP, and approved by the milestone decision authority.

a. Off-the-shelf items to be used in the same environment for which they were designed (no development or modification of hardware or software is required) will normally not require IOT before MS III.

b. Those off-the-shelf items which require hardware or operational software modifications will require IOT only when critical issues in the TEP have not been addressed. Prior concurrence by the independent operational evaluator is required to eliminate IOT.

c. For integration of NDI subsystems, modules, or components which contribute to a materiel solution, IOT is always required.

d. Follow-on testing, after the first unit is equipped, is oriented to validation and refinement of operating and support cost data, RAM characteristics, logistic support, training, and provisioning planning. These tests can materially aid the logisticians in supporting NDI throughout its life-cycle.

7–17. Recapitulation of Testing Requirements by Type of NDI

Testing requirements will be tailored to each specific system. The following test guidance by NDI category provides the general characteristics of testing activities appropriate to each NDI category. The goal of minimum testing still remains regardless of NDI category.

a. Off-the shelf item. No testing prior to PVT is required unless the contract is awarded to a contractor who has not previously produced acceptable finished products and the item is assessed as high risk. In that case, PQT should be required.

b. Modifications to off-the shelf item. Feasibility testing is required in the military environment. PQT is required if feasibility testing results in fixes to the item. PVT is required. Limited user evaluation may occur during feasibility or preproduction tests.

c. Integration of NDI components. Feasibility testing is required in the military environment. PQT of complete system is required. Hardware and computer software integration tests are required. IOT is required.PVT is required.

Section IV
Foreign Comparative Testing (FCT) Program

7–18. Foreign Comparative Testing Mission

The mission of the foreign comparative testing (FCT)program is to provide cost effective foreign equipment alternatives that meet approved Army requirements, and which, after being successfully tested and evaluated, can be selected in a procurement decision. The FCT involves T&E of weapon systems, equipments, and technologies of allied and other friendly nations with a view toward meeting valid existing Army requirements while reducing duplication in R&D, enhancing standardization and interoperability, improving cooperative support, and promoting competition and international technology exchange.

7–19. FCT Procedures

The FCT program generally fits into the Army acquisition cycle as part of the normal T&E process of NDI materiel. FCT is not a short cut to fielding, but can achieve significant savings in time and funding versus traditional development as research and development is usually not required. Procedures and criteria for project submissions are contained in DOD 5134.M–2. The following general procedures apply for Army FCT implementation.

a. A materiel developer, acting as the project proponent, can sponsor an item by preparing a Candidate Nomination Proposal (CNP)for the Army FCP Executive Agent, currently the United States Army Materiel Command (USAMC). After verifying that the DoD FCT criteria have been met and coordinating the CNP with appropriate Army organizations, the CNP will be forwarded to DOD through the Assistant Secretary of the Army (SARD-DI) for funding. Informal coordination of draft CNP and joint working groups on proposed FCT projects is encouraged.

b. Upon approval of the CNP, detailed plans for developmental and operational evaluations will be prepared by the independent developmental and operational evaluators and coordinated with the acquisition community. Foreign and contractor data will be used to the maximum extent possible to satisfy evaluation requirements. If sufficient data are not available, test items will be obtained from the foreign country by way of loan, lease, or purchase—whichever is most advantageous to the Army and agreed to by the foreign country.

c. DOD will provide FCT funds directly to the Army FCT Executive Agent who will distribute funding to the materiel developer as required or approved. All required plans and reports will flow through the Army FCT Executive Agent which will provide Army policy and oversight of all FCT projects.

Section V
Test and Evaluation Process in Support of Limited Procurement(LP) Systems

7–20. Limited Procurement Process

Limited procurement (LP) type classification (formerly called Limited Procurement-Urgent) is used when a materiel item is required for a special use for a limited time. The specified limited quantity for the LP item will be procured without intent of additional procurement of the item under this classification. The LP type classification is used to meet urgent operational requirements that cannot be satisfied by an item type classified Standard (TC-STD).

7–21. LP Criteria

Criteria for LP type classification of an item required for urgent operational use will include the following:

a. Existence of an urgent operational requirement, substantiated by the using command representative and the combat developer or by Headquarters, Department of the Army.

b. Determination that there is no type classified item that fully satisfies the requirement.

c. Sufficient definition of the military characteristics of the item in materiel requirements documents to allow subsequent evaluation of the item.

d. Demonstration that the proposed item does not qualify for STD and offers no more than a moderate risk.

e. Determination that the proposed item can be economically maintained and logistically supported in the geographic area and timeframe for which the type classification is valid.

7–22. Prohibitions Against Misuse of LP Type Classification

Type classification LP will not be used solely to avoid the checks and balances of the acquisition process or to avoid T&E of the item.

7–23. Operational Field Evaluations

Not later than 6 months following delivery of the initial shipment of the LP item, the user or requester of the item will collect data and provide an operational field evaluation statement to the program manager or mission assignee agency. Information copies will be provided to Headquarters, Department of the Army(ATTN: SARD-RPP), USATRADOC, USAMSAA, and USAOPTEC.

7–24. Expedited OT&E for LP Systems

The USAOPTEC can perform LUTs and expeditious operational assessments to support LP procurement before materiel release to the first unit equipped if the urgent requirement permits. The USAOPTEC participation in LP procurement can cover a spectrum of involvement, for both war and non-wartime urgent procurement. Some examples are:

a. Participation in a materiel release decision by rendering an AOA of the system based on program documentation and contractor or developmental testing.

b. Participation in a materiel release decision by rendering an AOA of the system based on program documentation and a combined DT and OT conducted by the developmental tester.

c. Participation in a materiel release by rendering a TER based on results of a quick reaction LUT in addition to results of contractor testing or DT.

Section VI
Accelerated Software Development Process for Software Intensive Materiel Systems and Information Systems

7–25. Accelerated Software Development Process

A flexible strategy, the accelerated software development process (ASDP), has been developed to expedite development, testing, and fielding of software intensive systems (materiel systems with extensive embedded software and information systems). It is consistent with the DoD 5000–series and DoD 8120–series guidance, including the requirement to identify low-rate initial production items at MS II. The strategy also implements the Software T&E Panel (STEP) recommendations for a unified software process. This strategy applies to materiel systems with extensive embedded software and to automated information systems. Typically, the PM develops an acquisition plan at Milestone I. The process described in the remainder of this chapter presents the way T&E would fit into a generic software intensive development. T&E events should be tailored to each acquisition.

a. Traditional weapon system OT&E requires the entire system to successfully complete OT&E of production representative items before fielding. The new strategy allows fielding of parts of software intensive systems, once successful OT&E of a representative sample has been accomplished.

b. Features of an ASDP include incremental blocks of development and testing, use of either a high-level functional description (HLFD) or an ORD, user involvement throughout the prototyping process, MS III.C and fielding of an operationally tested representative sample, fielding of subsequent blocks of functionality, and milestone decision review delegations to Project Boards for interim blocks.

c. The procedures outlined in this section and the following section offer an alternative to the standard process described in chapter 5.

7–26. Accelerated Development of Software

Technological changes have occurred that allow software development processes that are different from the traditional approaches (that is, Grand Design, Waterfall). Software development has been enhanced by availability of automated tools that help define requirements, help design and document the system, generate code, help simplify configuration management, and make maintenance easier by developing embedded test instrumentation. These procedures allow for faster production of software-intensive weapons and information systems at less cost.

7–27. Keystone of ASDP Strategy

The keystone of the new strategy is the MS II.n and III.n approach shown in figure 7–1. The time line in the illustration begins after MS II. If a system has a hardware and commercial-off-the-shelf (COTS) software component (operating system, communications software, database management system, query language), a LUT is conducted to determine successful interoperability of the hardware and COTS software and its interaction with users (soldiers or civilians), and the operational environment.

7–28. ASDP Testbeds

A testbed must be configured and fielded to support the LUT. Authorization to purchase and field the LUT testbed occurs at MS II or, in cases where the design is incomplete, on approval (by HQDA or DOD, depending on the level of oversight) of the TEP for the LUT. Following a successful test, the tester will redefine the testbed for OT of Block 1 of the developed software to appropriate sites beyond those required for the testbed LUT. The testbed may increase in size to support testing of subsequent blocks (1 through n) of developed software.

7–29. Representative Sample

Each block of developed software must provide added functionality or necessary integration capability with other systems and must stand alone, in the event that subsequent blocks are never fielded.

a. The operational tester will conduct an OT (LUT, IOT, or FOT) for each block. When a representative sample of the total software functionality to be developed has successfully completed IOT, the independent operational evaluator will provide a fielding recommendation to a MS III.C (fielding certification) decision review body.

b. To reach a representative sample, some number of blocks must sufficiently stress the system hardware, all COTS software, the intra-system connectivity, and the communications network.Definition of a representative sample will differ for each system.Generally, a representative sample is determined by collating the critical mission functions from the requirements documents with the hardware and with the COTS software capabilities.

7–30. Fielding—MS III.C

DOD or HQDA approval at a MS III.C decision review will allow the Army to authorize, purchase, and field 100 percent of the hardware and COTS software and all developmental software successfully tested to date to all users of the system at all sites.

7–31. Development, Testing, and Fielding of Subsequent Blocks

The OT&E activity will conduct an additional dedicated phase of OT for each software block developed after MS III.C. Each block is fielded after successful completion of an OT (usually a LUT).

a. For each LUT after MS III.C, the independent operational evaluator will prepare an OA. When the final block has completed FOT, the OT&E activity will provide a TER to address operational effectiveness and suitability of the total system.

b. The jagged vertical line in the Figure 7–1 can move to the left or right, depending on the definition of a representative sample of the blocks of software to be developed.Many systems will have no more than one or two blocks; some may have several. Regardless of the design, the OT&E strategy can be tailored to support the development and fielding strategy.

7–32. Other Features

Other features of the new strategy include the addition of critical mission functions (CMF) to Part I of the TEMP; criteria for determining readiness for OT; and tripwires to determine IOT requirements when changes are made to the CMF, hardware, COTS software, or communications network.

a. CMF describe the minimum acceptable functionality that must be provided before each block of the system can be fielded. CMF are developed and prioritized by the user representative and are based on the user's requirements. CMF are grouped into and enabled by blocks of developed software. An example of a CMF for a weapon system might be to provide position location; an example for an information system might be to process officer promotions.

b. As part of any strategy for successful fielding of these software intensive systems, OT (LUT, IOT, or FOT) will not start without assurance that the system can successfully function in the operational environment. In addition to the standard OT readiness statements from the project manager, user representative, and the testers and evaluators, the OT&E activity will require the Configuration Control Board (CCB) to certify that each block is ready for test.

c. Testing of changes to blocks and systems after fielding must be considered. The CCB is required to notify the OT&E activity if a tripwire is activated (significant impact on or change to CMF or a computer resource change that affects system operation or supportability). After examining the changes to be made, the OT&E activity will recommend appropriate levels of new OT to the TIWG.Otherwise, testing in support of PDSS (see chap 6) will occur.

Section VII
Accelerated Software Development Strategy

7–33. Introduction

This section briefly outlines the life cycle management model for the ASDP, and discusses the T&E activities related to each phase of the model. A comparison of this strategy with the standard strategy described in chapter 5 can be helpful in understanding the mechanism of the ASDP.

7–34. Determination of Mission Needs

a. Acquisition activities. Activities to be completed prior to MS 0 are outlined below. These actions will culminate in a defined mission need and produce the MNS.

(1) A need is identified by completing an Information Requirements Study, modeling of the business processes, or identifying requirements through the operation of existing systems or processes.

(2) Evaluation of the identified need is calculated to determine if it can be satisfied by a non-developmental solution, such as changes in doctrine, operational concepts, training, or organization.

(3) The preferred method for an initial evaluation of the resources required to develop a solution would be through a Functional Economic Analysis (FEA). The FEA does not replace the Economic Analysis (EA) required after MS 0.

b. T&E and CE activities. Typically no T&E or CE activities are conducted in this phase.

c. Milestone 0 (Concept Studies Decision). Approval of the MNS is required by this milestone.

7–35. Concept Exploration and Definition Phase

a. Acquisition activities. Activities to be completed prior to MS I are outlined below. These actions will culminate in a coordinated strategy to satisfy the mission need and will produce the high-level functional description (HLFD).

(1) Evaluate alternative technical concepts and analyze the technical risks to ensure that alternative system design concepts adequately reflect a broad segment of the technology base and provide an acceptable competitive environment.

(2) Development of an initial EA.

(3) Development of the acquisition strategy (AS).

b. T&E and CE activities. Typically no developmental or operational testing is conducted. The program manager establishes the TIWG during in this phase. CE activities include participation in the development of the HLFD, the preliminary TEMP, and associated documents such as training plans, the SMMP, and the ILSP.

c. Milestone I (Concept Demonstration Decision). T&E-related requirements for this milestone include approval of the HLFD, the initial COIC, the CMF, and the preliminary TEMP.

7–36. Demonstration and Validation Phase

a. Acquisition activities. Activities to be completed prior to MS II are outlined below. These actions will culminate in a demonstration that better defines the critical design characteristics and expected capabilities, that proves that the critical technologies can be incorporated into the system, that the processes are understood and attainable, and that the first incremental block is functional and ready for final development and testing.

(1) Selecting and, if necessary, acquiring the developmental tool set.

(2) Prototyping the system to conform with the HLFD.

(3) Updating the system design based on the prototyping, to include trade-offs between software, hardware, firmware, and human factors.

(4) Using the developmental tools and the user's involvement, design Block 1.

(5) Updating the AS.

(6) Establishing a developmental baseline.

(7) Completing the EA for Block 1, to include estimates for the other blocks.

(8) Determining the membership, and drafting of the charter for the Project Board.

b. T&E and CE activities. Typically no developmental or operational testing is conducted prior to MS II. TIWG meetings are held as required. CE activities include participation in updating the HLFD and transitioning it into the FD as the development continues, updating the preliminary TEMP, and updating the associated documents such as training plans, the SMMP, and the ILSP.

c. Milestone II (development decision). MS II approves the detailed design of block 1 and authorizes both the completion of Block 1 and the start of the development of subsequent blocks as resources become available.Approval of the FD, the COIC update, and the TEMP update are required by this milestone.

7–37. Engineering and Manufacturing Development Phase

a. Acquisition activities. Project Board reviews will occur at key points in the development of the blocks of the system to ensure the project is on track. These reviews have been labeled "MS II.X" to keep the terminology consistent. The reviews are not MAISRC-level reviews. As developmental resources are made available, the remaining blocks are prototyped, designed, developed, integrated with previous blocks, and tested. Actions to be completed by MS III.C are outlined below. These actions will culminate in the fielding of the representative sample of the system to the Army.

(1) Milestone II.0. A LUT is conducted after the MS II review by the operational tester. The LUT is designed to test the target hardware, COTS software, and communications without any application software. This test shall be conducted before Block 1 is tested on the target system. The Project Board conducts the MS II.0 review.

(2) Milestone II.1. After MS II.0, Block 1 is tested on the target hardware to support MS II.1. Testing should include an SQT and a LUT. If Block 1 is not the representative sample, MS II.1 will authorize the fielding of block 1 to the operational testbed only. The Project Board conducts the MS II.1 review.

(3) Milestone II.2 through II.n. Each block prior to reaching a representative sample will be tested as above and reviewed by the Project Board with MS II.2 through II.n reviews. The SQT and LUT will examine the functionality of the block and their integration with previously built blocks. This review will authorize the fielding of the block to the testbed. The Project Board conducts the MS II.X reviews.

(4) Milestone III.C (Certification). When the accumulation of the integration of the blocks comprises a representative sample which has been tested and evaluated using the MS II.X approach, the system is ready for a MS III.C. MS III.C is the decision point that certifies the completed increments for fielding Armywide. It determines whether the completed representative sample satisfies the mission and is ready for deployment. MS III.C requires a MAISRC review. Approval by the MAISRC at MS III.C authorizes the expenditure of resources for the deployment of the representative sample and the hardware and communications packages Army-wide.

b. T&E and CE activities. The operational tester will conduct an IOT of the representative sample to support MS III.C. LUTs will be conducted to support intermediate blocks.

(1) Extensive use of simulation and emulation may be required to fully stress the target configuration. The object of the"fully stress" requirement is to ensure that, as additional blocks are added beyond the representative sample, the system will continue to function without adverse impacts on the user and without the need for expensive hardware upgrades.

(2) Test plans, test reports, evaluations and assessments will be prepared by the developmental and operational testers and independent developmental and operational evaluators to support T&E during development. The evaluations and assessments will be provided to the Project Board and MAISRC as required. CE activities also include participation in the TEMP update for MS III.C and associated documents such as training plans, the SMMP, and the ILSP.

7–38. Production and Deployment Phase

a. Acquisition activities. This phase begins with MS III.C and ends with MS III.F(Final). MS III.F will approve fielding the final block of the system. The blocks completed after MS III.C will be reviewed by the Project Board prior to fielding. The reviews associated with these blocks will be designated as MS III.1 through III.M until the final block is ready for fielding. Because the representative sample has been fielded Army-wide, MS III.1 would authorize Army-wide fielding of the first block completed after MS III.C.

b. T&E and CE activities. These activities are similar to those discussed in the MS.II.X sequence. The operational tester will conduct an IOT of the final block of the system to support MS III.F. CE activities also include participation in the TEMP update for MS III.C and associated documents such as training plans, the SMMP, and the ILSP.

c. Milestone III.F (Final). MS III.F is the MAISRC review that determines that the final block is complete, the total system is complete, the system satisfies the mission need, and the system is operationally effective and suitable. This milestone marks the transition of the system to operations and support.

7–39. Operations and Support Phase

Following MS III.C, the fielded blocks are in the operations and support phase. The entire system transitions to operations and support after MS III.F. The acquisition process, T&E, and CE activities from this point forward are similar to the standard process (see chap 5).

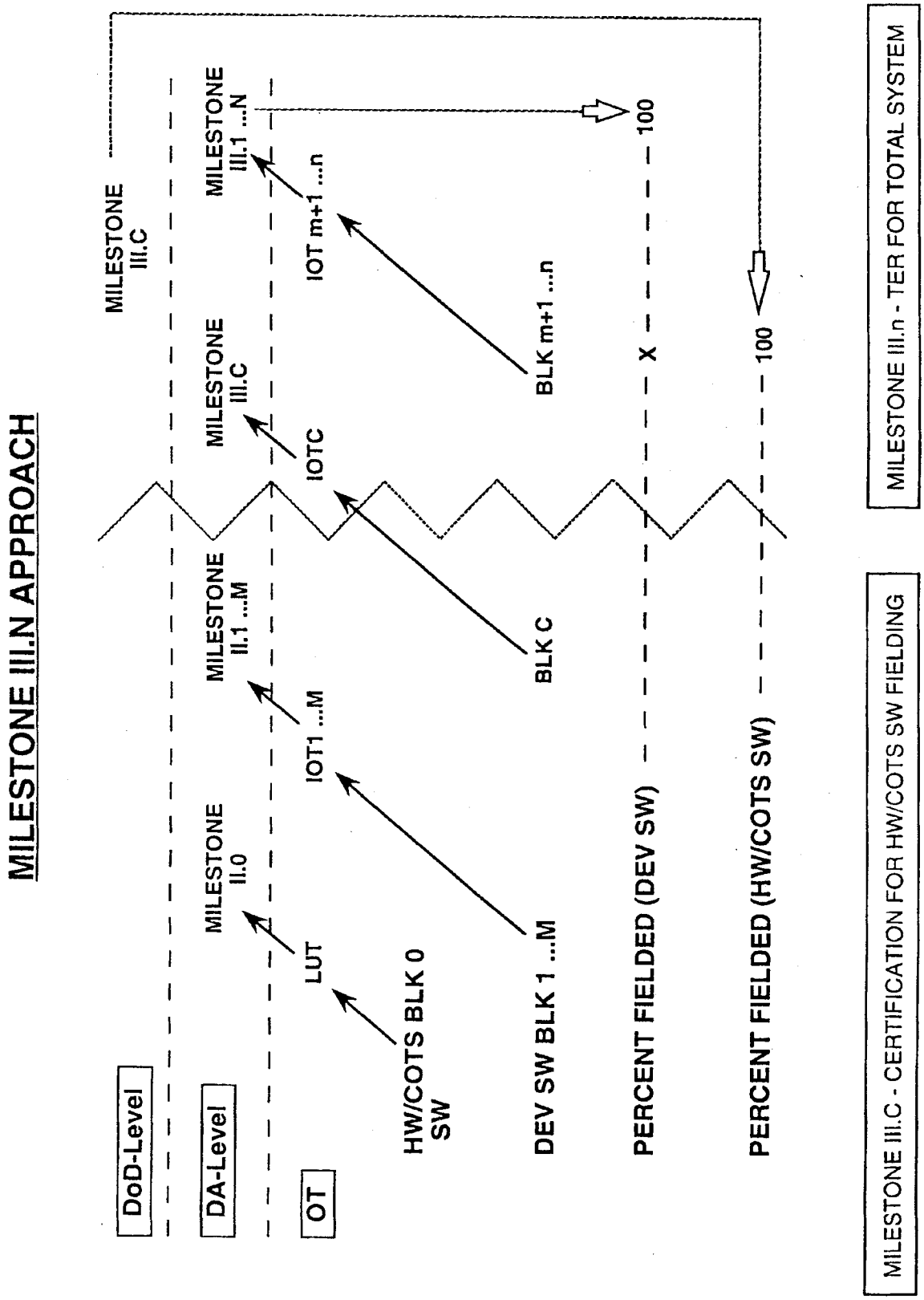

Figure 7-1. OT&E strategy for software-intensive systems

Chapter 8
Test Integration Working Group

Section I
Introduction

8–1. Overview
The Test Integration Working Group (TIWG) has been established as the forum to effect coordination, to integrate T&E planning, ensure participation by all members of the T&E community, and to solve routine problems in the T&E process. By bringing together the many agencies involved in the T&E process, the TIWG chairperson can explain the current status of the program and anticipated future events and emphasize the work that each agency must do to ensure that a well orchestrated T&E program is being conducted.

8–2. TIWG Team
The TIWG is a team of highly qualified members representing their respective organizations who meet to plan the necessary testing and the attendant evaluations. Through the intense efforts of this team, the planning, scheduling, resourcing, and actual testing can be accomplished. The team effort establishes a T&E program that will address whether the risks of developing and producing required systems are within acceptable and safe parameters. Actual testing or the availability of existing and directly applicable test data will assure that all technical and operational characteristics and issues are measured or assessed as comprehensively as possible.

8–3. Coordinated Program
The primary purpose of the TIWG is to develop a coordinated program for developmental and operational T&E of the system in determining that user requirements are met. This includes optimizing the use of appropriate T&E expertise, instrumentation, targets, facilities, simulations, and models to implement test integration, thereby reducing costs to the Army; integrating test requirements; developing and concurring in the TEMP as the first step in the TEMP approval process; mutually resolving cost and scheduling problems; providing a forum to assist those responsible for T&E documentation and execution; and ensuring that T&E planning, execution, and reporting are directed toward common goals.

8–4. Goals
TIWG goals are to develop a mutually agreeable T&E program that will provide the necessary test data for evaluations; to provide for development, staffing, coordination and approval of all required T&E documentation; establish the necessary subordinate working groups (subgroups) to address related T&E issues; assure that all participants have the opportunity to be involved and are not excluded; establish and manage the corrective action process;participate in developmental test readiness reviews (DTRRs) and operational test readiness reviews (OTRRs) and support the CE and integrated T&E. Close coordination among the TIWG members must be effected in a timely manner to optimize schedules and costs and preclude duplication or voids in the acquisition test cycle.

Section II
Objectives

8–5. TIWG Forum
A TIWG provides a forum in which designated representatives of each member organization can discuss freely their test requirements; mutually resolve cost and scheduling problems; and assure that T&E planning, execution, and reporting are directed towards a common goal. T&E coordination among all members of the acquisition team (AT) is accomplished through the TIWG. To this end, TIWG members are members of the AT and remain a principal active working group throughout the system acquisition process.

8–6. TIWG Meetings
TIWG meetings encompass activities such as development, staffing, coordination, and approval of all required T&E documentation, for example, TEMP, schedules; establishment of necessary subgroups; managing the corrective action process;supporting the CE process; the airing of substantive developmental and operational issues; briefings by special interest activities, for example, safety, environmental, software; and the identification of problems and resolution of issues.

8–7. Establishment of the TIWG
The TIWG must be established for every program (see AR 73–1). The TIWG is established between Milestone O (MS O) and Milestone I (MS I) by the program manager or materiel developer(combat developer or functional proponent, in coordination with the materiel developer if the program manager has not been designated)after receipt of the approved MNS. This affords sufficient time to assist in finalizing the critical operational issues and criteria for decision authority approval at MS I, and will facilitate early development of the TEMP and the T&E portions of the request for proposal (RFP) and supporting documentation.

8–8. TIWG Charter
A TIWG charter shall be developed which establishes the membership of the TIWG. The charter establishes the membership, scope, objectives and procedures of each TIWG. A sample format is indicated at figure 8–1. The formal TIWG charter is finalized after the initial TIWG meeting by the program manager or materiel developer and coordinated with the principal TIWG members. The TIWG charter is approved by the program manager or materiel developer on concurrence by the principal TIWG members. Each TWIG member receives a copy of the approved charter. The TIWG is chartered to structure the T&E program and integrate the various T&E and data requirements. It is chaired by the program manager or materiel developer and its members are qualified T&E representatives, with the authority to speak and sign for their parent organizations.TIWG member organizations are obligated to participate in TIWG meetings unless the agenda does not include topics of direct interest to them.

8–9. Continuous Evaluation
The TIWG supports CE by accomplishing earlier, more detailed, and continuing T&E documentation, planning, integration, and sharing of data from all testing. If possible, T&E documentation should not be published, without first allowing the principal TIWG members to review (not necessarily with any form of approval authority) the document thoroughly. This process will ensure that accurate T&E documentation will be published.

Section III
Composition

8–10. TIWG Participants
Representatives from all commands and agencies which may have a role in a particular program's T&E shall attend the initial TIWG meeting. At the conclusion of the initial meeting, a determination shall have been made as to those organizations which are critical to the TIWG body. The TIWG charter will identify representatives from those organizations as principal TIWG members.

a. Principal TIWG participants. Typical principal members to a TIWG are listed below:

(1) Program manager or materiel developer.
(2) Combat developer or functional proponent.
(3) Developmental tester.
(4) Independent developmental evaluator or assessor.
(5) Operational tester.
(6) Independent operational evaluator.
(7) Logistician.
(8) Survivability Lethality Analysis Directorate (SLAD)representative. This individual determines the survivability, lethality, and vulnerability of Army systems to the full spectrum of battlefield

threats. SLAD will make a determination as to its participation, that is, as principal, associate, or nonparticipant, in the TIWG process.

(9) Threat Integrator, Threat Systems Officer (TSO)representative. This individual represents the USATRADOC school initiating the requirement for materiel systems. A threat integrator is generally required for theater and tactical information systems. The threat integrator is a principal member of the TIWG only when the system being acquired is intended to defeat a specific threat system.

(10) Training representative. The training representative is a principal member of the TIWG only when the combat developer is a separate agency from the one that will be providing training for the program. For example, Special Operations Forces may the combat developer, Army Infantry School, the trainer.

b. Additional principal TIWG participants. Agencies which can provide additional principal members to the TIWG are listed below:

(1) The Army Command Control System (ACCS) systems engineer for any ACCS component system or equipment which has one or more interfaces.

(2) The Program Manager for Smoke and Obscurants for all systems which rely on electro-optical propagation and are susceptible to aerosol countermeasures.

(3) Military Traffic Management Command Transportation Engineering Agency if transportability engineering analysis of"problem items," in accordance with AR 70–47, has identified any transportability issues.

(4) A C3I Interoperability Test Coordinator from the Army Participating Test Unit (APTU) representing the Joint Interoperability and Engineering Organization (JIEO) will participate for C3I systems.

(5) United States Army Defense Ammunition Center and School(USADACS) when ammunition restraint system procedures need to be developed for military vehicles.

(6) Program managers or materiel developers from other programs that are being developed concurrently as part of a single system.This can occur when two vehicles or major subsystems are being developed concurrently by two different organizations as part of one program.

(7) Representatives from the Army Research Laboratory (ARL).

(8) Representatives of other services for multi-service acquisitions.

(9) Other organizations when significant interest and support is a major contribution to executing the T&E strategy, and are identified as such at the initial TIWG meeting.

c. Associate TIWG participants. The associate members of the TIWG may consist of any representative who provides a needed supportive role to adequately address all necessary T&E requirements and support the subordinate working groups. Associate members can include the Integrated Logistics Support Management Team (ILSMT), the international materiel evaluation representative, the contractor (when appropriate), program manager for Instrumentation, Targets and Threat Simulators (ITTS), environmental specialists (to determine how weather effects critical threshold values for systems), test and evaluation manager, and representatives from those commands or activities which serve in a monitor's role (for example, TSG representative for health aspects associated with system testing or use).

8–11. TIWG Participation by Department of the Army (DA) Staff and Office of the Secretary of Defense Staff

Representatives from the DA staff, the Office of the Director, Operational Test and Evaluation (DOT&E), the Office of the Under Secretary of Defense (Acquisition and Technology) (OUSD(A&T)), Director for Test, System Engineering and Evaluation (DTSE&E), and other DOD agencies are invited to attend specific TIWG meetings at the discretion and invitation of the TIWG chairperson.

8–12. Multi-Service Aquisition Programs

Multi-service acquisition programs with Army lead will have the same Army TIWG membership as an Army-unique acquisition program.Participating services will determine their membership requirements and those will be documented in the TIWG charter. Multi-service programs with Army participation (not lead) will have, as a minimum, representatives from the program manager or materiel developer, combat developer, or functional proponent, independent developmental evaluator or assessor, and independent operational evaluator. If any Army-unique testing is planned, the appropriate test agency shall also be represented. As in all cases, TIWG membership is documented in the charter.

Section IV
TIWG Subgroups

8–13. TIWG Subgroups

Essential to the TIWG process is the performance of specialized tasks assigned to subordinate working groups. The subgroups are necessary to define the details of the T&E program, handle the interfaces with other disciplines, prepare for testing, and develop supporting T&E documentation. Additionally, the subgroups are required to coordinate and jointly develop T&E parameters and identify corrective actions. When possible, the TIWG charter will delineate the planned subgroups. In some cases the subgroups may need to establish their own work groups.

8–14. TIWG Subgroup Charters

The TIWG will charter, as necessary, the subgroups identified below. Other subgroups may be chartered as appropriate.

a. Reliability, Availability, and Maintainability Working Group (RAMWG). Co-chaired by the materiel developer and combat developer, this group will address all RAM issues including failure definition and scoring criteria, RAM Rationale Annex, and Data Collection. The independent development evaluator or assessor, independent operational evaluator, developmental tester, and operational tester, as a minimum, participate in this subgroup (see AR 702–3).

b. The Supportability T&E Working Group(STEWG). Chaired by the program manager or materiel developer ILS manager, this group will provide coordination between the TIWG activities and the ILSMT. Topics to be coordinated will include all supportability test issues, test requirements, and logistic demonstration requirements contained in the TEMP (see AR 700–127).

c. Modeling and Simulation Working Group. Chaired by the program manager or materiel developer, this group will examine all data requirements to determine those which can be cost effectively satisfied through modeling and simulation rather than by testing.

Section V
Interface Groups and meetings

8–15. Other Working Groups

There are many related disciplines which have a close tie with the TIWG and their working group activities occur concurrently and are often combined with the activities of the TIWG. The communication lines between these groups with the TIWG must be clear and allow information transfer to enhance the progression of work for all disciplines. Some of these closely related subgroups are listed below:

a. The Threat Coordinating Subgroup. This is chaired by the threat integrator member of the TIWG. This subgroup reviews, coordinates, and maintains the Threat Test Support Package (TTSP).

b. Operational Test Readiness Review (OTRR). The OTRR evaluates the system's readiness to enter OT.Membership includes the program manager or materiel developer, operational tester, and independent operational evaluator.

c. Developmental Test Readiness Review(DTRR). The DTRR evaluates the system's readiness to enter developmental test. Membership, as a minimum, includes the program manager or materiel developer, developmental tester, and independent developmental evaluator or assessor.

d. Data Authentication Group (DAG). The operational tester determines the need for a DAG. The DAG is chaired by the operational tester with representatives from required areas of expertise. It meets while operational tests are being conducted to ensure timely exchange of data among all participating agencies or commands and to build a factual database by assisting in data reduction, data analysis, and the investigation of problems revealed in test data. The group is formed when the evaluation of systems requires complex data collection and instrumentation. Its members may also comprise the membership of the RAMWG who participate in the RAM scoring and assessment conference. Composition of the DAG for an OT is included in the OTP.

e. Computer Resources Working Group (CRWG). The CRWG is established by the program manager or materiel developer after MS I for each materiel system with embedded software to aid in the management of system computer resources. The CRWG assists in ensuring compliance with policy, procedures, plans, and standards established for computer resources. Membership includes the combat developer, materiel developer, developmental and operational testers, independent developmental evaluator or assessor, independent operational evaluator, and the PDSS activities. Members will actively participate in all aspects of the program dealing with computer resources.

f. Integrated Logistics Support Management Team (ILSMT). The ILSMT is established to coordinate overall ILS planning and execution. Membership includes the program manager or materiel developer, development tester, operational tester, independent developmental evaluator or assessor, independent operational evaluator, logistician and trainer (see AR 700–127).

g. MANPRINT Joint Working Group (MJWG). The MJWG develops the System MANPRINT Management Plan(SMMP) and coordinates the MANPRINT program. Membership includes the program manager or materiel developer, combat developer, logistician, and other organizations as appropriate (see AR 602–2).

h. System Safety Working Group (SSWG). The SSWG is chaired by the program manager or materiel developer and provides program management with system safety expertise and ensures enhanced communication between all AT members.Membership includes the program manager or materiel developer, developmental tester, operational tester, independent developmental evaluator or assessor, and independent operational evaluator (see AR 385–16).

i. Live Fire Test and Evaluation Working Group (LFT&EWG). The LFT&EWG is chaired by USAMSAA and is formed to prepare the LFT&E strategy and input to the TEMP. Membership typically includes the materiel developer, the combat developer, the independent evaluators or assessors, vulnerability and lethality analysts, testers, the medical community, the intelligence community and the system contractor (as required).

8–16. Initial TIWG Meeting

The initial TIWG meeting should be held together with a review of the draft Operational Requirements Document (ORD) or information system requirements document to familiarize the TIWG members with the preliminary system requirements. This meeting can be used to support the program manager in developing the T&E strategy for incorporation into the acquisition strategy, to identify all required TIWG members, draft the TIWG charter, and task TIWG members to prepare input for the preliminary TEMP.

8–17. Notice of the Initial TIWG Meeting

Notice of the initial TIWG meeting should be sent at least 14 calendar days (preferably 30 calendar days) prior to the TIWG meeting. A draft agenda should accompany the notice. The agenda should be finalized with input solicited from the TIWG members.

8–18. Initial TIWG Meeting Activities

The initial TIWG meeting should:

a. Provide a program or system orientation briefing. At the initial TIWG meeting, it is likely that attendees will be unfamiliar with a new program and it is necessary to familiarize them with all aspects of the program.

b. Review available system requirements documents to familiarize TIWG members with preliminary system requirements.Describe the overall acquisition approach that will be employed, showing how the results of the T&E community's participation in the early planning of the acquisition strategy ensures adequate T&E is integrated into the overall program.

c. Develop the T&E strategy for incorporation into the acquisition strategy. Conduct a detailed review of the Mission Need Statement (MNS) and the draft ORD or functional description if available. This will familiarize the TIWG members with the requirements for the new or modified system. The combat developer or the functional proponent, in the case of information systems, should conduct the review.

d. Initiate dialogue to define the critical technical parameters and critical operational issues to be addressed in T&E.

e. Detail the initial test requirements for the respective life cycle phases that will provide the test data and evaluations needed for each milestone.

f. Task TIWG members to draft their respective portions of the TEMP if a strawman is not provided. If a strawman was prepared, TIWG member comments and recommended changes should be discussed.Agreement should be reached on changes to be made and issues to be resolved. If a strawman TEMP is prepared prior to the initial TIWG meeting, time should be allotted at the TIWG meeting to review all comments and proposed changes to the TEMP. If the changes are satisfactory to the TIWG members, the TIWG Coordination Sheet can be signed at the meeting site, or alternatively, signed within some timeframe that is mutually agreeable to all principal TIWG members.

g. Draft the TIWG charter. Ensure all TIWG members (principal and associate) are identified.

h. Review available contract documentation. Generally, contractual documentation has not been prepared at this point;however, it is a major function of the TIWG members is to review contractual documents for T&E adequacy. If there is a draft Statement of Work (SOW) or RFP, it is useful to highlight the contractual requirements for test and evaluation.

i. Establish required subgroups.

j. Discuss related document development and status which affect T&E planning and whose completion is necessary to facilitate the T&E process, for example, the Critical Operational Issues and Criteria (COIC), the Safety Assessment Report (SAR), the Security Classification Guide (SCG), Safety Release (SR), and Environmental Impact Statements (EIS).

k. Establish unique values for the test title and system name to initialize a database in the Army Test Incident Reporting System(ATIRS). Determine which tests require Test Incident Reports (see chap 10) and identify these in TEMP.

l. Record the minutes and action items. After the meeting the chairperson will prepare the meeting minutes including the Action Item List (AIL), and distribute the minutes as agreed at the meeting and in the TIWG charter.

m. Establish the TIWG minutes distribution list containing all pertinent information, actual names, telephone numbers, facsimile numbers, and electronic addresses.

n. Discuss the action items assigned and develop a tentative agenda for the next meeting.

o. Address data collection requirements.

8–19. Follow-on TIWG Meetings

Follow-on TIWG meetings should occur on a timely basis to continue the T&E planning effort and the development, coordination, and approval of the required T&E documentation, especially the TEMP.The progress of the test program will be addressed and subgroups will meet as appropriate. As program changes occur and testing details are developed, program planning modifications will be required. Discussion of issues should continually occur, and issues which are resolved will be closed out in the AIL. DTRRs and OTRRs will be conducted and any issues relating to test readiness

should be raised and resolved at the TIWG. Techniques for data collection, incident reporting, and other test peculiar issues should be fully coordinated and integrated within the T&E community. A TIWG can be held at any time in a program when it is necessary to assemble the many agencies involved in the T&E process for the program. This can occur when the program is restructured, when an event presents a serious conflict for the next series of tests, during a test to disseminate information, or any other time.

Section VI
General TIWG Procedures

8–20. TIWG Meeting Announcements

Announcements for a TIWG must be sent to all TIWG members at least 14 days, preferably 30 days, prior to the commencement of a TIWG. The notice announcing the TIWG should include an agenda of topics to be discussed that includes TIWG member topics.

8–21. Unresolved Issues

The TIWG should not discourage the airing of substantive developmental and operational issues. Disagreement on matters of substance will be elevated through command channels to the next higher level for review and adjudication. Issues not resolved will be brought to the DUSA(OR) for resolution. Policy and procedural issues should be brought forward through TEMA for DUSA(OR)resolution.

8–22. Open Items

When an agenda item is not completed or resolved during a TIWG meeting, it is usually assigned to one of the representatives(contingent upon acceptance) for action, with appropriate suspense date. Open action items become part of the TIWG Action Item List(AIL) and are carried over to the next TIWG agenda either to verify that action has been completed or to accomplish the necessary closing action. The action items should be briefed as the last agenda topic at the TIWG.

8–23. TIWG Meeting Minutes

Minutes of each meeting are prepared by the chairperson and distributed to each principal member (to include those who could not attend) within 10 working days of the TIWG meeting. The minutes document all decisions and agreements of the TIWG and become a part of the official file. If the minutes do not adequately reflect a member's understanding of what was accomplished at a TIWG meeting, or if a member organization's position changes, this should be brought to the attention of the chairperson for correction or added as an action item to the next TIWG agenda within 2 weeks after receipt of the minutes. Alternatively, any reasonable period of time, as agreed to by all TIWG members and documented in the charter, can be used.

8–24. Teleconferences

Consideration should be given to conducting limited scope TIWG meetings by video teleconference. Normally conference time is limited to 2 hours. This method is good for disseminating information and reviewing comments requiring TEMP changes.

8–25. Coordination

Coordination on documents can be done by telephone or facsimile machine. This is especially useful when TIWG principals are required to concur in a TEMP revision.

CHARTER OF THE _____*_____
TEST INTEGRATION WORKING GROUP

1. PURPOSE: This is a brief statement identifying the system for which the TIWG is being established.

Example: To formally charter the * TIWG, comprised of the command representatives for the agencies listed in paragraph 2 below.

2. MEMBERSHIP: List organizations providing members. Include organizational addresses, office symbols, electronic message addresses, and DSN telephone numbers to facilitate communication between member organizations.

Example:

a. The * TIWG will be composed of one representative (principal) of each of the following:

(1) Program Manager/MATDEV

(2) Combat Developer/Functional Proponent

(3) Developmental Tester

(4) Independent Developmental Evaluator/Assessor

(5) Operational Tester

(6) Independent Operational Evaluator

(7) Logistician

(8) Survivability/Lethality Analysis Directorate

(9) Trainer

(10) Threat Integrator

(11) Other commands/agencies/services (when appropriate)

b. In addition to the members listed above, representatives of the agencies listed below are also included in this TIWG. These members will attend * TIWG meetings in an advisory role (such as providing comments on plans and reports and coordinating actions within their representative organizations as appropriate in accordance with their assigned mission.

Figure 8-1. Format of a TIWG Charter

3. OBJECTIVE: Specific objective of each TIWG is listed.

Example: The objective of the * TIWG is to provide a forum for test planning and integration to ensure an adequate and comprehensive test program to fully validate the system.

4. PROCEDURES: The procedures section provides the broad, general guidelines under which the TIWG will operate. The method of calling meetings, representation by members, developing agenda items, and conducting meetings are included. The organization of the TIWG is shown including the addition, the interface of the TIWG with other activities such as design engineering, simulation, targets management, etc., is shown. Procedures are also provided for handling open agenda items, resolution of problems and preparation of minutes of each TIWG meeting. Maximum use should be made of correspondence and electronic communication, e.g, facsimile, electronic mail, TECNET to resolve issues in order to reduce frequency of meetings.

Example:

a. After coordination, with principal members, meetings will convene at the call of the chairperson, who will provide for the recording and distribution of minutes of meetings.

b. Not less than two (2) weeks prior to each meeting, the chairperson will provide each member agency with notification of the time, place, and agenda for the proposed meeting.

c. Member agencies will be responsible for ensuring their own representation and such additional supplementary representation as may be indicated by the agenda.

d. Test integration, logistics, concepts, and training subcommittees will be established.

e. Members will be responsible for action items related to their functional areas that are specified on an Action Item List (AIL). The AIL will be revised by the agencies' representatives at each meeting. Such additions or deletions as recommended by agency representatives attending will be reviewed by the group and an updated AIL will be provided as part of the minutes.

f. The TIWG members will provide inputs and recommendations with regard to modification and revision to the TEMP.

Figure 8-1 (PAGE 2). Format of a TIWG Charter

g. Disagreements on matters of substance will be elevated from the TIWG to the next higher level of review for adjudication. Such matters are brought to the attentin of the DUSA (OR) for resolution or guidance if agreement cannot be reached at lower levels of review.

5. DISTRIBUTION: This section includes distribution to be made of the TIWG Charter, changes thereto, minutes of meetings, plans, reports, etc.

Example:

a. This charter, minutes of all meetings, and all issues of the * TIWG AIL shall be distributed to each * TIWG principal member within ten (10) working days after the meeting.

b. If the minutes do not adequately reflect a member's understanding of what was accomplished at a TIWG meeting, or if a member organization's position changes, this should be brought to the attention of the chairperson for correction or added as an action item to the next TIWG Agenda within two (2) weeks after receipt of the minutes.

c. Additional supplemental distribution of meeting minutes and AIL will be as recommended by the group.

d. Copies of T&E documentation, both government and contractor, will be provided to all TIWG members.

e. Specific points of contact and their addresses are provided as an Appendix.

Signature Block
TIWG Chairperson

Figure 8-1 (PAGE 3). Format of a TIWG Charter

Chapter 9
Test Support Packages

Section I
Introduction

9–1. Overview

Test support packages (TSPs) are provided to support conduct of Army testing for new systems undergoing development and fielding. TSPs are primarily used during developmental testing (DT)and operational testing (OT) before the Milestone III production decision. They include the System Support Package (SSP), New Equipment Training Test Support Package (NET TSP), Doctrinal and Organizational Test Support Package (D&O TSP), Training Test Support Package (Training TSP), and Threat Test Support Package (Threat TSP).

a. System Support Package (SSP). The SSP is a set of support elements (support equipment, manuals, expendables, spares and repair parts, tools and test measurement, and diagnostic equipment (TMDE)) planned for a system in the operational (deployed) environment, provided before DT and OT and tested and evaluated during DT and OT, to determine the adequacy of the planned support capability. The SSP is provided by the program executive officer (PEO) (or program manager (PM) or materiel developer (MATDEV)). An SSP is required for all systems, both materiel and information (see AR 700–127).

b. New Equipment Training Test Support Package (NET TSP). A NET program is first prepared by the PEO/PM/MATDEV in accordance with AR 350–35 to support training development for new materiel and information systems, including conduct of test and evaluation of new equipment and software. Based on the NET program, the PEO/PM/MATDEV prepares, as appropriate, a NET TSP. The NET TSP is provided to the training developers and testers. It is used to train player personnel for DT and to conduct training of instructor and key personnel who train player personnel for operational testing. The training developer uses the NET TSP to develop the training test support package (Training TSP).

c. Doctrinal and Organizational Test Support Package (D&O TSP). The D&O TSP is a set of documents prepared or revised by the combat developer or functional proponent for each OT supporting a milestone decision. Paragraphs or elements in the D&O TSP not needed (as determined by combat developer) will be annotated as"not required" in the D&O TSP. Major components of the D&O TSP are means of employment, organization, logistics concepts, operational mode summary/mission profile (OMS/MP), and test setting.

d. Threat Test Support Package (Threat TSP). The Threat TSP is a document or set of documents that provides a description of the threat that the new system will be tested against. A Threat TSP is required for all materiel systems(see AR 381–11).

e. Training Test Support Package (Training TSP). The Training TSP consists of materials used by the training developer to train test players and by the independent evaluator in evaluating training on a new system. This includes training of doctrine and tactics for the system and maintenance on the system.It focuses on the performance of specific individual and collective tasks during OT of a new system. The Training TSP is prepared by the proponent trainer.

9–2. Applicability

TSPs are required to support testing of materiel and information systems (including NDI and system change programs) when they are scheduled for delivery by the responsible organizations in the approved Outline Test Plan (OTP) (see AR 15–38) for the test. The Test Schedule and Review Committee (TSARC) is the appropriate forum to resolve issues regarding applicability of any TSP deemed necessary by the tester when preparing the OTP.

a. The SSP is required to support developmental and operational testing for all materiel systems and information systems unless waived (see AR 700–127).

b. The PEO/PM/MATDEV of the system conducts NET in support of the developmental and operational testers, and trainers of operational test players, for materiel and information systems. NET applies to operations and maintenance of equipment, including software updates and associated documentation. The NET TSP provides this information transfer to the trainer.

c. A Threat SSP is required in support of developmental and operational testing for all materiel systems when the TIWG determines that an operationally realistic threat is needed for the test (see AR 381–11).

d. While the D&O TSP, NET TSP, and Training TSP are normally critical to the conduct of testing, they are not mandatory and may not be desired when conditions exist that make them not applicable.

9–3. TSP Submission

Table 9–1 summarizes the responsible organizations and delivery schedule guidelines for the five TSPs.

Section II
Preparation of the System Support Package (SSP)

9–4. Introduction

The SSP is prepared and provided by the PEO/PM/MATDEV of the new equipment. The SSP is a composite of support equipment and documentation that will be evaluated during logistic demonstration and tested and certified during developmental and operational tests including repair parts, tools, maintenance and training manuals, and consumable supplies. For information systems, an SSP is prepared for hardware and software. The SSP, used to validate the support system, is to be differentiated from other logistic support resources and services required for initiating the test and maintaining test continuity.

9–5. Content of SSPs

See AR 700–127 for content of SSPs, and for associated policy, responsibilities, and waiver provisions.

9–6. SSP Processes and Procedures

The SSP is a composite of the support resources that are required to support the system when fielded or deployed. The SSP will be evaluated as part of the logistics demonstration (LD) during DT and tested and certified as appropriate during OT. To influence OT design plans, draft descriptions of the SSP should be provided 18 months before the start of testing followed by approved descriptions 14 months prior to test start.

a. SSP sufficiency. The PEO/PM/MATDEV, in coordination with the independent evaluators or assessors, will ensure that the SSP is sufficient to permit evaluation of logistic supportability issues in the TEMP.The SSP does not include those logistic support resources and services required by the tester to sustain the continuity of tests and demonstrations (for example, test site facilities, and administrative support vehicle available at the test activity).

b. Draft SSP Component List (SSPCL) delivery. The PEO/PM/MATDEV will ensure a draft SSPCL is developed for any other test (developmental or operational) with critical supportability issues. The PM/MATDEV will furnish the draft SSPCL to the ILSMT or TIWG members 90 days prior to test. They will review and identify SSP components required for each test in sufficient time for the PEO/PM/MATDEV to acquire and deliver the SSP.

c. Final SSPCL delivery. At least 60 days prior to the training test start, the PEO/PM/MATDEV will provide two copies (or as otherwise specified) of the final SSPCL to the developmental and operational testers, independent developmental and operational evaluators or assessors, logistician, combat developers or functional proponents, and any other interested activities.

d. SSP delivery. A complete SSP will be delivered to the test activity at least 30 days prior to test training initiation. When the SSP includes items available in the Army inventory, the responsible PEO/PM/MATDEV will ensure the on-site availability of such items.Upon receipt, test activities will inventory the SSP and report shortages that will have a significant impact on the planned test to the independent evaluators or assessors, and the logistician at least 25 days prior to scheduled test training initiation. If the independent evaluators or assessors determine that SSP shortages exist which prevent the adequate evaluation of any supportability-related issues, the test start will be suspended until the complete SSP is available, or a waiver is obtained by the materiel proponent. The ATIRS (see chap 10) will be used for reporting the SSP inventory.

Section III
Preparation of the New Equipment Training Test Support Package(NET TSP)

9–7. Introduction

The NET program (NETP) is first prepared by the PEO/PM/MATDEV in accordance with AR 350–35 to support training development for new materiel and systems, including conduct of test and evaluation of new equipment. Based on the NETP, the PEO/PM/MATDEV prepares, as appropriate, a NET TSP. It provides an equipment-specific training program for the training developer or subject matter expert (instructor) to develop a training program to train troops who will be used in a specific test. The NET TSP contains a combination of equipment-specific documents, training aids, training devices, training simulators, programs of instruction-(POIs) and lesson plans.

9–8. Content of NET TSPs

The NET TSP should include all training material required to train operators and maintainers of system peculiar tasks. The SSP should support the NET TSP and should be developed together with the NET TSP. Preparation of the NET TSP includes any contractor-developed training to be provided in support of operational testing. Format and content of the NET TSP are listed below.

a. Title of system.

b. Training aids (for example, transparencies, 35mm slides, student handouts, and blackboard).

c. POI and lesson plans (draft or final).

d. Technical manuals (draft, commercial or other).

e. Points of contact (POCs) (support agency's POC name and telephone number required for initial coordination).

f. Remarks reflecting clarification of the above items (for example, time schedules; support package components; additional support required in the system for test sustainment).

g. Maintenance (including all maintenance charts and literature).

9–9. NET TSP processes and procedures

a. The PEO/PM/MATDEV will program, budget, and fund the preparation and execution of the NET TSP. This includes, but is not limited to, training courses, travel and per diem for Instructor and Key Personnel Training (IKPT) for instructor personnel support in tests. The NET TSP should be planned, developed, and executed in coordination with the trainer and concurrently with the SSP.

b. The training developer or training proponent should use the NET TSP to develop the Training TSP used by operational test participants in support of operational test execution. The developmental tester should use it in support of all developmental tests during the development process.

c. For information systems, the NET TSP, if developed, should address both system hardware and software and be provided with the information system to the functional proponent for support of the planned testing assessments.

d. Milestones for providing NET TSP will be identified by the testers in either the TEMP or the OTP supporting the TSARC.

(1) The NET TSP should be provided to the developmental tester no later than 60 days prior to developmental test start. The milestone for delivery of the NET TSP to the developmental tester should be shown in the TEMP.

(2) The NET TSP should be provided no later than 180 days prior to start of training for an IOT. For NDI, the NET TSP should be provided no later than 60 days prior to start of training for an IOT. For EUTE, LUT, and FOT, the NET TSP should be provided no later than 90 days prior to test start.

(3) To provide the best training possible, the contractor may be allowed to train instructors as close to the start of training for start of IOT and FOT as feasible for knowledge retention purposes. Delivery of the NET TSP must still be timely to support delivery of the Training TSP 60 days prior to start of training for IOT and FOT. Training aids, to include vehicles, should be provided to instructors as early as possible prior to the training test start date to train test players. The 180–day lead time for contractor training cited in (2) above is applicable. However, for NDI with more compressed milestone schedules, contractor training for the instructors may occur closer to start of the OT. To ensure adequate planning, the PEO/PM/MATDEV should notify the available agencies as the acquisition strategy is developed and establish mutually satisfactory milestone goals.

(4) The NET TSP should be provided to the training developer as a package after completion of IKPT (which should be scheduled completion 180 days prior (60 days when required for NDI) to the start of test player training in support of an IOT for a Milestone III decision review.

(5) Deliveries of the NET TSP should be met even though the PEO/PM/MATDEV may use contractor support to develop the NET TSP.

Section IV
Preparation of the Doctrinal and Organizational TSP (D&O TSP)

9–10. Introduction

The D&O TSP can be prepared in support of both materiel systems development and information systems development. The D&O TSP, provided by the combat developer or functional proponent, is used to expand, update, and add specificity to the information in the MNS and ORD documents to support planned operational tests required to support a scheduled decision review milestone.

a. The D&O TSP will mature as the system and its requirements mature. Early in the system's life cycle, the content will be less specifically defined and subject to rapid changes as different concepts and techniques of employment and support are identified and accepted. As additional knowledge about the system and its capability increases, the more mature the D&O TSP becomes. As much information as possible should be provided to ensure support of operational test issues as determined by the combat developer or functional proponent.

b. A D&O TSP typically supports the conduct of an LUT, IOT, and FOT. A D&O TSP may also be necessary in support of CEP, FDTE, and EUTE (as determined by the combat developer, functional proponent, operational tester, and independent operational evaluator), but content will vary based on test or experiment requirements. The D&O TSP should be updated before each major test during a system's development.

c. The D&O TSP should be thought of as a transfer of approved system acquisition documents (for example, Operational Mode Summary/Mission Profile (OMS/MP)) or draft new or changes to operations documents (for example, field manuals (FMs)). Therefore, the majority of the package should be filled by references to approved documents or attachments of draft documents (for example, draft FM change pages).

9–11. Content of D&O TSPs

The D&O TSP consists of the following sections:references, means of employment, organization, logistics concepts, operational mode summary/mission profile, test setting, and coordination. A suggested format for preparing a D&O TSP is shown in Figure 9–1. A majority of the details should be satisfied by references or attachments. When references are very large, specific pages and chapters should be identified to assure appropriate use by the operational tester. A short paragraph should be provided for each item to help focus the tester on pertinent information.

a. References. The draft or approved MNS or ORD may be referenced or attached and all other documents supporting the D&O TSP appropriately referenced.

b. Means of employment. This paragraph describes how the system will be employed and supported. It includes or references documents which describe the doctrine, tactics, techniques, logistical concepts, and means of employment for the tested system, including a statement on new or revised versus current doctrine. The package should include sufficient detail to permit realistic system employment for conduct of the specified type test. It is used to guide the development of the TEP and to govern user actions during test. Also, when appropriate, related documents for the new system or equipment as well as support equipment should be shown as well as references or page changes to FMs, Field Circulars (FCs), Training Circulars(TCs), and operators manuals.

c. Organization. This element defines military occupational specialty (MOS)requirements, basis of issue, unit structure, organizational concept, operating concept, and lines of command or coordination for units employing the tested system. It is used in test planning to structure player units. When new MOSs are required, the specific duties of each MOS level must be included in the D&O TSP. See AR 611–1 regarding information for the development of this section. References to Basis of Issue Plan (BOIP), Quantitative and Qualitative Personnel Requirements Information (QQPRI), and Table of Organization and Equipment (TOE) apply.

d. Logistics concepts. This paragraph describes the concept for planned supply, transportation, maintenance procedures and methods for supporting the proposed or actual test system when fielded. If interim contractor support is planned in any form during initial fielding, then so state since laws govern system contractor or affiliates participation in IOT. References or draft change pages to appropriate FM apply. The concept will:

(1) Describe supply concepts envisioned for class I through X supply items and outline procedures for class IX repair parts availability for the system prescribed load list (PLL) including maintenance records, PLL records, requests for class IX items, and level of maintenance.

(2) Describe what supply and maintenance including repair parts and special tools will be provided to support testing.

(3) State system transportation procedures for rail, highway, marine and air movement with emphasis on new or changed requirements.

(4) State the MOS and duty title for each required level of maintenance.

(5) Describe special tools and test equipment required to operate and maintain the system.

(6) Describe each level of maintenance responsibility during the test, that is, military personnel, Department of Army civilian employees, or contractor personnel.

(7) Describe warranty procedures to be used to ensure maintenance conformity.

(8) Include coordination annexes listing the agencies through which the logistics concept was staffed and showing their comments.The logistics concept should be compatible with concepts, policies, and system support stated in AR 700–127 and AR 750–1.This section of the D&O TSP excludes the SSP by the PEO/PM/MATDEV but it should be compatible with the SSP.

e. Operational Mode Summary/Mission Profile(OMS/MP). This summary presents a description of the anticipated mix of ways the new equipment will carry out its operational role. It includes the operational events and environment the equipment experiences from beginning to end of a specific mission laid out in a time-phased approach. Additionally, as required to satisfy the purpose of test, a set of operational mission profiles (that is, attack, defense) should be shown. This section is prepared by the combat developer or functional proponent in coordination with the operational tester, to support the operational requirement. Details that should also be included or discussed for information systems are workload, environment, mobilization, continuity of operations, data loss, and system peculiar events.

f. Test setting. This paragraph should describe total environment (that is, tactical, threat, terrain, weather and logistical support) under which the system is to be examined. The test setting defines the interactions among threat, friendly actions, and the environment (or some specific geographic location) and establishes a scenario that subjects the system under test in the context of its total environment, to include the next higher level system or organization. The test setting should be compatible with the Threat TSP. Also, the size of unit, opposing force, equivalent scale of operations should be stated. Reference any combat developer or functional proponent standard scenario which is applicable.

g. Coordination. This paragraph indicates the organizations that normally should be provided the D&O TSP for review and comment. The final D&O TSP should contain an enclosure or appendix which details the results of the coordination (see Table 9–2 for suggested TSP coordination). The combat developer or functional proponent should establish appropriate coordination requirements and all coordination schedules to support timely completion of the D&O TSP prior to approval. Information contained in the D&O TSP already approved should be annotated as such.

9–12. D&O TSP Processes and Procedures

The combat developer (or functional proponent) is responsible for planning and development of the D&O TSP for each materiel system (or information system) undergoing acquisition. The operational tester should assist the combat developer or functional proponent in preparing the test setting (for example, scenarios and profiles) and concept of test employment.

a. The D&O TSP, to include the OMS/MP, should be provided to the operational tester 27 months prior to the start of an IOT, a LUT, or an FOT as agreed to by the TIWG (or as agreed to between the combat developer (or functional proponent) and operational tester prior to the start of a CEP test, EUTE, or FDTE), and as shown in TSARC OTP.

b. The combat developer or functional proponent must approve all D&O TSPs.

9–13. D&O TSP Checklist

A checklist is provided at Figure 9–2 for the preparer of the D&O TSP to use to ensure that basic contents of the TSP are addressed.

Section V
Preparation of the Threat Test Support Package (Threat TSP)

9–14. Introduction

Proponent combat developers (or functional proponents) and materiel developers provide threat support, including validation, to Army testing of new materiel and systems (see AR 381–11). The proponent threat support office will provide threat support by participating in test planning, preparing the Threat TSP, providing training required by units portraying threat forces, and providing on-site monitoring of the threat portrayal prior to and during the test. This applies to all developmental tests, operational tests, and other tests conducted in an operational setting.

9–15. Content of Threat TSPs

Guidance regarding Threat TSP content and format is contained in AR 381–11. Figure 9–3 provides a suggested Threat TSP preliminary package format for use as a guide during Threat TSP preparation.

9–16. Threat TSP Processes and Procedures

A Threat TSP will be prepared when an operational threat is required for developmental and operational testing of ACAT I systems, ACAT II systems, and other systems on the OSD T&E oversight list. Specific testing requirements for a given system will be determined by the TIWG. Determination of the requirement for an operationally realistic portrayal will be made by the TIWG upon the recommendation of the evaluation organization based on the requirements of the TEMP.

a. Initial Threat TSP. The initial Threat TSP (minus test specifics annexes) is developed after Milestone 0 by the combat developer or functional proponent threat support organization to support future testing for a specific system or concept. This Threat TSP is derived from the system threat assessment report (STAR) or system threat assessment(STA). The initial Threat TSP is more detailed than the STAR or STA and provides the threat scenarios to support a specific test and assesses the impacts of threat-related test limitations. To support DT requirements, the PEO/PM/MATDEV proponent (threat support organization/office) will expand and tailor the initial Threat TSP for each test in which threat force operations are to be portrayed realistically. For OT, the combat developer or functional proponent threat support activity will expand and tailor the initial Threat TSP for each OT requiring a realistic threat portrayal.

b. Final threat TSP. The final threat TSP includes an update of the initial threat TSP plus a section of several appendices that are developed on an iterative basis to support specific tests approved by the TEMP. The appendices become part of the Threat TSP and must be completed before final Threat TSP approval can be granted.

c. DA Threat Integration Staff Officer (TISO)involvement. As a member of the TIWG for ACAT I systems, ACAT II systems, and OSD OT&E oversight systems, the TISO advises threat representatives from the combat and materiel developers of tests scheduled and the anticipated threat support requirements at the initial threat coordinating group (TCG) meeting. TRADOC Threat Managers and AMC Foreign Intelligence Officers serve as the principal threat integrators for operational and developmental tests, respectively.

d. ACAT III and IV systems applicability. Threat TSPs for ACAT III and IV systems not on the OSD T&E oversight list will be provided by the combat or materiel developer, as appropriate, when threat portrayal is required by the TIWG for a DT or OT.

e. Validity. When approved, the Threat TSP describes the threat to be used for planning and developing the test and portrayed during test execution. An approved Threat TSP, however, does not ensure that test threat portrayal is valid. Two separate approval actions are required, one for the Threat TSP and one for the threat portrayal

during the test. The approved threat is included in the approved T&E plan prior to execution of test.

f. Additional guidance. See AR 381–11 for additional procedural and process guidance for Threat TSPs.

Section VI
Preparation of the Training Test Support Package (Training TSP)

9–17. Introduction

The Training TSP is provided to the test agency by the proponent developers (proponent) of the new system. A Training TSP is assembled by the proponent training developer for each affected operator and maintainer MOS. Where there are system cross proponent responsibilities, the proponent for the requirement will assemble training materials for supporting MOS. The lead proponent will consolidate the package and assure it does not contain conflicting requirements. The Training TSP contains information used by the trainer to train test players and for the tester's use in evaluating training on a new materiel system. It focuses on the performance of specific individual and collective tasks during operational testing of a system. The Training TSP package should be updated prior to each of the EUTE, LUT, IOT, and FOT during a system's development or as required by the TEMP or OTP. Training TSP for information systems should be tailored to the skills and abilities of the target audience scheduled to use the system. If there are no specified MOS to use the information system, training should be addressed and the users described.

9–18. Content of Training TSPs

Training TSPs usually consist of an initial submission and a final submission. The Training TSP items identified below will be submitted for approval to HQ TRADOC or major Army commands (MACOMs)assigned responsibility for non-TRADOC systems.

a. The initial Training TSP contains the items listed below.

(1) System Training Plan (STRAP). The STRAP should be approved prior to its inclusion in the Training TSP. Approval of the Training TSP should not be construed as approval of the STRAP. See TRADOC Regulation 351–9 for a detailed description of the contents of each paragraph in the STRAP.

(2) Test training certification plan. The plan outlines and describes the method and procedures for evaluating and certifying individual and collective pre-test training. Specifically, it describes the who, where, and how training is certified.

(3) Training data requirements. Data requirements and milestones should be identified.

b. The final Training TSP contains the items listed below.

(1) Training schedule.

(2) POI for each MOS/SSI affected.

(3) The Army Training and Evaluation Program (ARTEP)/Mission Training Plan (MTP) or changes to the ARTEP/MTP.

(4) List of training devices, embedded training components, and simulators.

(5) Target audience description.

(6) Soldier training publications or changes.

(7) Crew drills.

(8) Lesson plans.

(9) Ammunition, targets, and ranges required for training.

(10) Critical MOS task list.

(11) Field manuals (FMs) or changes to FMs.

9–19. Training TSP Processes and Procedures

The proponent training developer develops, coordinates, and provides the Training TSP to the test agency. Logistics oriented schools and non-proponent schools which manage MOSs involved with the new system develop training TSP input (for example, POI, Lesson plans, STRAP changes, training data requirements, ARTEP/MTP changes, target audience descriptions, crew drills, ammunition, targets and ranges required for training, and critical task list) to the lead proponent. This is in addition to the NET TSP provided by the materiel developer. All Training TSP input must be provided in sufficient time from responsible agencies to the training developer 60 days prior to start of test player training to allow the TSP to be submitted on time to the tester.When required, a Training TSP for an information system will be prepared as specified by the training proponent for the information system under development. The Training TSP may provide or make reference to supporting documentation to the TSP. Attachments depend on availability of referenced documents.

a. Initial submission. The initial Training TSP consists of the approved STRAP or training data requirements, and the Certification Plan. It provides the test agency with the training concept for the system, the training issues upon which the trainer requires data, and the method for training test players. The initial submission is due to the test agency from Test (T) start minus (-) T–18 months, or as specified in the OTP.

b. Final submission. The Training TSP is a full package. It is prepared following IKPT and receipt of the NET TSP which should occur 6 months prior to the start training date for developmental systems and not later than 2 months prior to the start training date for NDI systems. The final Training TSP is submitted to the training proponent 60 days prior to the commencement of test player training.

c. Functions

(1) The training developer:

(a) Provides guidance on preparation, coordination, approval and distribution of the Training TSP.

(b) Serves as approving authority for all STRAPs and Training TSPs.

(c) Serves as the training developer policy element for the STRAP and the Training TSP.

(2) The operational test and evaluation agency:

(a) Reviews the draft Training TSP and provides comments to proponents.

(b) Ensures the Training TSP is included as part of the TEP development process.

(c) Ensures all training is completed prior to start of test.

(3) The training proponent:

(a) Prepares initial and final Training TSPs in coordination with supporting schools.

(b) Forwards approved copies of initial and final Training TSPs to the tester.

9–20. Checklist

Figure 9–4 provides a checklist to use in preparing the Training TSP.

1. Title Page (type of test, system, date, etc.).

2. References.

3. Means of Employment.

   a. Field Manuals (FMs).
   b. Field Circulars (FCs).
   c. Training Circulars (TCS).
   d. Soldiers Manuals (SMs).
   e. Operators Manuals.
   f. Tactical Unit Standing Operating Procedures (TAC SOP).
   g. Communications-Electronic Operating Instructions (CEOI).
   h. Equipment Storage Plans (Load lists).

4. Organization.

   a. Basis of Issue Plan (BOIP).
   b. Qualitative and Quantitative Personnel Requirements Information (QQPRI).
   c. Organization Plan.
      (1) Introduction.
      (2) System Description.
      (3) Organizational Concept (Unit).
      (4) Operating Procedures.

5. Logistics Concept.

   a. Purpose.
   b. Source.
   c. Description.
   d. Supply.
   e. Transportation.
   f. Maintenance.
   g. MOS by level of maintenance.
   h. Special tools and test equipment.

6. Mission Profiles.

7. Test Setting.

8. Approval authority.

NOTE: Content will vary based on purpose of TSP or milestone decision review and as deemed necessary by the combat developer or functional proponent and evaluator.

Figure 9-1. Suggested format for a doctrinal and organizational TSP

CHECKLIST FOR DOCTRINAL AND ORGANIZATIONAL
TEST SUPPORT PACKAGE (D&O TSP)

1. Following is a list of items to consider during preparation and review of D&O TSP:

a. References and title page. Administrative information and ORD/TSARC references (current and available).

b. Means of Employment.

(1) Does the D&O TSP provide a complete, current listing of the doctrinal materiel that will be required for the new system at the unit level, e.g., FMs, FCs, TCs, SMs, operators manuals (may be included in the SSP), TAC SOPs, CEOIs, and load plans?

(2) Does the D&O TSP provide a listing of the doctrinal material used at staff levels above the operating unit that must be changed or augmented to support fielding of the system? Interoperability?

(3) Are drafts of, or changes to the listed or referenced documents included in the D&O TSP?

(4) Is the draft documentation such that it addresses system employment and permits development of the TEP, DTP and other T&E planning documents, e.g., TEMP, COIC, etc.?

(5) Are dates for delivery of the Tactical SOP, communication/electronic and loading instructions and plans established?

(6) Does the scope state the tactical scenario?

c. Organization.

(1) Are draft or final TOEs for units employing the system up to battalion level or equivalent included? BOIP, QQPRI referenced?

(2) Does the D&O TSP include a detailed description of the operational concept for employing the system in combat to include lines of communication and coordination through division level?

(3) Does the D&O TSP describe each of the system employment options, e.g., direct support, general support, attachment, etc.?

Figure 9-2. Doctrinal and organizational TSP checklist

(4) Are the operating procedures for each option described in detail?

(5) Are the lines of C3 for the system clearly delineated?

(6) Are the degraded mode(s) of operation described in detail?

(7) Are the various communications options (wire, radio (voice, digital data, secure, etc.), facsimile, etc.) described?

(8) Are related operational and organizational concepts included in the D&O TSP? This applies when the system under development/test is used in conjunction with or to employ other systems. An example of a system requiring special treatment is the Fire Support Team Vehicle (FISTV) which in addition to its usual field artillery missions may be required to employ Hellfire missiles, U.S. Air Force laser guided and conventional weapons and other systems. The D&O TSP should include the employment concepts for each such related system.

(9) Are MOSs discussed?

d. Logistics Concepts.

(1) Are the logistical concepts for the system through the direct support level incorporated into draft FMs and support documents?

(2) Are they shown in FM (draft/final)?

(3) Are the logistical concepts detailed enough so that IOT and FOT can assess supportability through the direct support level?

(4) Are all major logistical areas included (e.g., supply, maintenance, transportation).

(5) Does the logistics concept include procedures for use of operational readiness floats (ORF)?

(6) Type of support stated (troop, contract)?

(7) Are there environmental impacts(e.g., manufacturing, supply, maintenance, repair, and disposal actions)?

Figure 9-2 (PAGE 2). Doctrinal and organizational TSP checklist--continued

e. Operational Mode Summary/Mission Profile.

(1) Has the OMS/MP been expanded or updated since the last operational test or publication of the ORD?

(2) Does the OMS/MP describe the events and frequency of occurrence and duration events in attack, defense, exploitation and retrograde operations? State alternate missions?

(3) Does the OMS/MP state the frequency and duration of responses to threat use of countermeasure such electronic warfare or radio electronic combat, obscurants and NBC weapons?

f. Test Setting.

(1) Does the setting detail friendly and threat force actions down to the unit level?

(2) Are the probable areas of employment for the proposed system stated?

(3) Does the setting state the primary areas of employment for the proposed system?

(4) Is the approved scenario on which the test setting is based referenced? (Include sequence number and date of the scenario).

(5) Does the setting state or relate to a standard scenario and threat support package?

(6) Does the test setting identify the type force structure for the proposed system?

2. After finalizing contents, ensure that adequate coordination is accomplished.

Figure 9-2 (PAGE 3). Doctrinal and organizational TSP checklist--continued

1. Title page. (Preparing agency, information cutoff date, U.S. system project office, and the MACOM or DA validation date).

2. Tables of contents and illustrations.

3. Section I Background Information.

a. Description of system, organization or concept to be tested.
b. Type of test.
c. Evaluating agency.
d. Test organization.
e. TRADOC proponent school.
f. Test dates.
g. Test location.
h. Simulated location (e.g., central Europe).
i. IOC of system being tested.
j. Threat year.

4. Section II Critical Operational Issues and Criteria/Additional Operational Issues and Criteria (COIC/AOIC).

5. Section III Threat.

a. Specific threat systems and units/organizations.
b. Threat tactics, doctrine, techniques, procedures and flight profiles (as appropriate).
c. Threat countermeasures.

6. Section IV Test Specific Appendices.

a. Appendix A Test concept (Draft of TEP Chapter 3-1).
b. Appendix B Scenario.
c. Appendix C Description of trials/test runs/vignettes.
d. Appendix D Firer/target matrix.
e. Appendix E Targets, threat simulators, and surrogates.
f. Appendix F Limitations.
g. Appendix G Threat force training plan.

Figure 9-3. Suggested format for a threat TSP

CHECKLIST FOR TRAINING TEST SUPPORT PACKAGE
(Training TSP)

1. Initial Submission of the Training TSP.

a. Were development procedures outlined in TRADOC Reg 351-9 followed for the STRAP?

b. Did the STRAP address:

(1) The system description?

(2) Assumptions?

(3) The training concept?

(4) The training device strategy?

(5) Significant training issues at risk?

c. Did the Test Training Certification Plan describe the method and procedures for evaluating and certifying individual and collective pre-test training? Specifically, did it describe the who, where, and how training is to be accomplished and the method of certification?

d. Were the STRAP and Test Training Certification Plan submitted within the time frame prescribed?

e. Did the Training Data Requirements provide training issues outlining the need for data on individual/collective performance, technical manuals, etc.?

2. Final Submission.

a. Is final Training TSP submitted to HQ TRADOC at least 60 days prior to the test date?

b. Does the final Training TSP include:

(1) The training schedule?

(2) The POI for each MOS/SSI affected?

(3) FMs/FM Changes References?

(4) The ARTEP/MTP or changes to the ARTEP/MTP?

Figure 9-4. Training TSP checklist

(5) A list of training devices, embedded training components, and simulators?

(6) A target audience description?

(7) Soldier training publications or changes?

(8) Crew drills?

(9) Lessons Plans?

(10) A list of ammunition, targets, and ranges required for training?

(11) A critical task list?

c. Does the Training TSP include information from each MOS proponent school affected?

d. Does the Training TSP lay out who is responsible for training those tasks taught in the institution and unit?

e. Does the Training TSP contain all of the material needed to train test players on operator and maintainer tasks?

f. Is field training necessary? Does it train operator crews to operate the system to its desired capability? Is night training appropriate?

g. Are tactics, techniques, and procedures (DTT) taught to test players? Does it agree with the employment described in doctrinal manuals?

h. Is there sufficient time built into the training schedule for the unit to become proficient with the system?

i. Will training devices be available to support test training?

j. How much ammunition is required to support training? Is it supportable?

k. Is the test player a "typical soldier" in his career field?

Figure 9-4 (PAGE 2). Training TSP checklist

Chapter 10
Test Incidents and Related Reporting

10–1. Introduction

This chapter discusses processes and procedures for the reporting of DT and OT results and corrective action information to the Army Test Incident Reporting System (ATIRS) to enable the continuous evaluation process to function. A separate scheme is used to report software problems, and is not discussed in this chapter.

a. Program managers, combat developers, functional proponents, evaluators, assessors, and others participating in the acquisition process must be informed of system performance during tests in a timely manner. Acquisition community members must have immediate access to test information in order to consider corrective actions.In this way the continuous evaluation of the systems is enhanced.

b. Test results and corrective action information are also required by Reliability, Availability, and Maintainability (RAM)scoring and assessment conference members to form the basis for the assessment of RAM and integrated logistics support (ILS) (see AR 700–127).

10–2. Process Overview

a. The Test Incident Report (TIR) contains the minimum essential data for test incidents and corrective actions. A sample TIR

form is shown in figure 10–1 at the end of this chapter.The TIR contains two types of data. One type consists of test incident (TI) data. The tester prepares these data. The tester omits section VI when preparing the TIR. The other type consists of corrective action (CA) data which are prepared by the program manager. These two data types are merged together by ATIRS at Aberdeen Proving Ground, MD, which is administered by the Aberdeen Test Center of the United States Army Test and Evaluation Command.

The tester (Government or contractor) prepares TI data for all pre-Milestone III tests and postmilestone III tests which support a materiel release decision. The IPT will determine which Government and contractor tests require TI data and will identify these tests in the TEMP. TI data may also be prepared for other tests as required by the program manager or other test sponsors.

c. The program manager prepares CA data for input into ATIRS for critical and major TIRs as a minimum. All TIRs must be considered for corrective action, and the TIR should reflect action taken with supporting rationale. After consideration, the action may be to decide that no corrective action is required for minor TIRs. The intent is to produce a better system.

d. TI and CA data will be inputted into ATIRS. ATIRS provides an Army standard method of electronically exchanging, storing, processing, and reporting data on results of testing, their corrective actions, and other test-related information. ATIRS is used to store all test incidents and corrective actions information.Assistance on ATIRS is available by electronic mail through the Defense Data Network (DDN) at atirs@atc.apg.army.mil or by submitting a request to Commander, U.S. Army Aberdeen Test Center, ATTN: STEAC-RM-CC (ATIRS Administrator), Aberdeen Proving Ground, MD 21005–5059.

e. A corrective action review team comprised of the program manager, combat developer or functional proponent, independent evaluator, or assessor reviews all CA data and associated TI data, to verify that proposed corrective actions are appropriate and effective. The testers are advisers to the team.

f. Production and postproduction tests of ammunition are excluded from submission of TIRs. The reporting procedures in AR 75–1 are used for these items.

10–3. Security

a. Since the TIR data will be transmitted, stored, and interactively accessed via unsecured media, care must be taken to ensure that documents provided to ATIRS contain no classified information.

b. In the event that information pertaining to a test incident is classified, the information will be published separately in a classified TIR and distributed per the listing agreed to by TIWG members. Additionally, an unclassified TIR referencing the classified TIR will be provided to ATIRS in the formats of table 10–1 (preferred) or figure 10–1. AR 380–5 provides instructions on handling classified documents from automated equipment. Since portion markings are not possible on the TIR, the individual blocks in a classified TIR need not be marked provided that:

(1) Classification markings are placed top and bottom.

(2) A statement is included in Block 90 showing the source of the classification, full address of proponent, and declassification date/event/Originating Agency's Determination Required (OADR).

(3) A statement is provided in Block 90 listing the classified block numbers and their classification levels. In addition, a statement will be provided to indicate that other blocks not listed are unclassified.

c. The tester should consult the program security classification guide for classification of program data or the program manager when classification of cumulative data is in question.

d. The originators and recipients must safeguard the classified information per AR 380–5.

e. The program manager should address operations security(OPSEC) and competition sensitive (CS) implications of TIR information before pretest activities begin. If the reports are expected to contain OPSEC information, the program manager will notify the document originator, and the ATIRS administrator of any limits to be placed on content, electronic mail distribution, storage, or interactive access per AR 530–1. Similar procedures will be followed for reports expected to contain proprietary or CS information.

f. Access to ATIRS databases is requested through the ATIRS administrator. As a default, Government users will have open access to ATIRS databases, unless the data is restricted by the program manager or tester. The ATIRS administrator has full authority to grant access to databases not restricted by the program manager or tester. All contractors are restricted to those data authorized by the program manager or tester. The T&E Manager will have access to all data associated with his or her commodity command.

Table 10–1
Test Incident Data Stream

HEADER DATA AND TEST INCIDENT DATA

HEADER DATA

Field Name	**Field Length (Fixed)**	**Field Position (Fixed)**	**Instructions**
Data Item	1	1	0 - Indicates test incident information. Only the tester can originate this information. 1 -Indicates corrective action information. Only the test sponsor can originate this information. 2 -Indicates both test incident and corrective information. Only the ADACS database can originate this combined information. 3 -Indicates ADACS data from an ATTC.
Markings	1	2	0 -Unclassified 1 - FOUO
Version#	2	3-4	Version number; this version number is 0
Sender's Phone#	20	5-24	Commercial Phone#
Project#	20	103-122	Test Project# (TIRS only)
Submittal Date Format	6	123-128	Date of submittal in YYMMDD format
Submitter	20	129-148	Point of contact responsible for submission of data.
Reserved	10	149-158	Reserved for future use

TEST INCIDENT DATA

Block Number Block Name	Field Length (Maximum)	Instructions
--1 Release Date	6	YYMMDD
--2 Test Title	34	
--3 Test Project#	20	
--4 TIR#/Revison	10/2	Omit slash if TIR is not revised
--5 Test Agency	20	
--6 Test Sponsor	20	
--7 System	14	
--8 Original Release Date	6	YYMMDD
--9		Reserved
--10 Model		26
--11 Serial#		24
--12 USA#		27
--13 Mfr		28
--14 Contract		22
--15 Item#	10	
--16		Reserved
--17		Reserved
--18		Reserved
--19		Reserved
--20		Reserved
--21 Test Life		10
Life Units		14
--22 Test Life		10
Life Units		14
--23 Test Life		10
Life Units		14
--24 Test Life		10
Life Units		14
--25 Test Life		10

Table 10–1
Test Incident Data Stream—Continued

HEADER DATA AND TEST INCIDENT DATA		
Life Units	14	
--26		Reserved
--27		Reserved
--28		Reserved
--29		Reserved
--30		
Title	26	
--31		
Subsystem	22	
--32		
Incident Class	12	
--33		
Observed During	16	
--34		
Action	25	
--35		Reserved
--36		
Element Name:		(Not to exceed 34 for name and value
Element Value		(including : and spacing)
Repeat for the number of names and values that are being collected.		
//	2	End of repeating blocks indicator
--37		Reserved
--38		Reserved
--39		Reserved
--40		
Date Occurred	6	YYMMDD
Time	4	
Time standard	4	
--41		
FD/SC Step#	20	
--42		
FD/SC Class	20	
--43		
Chargeability	18	
--44		
Incident Status	12	
--45		Reserved
--46		
Category	14	
Category	14	
Category	14	
Category	14	
--47		
Keywords	14	
Keywords	14	
Keywords	14	
Keywords	14	
--48		
Test Environment	32	
Type	22	
Condition	16	
--49		
Defective Material	59	
--50		
Name	27	
--51		
Serial#	24	
--52		
FSN/NSN	24	
--53		
Mfr	28	
--54		
Mfr Part#	22	
--55		
Drawing#	23	
--56		
Quantity	10	
--57		
Action	25	
--58		Reserved
--59		Reserved
--60		
FGC	10	
--61		

Table 10–1
Test Incident Data Stream—Continued

HEADER DATA AND TEST INCIDENT DATA		
LSA#	27	
--62		
Part Life	10	
Part Units	14	(If "When Repaired" is used, the displayed "Part Units" length will be truncated to 6 characters.)
When Repaired	10	
--63		
Part Life	10	
Part Units	14	
When Repaired	10	
--64		
Part Life	10	
Part Units	14	
When Repaired	10	
--65		
Next Assembly	22	
--66		
Serial#	24	
--67		
Software Version	14	
--68		Reserved
--69		Reserved
--70		
Diag Clockhours	7	hhhh:mm
--71		
Diag Manhours	7	hhhh:mm
--72		
Total Maint Clockhours	7	hhhh:mm
--73		
Total Maint Manhours	7	hhhh:mm
--74		Reserved
--75		Reserved
--76		Reserved
--77		Reserved
--78		Reserved
--79		Reserved
--80		
Type	27	
--81		
Level Used	21	
--82		
Level Prescribed	21	
--83		
Level Recommended	21	
--84		Reserved
--85		Reserved
--86		Reserved
--87		Reserved
--88		Reserved
--89		Reserved
--90		
Incident Description	76	This is a repeating field. There is no need to repeat Block #.
//	2	Forward slash to end description for block 90.
--91		Reserved
--92		Reserved
--93		Reserved
--94		Reserved
--95		Reserved
	Additional Data - These are data blocks not covered anywhere above.	
--96	Repeat as many as needed, including block no. If any data is missing, represent with a blank line.	
Maintenance Start Date	6	YYMMDD
Maintenance End Date	6	YYMMDD
Time Started	4	24-hour clock time
Time Ended	4	24-hour clock time
Maintenance level/echelon	21	Although a maximum of 21 characters is shown (following block 81 field length), only the first 5 characters are displayed on the TIR form in order to accommodate all specified Maintenance Time breakdown information on one line. Provide as much complete information as possible within the first 5 characters.
Admin & Logistic delay time	6	
Maintenace Type	4	

Table 10–1
Test Incident Data Stream—Continued

HEADER DATA AND TEST INCIDENT DATA		
Diagnostic Clockhours	7	Although a maximum of 7 characters is shown (following Blocks 70-73 field lengths), only first 6 characters are displayed on the TIR form to allow all specified Maintenance Time Breakdown information on one line. Provide as much complete information as possible within the first 6 characters.
Total Maintenance Clockhours	7	
Diagnostic Manhours	7	
Total Maintenance Manhours	7	
Maintenance Chargeability	1	Y or N
	Repeat as many as needed, including block no. If any data is missing, represent with blank lines	
--97		
Nomenclature	27	Although a maximum of 27 characters is shown (following Block 50 field length), only the first 19 characters are displayed on the TIR form to allow all specified PARTS DATA information on one line. Provide as much complete information as possible within the first 19 characters.
FGC	10	Although a maximum of 10 characters is shown (following Block 60 field length), only the first 4 characters are displayed on the TIR form to allow all specified PARTS DATA information on one line. Provide as much complete information as possible within the first 4 characters.
Serial#	24	
FSN/NSN	24	
Manufacturer's Part#	22	
Part Life	10	Although a maximum of 10 characters is shown (following Blocks 62-64 field lengths), only the first 7 characters are displayed on the TIR form in order to accommodate all specified PARTS DATA information on one line. Provide as much complete information as possible within the first 7 characters.
Part Units	14	Although a maximum of 14 characters is shown (following Blocks 62-64 field lengths), only the first 7 characters area dislapyed on the TIR form in order to accommodate all specified PARTS DATA on one line. Provide as much complete information as possible within the first 7 characters. The information contained in this data element is displayed in place of "Part Life" in the header.
Maintenance level/echelon	21	Although a maximum of 21 characters is shown (following Blocks 82-83 field lengths), only the first 5 characters are displayed on the TIR form in order to accommodate all specified PARTS DATA on one line. Provide as much complete information as possible within the first 5 characters.
Quantity	10	Although a maximum of 10 characters is shown (following Block 56 field length), only the first 4 characters are displayed on the TIR form to allow all specified PARTS DATA on one line. Provide as much complete information as possible within the first 4 characters. This entry must be numeric.
Action	25	Although a maximum of 25 characters is shown (following Block 57 field length), only the first 7 characters are displayed on the TIR form in order to accommodate all specified PARTS DATA on one line. Provide as much complete information as possible within the first 7 characters.
--98		
Preparer's Name	34	
Preparer's Title	34	
Preparer's Phone#	34	
--99		
Releaser's Name	34	
Releaser's Title	34	
Releaser's Phone #	34	
--9	End of file indicator	

EXAMPLE TEST INCIDENT DATA STREAM

00 04105559413	jdoe@testplace-emh1.army.mil	etc., etc., <cr> <lf>
--1<cr> <lf>		
92013 <cr> <lf>		
--2<cr> <lf>		
PQT OF SMALL WIDGETS <cr>		
&ltlf>		
--3<cr> <lf>		
9-ZZ-999-999-999<cr> <lf>		
--4<cr> <lf>		
K2-B999999<cr> <lf>		

Table 10–1
Test Incident Data Stream—Continued

HEADER DATA AND TEST INCIDENT DATA
--36<cr> <lf>
Subsystem Code:<cr> <lf>
1<cr> <lf>
Hazard Severity:<cr> <lf>
na<cr> <lf>
Sub Cause:<cr> <lf>
Main Battle Tank<cr><lf>
Sub Cause Code:<cr> <lf>
1<cr> <lf>
--81<cr> <lf>
ORG <cr> <lf>
--82 <cr> <lf>
DS<cr> <lf>
--83 <cr> <lf>
ORG <cr> <lf>
--90 <cr> <lf>
Misalignment problem discovered.
<cr> <lf>
During the initial phase inspection,
an alignment problem was <cr>
<lf> noted between widget A and
tab B. No further action was <cr>
<lf> taken at this time. <cr> <lf>
.
.etc.
.
// <cr> <lf>
.
.etc.
.
-9 <cr> <lf>
.
.
.//<cr><lf>
--100<cr><lf>
Closed<cr><lf>
--101<cr><lf>
930112<cr><lf>
--102<cr><lf>
930420<cr><lf>
--103<cr><lf>
930125<cr><lf>
--104<cr><lf>
930225<cr><lf>
--105<cr><lf>
920625<cr><lf>
--120<cr><lf>
The developer has determined that
the shutdown of<cr><lf> the en-
gine occurred due to an electrical
short.<cr><lf>
\\<cr><lf>
--121<cr><lf>
This described the status of the
corrective action<cr><lf>
\\<cr><lf>
--122<cr><lf>
This area describes the results of
the corrective action.<cr><lf>
<cr><lf>
\\<cr><lf>
--123<cr><lf>
This area describes the planned
implementation.<cr><lf>
\\<cr><lf>
-9<cr><lf>

10–4. Test Integration Working Group (TIWG)Actions

a. The TIWG plays an active role in developing the T&E program and integrating various disciplines and interest. Therefore, the TIWG is used as the medium to effect necessary actions crucial to the TIR process.

b. To ensure consistency of terms across test phases and milestones, prior to any TIWG, the program manager and tester will contact ATIRS either by mail, electronic mail (see para 10–2d for mail and electronic mail addresses), or dial-in/TELNET (after receiving access authorization) for a list of possible values for the TIR

blocks shown in paragraphs 10–4c and 10–4d. The list will form the basis for agreement or understanding of standard values at TIWGs as discussed below.

c. At the first TIWG meeting following the milestone decision, the program manager and testers (or higher headquarters test manager) will lead the following actions:

(1) Identify all tests which provide data to support a milestone decision. These tests are then reflected in the TEMP and TIRs will be prepared for those tests.

(2) Establish acceptable unique values for the below blocks so that consistency can be maintained between tests.

(a) Test Title (Block 2).

(b) System (Block 7).

d. Prior to each test, as the program develops, the program manager and tester (or higher headquarters test manager) will lead the following actions in subsequent TIWGs:

(1) Establish unique values to be registered with ATIRS for the following blocks:

(a) Test Agency (Block 5).

(b) Test Sponsor (Block 6).

(c) Model (Block 10).

(d) Manufacturer (Block 13).

(e) Contract No. (Block 14).

(f) Subsystem (Block 31).

(g) Failure Definition/Scoring Criteria Classification (Block 42).

(h) Chargeability (Block 43).

(2) Establish the format and units of measure to be registered with the ATIRS administrator for the following blocks:

(a) Test Life: Units (Blocks 21–25).

(b) Part Life: Units (Blocks 62–64).

(3) Discuss possible data values desired to be recorded during test for the following blocks:

(a) Action (Blocks 34 and 57).

(b) Categories (Block 46).

(c) Keywords (Block 47).

(d) Test Environment; Type; Condition (Block 48).

(e) Disposition (Block 49).

(f) Type/Level Used/Level Prescribed/Level Recommended (Blocks 80–83).

(4) Discuss security guidance and procedures on data handling.

(5) If competition sensitive data are involved, determine authorizations and data restrictions to ATIRS and submit to the ATIRS administrator.

(6) Establish a distribution list for the TI and CA data for users preferring data to be sent directly from the tester and program manager. The list will include format (for example, data stream, TIR form text format), distribution method (for example, computer transfers, electronic mail, floppy disk, hardcopy), mail address, and electronic mailbox address for each recipient. Include the recipient name or point of contact and telephone number for the electronic mailbox address. Users to consider include the program manager, both independent developmental and operational evaluators or assessors, logistician, combat developer or functional proponent, and T&E Manager.

(7) Determine recipients of hard copy information, such as classified photographs or other information related to TI data.

(8) Determine capabilities and procedures of participants in implementing provisions of this pamphlet (for example, how contractor TI data are processed for input to the independent evaluators/assessors and ATIRS administrator).

(9) Determine data collection procedures for all of the test and commodity-unique additions.

10–5. Notifying Database Personnel

a. After the TIWG, the program manager in coordination with the tester must register the TIWG-agreed acceptable values for the specified blocks stated in paragraph 10–4 with the ATIRS administrator before testing begins. Registration is accomplished through either electronic mail, facsimile, or in writing to the ATIRS administrator.

b. All additions to the blocks in the TIR or changes to the TIWG-agreed values must be coordinated with the ATIRS administrator so that consistent, readily identifiable data are stored, retrieved, and used.

10–6. Test Incident (TI) Data

a. The tester (Government or contractor) prepares the TI data portion of the TIR (that is, Header blocks 1–8 and Sections I to V). Instructions for completion of the TI data input are listed below.

b. TI data are prepared for each test incident occurring on an identifiable test item or system, without regard to the number of times the test incident recurs. Some groupings of incidents are authorized for minor or extremely frequent occurrences that do not impact mission reliability. When an incident involves a problem-(such as an inherent operational defect, safety, or human factors engineering (HFE) problems) which does not require maintenance and can be determined by inspection or examination to be common to all samples of the test item that are accessible to the tester, the tester may prepare a single TIR that addresses the problem, in lieu of a TIR for each test item.

c. TI data are prepared for test incidents involving Government-owned products, such as items covered by a warranty or Government-furnished equipment. The materiel developer item manager will prepare a Quality Deficiency Report (QDR), based on the TIR input (see AR 702–7–1). A separate QDR will not be prepared by the tester.

d. TI data will be prepared whenever the need arises during pretest, test, or post-test activities to report—

(1) Non-receipt of all or part of any applicable test support package or an inadequacy in the components of a support package, in particular, the System Support Package. Also, TI data will be prepared if the System Support Package Component List (SSPCL) is incomplete.

(2) Start of test, to establish a record of the test start date and major component serial numbers (for example, engine, transmission) and the starting hours for the major components.

(3) Receipt of materiel in unsatisfactory condition for test.

(4) Any functional area characteristic, defect, or discrepancy, actual or incipient, that affects, may ultimately affect, or pertains to health, safety, environmental, operational suitability or effectiveness, or compliance with contract specifications or requirements documents of the item or system to include its hardware, operator or crew and maintenance personnel, prescribed training, publications, tools, diagnostic and support equipment, and associated software.

(5) The need for or accomplishment of a scheduled preventive maintenance check and service if the maintenance data associated with the task is to be scored as chargeable and scheduled and is to be used in the computation of maintainability statistics for the test.

(6) The need for or accomplishment, application, or installation of a modification to an end-item or its associated software. Indication will be made in Block 90 of the effects on previously reported test conditions.

(7) The need for installation, removal, adjustment, repair, or replacement of a component, assembly, or software for reasons other than above.

(8) The accomplishment of off-item component or assembly repair, whether accomplished by the tester or by the contractor or manufacturer, on or off the test site, if such maintenance is not reported with the basic incident.

(9) End of test, to establish a record of the test end date and the ending hours for the major components.

e. In addition, TI data report the following:

(1) A summarization of subtest results (for example, performance, safety, HFE).

(2) The achievement of important milestones in the test program, such as receipt or shipment of the test items or commencement or completion of testing, or a specific phase of testing.

f. Each TIR will be assigned a TIR classification value by the tester that reflects the degree of seriousness of the reported incident or test findings, regardless of cause, frequency, or expected probability of occurrence. The four acceptable TIR classification values

are: Critical, Major, Minor, and Information, and are described as follows:

(1) Critical—

(a) Involves a catastrophic or critical hazard related to health or safety of personnel (death or severe injury or occupational illness; Categories I and II per MIL-STD–882B).

(b) Involves a catastrophic safety hazard to the item/system under test (unplanned system loss; Category I per MIL-STD–882B).

(c) Reports test results which make test suspension or termination advisable.

(2) Major—

(a) Involves a marginal hazard to health or safety of personnel-(Category III per MIL-STD–882B).

(b) Involves a critical safety hazard to the item/system under test (unplanned major system damage; Category II per MIL-STD–882B).

(c) Reports the inability of the test materiel (including diagnostic equipment, tools, publications, software, and so forth)to meet a critical or essential functional area, design, or performance requirement.

(d) Reports subtest results which reflect inadequate performance.

(e) Involves two or more repetitive minor TIR incidents in which their cumulated effect could result in any of the above four conditions.

(3) Minor—

(a) Reflects an actual or incipient malfunction, defect, hazard, or negative finding that does not qualify as critical or major.

(b) Reports subtest results which reflect marginal performance.

(4) Information. Reports modification to the tested item, current condition of the tested item, test findings, subtest results, safety release information, or other types of information.

g. If the cumulated effect of two or more repetitive minor TIR incidents exhibiting the same manifestations meets the definition for a major TIR, then a major TIR can be written. This major TIR is written at the incident when the repetitiveness is considered serious enough to warrant a major TIR. As additional repetitive incidents occur, each incident is classified accordingly. This may result in additional major TIRs. Each such major TIR will describe how the repetitiveness justifies a major TIR and will list the preceding related TIRs that led to this major TIR.

h. A change or addition to information contained in distributed TI data (such as a more complete analysis, a description of deferred maintenance, TIR reclassification, incorporation of scoring conference results, or addition of any other data that is required to complete or update the TI data) will be accomplished by issuing revisions to the original TI data. The revision will replace the original TI data (or previous revisions) in ATIRS and in any other files (manual or otherwise) that may be created in ATIRS.

i. In revising previously submitted TI data, the original data must be accounted for by reporting in Block 90 of the TIR the information which has been revised.

j. The basic TIR number assigned in Block 4 is not to be altered; however, Block 1 provides for identifying the revision number and date.

k. In those instances where the TI data is revised to change the TIR incident classification, Block 90 must provide rationale for the change.

l. The tester will electronically transmit the TI data and revisions, if possible, by dial-in or TELNET (provided ATIRS access is authorized) or by electronic mail (atirs@atc.apg.army.mil) to ATIRS using the data stream specified in table 10–1. If a data stream is not possible, then the TIR form of figure 10–1(excluding Section VI) may be transmitted in ASCII format after coordination with the ATIRS administrator. No hardcopy TI data are to be submitted to ATIRS. In addition, the AMC commodity command T&E Manager will distribute the TI data per figure 10–1 by electronic mail. Data will also be distributed to other users per agreements reached by TIWG members.

m. In those instances where electronic transmission capability does not exist, tape, floppy disk or other electronic storage media of the test incident or corrective action information will be forwarded by the preparer to ATIRS (same address listed in para 10–2d) for inclusion in the database. Media compatibility must be verified with the ATIRS administrator.

n. Distribution of TI data that are prepared for tests other than those identified by the TIWG is limited to the addressees designated by the program manager or the tester.

o. The program manager will prepare a listing, using agreements reached by the TIWG members, for distribution of photographs and classified TI data.

p. Until an automated support system is established to efficiently process pictures and graphics, transmission of pictures and graphics by facsimile is encouraged.

q. As regards the timeliness of TI data, all TI data must be validated before they are released and distributed. For TI data produced during OT, a Data Authentication Group might validate the data. The following timelines are provided as goals:

(1) For critical TIRs, the tester notifies the program manager by telephone within 24 hours after detection of the incident and should distribute the TI data within 24 hours. Critical TIR data are transmitted electronically to the program manager, T&E Manager, higher headquarters test manager, logistician, both the developmental and operational independent evaluators or assessors, and the ATIRS administrator. Electronic message notification does not negate the requirement for accident reporting per AR 385–40.

(2) For major, minor, and information TIRs, the tester prepares and distributes the TI data as soon as the data have been validated.The goals are to distribute the TI data within 3 workdays for major TIRs, 5 workdays for minor TIRs, and 10 days for information TIRs after detection of the incident or completion of the subtest. The goal is not to exceed 10 workdays for any TI data.

(3) Revisions to TI data should be distributed within 10 workdays after the need for the new information or corrections is detected.

r. If test materiel is received in unsatisfactory condition for testing such that, in the opinion of the tester, the unsatisfactory condition may jeopardize test objectives, invalidate test results, or render testing unsafe, the tester, after coordination with higher headquarters test manager, should notify the materiel developer by telephone.

(1) If corrections can be made readily with no delay in scheduled test initiation, the tester, after coordination with the higher headquarters test manager, should obtain telephonic concurrence from the program manager and initiate corrective actions or repairs. This means being able to place the item or system in serviceable condition in accordance with the contract specification or standards using available maintenance or repair capabilities. A major TIR will be written.

(2) If corrections cannot readily be made, the tester, after coordination with the higher headquarters test manager, should recommend by phone rescheduling, suspension, or termination and, if applicable, request disposition instructions for the test items or system from the materiel developer and prepare a critical TIR.

10–7. Corrective Action (CA) Data

a. The program manager prepares the CA data (Section VI of TIR form). CA data are required for critical and major TIRs as a minimum. Instructions for completing the CA data input are listed below.

b. The information will reflect a program manager's analysis of the problem and the status or description of corrective action or report that no corrective action is proposed, as long as adequate justification is provided in the information. CA data will be prepared with the best information available at the time of preparation, even though the information may be incomplete.

c. Whenever possible, the program manager should implement the necessary corrective actions during the conduct of the planned test program. This provides the independent evaluator or assessor the opportunity to analyze the corrective action and determine the need for any additional testing, minimizing the need for unplanned additional verification tests or commencement of a new acquisition phase with corrective actions of unknown adequacy. During OT, the

configuration is fixed and corrective actions normally are not implemented during its conduct. If a corrective action is implemented during testing, the tester will write TI data on the incident.

d. In revising previously submitted narrative CA data (Blocks 120 through 123), the original data must be retained. Revisions may add data or change erroneous information by citing the old and adding the correction.

e. Each corrective action taken is assigned a classification value that reflects the status of the corrective action. The acceptable corrective action status classifications are as follows:

(1) *Open.* Corrective action has not been identified or proposed.

(2) *Proposed.* Corrective action is required and a potentially acceptable corrective action has been identified and proposed.

(3) *Verified.* Corrective action is required and a corrective action has been verified as adequate by test or analysis.

(4) *Reviewed.* Corrective action is required and a corrective action review team has reviewed the corrective action for appropriateness and effectiveness.

(5) *Completed.* Corrective action is required and has been approved for production.

(6) *Incomplete.* Corrective action is required, but could not be completed because of circumstances outside the control of the program (for example, no funds, program cancellation, court ruling, manufacturer out of business).

(7) *Not required.* Corrective action is not required.

f. The initial CA data will be submitted to the ATIRS administrator within 60 days of the date reflected in the TIR release date (Block 1 of the TIR). Subsequent updates are submitted as appropriate.

g. A change or addition to previously distributed corrective action information to ATIRS is made by submitting revised data. The revised data replaces the original corrective action information in ATIRS.

h. The CA data will be electronically transmitted by dial-in or TELNET (provided ATIRS access is authorized) or by electronic mail (atirs@atc.apg.army.mil) using the format of table 10–2 to ATIRS.

Table 10–2
Corrective Action Data Stream

Field Name	Field Length (Fixed)	Field Position (Fixed)	Instructions
Data Item	1	1	O - Indicates test incident information. Only the tester can originate this information. 1 - Indicates corrective action information. Only the test sponsor can originate this information. 2 - Indicates both test incident and corrective information. Only the ADACS database can originate this combined information. 3 - Indicates ADACS data from an ATTC.
Markings	1	2	0 - Unclassified 1 - FOUO
Version#	2	3-4	Version number. This version is 0
Sender's Phone#	20	5-24	Commercial Phone#
Sender's E-Mail	78	25-102	
Project#	20	103-122	Test Project # (TIRS only)
Submittal Date	6	123-128	Date of submittal in YYMMDD format.
Submitter	20	129-148	POC who submits the data.
Reserved	10	149-158	Reserved for future use.
Block Number	Field Length (Maximum)	Instructions	
—0			
CA Action#/Revision#		10/2	This data field is not on the TIR form. It is used to distinguish one corrective action from another when multiple corrective actions occur on test incidents. Any convenient sequencing scheme may be used. If omitted, Corrective Action# will be generated. Do not use TIR# as Corrective Action#. When doing a revision, CA# and the revision#number must be present. "Revision" is the revision number of the submitted CA data and is displayed in the CA entry data block.
—3			
Test Project#		20	
—4			
TIR#		10	This is a repeating field.
//		2	End of TIR# indicator.
—3			
Test Project#		20	
—4			
TIR#		10	This is a repeating field.

Table 10–2
Corrective Action Data Stream—Continued

Field Name	Field Length (Fixed)	Field Position (Fixed)	Instructions
.		.	
.		.	
//		2	End of TIR# indicator
—100			
CA Status		8	
—101			
CA Entry Date		6	YYMMDD
—102			
CA Date Reviewed		6	YYMMDD
—103			
CA Date Proposed		6	YYMMDD
—104			
CA Date Verified		6	YYMMDD
—105			
CA Date Completed		6	YYMMDD
—120			
Developer's Analysis of Problem		76	This is a repeating field.
.			
//		2	End of Description for Block 120
—121			
Status/Description of Corrective Action		76	This is a repeating field.
//		2	End of Description for Block 121
—122			
Test Results on Corrective Action		76	This is a repeating field.
.			
.			
//		2	End of Description for Block 122
—123			
Planned Production Implementation		76	This is a repeating field
.			
//		2	End of Description for Block 123
—9		2	End of record indicator
Note: Do not leave any blank lines at the beginning or end of this file.			
10 0410555941 3		tsponsor@mat place–emh1.army.mil	etc., etc., <cr> <lf>
—O<cr> <lf>			
AOOOOOOO01/O 2 <cr> <lf>			
—3 <cr> <lf>			
9-ZZ-999999999 <cr> <lf>			
—4 <cr> <lf>			
K2BOOOOOl <cr> <lf>			
.etc.			
Repeating Block Sample			
.			
.			
.			
// <cr> <lf>			
—3 <cr> <lf>			
8-ZZ-999999999 <cr> <lf>			
—4 <cr> <lf>			
K2AOOOOOI <cr> <lf>			
K2AOOOOIO <crgt; <lf>			
.etc.			
.			
Repeating Block Sample			
.			
.			
// <cr> <lf>			
—101 <cr> <lf>			
930112 <crlt; <lf>			
—102 <cr> <lf>			
930420 <cr> <lt>			
—103 <cr> <lf>			
930125 <cr> &ltlf>			
—104 <cr> <lf>			
930225 <cr> <lf>			
—105 <cr> <lf>			
920625 <cr> <lf>			

Table 10–2
Corrective Action Data Stream—Continued

Field Name	Field Length (Fixed)	Field Position (Fixed)	Instructions
—120 <cr> <lf> The developer has determined that the shut down <cr> <lf> the engine occurred due to an electrical short.<cr> <lf> // <cr> <lf> —121 <cr> <lf> This describes the status of the corrective action. <cr> <lf> // <cr> <lf> —122 <cr> <lf> This area describes the results of the corrective action. <cr> <lf> // <cr> <lf> —123 <cr> <lf> This area describes the planned production implementation. <cr> &t;lf> // <cr> <lf> –9			

i. When the program manager does not possess electronic distribution capability, the data will be prepared according to the format of table 10–2 and will be provided on tape, floppy disk, or other electronic storage media to the ATIRS administrator, who ensures input into the database. No hardcopies will be submitted.

j. The program manager will prepare a listing of recipients of CA data, using agreements reached by the TIWG members, for distribution of basic CA data, photographs, classified information or other information related to a corrective action.

k. Distribution of CA data for tests other than those identified by the TIWG is limited to the addressees designated by the program manager.

l. Until an automated support system is established to efficiently process picture and graphics, transmission of pictures and graphics by facsimile is encouraged.

10–8. CA Identification and Verification Procedures

a. A corrective action review team comprised of the program manager, combat developer, or functional proponent, independent evaluator, or assessor reviews all CA data and associated TI data, to verify that proposed corrective actions are appropriate and effective. The testers are advisers to the team. Corrective actions concerning critical and major TIRs involving a safety hazard must be coordinated with the safety community before the team convenes. The corrective action review team may meet either separately or concurrently during any other convenient meeting where corrective actions might be discussed. Telephonic meetings are encouraged.

b. Decision procedures.

(1) The corrective action review team is advisory to and is chaired by the program manager. When any member nonconcurs with the proposed CA status decision, the program manager will attempt to resolve the issue. If it cannot be resolved, the program manager will advise all members, in his or her role as corrective action review team chairman, of the final decision. The member nonconcurring may raise the issue to the next level of management for resolution and will concurrently advise the program manager.

(2) When the CA status is changed, the program manager will transmit a CA data stream to ATIRS with the changed CA status information. CA status changes to “REVIEWED” can occur only after:

(a) Appropriate concurrence by the corrective action review team.

(b) Withdrawal of nonconcurrence or resolution by intermediate or final decision authority.

c. In order to effect continuous evaluation, the program manager will submit the changed CA status information to ATIRS as soon as possible or when the corrective action review team has reviewed and verified the corrective action.

```
-----------------------------------------------------------------------------
 TEST INCIDENT REPORT (AR 73-1)          | 1. Release Date: 02 MAR 1994
-----------------------------------------------------------------------------
    Test Title:                          |    Test Project#:      |    TIR#:
 2. PERFORMANCE TEST OF ZSYSTEM          | 3. 1-ZZ-120-ZSY-012    | 4. KX-D000021
-----------------------------------------------------------------------------
 5. Test Agency: MY PLACE                | 6. Test Sponsor: PM ZSYSTEM
 7. System: ZSYSTEM                      | 8. Original Release Date: 02 MAR 1994
--------------------------- I  MAJOR ITEM DATA ------------------------------
10. Model: MXYZ1 ZSYS CARGO              |    Test Life:  Units:
11. Serial#: C-0217B-JB                  | 21.      282.0  MILES
12. USA#: N1-1528                        | 22.       23.1  ENGHRS
13. Mfr: ARMORED WHEELIES, INC.          | 23.        0.0  MHEHRS
14. Contract#: DAAE07-92-Z-X001          | 24.        0.0  MHECYC
15. Item#: 217                           | 25.
---------------------------- II  INCIDENT DATA ------------------------------
30. Title: WIRE HANGING FROM WIDGET      | 40. Date & Time: 28 FEB 1994 1250 EST
31. Subsystem: WIDGET                    | 41. FD/SC Step#: 05-
32. Incident Class: MAJOR                | 42. FD/SC Class: EFF
33. Observed During: OPERATIONS          | 43. Chargeability: HARDWARE/CFE
34. Action: MAINTAINED                   | 44. Incident Status: PRELIMINARY
-----------------------------------------------------------------------------
46. Categories: RAM                      |                |                |
47. Keywords:                            |                |                |
-----------------------------------------------------------------------------
    Test Environment:                    | Type:          | Condition:
48. OPERATIONS                           | HILLY CROSS COUNTRY | DRY
49. Disposition: MISSING/LOST
------------------------- III  INCIDENT SUBJECT DATA ------------------------
50. Name: TERMINAL END                   | 60. FGC: 06130112
51. Serial#: NA                          | 61. LSA#: NA
52. FSN/NSN: UNKNOWN                     |    Part Life:  Units:
53. Mfr: UNKNOWN                         | 62.      282.0  MILES
54. Mfr Part#: UNKNOWN                   | 63.       23.1  ENGHRS
55. Drawing#: NOT SHOWN                  | 64.        0.0  MHECYC
56. Quantity: 1                          | 65. Next Assy: WIDGET
57. Action: REPLACED                     | 66. Serial#: NA
58. (NOT USED)                           | 67. Software Version#: NA
--------------------------- IV  MAINTENANCE DATA ----------------------------
70. Diagnostic Clockhours:     00:10     | 80. Type: UNSCHEDULED
71. Diagnostic Manhours:       00:10     | 81. Level Used: UNIT
72. Active Maint Clockhours:   00:02     | 82. Level Prsc: UNIT
73. Active Maint Manhours:     00:02     | 83. Level Recm: UNIT
-------------------- V  INCIDENT/MAINTENANCE DESCRIPTION ----------------------
90. WIRE HANGING FROM WIDGET - SYSTEM SHUTDOWN. REPAIRED.
     At 1250, during operations, the system shut down.  Organizational level
maintenance was called.  A wire with the terminal end missing was found
hanging from the widget.  Maintenance installed a terminal end and
reattached the widget wire to the gadget screw.  The system was restarted
with no problem.


                          MAINTENANCE TIME BREAKDOWN
DateSt DateEd TmSt TmEd Level Delay  Type Dgchrs Tmchrs Dgmhrs Tmmhrs App
940228 940228 1310 1322 UNIT  NA     UNSC  00:10  00:02  00:10  00:02  Y
------------------------- (continued on next page) --------------------------
```

Figure 10-1. Sample Test Incident Report with instructions for completion

```
-----------------------------------------------------------------------------
   TIR Number: K2-D000021                                  Page Number:  2
-----------------------------------------------------------------------------
                                PARTS DATA
Nomenclature        FGC  MfrPart#                    MILES  Level Qty  Action
TERMINAL END        0613 UNKNOWN                     282.0  UNIT     1 CONSUME
-----------------------------------------------------------------------------
    Name, Title & Phone of Preparer:  |    Releaser:

98. I.C. TEST                         |99. I. RELEASE
    TEST DIRECTOR                     |    CHIEF, LIGHT TACTICAL VEHICLE BR
    DSN XXX-XXXX                      |    DSN XXX-XXXX
-----------------------------------------------------------------------------
----------------------- VI  CORRECTIVE ACTION DATA --------------------------
     CA Status:          |     CA Entry Date:        |     CA Date Reviewed:
100. NOT REQD            |101. 20 APR 1994 REV#  0   |102.
-----------------------------------------------------------------------------
     CA Date Proposed:   |     CA Date Verified:     |     CA Date Completed:
103. 20 APR 1994         |104.                       |105.
-----------------------------------------------------------------------------
120. Developer's Analysis of Problem:
TERMINAL END WAS PULLED OFF - MAINTENANCE/FACTORY ERROR.

-----------------------------------------------------------------------------
121. Status/Description of Corrective Action:
NO C/A REQUIRED

-----------------------------------------------------------------------------
122. Test Results on Corrective Action:
-----------------------------------------------------------------------------
123. Planned Production Implementation:
-----------------------------------------------------------------------------
```

Figure 10-1 (PAGE 2). Sample Test Incident Report with instructions for completion

Test Incident Report (TIR) Preparation Instructions

1. INTRODUCTION.

a. This provides preparation instructions for the Test Incident Report (TIR) form. Two data types are addressed:

(1) Test incident (TI) data. TI data blocks are contained in Sections I to V of the TIR form. Paragraph 3 provides instructions on preparing these blocks. The TI data are the responsibility of the tester.

(2) Corrective action (CA) data. CA data blocks are contained in Section VI of the TIR form. Paragraph 4 provides instructions on preparing these blocks. The CA data are the responsibility of the program manager. These data are provided to ATIRS using the data stream format specified in Table 10-2. ATIRS will reproduce the data into the TIR form format.

b. Pagination procedures and procedures for augmenting the format of the TIR are at paragraphs 5 and 6 respectively.

2. GENERAL FILL-IN INSTRUCTIONS.

a. Enter all data either in numbers, upper-case letters, or combinations thereof, with the exception of Section V (Incident/Maintenance Description) and Blocks 120-123, which can be upper- and lower-case letters.

b. Do not leave any blocks blank that are designated "MUST FILL".

c. Left-justify all entries unless otherwise stated in the instructions.

d. When inputting data into ATIRS using the TIR form, follow exact placement and field lengths for the data elements for a successful automated pickup of data.

e. When submitting electronically, submit all characters in ASCII format. The characters "|", "~~", and "//" are not permitted in the text as data values. Control and graphics characters are also not allowed.

f. If the TIR is distributed by hardcopy, use either 10-pitch or 12-pitch type. Do not mix pitch types; i.e., data in 12-pitch should not be entered on a 10-pitch form.

Figure 10-1 (PAGE 3). Sample Test Incident Report with instructions for completion

3. FILLING IN SECTIONS I TO V OF THE TIR FORM

Specific instructions follow for completing each area or section of the TIR form. Additional items to note:

a. Sections III and/or IV can be omitted if the incident does not involve a part/component or maintenance action.

b. Some or all of the following materials for the item/system under test are required for reference while preparing TIRs:

(1) System Support Package (SSP) Component List.

(2) Technical manuals/equipment publications.

(3) Maintenance Allocation Chart (MAC).

(4) Repair Parts/Special Tools List (RPSTL).

(5) Logistic Support Analysis (LSA) Control Numbers from the LSA Record (LSAR).

(6) Failure Definition/Scoring Criteria (FD/SC).

(7) Technical Bulletin 750-93-1 (Functional Group Codes).

TIR HEADER AREA.

Fill in the TIR header area (Blocks 1 through 7) on every TIR that is prepared.

BLOCK 1. Release Date: (Cols. 59-78, X(20) max)

Enter the date (in DD MMM YYYY format) that the TIR was released for distribution. If a revised TIR is to be issued, change the original release date to the release date of the revision, followed by a space, the phrase REV#, space, and the revision number. Allocate two spaces for the revision number. If only one space is used, fill in the first space with a 0. This is a "MUST FILL" block. Example follows:

Original TIR: 04 AUG 1991

Revised TIR: 06 AUG 1991 REV# 01

Figure 10-1 (PAGE 4). Sample Test Incident Report with instructions for completion

BLOCK 2. Test Title: (Cols. 6-39, X(34) max)

Enter the title that has been assigned to this test. This is a "MUST FILL" block.

NOTE: Contact ATIRS for the test title name prior to commencement of testing.

BLOCK 3. Test Project#: (Cols. 45-64, X(21) max)

Enter the test project number that has been assigned for this test. This is a "MUST FILL" block.

NOTE: For tests conducted by U.S. Army Test and Evaluation Command (TECOM) test centers, this will be the TECOM Test Resource Management System (TRMS) number, complete with hyphens but without the test center funding code (e.g., 1-VC-010-577-011). For tests conducted by non-TECOM activities, other project numbers may be applicable. A project number is always required to maintain a unique record number for the project database.

BLOCK 4. TIR#: (Cols. 68-77, X(10) max)

Enter the TIR number that has been assigned for this TIR. This is a "MUST FILL" block. Do not change the TIR number (for reasons of TIR revisions, supplementation, or whatever) once it has been assigned.

NOTE: The TIR number is made up of two parts as follows:

a. The first part (first 4 characters) is to identify the TIR as resulting from a specific test by a specific tester, apart from other tests by the same or other tester on a given system or model. The value assigned to this part is to remain constant for the duration of the test and will consist of the following:

(1) The first 2 positions are used to identify the tester. The value to be assigned will be the installation funding code for the tester (if government) or for the program sponsor (if the test is being conducted by a contractor).

(2) The third position is to contain a hyphen (-).

(3) The fourth position is used for a test sequence code (values A through Z) that relates to the number of tests that have been performed by the tester on a given system or model (e.g., assign "A" for the first test of a given system

Figure 10-1 (PAGE 5). Sample Test Incident Report with instructions for completion

by a given tester). Zero-fill this position when not used.

b. An example of the first part entry for the fifth test at the U.S. Army Aberdeen Test Center (ATC) on a given system is K2-E. After the alphabet has been exhausted (excluding "I" and "O"), use the first position from the second part of the TIR number for additional codes (e.g., K2-AC). Zero-fill this position when not used.

c. The second part of the TIR number is used for the unique portion of the number. Normally, the numbering should start with one and be indexed by one for each TIR; however, separate blocks of numbers may be reserved (e.g., for major item types, individual end items, or subsystems) and applied sequentially when desired. Since this field will be sorted upon, do not allow any intermediate positions to be left blank; also, require that all numbers be right-justified and zero-filled.

NOTE: Examples of TIR numbers are:

K2-EA00001, KC-A000101

BLOCK 5. Test Agency: (Cols. 19-38, X(20) max)

Enter the name of the test agency (government or contractor) that is responsible for the conduct and reporting of this test. This is a "MUST FILL" block.

NOTE: Contact ATIRS for the exact test agency name prior to commencement of testing.

BLOCK 6. Test Sponsor: (Cols. 59-78, X(20) max)

Enter the name of the program sponsor for this test. This consists of both the sponsor name (or the sponsor acronym, if the name is lengthy) and office symbol. This is a "MUST FILL" block and should not be changed regardless of test phase.

NOTE: Contact ATIRS for the program sponsor name prior to commencement of testing.

BLOCK 7. System: (Cols. 14-27, X(14) max)

Enter the name of the system which encompasses all major items to be included in the test program. This is a "MUST FILL" block.

NOTE: Contact ATIRS for the system name prior to commencement of testing.

Figure 10-1 (PAGE 6). Sample Test Incident Report with instructions for completion

BLOCK 8. Original Release Date. (Cols. 68-78) X(11) max)

Enter the original release date for the TI data.

BLOCK 9. (Reserved)

SECTION I, MAJOR ITEM DATA.

Complete this section for every TIR that is prepared. With the exception of Block 10 and possibly Blocks 13 and 14, specific entries in the blocks are applicable only if the TIR applies to a single sample of the major item under test (e.g., an identifiable tank). If the TIR is to apply to more than one sample of the major item, enter an appropriate general response (e.g. ALL, SEE BLOCK 90, OFF-ITEM, N/A, etc.) in each applicable space or leave them blank. If "SEE BLOCK 90" is used, enter the appropriate values in Block 90, either in tabular or narrative form.

NOTE: Test planning personnel must establish acceptable test-unique values for Blocks 10, 13, 14, and 15 and the units for Blocks 21 through 25, as a minimum, prior to commencement of testing.

BLOCK 10. Model: (Cols. 13-38, X(26) max)

Enter the model, type, or series descriptor for the major item to which this TIR applies. This is a "MUST FILL" block.

NOTE: Contact ATIRS for the model name prior to commencement of testing.

BLOCK 11. Serial#: (Cols. 15-38, X(24) max)

Enter the major item serial number, if applicable. If this TIR is used to document an off-item repair, enter OFF-ITEM in this space.

BLOCK 12. USA#: (Cols. 12-38, X(27) max)

Enter the major item USA registration number (or tail number), if applicable.

BLOCK 13. Mfr: (Cols. 11-38, X(28) max)

Enter the name of the manufacturer of the major item, if known.

NOTE: Contact ATIRS for the manufacturer name prior to commencement of testing.

Figure 10-1 (PAGE 7). Sample Test Incident Report with instructions for completion

BLOCK 14. Contract#: (Cols. 17-38, X(22) max)

Enter the contract number, purchase order number, or document number that pertains to the obtainment of the major item, if known.

NOTE: Contact ATIRS for the contract number prior to commencement of testing.

BLOCK 15. Item#: (Cols. 13-38, x(26) max)

Enter the code that has been assigned to the end item, group of test items, or type of data against which this TIR is being written.

NOTE: This block is to be used by the tester to assign test unique codes in any way he sees fit to enable easier tracking of data. In general, test planning personnel should establish acceptable test-unique item number codes prior to the start of test. Begin by determining whether all end items to be tested are to be of the same group within the system or of different groups. Then identify each end item to be tested in each group and assign a unique item number code for each end item. Also assign additional item number codes for any specific types of data that are to be recorded as pertaining to all items within a specific group (e.g. PUBS for publication comments).

When assigning these codes, consider how the test data is desired to be stored and retrieved. If data from one or more groups of end items are to be retrieved and/or consolidated, consider using the first character(s) of the code as part of the data retrieval selection criteria.

BLOCKS 16 to 20. (Reserved)

BLOCKS 21 to 25. Test Life: (Cols. 45-54, X(10) max)
Units: (Cols. 57-70, X(14) max)

Enter the test life of the major item at the time of the incident and its corresponding units of measure. Up to five types of major item test life may be entered.

NOTE: Contact ATIRS for the test life format and units prior to commencement of testing.

Figure 10-1 (PAGE 8). Sample Test Incident Report with instructions for completion

Examples of units of measure are miles, kilometers, rounds fired, flight hours, etc., or abbreviations thereof. Test planning personnel should assign a specific unit of measure to each block for the duration of test, together with required spacing, justification, and composition of the test life and unit of measure entries. If a life period other than test life is to be recorded, so indicate (e.g., TOT ODOM MILES).

BLOCKS 26 to 29. (Reserved)

SECTION II, INCIDENT DATA.

Complete this section for every TIR that is prepared. The blocks in this section pertain to summary information and basic incident data, to include the various classifications of the TIR and its scoring. Values entered in Blocks 32 and 41 through 43 should be treated as preliminary when the TIR is first prepared. After the TIR has been scored at the RAM scoring conference or during the TIR closure process, submit a revised TIR revising the values entered in Blocks 32 and 41 through 43 as necessary to reflect the various conference agreements. The status of this scoring will be reflected in BLOCK 44.

NOTE: Test planning personnel will establish acceptable test-unique values for Blocks 31, 34, 41, 42, 43, 46, 47 and possibly 48 and/or 49 prior to commencement of testing.

BLOCK 30. Title: (Cols. 13-38, X(26) max)

Enter a title for the TIR or a brief summary of the information that is to be contained therein. This is a "MUST FILL" block. Be sure to stay within the space allowed.

BLOCK 31. Subsystem: (Cols. 17-38, X(22) max)

Enter the name of the subsystem to which this TIR is to be chargeable. This is a "MUST FILL" block.

NOTE: Contact ATIRS for a list of subsystem names prior to commencement of testing. The major item name and NONE should also be included as acceptable values.

BLOCK 32. Incident Class: (Cols. 22-33, X(12) max)

Enter the classification that is to be assigned to this TIR. This is a "MUST FILL" block. The only acceptable values are: CRITICAL, MAJOR, MINOR, INFORMATION.

Figure 10-1 (PAGE 9). Sample Test Incident Report with instructions for completion

BLOCK 33. Observed During: (Cols. 23-38, X(16) max)

Enter the word or phrase that best describes the activity that was taking place when the event occurred that prompted the preparation of this TIR.

NOTE: Examples of typical test activity entries are: INIT, INSPECTION, RAM-D, SAFETY EVAL, OPERATION, INSPECTION, NON-MISSION, MAINTENANCE, TRANSPORT, DESK AUDIT, LOG EVAL, PERF EVAL, ENV EVAL.

BLOCK 34. Action: (Cols. 14-38, X(25) max)

Enter the word or phrase that best describes any action that was taken on the major item following the event or incident.

NOTE: Prior to commencement of testing contact ATIRS administrator for other acceptable values in addition to the examples below. Other values may be added by registering them with the ATIRS administrator.

Examples of entries for actions taken on the major item are: CLEARED, MAINTAINED, SUSPENDED TEST, OPERATED, DEFERRED, MAINTENANCE, NONE, OPEN (OPEN means that maintenance has not been or was not completed)

BLOCK 35. (Reserved)

BLOCK 36. (See paragraph 6)

BLOCKS 37 TO 39. (Reserved)

BLOCK 40. Date & Time: (Cols. 58-77, X(20) max)

Enter the date and time when the event occurred that prompted the preparation of this TIR. In the case of a TIR reporting a failure, malfunction, discrepancy, defect, maintenance task, or hazard, this will be the date and time that the problem or event occurred, began, or was detected. For other TIRs, this will be the date and time associated with determination of the need for the TIR, assuming that the requisite information is available. This is a "MUST FILL" block. Format for entry is day, space, month, space, year (DD MMM YYYY), space, 24-hour time (HHMM), space, and time standard (DMZ) (e.g., 31 MAR 1993 2400 EST). Do not attempt to list a range of dates or multiple dates. Time and time standard may be omitted, if not known.

BLOCK 41. FD/SC STEP#: (Cols. 58-77, X(20) max)

Figure 10-1 (PAGE 10). Sample Test Incident Report with instructions for completion

Enter the step number from the FD/SC decision tree flow chart for the test that best describes the rationale for the scoring of this TIR.

BLOCK 42. FD/SC Class: (Cols. 58-77, X(20) max)

Enter the FD/SC classification that is to be assigned to this TIR. If multiple classifications are used, they will be separated by a slash (/).

NOTE: Contact ATIRS for exact acceptable values prior to commencement of test.

NOTE: Examples of typical FD/SC classification entries are: NO TEST, NON-RAM, SMA, MAF/MA, UMA, EMA/UMA, OMF/EMA/UMA, EFF

BLOCK 43. Chargeability: (Cols. 60-77, X(18) max)

Enter the FD/SC chargeability that is to be assigned to this TIR.

NOTE: Contact ATIRS for exact acceptable values prior to commencement of test.

NOTE: Examples of typical FD/SC chargeability entries are: HARDWARE, TRAINING, ENVIRONMENT, SOFTWARE, PUBLICATIONS, TEST, CONDUCT, OPERATOR/CREW, SUPPORT EQUIP, GFE, MAINT PERSONNEL, MAINT HARDWARE, NONE

BLOCKS 44. Incident Status: (Cols. 62-73, X(12) max)

Enter the status that describes the method of arriving at values for Blocks 32 and 41 through 43. If the tester scored the data, enter PRELIMINARY. Enter SCORED if a formal committee such as a RAM Scoring Conference scored the data.

Status entries are: PRELIMINARY, SCORED

BLOCK 45. (Reserved)

BLOCK 46. Categories: (Cols. 18-31, 33-46, 48-61, 63-76, X(14) max)

Enter the word or phrase from the following list that best describes the categories or test issues associated with this TIR. All applicable categories will be submitted, with the primary category listed first. Acceptable values are shown below.

Figure 10-1 (PAGE 11). Sample Test Incident Report with instructions for completion

NOTE: Examples of environment type values include: PAVED, HILLY CROSS COUNTRY, VIBRATION, GRAVEL, SWAMP/MUD/HOG, WALLOW, FUEL CONSUMPTION, WASHRACK, HORIZONTAL SLOPE, OBSTACLES, BELGIAN BLOCK, SIDE SLOPE, DYNAMOMETER, FORDING BASINS, ENVIRONMENTAL, CHAMBER, FIRING RANGE, LABORATORY, MAINT/REPAIR SHOP, NA

Condition: (Cols. 62-77, X(16) max)

Enter the environment condition that best describes the condition of the environment in which the test is being conducted.

NOTE: Coordinate with ATIRS for a list of presently used phrases/words and to add any other phrases/words to the list prior to commencement of test.

NOTE: Examples of typical environment condition values include: DRY, DUSTY, HEAVY MUD, ICE AND SNOW, ICE, SNOW, LIGHT, MUD, WET, WET SNOW, ICE FOG, SAND, NA

BLOCK 49. Disposition: (Cols. 19-77, X(59) max)

Enter the word or phrase that best describes disposition of any defective (failed) materiel that pertains to this TIR.

NOTE: Prior to commencement of testing, contact ATIRS administrator for other acceptable values in addition to the examples below. Other values may be added by registering them with the ATIRS administrator.

Examples of typical disposition values include: AWAITING INSTRUCTIONS/INSTALLED/REINSTALLED, TO BE HELD UNTIL (date), SCRAPPED, HELD FOR FAILURE ANALYSIS, REWORKED, TURNED IN TO, SUPPLY, CANNIBALIZED, FORWARDED TO HIGHER LEVEL MAINTENANCE, MISSING/LOST, RETURNED TO (contractor name), OTHER/SEE BLOCK 90, RETURNED TO (sponsor name), NOT APPLICABLE, SHIPPED PER SPONSOR

SECTION III, INCIDENT SUBJECT DATA.

The blocks in this section provide for the description of the TIR subject part or assembly (if any) and its next higher assembly. Complete this section if the TIR pertains in any way to an identifiable part or assembly, a major subassembly or subsystem, the major item itself, or a component of its SSP. If the subject of the TIR is to be a group of parts or assemblies of a given type, make sure that all entries to be made in the various blocks apply to the entire quantity that is being described.

Figure 10-1 (PAGE 12). Sample Test Incident Report with instructions for completion

If the parts or assemblies in the group have different values (e.g., serial numbers, part numbers, part lives, etc.), enter an appropriate general response (e.g., SEE BLOCK 90, N/A, etc.) in each applicable space or leave blank. Regardless of whether a part or a group of parts are of concern, provide in Block 90 a tabulation of the parts used. Detailed instructions are provided in the Block 90 instructions below. Because Section III contains summaries of data, its blocks should not be used to count parts without close deliberations.

BLOCK 50. Name: (Cols. 12-38, X(27) max)

Enter the name of the part or assembly being described as the TIR subject. Obtain it from the RPSTL. This is a "MUST FILL" block if Section III is used.

BLOCK 51. Serial#: (Cols. 15-38, X(24) max)

Enter the serial number, lot number, or batch number for the item named in Block 50.

BLOCK 52. FSN/NSN: (Cols. 15-38, X(24) max)

Enter the Federal/National Stock Number for the item named in Block 50. Obtain it from the RPSTL.

BLOCK 53. Mfr: (Cols. 11-38, X(28) max)

Enter the name of the manufacturer that built or produced the item named in Block 50, if known or enter the Federal Supply Code of Manufacturer (FSCM) code from the RPSTL. Abbreviate as required.

BLOCK 54. Mfr Part#: (Cols. 16-38, X(23) max)

Enter the manufacturer's part number for the item named in Block 50. Obtain it from the RPSTL or from the part or assembly itself.

BLOCK 55. Drawing#: (Cols. 16-38, X(23) max)

Enter the drawing number for the item named in Block 50, if available.

NOTE: If desired, figure and item number references from the appropriate RPSTL may be entered in this block in lieu of a drawing number.

Figure 10-1 (PAGE 13). Sample Test Incident Report with instructions for completion

BLOCK 56. Quantity: (Cols. 16-25, X(10) max)

Enter the quantity of the items that have been named in Block 50. Refer to the introductory instructions for Section III if the entry is to be greater than one. The number entered should be right justified. This is a "MUST FILL" block if Section III is used.

BLOCK 57. Action: (Cols. 14-38, X(25) max)

Enter the word or phrase that best describes what was done to the part or assembly named in Block 50 following the event or incident. Enter NONE if no action was taken. This is a 'MUST FILL" block if Section III is used.

NOTE: Prior to commencement of testing, contact ATIRS administrator for other acceptable values in addition to the examples below. Other values may be added by registering them with the ATIRS administrator.

Examples of entries for actions taken on a part or assembly are: INSPECTED, CHANGED MISSION PROFILE, CLEARED, TESTED, DIAGNOSED, DRAINED, SERVICED, OPERATED, FLUSHED, ADJUSTED, LUBRICATED, PURGED, ALIGNED/REPOSITIONED, DISASSEMBLED/ASSEMBLED, LOADED, CALIBRATED, REMOVED, ADDED, INSTALLED, MODIFIED, CHARGED, REPLACED, TORQUED/TIGHTENED, SLAVED, DISCONNECTED, REMOVED/REINSTALLED, UNLOADED, REPAIRED, SAMPLED OIL/FLUID, CLEANED/WASHED, OVERHAULED, SAFETY WIRED/SECURED, HANDLED/JACKED, REBUILT, PAINTED/CURING/DRYING, NONE

BLOCK 58 to 59. (Reserved)

BLOCK 60. FGC: (Cols. 50-59, X(10) max)

Enter the Functional Group Code (FGC) to which the item named in Block 50 belongs. Obtain it from the RPSTL, MAC or TB 750-93-1

BLOCK 61. LSA#: (Cols. 51-77, X(27) max)

Enter the LSA Control Number for the item named in Block 50, if applicable. Obtain it from the LSAR for the system, if available.

Figure 10-1 (PAGE 14). Sample Test Incident Report with instructions for completion

BLOCKS 62 to 64. Part Life: (Cols. 45-54, X(10) max)
Units: (Cols. 57-70, X(14) max)

Enter the true life, if known, of the item named in Block 50 and its corresponding units of measure. If true life is unknown, enter test life. If the part or assembly is new, enter 0 (zero). Up to 3 types of part life may be entered. An optional "When Repaired" of a maximum field length of 10 characters might be used on certain projects. In such case, only the first 6 characters of "Units" are printed on the TIR in order to fit required data on one line.

NOTE: Contact ATIRS for the part life format and units prior to commencement of testing.

Test planning personnel should either assign a specific unit of measure to each block for the duration of test (the same as for Blocks 21, 22, 23, 24, or 25) or designate one or more units of measure to be used with specific parts, assemblies, or subsystems of the major item (i.e., the most appropriate units). Required spacing, justification, and composition of the part life and unit of measure entries should also be assigned. The program manager should provide part life data if this data is not known.

NOTE: Part life should be right justified decimal values and part life units should be left justified for Blocks 62 through 64.

BLOCK 65. Next Assy: (Cols. 56-77, X(22) max)

Enter the name of the next higher assembly to the item named in Block 50. Obtain it from the RPSTL. The program manager should provide this information if the RPSTL does not exist.

BLOCK 66. Serial#: (Cols. 54-77, X(24) max)

Enter the serial number, if applicable, of the item named in Block 65.

BLOCK 67. Software Version#: (Cols. 64-77, X(14) max)

Enter the computer configuration item name when Categories (Block 46) or Chargeability (Block 43) is SOFTWARE.

BLOCKS 68 and 69. (Reserved)

Figure 10-1 (PAGE 15). Sample Test Incident Report with instructions for completion

SECTION IV, MAINTENANCE DATA.

This section is used for summarizing data from all applicable maintenance tasks or actions that were performed on the end item identified in Block 10 as a result of the event or incident being described on this TIR. Complete this section if maintenance was performed. If maintenance is known to be required but is not performed immediately, complete this section with all available known data, leaving the remaining spaces blank. When the maintenance is eventually performed, revise and update the data in this section and on the remainder of the TIR to reflect the additional information learned during the maintenance. Provide in Block 90 a tabulation of the clockhours and manhours by maintenance level and type. Detailed instructions are provided in the Block 90 instructions below. Because the blocks in Section IV contain summaries of data, they will not be used to calculate supportability indices (e.g. mean time to repair (MTTR), maintenance ratio (MR), etc.) without close deliberations.

NOTE: The tester establishes acceptable test-unique values for Blocks 80 through 83 through the TIWG process.

BLOCKS 70 and 71. Diagnostic Clockhours/Manhours:
(Cols. 31-37, X(7)max)

Enter the clockhours and manhours required to perform the diagnostic (fault location) portion of maintenance for all tasks or actions described on this TIR, regardless of maintenance level. Data is to be reported in the format HHHH:MM.

BLOCKS 72 and 73. Total Maint Clockhours/Manhours:
(Cols. 31-37, X(7)max)

Enter the clockhours and manhours required to perform all maintenance for all tasks or actions being described on this TIR, regardless of maintenance level. Include all diagnostic time from Blocks 70 and 71. Data is to be reported in the format HHHH:MM.

BLOCKS 74 to 79. (See paragraph 6.)

BLOCK 80. Type: (Cols. 51-77, X(27) max)

Enter the word or phrase that best describes the type of maintenance that was performed. Make sure that the entry does not conflict with any scoring entered in Blocks 41 through 43. This is a "MUST FILL" block if Section IV is used.

Figure 10-1 (PAGE 16). Sample Test Incident Report with instructions for completion

NOTE: Prior to commencement of testing, contact ATIRS administrator for other acceptable values in addition to the examples below. Other values may be added by registering them with the ATIRS administrator.

Examples of entries for maintenance type are (try to limit to these listed): UNSCHEDULED, ESTIMATED, SCHEDULED, SIMULATED, NO TEST

BLOCK 81. Level Used: (Cols. 57-77, X(21) max)

Enter the name of the highest maintenance level that was actually used to perform any of the maintenance being described on this TIR. This is a "MUST FILL" block if Section IV is used.

BLOCK 82. Level Prsc: (Cols. 57-77, X(21) max)

Enter the name of the highest maintenance echelon prescribed in the MAC which should have been used during this incident. Stated another way, this is the lowest maintenance level that is prescribed in the MAC or technical manuals as being authorized to perform <u>all</u> of the maintenance being described on this TIR. If no level is prescribed, enter NONE or UNKNOWN, as applicable.

BLOCK 83. Level Recm: (Cols. 57-77, X(21) max)

Enter the name of the maintenance level that the tester recommends for this maintenance, if different from the prescribed level entered in Block 82.

NOTE: Prior to commencement of testing, contact ATIRS administrator for other acceptable values in addition to the examples below. Other values may be added by registering them with the ATIRS administrator.

Examples of acceptable maintenance level entries in hierarchical order for Blocks 81 to 83 are:

For Non-Aviation Systems: CREW/OPERATOR, UNIT, UNIT/DS ASSIST, MFR UNIT, DS/UNIT ASSIST, DIRECT SUPPORT, MFR DIRECT SUPPORT, MFR CONTACT TEAM, GENERAL SUPPORT, MFR GENERAL SUPPORT, SPECIAL REPAIR ACTY, DEPOT, MFR/UNKNOWN LEVEL

For Aviation Systems: CREW/OPERATOR, UNIT (AVUM), AVUM/AVIM ASSIST, MFR AVUM, AVIM/AVUM ASSIST, INTERMEDIATE (AVIM)/DS, MFR AVIM/DS, MFR CONTACT TEAM, INTERMEDIATE (AVIM)/GS, MFR AVIM/GS, SPECIAL REPAIR ACTY, DEPOT, MFR/UNKNOWN LEVEL

Figure 10-1 (PAGE 17). Sample Test Incident Report with instructions for completion

Values of NONE and UNKNOWN are also acceptable for Block 82 but should not be used with Blocks 81 or 83.

BLOCKS 84 to 89. (Reserved)

SECTION V, INCIDENT/MAINTENANCE DESCRIPTION.

Complete this section for every TIR that is prepared. The use of upper-case and lower-case letters in Block 90 is permitted and encouraged.

Section V is a variable length narrative. If desired, it may be composed of several preprogrammed elements from other data entry systems (e.g., short narrative, full description, and tabulated fillers and spaces for maintenance subtasks performed, parts used, tools used, etc.).

BLOCK 90:

First line: (Cols. 6-77, X(72) max)

Start the first line in Column 6 on the same line as the number "90." On the remainder of the line, enter a brief summary of the incident that is being described on this TIR. For example, "TRANSMISSION CLUTCH PACK WORN, NO REVERSE, FAULT LOCATION ONLY" OR "Transmission removed and replaced because of worn clutch pack." Be sure to stay within the space allowed on the line. This is a "MUST FILL" line.

Subsequent lines: (Cols. 2-77, X(76) max)

On subsequent lines, fully describe the incident or event and any resultant maintenance tasks. This is a "MUST FILL" block. Use as many lines as are necessary and continuation sheet(s), if required. Use complete sentences and proper paragraph structuring, numbering, and indentation. Enter table headings and values as required to amplify the narrative. Use footnotes, if applicable. If desired, skip lines to separate paragraphs, space tables and table headings, and isolate footnotes.

Provide answers to as many of these questions as possible: What happened? How did it happen? How was it discovered? Where did it happen? Under what conditions did it happen? Why did it happen? What actions, if any, were taken? Include additional description in instances where entries made in Sections I through IV require further clarification. Include reasons and/or justification for incident classification assignments and scoring if they are not self-explanatory.

Figure 10-1 (PAGE 18). Sample Test Incident Report with instructions for completion

For TIRs pertaining to an accident or environmental release, describe any resultant injuries or property damage. Include the word "safety" or "health" and a risk assessment code (e.g. Cat I-A) per MIL-STD-882, if applicable.

Whenever possible, indicate if the cause of the incident or event is improper design (e.g. improper material, overstressing, interfering parts, or other design problems) or improper manufacture. Describe any positive actions or suggested solutions which appear capable of correcting the problem or would prevent future incidents of this type from occurring.

TIRs which report subtest results will identify the name of the individual subtest and state the test results. Discuss the analytical procedures used and test measurement accuracy. Ensure that only factual data are contained in this paragraph. A caution "Preliminary Data -- Subject to Further Review" leads into the following format of information: "a. Reference Test Plan, subtest ___, paragraph, ___, dated ___. b. Summary of Results. c. Abbreviated Analysis." The program manager or evaluators may request additional data to be in the TI data if needed.

Reference any hard-copy reports, sketches, photographs, or correspondence containing classified information on the incident or event that are being forwarded separately. Do not include any classified information in this block or, for that matter, in any other block on the TIR. If a classified TIR is to be prepared, see paragraph 10-3 for instructions.

Revise or update this description as more information becomes available or if additional maintenance tasks are performed as a result of the event or incident. Identify revised information with the heading on a separate line: "Revision", the date of the revision, and test life. Enter the name of the person who is responsible for the revised information, if other than shown in Block 98. The test director is the ultimate responsible person for any TIR changes. For each TIR revision involving changes to data in Sections I through IV, change the original data, then enter a brief description of the changes and the reason(s) for the changes. All original data in Block 90 are retained during TIR revision to ensure data integrity. Revisions may (1) add data or (2) change erroneous data by citing the old and adding the correction.

Figure 10-1 (PAGE 19). Sample Test Incident Report with instructions for completion

Maintenance Time Information:

After the description narratives, provide a tabulation of maintenance time information for the maintenance actions performed as follows: maintenance level/echelon, maintenance type, clockhours, and manhours. After allowing a blank line, begin the tabulation with the header "MAINTENANCE TIME BREAKDOWN" starting in column 27. Leaving no blank lines, provide the maintenance information. Use the following header conventions in naming the columns:

Content	Header	Maximum Length	Beginning Position
Date maintenance started (YYMMDD format)	DateSt	6	2
Date maintenance ended (YYMMDD format)	DateEd	6	9
Time started (4-digit 2400 hour clock format)	TmSt	4	16
Time ended (4-digit 2400 hour clock format)	TmEd	4	21
Maintenance level/echelon	Level	5	26
Administrative and logistic delay hours	Delay	10	32
Maintenance type	Type	4	43
Diagnostic clockhours (HHH:MM format)	Dghrs	6	48
Total maintenance clockhours (HHH:MM format)	Tmhrs	6	55
Diagnostic manhours (HHH:MM format)	Dmmhrs	6	62
Total maintenance manhours (HHH:MM format)	Tmmhrs	6	69
Applicable (Y) or not applicable (N)	App	1	77

The maintenance level content is to contain no more than 5 characters. The maintenance type content is to contain no more than 4 characters. The characters allowed for these values are less than those allowed for Blocks 80 and 81 because of the use of abbreviations to save space. The applicable time (App) is a marker that can be used to denote which maintenance periods are applicable for calculating supportability indices. Normally, "App" is not used. It is used as an aid to help differentiate maintenance times when not all times are useable for logistic supportability index calculations. The intent is to ensure all maintenance data are recorded.

Figure 10-1 (PAGE 20). Sample Test Incident Report with instructions for completion

Use the following abbreviations for the more common maintenance levels: CREW - Crew, UNIT - Unit, DS - Direct Support, GS - General Support, AVUM - Aviation Unit, Maintenance, AVIM - Aviation Intermediate Maintenance, SRA - Special Repair Activity, DEPOT - Depot, CONTR - Contractor

Use the following abbreviations to indicate the more common maintenance types: NT - No Test, U - Unscheduled maintenance action, S - Scheduled maintenance action, EST - Estimated maintenance action, SIMU - Simulated maintenance action

Part Information:

After the description narratives, provide a tabulation of parts used. After allowing a blank line, begin the tabulation with the header "PARTS DATA" starting in column 35. Leaving no blank lines after the header, provide the following part information: nomenclature; FGC; numerical control identification(s) such as the serial number or FSN/NSN or manufacturer part number (whichever is available for the test item); part life; maintenance level/echelon prescribed for replacement; quantity; and action taken on the part. The program manager will provide the part information to the tester if information is lacking to complete the part information on a TIR. Use the following header conventions in naming the columns:

Content	Header	Maximum Length	Beginning Position
Nomenclature	Nomenclature	19	2
FGC	FGC	4	22
Serial number	Serial#	24	27
or FSN/NSN	FSN/NSN	24	27
or Manufacturer number	MfrPart#	22	27
Part life	PartLife	7	52
Maintenance level/echelon	Level	5	61
Quantity	Qty	4	67
Action	Action	7	72

The number of characters allowed is to be no longer than those specified for the corresponding blocks in Section III and, depending on actual information content, can be even shorter. The nomenclature content is to contain no more than 27 characters (the same as Block 50). The FGC code is only 4 characters long; the extra 10 character length is to accommodate extra information if needed. The units for the part life will normally be the same as used in Block 62. In the header, the actual part life units will be substituted in

Figure 10-1 (PAGE 21). Sample Test Incident Report with instructions for completion

place of "PartLife".

BLOCKS 91 through 95:

These blocks are to be used in a similar fashion as Block 90. (See paragraph 6.)

BLOCKS 96 and 97: (Reserved to demarcate beginning of maintenance-time-breakdown and parts data in the data stream)

TIR RESPONSIBILITIES AREA.

Fill in the responsibility blocks (Blocks 98 and 99) on every TIR that is prepared. Each responsibility block may be three lines maximum, X(34) maximum per line. Leave one blank line between the command line and the names of the individuals.

NOTE: Test planning personnel should establish acceptable entries for some, if not all, of the information to be entered in Blocks 98 and 99 prior to commencement of testing.

BLOCK 98. Name, Title, & Phone of Preparer:
(Cols. 6-39, X(34) max)

Enter the name, title, and telephone number of the person responsible for the content and validity of the information in this TIR. This is a "MUST FILL" block.

BLOCK 99. Releaser: (Cols. 45-78, X(34) max)

Enter the releaser block as required by the tester. This is a "MUST FILL" block.

NOTE: This is the end of the TI data portion of the TIR.

4. FILLING IN SECTION VI OF THE TIR FORM.

Specific instructions follow for completing each area or section of the TIR form.

BLOCK 100:
CA Status: (Cols. 7-16, X(10) max)

Enter OPEN, PROPOSED, VERIFIED, REVIEWED, COMPLETED, INCOMPLETE, or NOT REQD indicating the status of the corrective action. This is a "MUST FILL" block.

Figure 10-1 (PAGE 22). Sample Test Incident Report with instructions for completion

BLOCK 101:
CA Entry Date: (Cols. 33-52, X(20) max)

Enter the date (in DD MMM YYYY format) that the CA data is released for submittal. If the CA data is revised, the entry date changes with each new release and submission. A revision number is assigned for each revision. This is a "MUST FILL" block. Example follows:

Original CA data: 04 OCT 1993

Revised CA data: 06 OCT 1993 REV# 01

BLOCK 102:
CA Date Reviewed: (Cols. 59-69, X(11) max)

Enter the date (in DD MMM YYYY format) that the corrective action review team reviewed the CA and verified it as appropriate and effective. Review may be by correspondence or electronic media (telephone, teleconference, e-mail, facsimile). This date is entered when complete concurrence has been obtained (to include resolution of elevated issues). If review was by correspondence or electronic media, then use the date when final coordination was achieved. Block 100 would be annotated REVIEWED. This is a "MUST FILL" block if the corrective action review team verifies the CA.

BLOCK 103:
CA Date Proposed: (Cols. 7-17, X(11) max)

Enter the (in DD MMM YYYY format) that the program manager submits a potentially acceptable CA. Once entered it will not change unless an error was made. Block 100 would be annotated PROPOSED. This is a "MUST FILL" block if a CA is proposed.

BLOCK 104:
CA Date Verified: (Cols. 33-43, X(11) max)

Enter the date (in DD MMM YYYY format) that test or analysis verified the corrective action as adequate. Block 100 would be annotated VERIFIED. This is a "MUST FILL" block when the corrective action is verified as adequate.

BLOCK 105:
CA Date Completed: (Cols. 59-69, X(11) max)

Enter the date (in DD MMM YYYY format) that the CA was approved for production and no further actions are required. This block is not a required entry for a CA Status of NOT REQD. This is a "MUST FILL" block if Block 100 contains COMPLETED.

Figure 10-1 (PAGE 23). Sample Test Incident Report with instructions for completion

BLOCKS 120-123. (Cols. 2-77, X(76) max)

Space is provided for entering four different types of narratives that pertain to the corrective action. The four narrative types, together with their respective block numbers, are as follows:

120. Developer's Analysis of Problem.
121. Status/Description of Corrective Action.
122. Test Results on Corrective Action.
123. Planned Production Implementation.

Enter the block number and the title for the type of narrative that is being addressed; then prepare and enter the narrative. The use of upper-case and lower-case letters is permitted and encouraged. Use complete sentences and proper paragraph structuring, numbering, and indentation. Enter table headings and values as required to amplify the narrative. Use footnotes, if applicable. If desired, skip lines to separate paragraphs, space tables and table headings, and isolate footnotes.

Use as many lines as are necessary for each narrative type. Complete one narrative and add a line of dashes before beginning another narrative. Complete the narrative before continuing on to another block. Keep the narratives in order by block number. Each of the narratives are "MUST FILL" blocks.

Limit the narratives to the corrective action and related incident reports. Reference any hard-copy reports, sketches, photographs, or correspondence containing classified information that are being forwarded separately. Do not include any classified information in the narratives or, for that matter, in any other blocks.

Revise or update the narratives as more information becomes available. Identify revised information with the heading on a separate line: "Revision" and the date of the revision. All original narrative data are retained during corrective action revision to ensure data integrity. Revisions may (1) add data or (2) change erroneous data by the citing the old and adding the correction.

Figure 10-1 (PAGE 24). Sample Test Incident Report with instructions for completion

5. PAGINATION PROCEDURES.

Page breaks are unnecessary in TIRs that are distributed electronically, but may be present when hard copy distribution is being made. The location of the page break is left to the discretion of the preparer. Ideally, the page break should not leave a section title on one page and begin the data on the next. At the desired page break, end the page with the following line:

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|--------------------- (continued on next page)-------------------------|
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Start each new page with the following header:

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-----------------------------------------------------------------------
|TIR Number:                                          Page Number:      |
|---------------------------------------------------------------------|
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Regardless of the number of pages, always end the TI data portion with the responsibility blocks (Blocks 98 and 99) and the row of hyphens.

6. TIR FORM AUGMENTATION PROCEDURES.

a. The TIR Form is a sequenced set of standardized record formats, each format containing either predetermined fillers or a combination of fillers and spaces for entering data. The form may be subjected to automated document processing. Successful processing by the method being used depends upon rigid adherence to the record sequence and the use and content of each record format.

b. During processing, the computer will look for particular data elements in specific locations on the form as depicted by the fillers. Therefore, fillers on the TIR form must not be altered with respect to location or content, and the locations and field lengths of the blocks for entering data should not be changed.

c. Limited provisions have been made to allow for tailoring of the TIR form by test planning personnel to accommodate test-unique or commodity-unique data entry blocks.

(1) Blocks 9, 16-20, 26-29, 35, 37-39, 45, 58-59, 74-79, 84-89, 91-95, are reserved. These blocks will be used only upon agreement of the T&E community. This decision will be made at an ATIRS Users Group Conference.

(2) In Section II Block 36 may be used for added test-unique or commodity-unique data.

Figure 10-1 (PAGE 25). Sample Test Incident Report with instructions for completion

d. Format for block 36. Special Requirements Data consists of the following: name of the element, a colon, a space, and the element value. The element name, colon, space and element value are not to exceed 34 characters. Once a block is used, it will remain in use and maintained throughout the test.

Example:

36. Special Requirements Data:	
Subsystem Code: B2	Para/Page: 2111/545
Hazard Severity: CRITICAL	Sub Cause: GUN/TUR DRIVE & STAB
MRF: 020	Sub Cause Code: B2

e. Data collection procedures for all test-unique and commodity-unique additions should also be established and disseminated prior to start of test.

Figure 10-1 (PAGE 26). Sample Test Incident Report with instructions for completion

Chapter 11
Instrumentation, Targets, and Threat Simulators (ITTS)

Section I
Introduction

11–1. Overview
This chapter provides a guide for planning for instrumentation, targets, and threat simulators (ITTS) to meet test and evaluation (T&E) requirements. It outlines the relationships of key activities involved in planning, managing, and using ITTS in support of test and evaluation. It also identifies key inventory and capability accounting systems, describes procedures for asset scheduling and use, and provides formats and instructions for preparation and processing of required documentation.

11–2. ITTS Planning
a. Planning for instrumentation, targets, and threat simulators to support test and evaluation must begin early in the weapon system concept planning cycle to ensure timely and adequate support. ITTS long-range planning follows the process detailed in Section VII of this chapter. Near-term planning during the acquisition of Army materiel systems draws on various programmatic documentation for planning of ITTS support as graphically depicted in Figure 11–1. Army materiel system documents which do not specifically address ITTS, but discuss the threat related to a particular materiel system include the Operational Requirements Document (ORD), Integrated Program Summary (IPS), Cost and Operational Effectiveness Analysis (COEA), Test and Evaluation Master Plan (TEMP), Test and Evaluation Plan (TEP), Outline Test Plan (OTP), Threat Test Support Package (Threat TSP), and the Target/Threat Simulator Accreditation Report. Part V of the TEMP summarizes the required T&E resources, including ITTS.

b. Acquisition of ITTS is accomplished through a tailored DOD–5000 series process. The project manager for ITTS (PMIT-TS)is the Army's single manager for developing and acquiring targets(except training range targets), threat simulators, and major test instrumentation. All test activities, PMs, and other materiel developers will coordinate their ITTS requirements with PM ITTS beginning with Phase 0, Concept Exploration and Definition, and continue through the life cycle of the system. PM ITTS is required to fund nonsystem unique ITTS requirements. The system PM is required to fund for all system unique ITTS requirements. Only in those unique cases where PM ITTS cannot provide the ITTS supportÏ

Section II
Near-Term Instrumentation Support

11–3. Support Planning
Inventory and capability accounting sources should be used to identify availability of specific instruments and the types of instruments necessary to capture the required data. Performance characteristics, support requirements, and availability,integrated with test schedule and data accuracy requirements, will frequently determine how a test must be structured.

11–4. Needs Satisfaction
When possible, instrumentation needs will normally be satisfied from on-hand assets. Satisfaction of needs in excess of organic capability should use one or more of the following methods, listed in order of preference.

a. Existing resources. Testers are encouraged to survey and query existing inventory databases (for example, OPTEC Instrumentation Database(OIDB), Test Facilities (TESTFACS) Register managed by PM ITTS) and catalogs to determine what additional needed resources are in inventory, where, and in what quantities. Direct coordination with points of contact (POCs) is also encouraged for the tester to gain a complete understanding of an item's capabilities, limitations, support requirements, and suitability, and to determine its potential availability. The preferred alternative for meeting instrumentation and test support equipment shortfalls should be through the Inter-range Loan Agreements process. The Range Commanders Council operates a triservice forum for sharing of test support equipment and instrumentation. Refer to the Range Commanders Council Secretariat, ATTN: STEWS-RCC, White Sands Missile Range, NM 88002–8110.

b. Lease or NDI procurement. Standard off-the-shelf instrumentation may be leased or rented to satisfy short-term inventory augmentation or one-time needs. A cost benefit analysis should be conducted to compare total lease or rental costs to non-development

item (NDI) life cycle period (procurement plus ownership) costs over the full instrumentation requirement period before this option is pursued.

c. NDI procurement and modification. Testers may procure standard off-the-shelf NDI instrumentation or modify on-hand inventory assets needed to satisfy test requirements. A trade-off analysis of modification versus procurement of NDI (assuming availability) should be conducted to determine the most cost efficient approach.

d. Development Design, development, and procurement of instrumentation should be the exception due to the time required. Experience has shown that the acquisition cycle for sustaining instrumentation can easily take 3–5 years and 8–12 years is not uncommon for a major instrumentation system. When development of instrumentation is necessary, the impact must be closely coordinated through the TIWG and the TSARC, and documented in ORD format and reflected in the TEMP as a potential test limitation.

Section III
Target and Threat Simulator Support

11–5. Overview

a. Development planning. Development planning uses a long-range (10–15 years)plan geared to progressing from definition of generic threat technological advancements to specific applications of technology.This planning uses the Army Science and Technology Master Plan(ASTMP), USATRADOC's Concept Based Requirements System (CBRS), national and DOD intelligence community products, and system acquisition documentation to establish system links. Planning then evolves into focusing Scientific and Technical Intelligence (S&TI)Centers and other intelligence organizations on specific systems through initiation of Intelligence Production Requirements or through the use of Integrated Technical Evaluation and Analysis of Multiple Sources (ITEAMS) as necessary. Candidate systems for development are identified by or to potential users (combat developers, PEO/PM offices, evaluators, and testers) for consideration through direct coordination, TIWG interface, and annual requirements conferences chaired by PM ITTS. Those candidates for which specific needs can be justified are subsequently documented in ORD format. USATECOM is the combat developer for developmental test and evaluation threat related systems. USAOPTEC functions similarly for operational test and evaluation systems.

b. Use planning. Use planning for targets and threat simulators in support of T&E is a cooperative effort between the intelligence, evaluation, research and development (R&D), and testing communities.Intelligence officers identify and describe the system specific threat in all its aspects; evaluators determine which threat sensitive issues must be addressed by test; developers manage the development and acquisition of threat representative assets; and testers schedule and control threat representative assets in accordance with intelligence descriptions and estimates. Use planning normally has a shorter range (1–3 years), resulting in reliance on existing targets and threat simulators to satisfy needs.

11–6. Related Documents

When planning for the use of appropriate targets and threat simulators, it is important to know how threat information for a United States system is derived and where the information is documented. While these documents support and justify the development of materiel systems, they are also used to identify targets and threat simulators required for T&E of the system. Some of the key threat information and documents used are described below.

a. Baseline intelligence product. This provides threat information by geographic region or country on all weapons systems, doctrine, tactics, organizations, equipment, and military forces. It is continuously updated by the Defense Intelligence Agency (DIA) and approved by DIA.

b. System Threat Assessment Report (STAR). (See AR 381–11).

c. Integrated Threat Tactical Operations Plan(ITTOP). This provides information on all known and projected threat force mixes. It is used for threat simulators in inventory,provides command and control, integrated force operations, and crew drill and procedures (including electronic countermeasures and electronic counter countermeasures (ECM/ECCM)). It is updated as required by OTSA with input from S&TI Centers. It is approved by DCSINT. The crew drills and procedures are validated by the MATDEV.

11–7. Support Planning

a. The challenge. A program's T&E strategy is based on Critical Operational Issues and Criteria (COIC) developed early in the acquisition process. Answers to many of these issues depend largely on the threat environment to which the system will be subjected. Some of the challenges to T&E planners are listed below.

(1) *Differences.* Since development of COIC precedes the development of the detailed threat assessments in threat related documents,significant differences can occur between the documented threat and that used to develop COIC.

(2) *Gaps.* Intelligence gaps become evident when a system is progressively defined as it proceeds through the acquisition process. These gaps generate both intelligence production and collection requirements, which, as they are developed, may change the projected threat.

(3) *System operating requirements.* Due to the evolving threat, keeping the system operating requirements in consonance with the threat is sometimes difficult.Ï representation.

(4) *Inaccuracies.* TEMP and OTP development precedes that of the Threat TSP and can result in inaccuracies and/or inadequacies in projections of assets required for test threat representation.

b. Critical Intelligence Parameters (CIP). Together, the MATDEV and the intelligence community establish limits on how much the threat can change without causing a major redesign or reassessment of the program. These limits, expressed as CIPs, define thresholds for characteristics of actual or projected threat systems (for example, capabilities, numbers, types, or mixes of systems), which if exceeded, could substantially change a system's operational requirement. Once defined, CIPs are submitted through intelligence channels for validation and subsequent collection and production. They are included in the STAR and Threat TSP and serve as a T&E planning factor.

c. The Threat TSP in test planning. The Threat TSP documents the threat environment appropriate to test a developing system (see chap 9). When reviewing the Threat TSP, the evaluator and tester must determine whether:

(1) The threat overview in the Threat TSP adequately reflects the threat assessment of the STAR.

(2) Threat scenarios have been validated and accurately replicate the test threat environment needed to address the critical issues.

(3) Weapon and target matrices adequately reflect the validated threat.

(4) The threat is appropriately configured for the environmental conditions and means of employment (doctrine,tactics, organization, and force structure) necessary to answer the issue focus of the TEP.

(5) Detailed test planning has been conducted with full cognizance of CIPs.

(6) Targets and threat simulators are available and scheduled to replicate the threat scenarios depicted in the Threat TSP.Consideration must also be given to the use of surrogates (in the absence of appropriate targets or threat simulators) and theÏ testing.

11–8. Validation and Accreditation

Validation and accreditation are applicable to all threat simulators and targets which are used to represent a specific threat system (or portion of a specific threat system) in developmental and operational tests. Laboratory simulators should be validated and accredited if they represent a part or function of a specific threat system and are used in a test supporting a milestone decision.Detailed procedures on validation and accreditation of United States Army targets and threat simulators are provided in Section VIII of this chapter.

Section IV
Inventory and Capability Accounting and Use

11–9. Test Facilities

a. PM ITTS maintains Test Facilities (TESTFACS) as a tool to identify existing major test facilities, instrumentation, and test equipment with an acquisition cost of $75,000 or more. The TESTFACS database identifies assets by location, value, capability, and points of contacts to provide the test community with a readily available list of assets. Narrative descriptions and performance information identify system-unique capabilities of the facilities listed, while a list of major projects and programs supported enables identification of any similar or related uses which have already employed the facilities.

b. Through TESTFACs, PM ITTS and the T&E community have ready access to a roster of more than $5 billion in test assets, allowing rapid identification and elimination of potentially duplicative development efforts. TESTFACS is already accessible through the Defense Data Network (DDN), and provides data to other key databases such as the DOD T&E Assets Database, Air Force ATRIS, and the TECOM Technology Development and Acquisition Program (TDAP). TESTFACS is a valuable tool for test planning during TIWGs as well as providing a means to ensure that investments in the T&E infrastructure provide maximum benefit. Point of contact for TESTFACS is the Project Manager for Instrumentation, Targets and Threat Simulators, Assistant Project Manager for Technology, ATTN: AMCPM-ITTS-A, Aberdeen Proving Ground, MD 21005–5001.

11–10. Associated Programs

a. OPTEC Instrumentation Database (OIDB). The OIDB is an automated inventory program that includes all ITTS assets owned and operated by USAOPTEC test activities. It identifies instrumentation by category, class/subclass, quantity, and location. Refer to Commander, United States Army Operational Test and Evaluation Command, ATTN: CSTE-OPI, Park Center IV 4501 Ford Ave, Alexandria, VA 22302–1458.

b. T&E Assets Database. The Director for Test, System Engineering and Evaluation(DTSE&E), Office of the Under Secretary of Defense (Acquisition and Technology) oversees the T&E Assets Database, an automated inventory which includes assets with a value of $1 million or more. The database is "on-line" and accessible via T&E Community Network (TECNET). It serves to support planning and to quantify DOD capability per DoDD 3200.11.

c. Joint Threat Simulator Handbook (JTSH). The JTSH is a classified listing and description of over 200 threat simulators available for use in support of testing.Descriptions include a side-by-side presentation of threat and simulator parametric values, to provide an indication of simulator fidelity, and, for the majority, photographs of the simulator.Intended as a "first look" data source, the handbook reflects inventory quantity and location and identifies points of contact for additional information. The JTSH is available in hardcopy or microfiche format from the Joint Electronic Warfare Center, San Antonio, TX, or personal computer (PC) compatible automated format through the CROSSBOW Management Office. Refer to Joint Electronic Warfare Center, San Antonio, TX 78243–5000.

d. Targets Information Manual. This manual serves as a descriptive catalog of Army targets and foreign ground assets available (or in development) for support of T&E or training. Refer to Project Manager for Instrumentation, Targets and Threat Simulators, ATTN: AMCPM-ITTS-Q, Redstone Arsenal, AL 35898–5798.

e. Certification of foreign ground assets. PM ITTS maintains a catalog of foreign ground assets which have been compared against the DIA-approved threat baseline and determined to be accurate representations of the threat. The assets are available for use in testing and training. Refer to Project Manager for Instrumentation, Targets and Threat Simulators, ATTN:AMCPM-ITTS-Q, Redstone Arsenal, AL 35898–5798.

Section V
Schedule and Use Requirements

11–11. Individual test activities, directorates, ranges, and laboratories possess organic instrumentation assets consistent with their mission focus.

a. Scheduling. Scheduling of organic assets is effected in consonance with internal operating procedures. Scheduling of assets from external sources is effected by direct coordination between the borrower and lender.

b. Costs. Costs associated with instrumentation use are normally limited to those of lease, round trip transportation (for borrowed instrumentation), and any modifications required for unique or special applications or interface requirements. The latter are typically charged to the customer (that is, the PEO or PM). Costs should be reflected in the OTP for TSARC approved tests.

11–12. Targets

For TSARC approved tests, requirements for targets will be included within the OTP. Individual test activities possess limited organic target assets. The vast majority of aerial and ground targets used in support of Army T&E are developed, procured, maintained, and operated by the Targets Management Office (TMO).The procedures of this section therefore focus on TMO. Specific procedural requirements for assets held by other organizations should be coordinated directly with the appropriate POC.

a. Scheduling. A diagram of the processing of a request is shown in figure 11–2. Refer to Project Manager for Instrumentation, Targets and Threat Simulators, ATTN: AMCPM-ITTS-Q, Redstone Arsenal, AL 35898–5798.

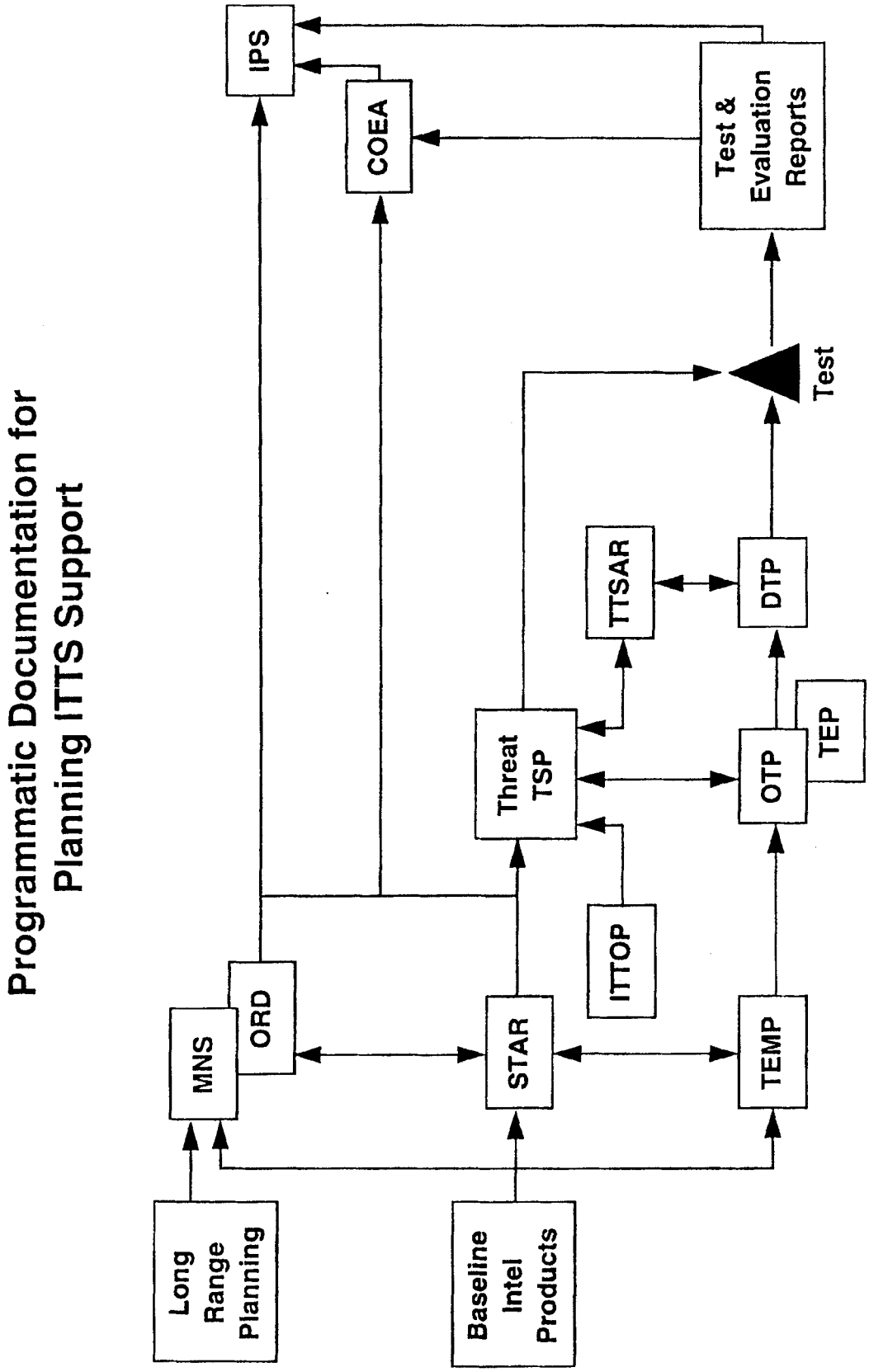

Figure 11-1. Programmatic Documentation for Planning ITTS Support

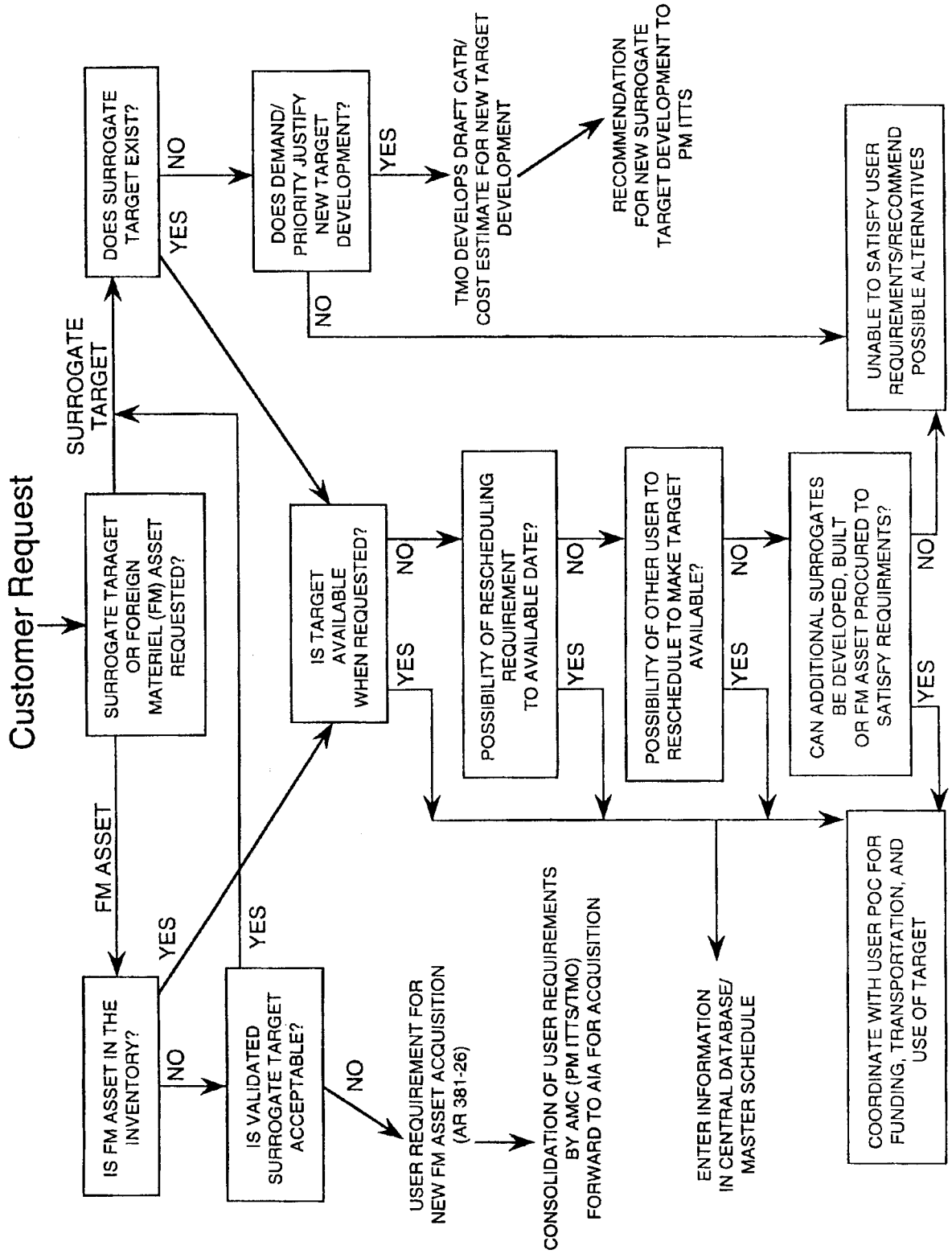

Figure 11-2. Target Request Process

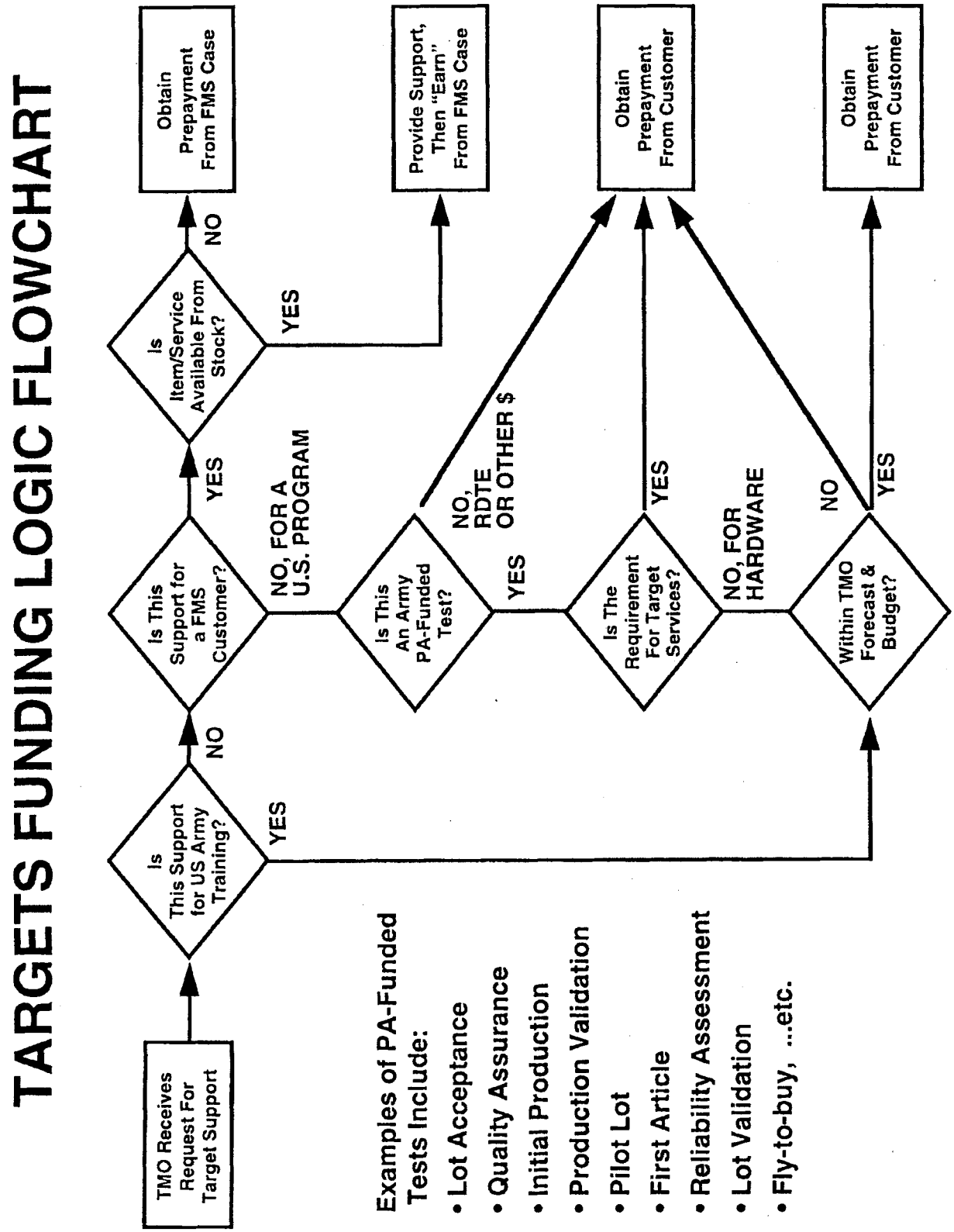

Figure 11-3. Targets Funding Logic Flowchart

11–13. Foreign Materiel

For TSARC approved tests, requirements for foreign materiel will be included within the OTP. Traditionally, foreign materiel available for the T&E community to use has been acquired under the auspices of AR 381–26 and held by the National Ground Intelligence Center (NGIC).

a. Availability. International events of the past few years have resulted in the availability of an unprecedented number of foreign military assets and overloaded the NGIC capacity. These assets are

currently in the possession of USAMC, with PM ITTS designated as the management agent. The TMO will execute the activities associated with the management of foreign materiel. A Central Asset Pool (CAP), planned for Yuma Proving Ground (YPG), Arizona, Aberdeen Proving Ground (APG), MD, White Sands Missile Range (WSMR), New Mexico, Redstone Technical Test Center (RTTC), and Chicken Little, Eglin Air Force Base, FL will serve as a central storage facility and center of expertise for storing, preparing for use, and shipping of foreign assets. Detailed procedures are currently under development.

b. Scheduling. TMO will provide central control over foreign assets by coordinating asset use and maintaining accountability. After approval of a foreign military asset use request, TMO will direct the CAP to prepare and ship the foreign assets to the requested location. A loan agreement will be used to define responsibilities and conditions for the use of foreign assets. A sample is shown at Figure 11–4. Refer to Project Manager for Instrumentation, Targets and Threat Simulators, ATTN: AMCPM-ITTS-Q, Redstone Arsenal, AL 35898–5798.

11–14. Threat Simulators

For TSARC approved tests, requirements for threat simulators will be included within the OTP. Army Threat Simulators (ATS), developed by PM ITTS and subject to the provisions of validation and accreditation outlined in Appendix A to this pamphlet, are normally fielded to OTSA for operation and maintenance. The procedures of this section therefore focus on OTSA. Specific procedural requirements for assets held by other organizations should be coordinated directly with the appropriate POC.

a. Scheduling. The OIDB provides a list of threat simulators available at OTSA. Additional assets and information are addressed in the Joint Threat Simulator Handbook. Scheduling of OTSA held threat simulators is accomplished directly with OTSA and should be effected no later than 24 months in advance of the required test date.Formal schedule coordination and approval for use is conducted as a part of the TSARC process. Refer to Director, U.S. Army Operational Test and Evaluation Command Threat Support Activity (OTSA), ATTN:CSTE-OPO, Fort Bliss, Texas 79916–0058.

b. Costs. For all types of test and training support, OTSA will prepare a cost estimate and provide a summary sheet to HQ OPTEC(CSTE-OPI) for use in communication and coordination with the customer. For TSARC approved tests, costs associated with threat simulator support, drawn from the summary sheet, will be included within the OTP.

Section VI
ITTS Requirements Process

11–15. Requirements Process: Short-Term

The process discussed in this section provides general information for the user who is unable to fulfill needs from inventory.

a. Overview. Each step of the ITTS requirements process is identified by the documents, actions, and approvals required from the identification of a need by a user to the initiation of a project.Some steps of the process differ for the development of instrumentation versus that of targets and threat simulators.Therefore the process and documentation requirements should be tailored based on agreement between the user and materiel developer.For all ITTS, the following are required: formation of an ITTS Working Group (IWG), approval of an ORD by a member of the Senior Executive Service (SES) or General Officer representing the user, acceptance of the ORD by a General Officer representing the materiel developer, and multi-service review of planned major investments.

b. Requirement identification. The user (HQ USATECOM, HQ USAOPTEC, a Materiel Development Command, PEO or PM) generates ITTS requirements based on needs that are validated through documented references. These references may be the ASTMP, Five Year Test Program (FYTP), TIWG minutes, system TEMP, or any other applicable documents. The long-range planning process described in the Section VII of this chapter provides the methodology used for identifying and refining requirements in the ASTMP. In addition to instrumentation, USATECOM and USAOPTEC will also identify ITTS needs to enhance their respective test facility infrastructure, improve testing efficiency and improve operational safety. These needs will be documented in the USATECOM TDAP, or the USAOPTEC Operational Test Instrumentation Plan (OTIP).

c. Requirement review and consolidation. The user reviews all requirements, checks for unwarranted duplication, and confirms adherence to the command long-range plan.The user then performs the following functions: prioritization of requirements, identification of major instrumentation projects for PM ITTS management, execution, identification of targets and threat simulators, and identification of sustaining instrumentation for internal management and execution. The balance of this section will address approval and review of major instrumentation, targets and threat simulators. Sustaining instrumentation, which is internally managed by the user, will not be addressed.

d. ITTS Working Group. For major instrumentation, targets and threat simulators, PM ITTS and the user will form an ITTS Working Group (IWG) chaired by the user. The IWG will operate during the preparation and staffing of the ORD and COEA, and perform Concept Exploration functions. The functions will be to mutually understand the ITTS requirements and establish general project milestones and documentation requirements. The following documents should be extensively tailored in accordance with IWG direction: the ORD, an abbreviated COEA or Cost Benefit Analysis, the Integrated Program Summary (IPS), the TEMP, and the Integrated Logistics Support Plan(ILSP). Other documents will be prepared at the discretion of the IWG.

e. ORD preparation and staffing. The ITTS user will lead in preparing the ORD. PM ITTS and the U.S. Army Simulation, Training, and Instrumentation Command(USASTRICOM) will provide support as determined by the IWG. All ORDs will be staffed within the using command and PM ITTS. The Commanding General or Technical Director of the using command, USATECOM or USAOPTEC, or a weapon system PM or PEO will approve and sign the ORD. As the materiel developer, the Commanding General(CG), USASTRICOM will also sign the document indicating his or her acceptance of the project and understanding of the requirement.

f. Concept exploration. The IWG will coordinate activities during this phase. The user will lead in the preparation of a COEA and other related documents. PM ITTS will study tradeoffs and prepare acquisition documents as required by the IWG and IPR chair appointed by CG USASTRICOM. Trade-off studies may be performed as directed by the IWG. The user should select the best technical approach based upon projected resources and technical requirements. Both the user and PM ITTS will have agreed upon an approach, schedule and rough order of magnitude cost estimate for the system.

g. Joint Service reviews

(1) *Test and Evaluation Reliance Investment Board.* The users submit all projects to the individual Test and Evaluation Reliance Investment Board (TERIB) and Reliance lead which ensure complete integration of joint and individual service investments in the T&E infrastructure. The TERIB reviews each project for duplication with other service capabilities, potential for joint service cooperation, and technical merit. The TERIB produces the DOD Test Resource Master Plan (TRMP) and Test Investment Strategy (TIS) in which projects are placed in priority order and funding projected through the POM.

(2) *Operational Test and Evaluation Coordination Committee Review (for OT&E requirements only).* The Operational Test and Evaluation Coordination Committee(OTECC) reviews Army OT&E projects in coordination with other OT&E requirements from the other services. As a result, potential OSD funded candidates and multi-service duplications are identified.

(3) *CROSSBOW Committee Review (for threat simulator requirements only).* CROSSBOW Committee reviews Army threat simulator requirements in coordination with threat simulator requirements

from the other services, and reports to the Defense Test and Training Steering Group (DTTSG). The DTTSG and CROSSBOW Committee use these findings to recommend the lead service for joint developments and identify those programs which have unwarranted duplication.

(4) *Incorporation of results of TERIB (TRMP), OTECC, and CROSSBOW Committee Reviews.* PM ITTS consolidates program listings and funding requirements into the appropriate program elements and coordinates with other services as applicable to accommodate TERIB, OTECC, and CROSSBOW Committee findings.

Section VII
Long-Range Planning for ITTS

11–16. Overview

This section describes a long-range planning process to plan and budget more effectively for the acquisition of Army major ITTS that supports the T&E of future Army combat systems. This section provides procedural guidance to organizations requiring the development and acquisition of Army ITTS. The process consists of four steps for converting future Army combat system planning into a Long-Range RD&A Plan for ITTS. As a part of the four steps, information shall flow in the sequence shown in Figure 11–5.This section will detail the information flow, the organizational tasks, and documentation associated with the ITTS long-range planning process.

FOREIGN EQUIPMENT REQUEST

1. TEST TITLE: Airwolf Contractor Developmental Test

2. MATERIEL PROGRAM: PM Airwolf Aviation System

3. SYSTEMS REQUIRED:

SYSTEM	NO. REQUIRED
T72M Tank	3
BMP1 IFV	2
BMP2 IFV	2
BTR APC	1

4. DESCRIPTION OF SYSTEM USE: Used in Captive Flight Test for Thermal Infrared Sensor

5. TIMEFRAME: REQUIRED BY: 1 Mar 97
LOAN TIMEFRAME: 3 Mos

6. LOCATION: (SHIPPING ADDRESS): Aberdeen Test Center
Bldg 1089
Aberdeen Proving Ground, MD
DODAAC W81C5M

7. DESTRUCTIVE OR NON-DESTRUCTIVE: DESTRUCTIVE

IF DESTRUCTIVE, DESCRIBE EXPECTED DAMAGE:
Engine Destroyed

8. WHAT SUBSYSTEMS NEED TO BE OPERATIONAL?
Turret Rotation

9. ARE FUNDS AVAILABLE FOR:

SHIPPING	yes
MAINTENANCE	yes
DAMAGE REPAIR	yes
OPERATION	yes

10. POINT OF CONTACT: (PERSON RESPONSIBLE FOR SYSTEM)

NAME Ken Parker, Test Engineer
TELEPHONE DSN 555-6666

Figure 11-4. Foreign Equipment Request

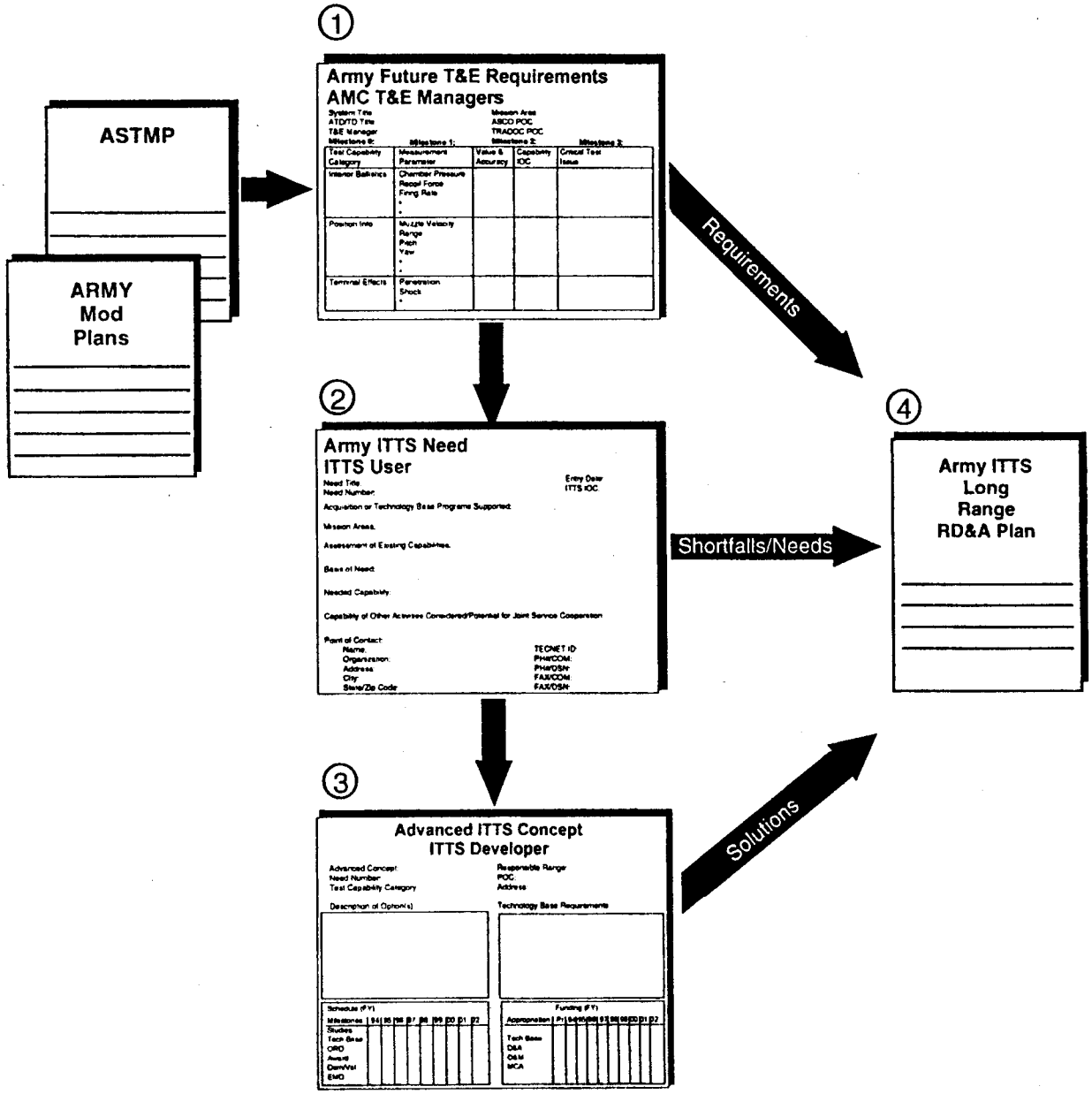

Figure 11-5. Summary of the Army ITTS Long-Range Planning Process

11–17. Army Future Test and Evaluation Requirements (AFTER)

The first step of the ITTS long-range planning process utilizes future Army combat systems long-range planning information to delineate future T&E requirements. The documented requirements are referred to as AFTERs. These requirements are the new parameters of future Army combat systems that require measurement and/or simulators, anticipated parameter values and accuracies,and the timeframe in which the measurements must be made or the simulators are to be available.

(1) The primary source for generating AFTERs are the Army combat system long-range planning efforts. These efforts are documented in the ASTMP and the Army Modernization Plan. They entail the coordination of CBTDEV and MATDEV in addressing changes in the threat or improving the overall fighting capability of the Army with materiel. The CBTDEV representative is the applicable USATRADOC School along with the associated Battle Lab. The MATDEV representative is the applicable USAMC Major Subordinate Command.Within the USATRADOC School, the function has been given to the Combat Development Center. Within the USAMC Major Subordinate Command, the function has been given to the Advanced Systems Concept Office (ASCO) normally found within the Major Subordinate Command Research, Development, and Engineering Center (RDEC).

(2) The ASTMP published annually by the Office of the Assistant Secretary of the Army for Research, Development and Acquisition and the Army Modernization Plan published annually by the Deputy Chief of Staff for Operations and Plans (DCSOPS) are documentation that summarize by Modernization Area the long-range Army goals for combat system acquisition.

(3) The process by which AFTERs are generated from the combat system long-range planning is shown in Figure 11–6. The T&E Manager will interface with the Major Subordinate Command ASCO to generate the measurement parameters of future Army combat systems, their particular values, and the timeframe in which the measurements must be made.

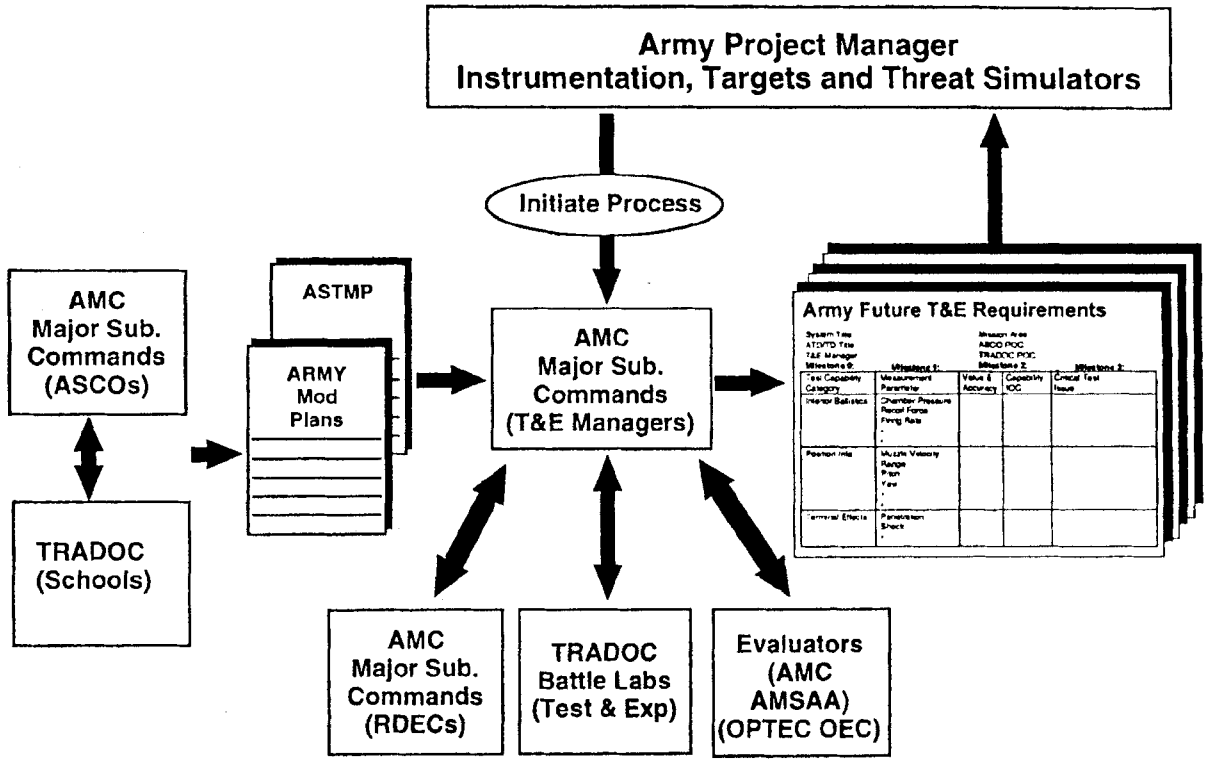

Figure 11-6. Step 1 of ITTS Long-Range Planning — Generation of AFTERS

(4) These parameters will be generated by obtaining and reviewing the long-range planning documentation delineated above and by holding technical interchanges as necessary with the ASCO, RDEC engineers (specifically in the technology centers), and the USATRADOC Battle Lab representative (specifically in the test and experimentation branches). A T&E Manager will oversee AFTERs only if the Major Subordinate Command has been selected as responsible for modernization packages as delineated in Table 11–1.

(5) The AFTERs will be prepared in the format shown in Figure 11–7 for each future Army combat system that is defined in the ASTMP. The format includes background information, future system information, POCs, and program milestones. The format also includes a categorization of AFTERs by required test capability. Figure 11–8 describes the test capability categories, and Figure 11–9 provides a data collection matrix illustration. The AFTER format also includes values and accuracies of measurement parameters, the required initial operational capability (IOC) date for the test capability, and any critical issues associated with the measurement. The IOC date should be consistent with the acquisition milestones provided as background.

(6) Once the AFTERs have been generated, the T&E Manager will forward them for feedback to the independent evaluator. Once coordinated, T&E Managers will submit AFTERs to PM ITTS, who will review and coordinate the follow-on long-range planning efforts.

Army Future T&E Requirements

System Title: OICW
Mission Area: Soldier
ATD/TD: OICW ATD

MATDEV:
CBTDEV:

Milestone 1: Milestone 2: Milestone 3:

AFTER Capability	Parameter	Value & Accuracy	Req Date	Critical Issue
Position Info	X,Y,Z	TBD/0.1m	97	

Figure 11-7. AFTER Format

TEST CAPABILITY CATEGORIES

The following test capability categories have been generated for the specific purpose of grouping like combat system T&E measurements. The categories along with associated example parameters provide a point of departure for determining both DT and OT categories for the specific purpose of supporting ITTS long range planning. These categories should be refined through the joint efforts of PM ITTS, TECOM, OPTEC, TRADOC Battle Labs, Evaluators, and T&E Managers.

1. Position Information -- x/y/z vs. time, velocity, acceleration, pitch/yaw, etc.

2. Interior Ballistics -- bore pressure, recoil force/velocity, tube wear, firing rate, bore temperature, launch acceleration, etc.

3. Terminal Ballistics Effects -- penetration, impulse, energy, spall pattern, etc.

4. Vehicle Dynamics -- shock, vibration, fuel consumption, speed, duration, range, maneuverability, etc.

5. NBC Effects (Contamination) -- concentration, dose, type, etc.

6. Materials Characteristics -- tensile strength, yield strength, Charpy Notch, Rockwell Hardness, elasticity, etc.

7. Signal Measurement -- type, frequency, intensity, pattern, etc.

8. Signature Measurement -- type, frequency, intensity, pattern, etc.

9. Signal Simulator -- type, frequency, intensity, pattern, etc.

10. Signature Simulator -- type, frequency, intensity, pattern, etc.

11. Flight Profile Simulator -- speed, altitude, duration, maneuverability, etc.

12. Structural Simulator (armor) -- thickness, material type, etc.

13. Environmental Simulator -- temperature, humidity, sand/dust concentration, etc.

14. Data Acquisition/Processing -- digitizing speed, record length, etc.

Figure 11-8. Test Capability Categories

Required Test Capabilities \ Army ITTS Capability Categories	Position Info	Interior Ballistics	Terminal Effects	Vehicle Dynamics	NBC Effects – Contamination	Materials Characteristics	Signal/Signature Measurement	Signal Simulator	Signature Simulator	Flight Profile Simulator	Structural (Armor) Simulator	Environmental Simulator	Data Acq, Software & Processing
Countermeasures													
C3/Intel/EW													
Data Processing													
Directed Energy													
Environmental													
Fire Control Systems													X
Flight Vehicle (dynamics)													
Ground Vehicle (dynamics)													
Human Factors													
Launch Dynamics (Int. Ball.)													
Materials													
Munitions – (Ext.) Ballistics	X												
Munitions – Terminal Effects	X												
Nuclear/Biological/Chemical													
Nuclear Effects													
Sensors									X				
Software													
Targets & Threat Simulators													
Test Support Technologies													
Troop Support Equipment													
Vulnerability/Survivability													

Figure 11-9. ITTS Data Collection Matrix

b. Documentation requirements. Future T&E requirements in support of future Army combat systems shall be documented in the format given in Figure 11–7.

11–18. Army ITTS Need Statements

This section describes the second step of the ITTS Long-Range Planning Process utilizing AFTERs to identify shortfalls in existing resources and generating ITTS Needs. These ITTS need statements are coordinated with the OSD and other services to prevent unwarranted duplication of resources.

a. Description. The second step of the ITTS long-range planning process, as shown in Figure 11–10, begins with the distribution of AFTERs from PM ITTS to the test community. The testers (USATECOM and USAOPTEC) will begin their efforts by sorting these requirements first according to applicability to developmental or operational testing. Afterwards, they will sort the AFTERs according to like measurements (that is, test capability categories given in Figure 11–8).

(1) With the requirements sorted by like measurements, a comprehensive picture develops that outlines the types of new measurements required for across-the-board T&E of future Army combat systems. These sorted measurements and the associated required timelines will act as a roadmap to identify shortfalls in existing ITTS capabilities and subsequent needs of the various test ranges.

(2) Determining shortfalls and associated needs requires that two key decisions must be made. First, the range that will be the likely place that each system will be tested must be chosen. Second, if a shortfall is identified, then a decision must be made by the testers whether the resulting ITTS need should be addressed with materiel and if so, acquired as a common Army test asset or whether the resulting ITTS need is unique to a single Army system acquisition. In the latter case, a unique ITTS need would be paid for by the PM or associated Major Subordinate Command and the ITTS need would be generated by them and coordinated directly with PM ITTS. In the former case, the common ITTS need is documented in the format shown in Figure 11–11 by the applicable tester with the capability of the new ITTS specified to include reasonable growth expectations. All ITTS needs must then be coordinated internally to the Army and then with OSD and other services via the TERIB.

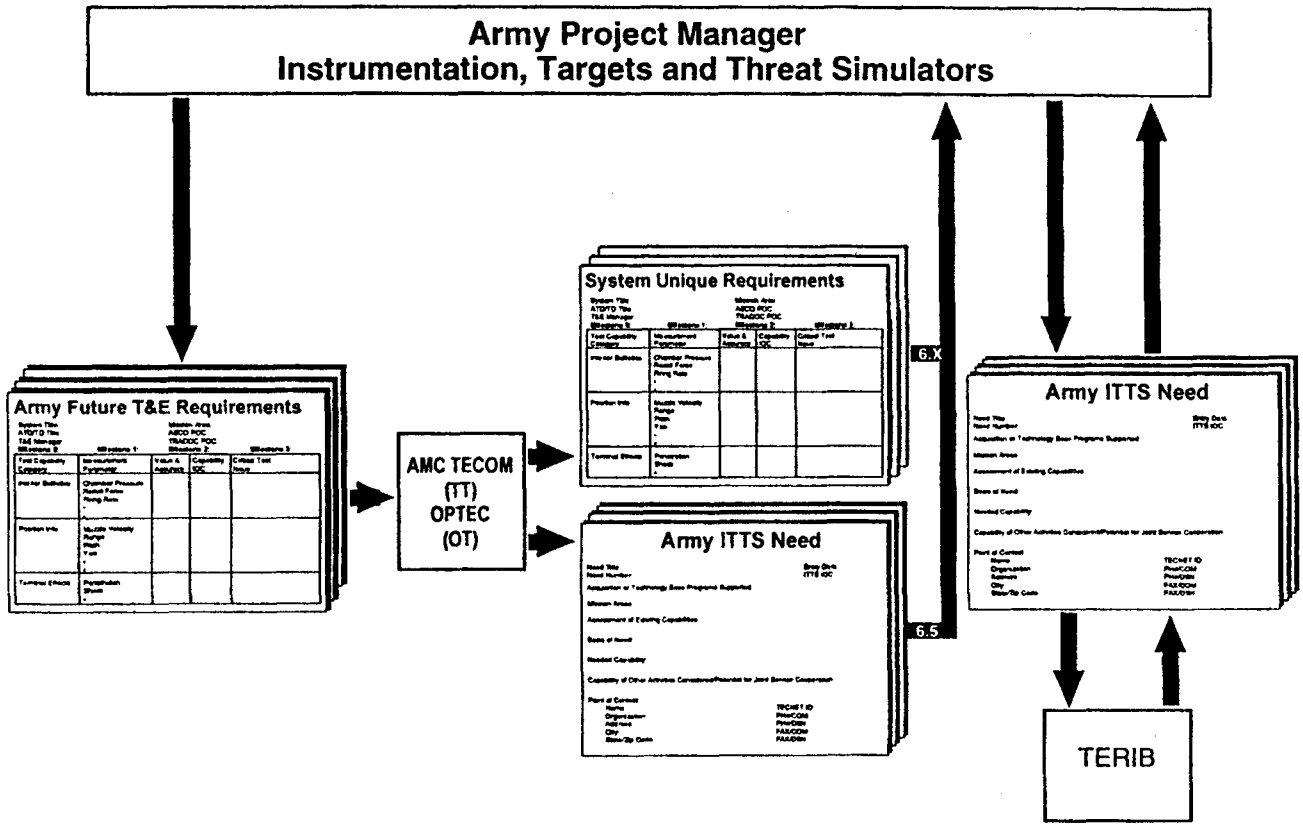

Figure 11-10. Step 2 of ITTS Long-Range Planning—Generation of ITTS Needs

Army ITTS Need

Need Title: Int Fire Control & Scoring Range
Unique AFTER: Human Signature -- TBD IR

Entry Date: 1/20/95
ITTS IOC: FY 00

Aquisition or Technology Base Programs Supported: Objective Indivudual Combat Weapon

Mission Areas: Soldier

Assessment of Existing Capabilities:
ATC -- separate acoustic scoring screens and high speed video to track rounds out to 2000m with a velocity accruacy of 0.1 m/s - however, the evaluation of an Integrated fire control system is not available.
YPG - (acoustic scoring) GP20 - 20 cm accuracy between actual projectile intersection of measurement plane and measured Intersection. Separate planes can provide Instantaneous TSPI at 4 measured points. Can measure from ground to 20 feet, but not airborne yet (Bob Mal x802-328-8719)

Basis of Need: Integrated fire control system and scoring range test capability.

Needed Capability:
Target simulator of personnel, light vehicles, RW and FW aircraft and fortifications in the 0.4-0.7 and 3-5 micron bands testing fire control with ballistic trajectory of 0.1m (3D) TSPI and 0.1 m/s velocity accuracy.

Figure 11-11. ITTS Needs Format

b. Documentation requirements. Army ITTS needs shall be documented in the format given in Figure 11–11.

11–19. Army Advanced ITTS Concept Summaries

This paragraph describes the third step of the ITTS Long-Range Planning Process. This step utilizes the ITTS needs to generate future advanced ITTS concepts to be acquired to support the T&E of future Army combat systems.

a. Description. The third step of the ITTS Long-Range Planning Process as shown in Figure–12, begins with the evaluation of all ITTS needs. The goal of this evaluation is to understand the requirements for the acquisition of each ITTS need. PM ITTS will then

prepare a brief technical approach to address the needed ITTS capability and describe the approach in an Advanced ITTS Concept Summary as illustrated in Figure 11–13. Each Advanced ITTS Concept Summary will briefly describe one or more technical approaches to satisfy the need, identify any technology base requirements for each technical approach, and estimate a schedule and funding profile for the acquisition of the advanced ITTS concept.

(1) Developmental T&E advanced ITTS concepts responding to USATECOM needs are closely coordinated between the ITTS developer and USATECOM to ensure that advanced developmental test ITTS concepts address USATECOM needs. Operational T&E advanced ITTS concepts responding to USAOPTEC needs are closely coordinated between the ITTS developer and USAOPTEC to ensure that advanced operational test ITTS concepts address USAOPTEC needs. Other advanced ITTS concepts corresponding to USAMC Major Subordinate Command, PMs or other ITTs user needs are coordinated between the ITTS developers and applicable ITTS users.

(2) The advanced ITTS concept summaries will then be coupled with the associated need and AFTERs and distributed to the applicable T&E Managers, evaluators, and TRADOC Battle Labs for feedback. Once PM ITTS coordinates all feedback, the Advanced ITTS Concept Summaries will be used in the next step of the planning process.

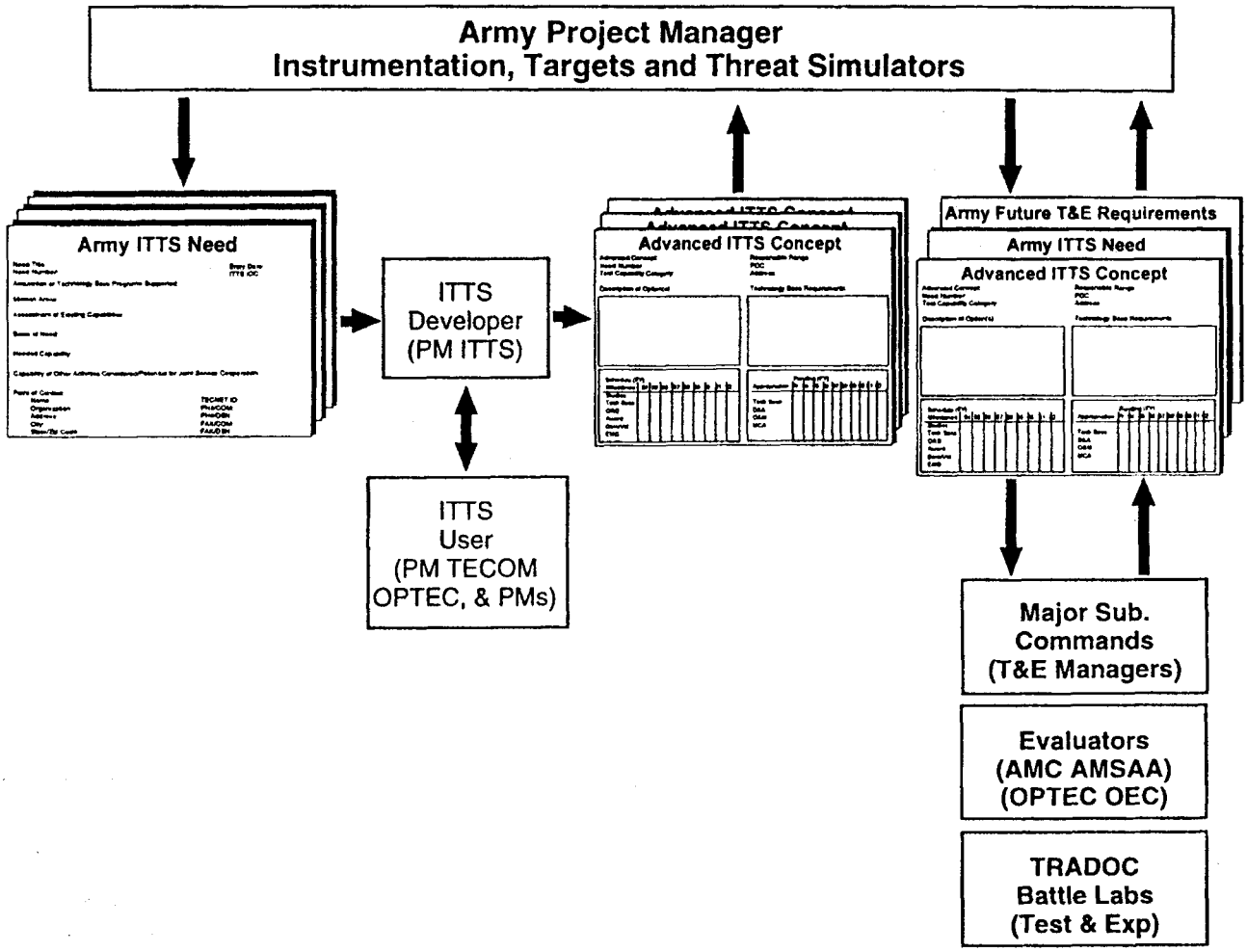

Figure 11-12. Step 3 of ITTS Long-Range Plannning—Generation of Advanced ITTS Concepts

Advanced ITTS Concept Summary

Advanced Concept: Virtual Ballistic Target whith Integrated Scoring System
Army Need: IntFire Control & Scoring Range - Human Signature
Future System: Objective Individual Combat Weapon

AC User: Andy Hooper (TECOM YPG)
AC Dev:
Entry Date: 12/05/95

Description of Option(s)

Fully animated, high fidelity visual and MW or LW IR simulated personnel, light vehicles, FW and RW aircraft, and fortifications targets with 3 dimensional scoring system with 0.1m 3 dimensional TSPI accuracy and 0.1 m/sec velocity accuracy required, 3 dimensional fragmentation pattern TSPI and velociy is also desired.

Technology Base Requirements

Fully animated visual and MW or LW IR target technology needs to be developed along with a 3 dimensional scoring system. Current capablity is laser projection in a single wavelength silhouette only with 2 dimensional scoring. Competing technologies need to be evaluated to meet requirements.

Schedule (FY)

Milestones	92	93	94	95	96	97	98	99	00
Tech Base				X	-	X			
ORD						X			
EMD							X	-	
IOC									

Funding (FY)

Appropriation	Pr	92	93	94	95	96	97	98	99	00
Tech Base					0.2	0.3	0.4			
RDTE										
Prod										
Mil Con										

Figure 11-13. Advanced ITTS Concept Summary Format

11–20. Army ITTS Long-Range Research, Development, and Acquisition Plan

This paragraph describes the fourth step of the ITTS Long-Range Planning Process. This step prioritizes advanced ITTS concepts and combines the prioritized concepts, their summaries, associated needs, and applicable AFTERs to derive an ITTS Long-Range Research, Development, and Acquisition (RDA) Plan to support T&E of future Army combat systems.

a. Description. The fourth step of the ITTS long-range planning process is to derive a long-range plan to research, develop, and acquire future ITTS based on summaries of advanced ITTS concepts that address the T&E resource needs of future Army combat systems. The plan will be submitted as a part of the Army Long-Range Army Materiel Requirements Plan (LRAMRP) process. The fourth step begins with the transfer of Advanced ITTS Concept Summaries from the PM ITTS to USATECOM and USAOPTEC as shown in Figure 11–14.

(1) The Advanced ITTS Concept Summaries contain descriptive, funding and scheduling information. The summaries combined with associated ITTS needs and applicable AFTERs which contain information regarding traceability to future Army combat system provide all the information necessary to generate an ITTS Long-Range RDA Plan. USATECOM and USAOPTEC will use this information to prioritize each advanced ITTS concept in the developmental and operational test Research, Development, Test and Evaluation (RDT&E)Programs deriving a one-to-N list for each test area,developmental and operational.

(2) The prioritized lists from USATECOM and USAOPTEC are then submitted to PM ITTS for coordination. PM ITTS combines the descriptive, funding, prioritization and schedule information in the Advanced ITTS Concept Summaries with the combat system traceability information in the associated ITTS needs and applicable AFTERs to generate an ITTS Long-Range RDA Plan that is submitted as part of the Army LRAMRP process. Once funding and schedules are approved and incorporated into the program objective memorandum, Advanced ITTS Concept Summaries and ITTS needs become the source documentation for ITTS ORDs.

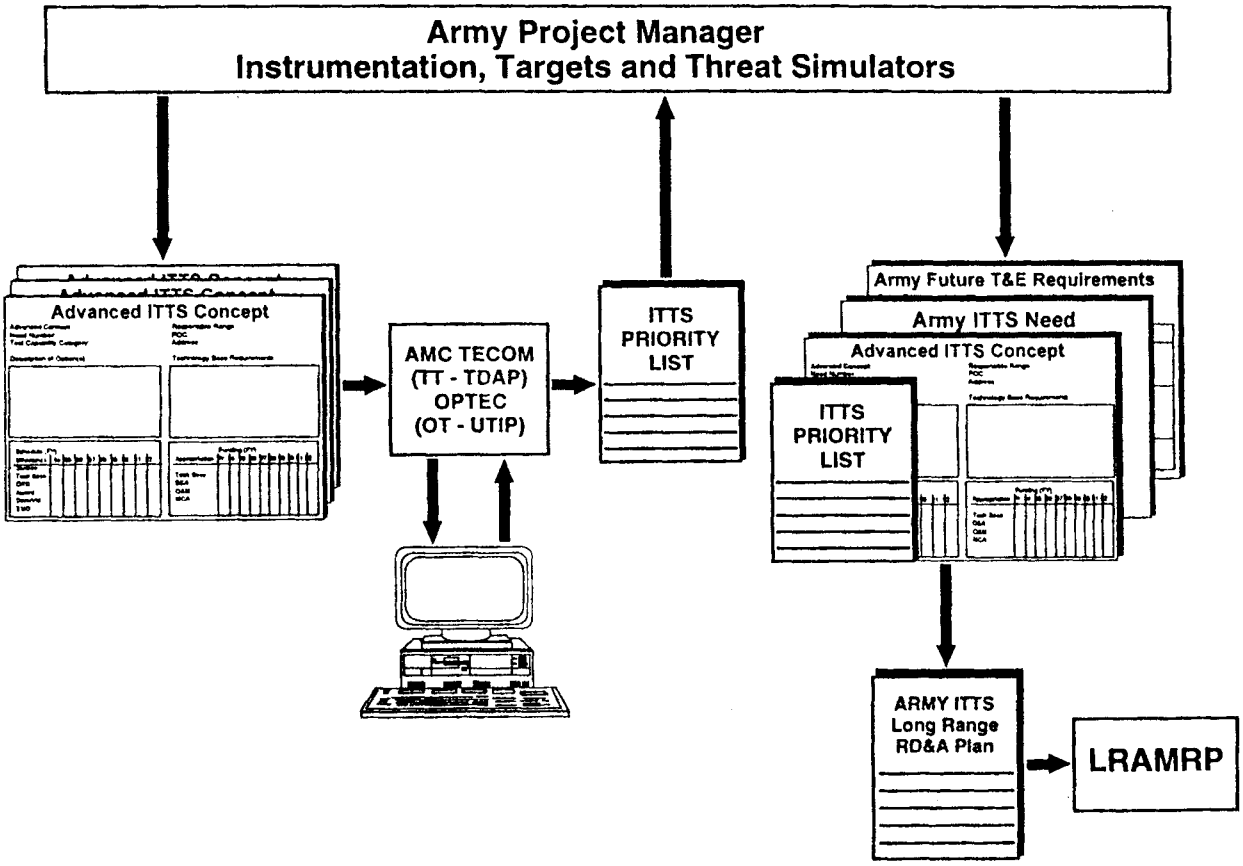

Figure 11-14. Step 4 of ITTS Long-Range Planning—Generation of ITTS Long-Range RD&A Plan

Section VIII
United States Army Validation and Accreditation Procedures for Threat Simulators and Targets

11–21. Introduction

a. Authority. This section provides the procedures used by the Army Validation and Accreditation Program for Threat Simulators and Targets. The processes, concepts, and procedures employed in validation and accreditation of targets and threat simulators are defined and prescribed. The roles and responsibilities of the Department of the Army agencies and organizations involved in validation and accreditation are identified and explained. These procedures implement and support Department of Defense (DOD) Threat Simulator Program Guidelines, Part 7 of DOD 5000.2–M, Defense Acquisition Management Documentation and Reports, concerning threat simulators and targets, and are issued in compliance with AR 5–11, DA PAM 5–11, and AR 381–11. For threat simulations, validation and accreditation procedures can be found in AR 5–11 and DA PAM 5–11.

b. Application. These procedures are applicable to Army threat simulators and targets, which represent a part or function of a specific threat system, and will be used in tests supporting milestone decisions.Exceptions to the validation process will be addressed on an individual basis. All requests for exceptions should be forwarded to the Director, United States Army Test and Evaluation Management Agency, 200 Army Pentagon (ATTN: DACS-TE), Washington, D.C.20310–0200. A validation waiver granted to facilitate accreditation does not preclude system validation requirements.Accreditation waivers will not be granted.

c. Materiel development support. Figure 11–15 illustrates the ideal generic relationship of validation and accreditation support to the life cycles of Army materiel development and threat simulators and targets. As shown in the figure, validation is performed at critical points throughout the life cycle of threat simulators and targets. Accreditation pertains to specific test applications of threat simulators and targets during the operational phase of their life cycle. Validation Working Groups (VWGs), ad hoc committees convened for a specific purpose, conduct validations during 2 to 3 day meetings. The effectiveness of each VWG is entirely dependent on the ability of its membership to address a validation event fora given target or simulator. Validation must not be viewed as an evaluation where the relative worth of a system is being graded; it is a process for comparing simulators and targets to DIA-approved threat data, documenting the variations, and assessing the impact of those differences on the potential use of the simulator or target.The VWG task is finished when the completed Validation Report is signed by the VWG members and, when required, approved by the Defense Test and Training Steering Group (DTTSG) or the Director of TEMA.

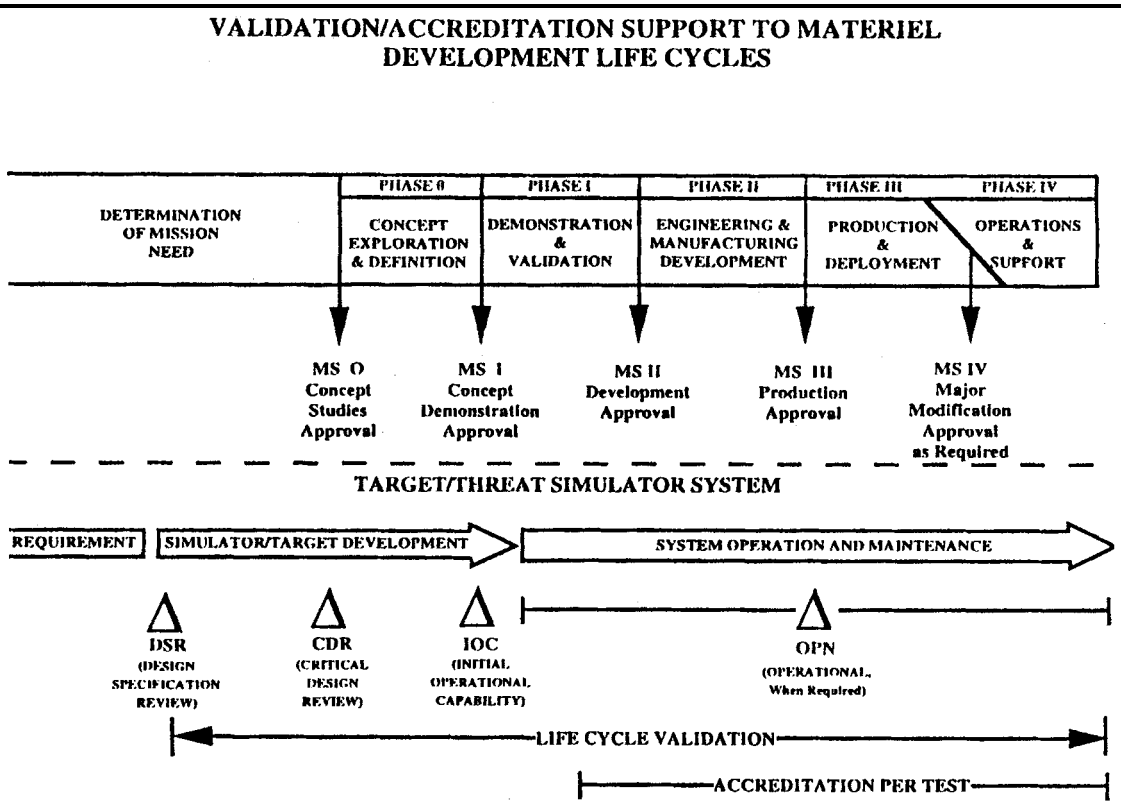

Figure 11-15. Validation/Accreditation Support to Materiel Development Life Cycles

11–22. Validation of Threat Simulators

a. General process. Validation is the process used to document and analyze any critical performance differences a threat simulator may have from DIA-approved data. Threat simulators are developed to portray threat systems for user-identified test and training requirements.Accordingly, threat simulators may duplicate or represent a limited number of threat system attributes. Validation must therefore be based upon expert knowledge of the threat, the simulator, and user requirements. A report will be issued documenting the specific validation. The report will incorporate information provided in the Threat Support Package (TSP), System Description, and Delta Report(DR) as detailed below, along with the final conclusions and comments of the VWG members. Funding developmental validation costs are provided by the threat simulator or target Materiel Developer.Operational validation costs will be funded by the owning organization.

(1) The Threat Support Package (TSP) contains the narrative, pictorial, and parametric description of the threat system being simulated. It is provided by the appropriate National Intelligence Production (NIP) Center. Standard formats and parameter listings prepared by the CROSSBOW committee are used as guides. The TSP contains the most current information available concerning the threat system; this information is required for Section 3 of the Validation Report.

(2) The System Description contains the narrative, pictorial, and parametric description of the simulator undergoing validation.It is prepared by the simulator developer using the same format and parameters as the TSP. Depending on the stage of simulator development, the system description contains either the most current design specifications or actual measured data from the simulator system being validated. This information is necessary for Section 4 of the Validation Report.

(3) The Delta Report (DR) is prepared under the auspices of the VWG chairman, normally by the Materiel Developer. It lists comparable threat and simulator data, identifies the planned or actual differences, and presents the information in a standard Validation Report format. Rationale for significant differences will be documented in the Delta Report. The genesis and use of the or target Materiel Developer prepares the information required for Appendix A, Standard Validation Criteria, of the Validation Report.

b. Validation requirements. In order for validation requirements to comply with Department of Defense Guidelines, validation must be accomplished throughout the threat simulator life cycle. Figure 11–17 depicts the validation events in the threat simulator life cycle.

(1) Validation of the design specification, called a Design Specification Review (DSR), establishes a means for and a formal record of the evaluation of the threat simulator design, the current DIA-approved intelligence regarding the threat system, and the projected use of the device. DTTSG approval of the DSR validation report is required. The DSR is primarily an evaluation of paperwork specifying the design of the system versus paperwork detailing the threat parameters. General validation procedures are followed;however, no actual measurements are taken at this stage of development since there are only preliminary designs and intelligence to evaluate.

(2) Validation at IOC provides the first opportunity to compare the complete, functional threat simulator, current DIA-approved intelligence estimates of the threat system, and the operational requirement for the device. This validation is used to support the fielding decision and documents the performance of the threat simulator for test planning and audit purposes. DTTSG approval is required of the IOC Validation Report before simulator use in testing or training. The IOC validation is the final validation prior to fielding the system; therefore, it is based on actual measurements and the most recent intelligence data. IOC is the most complete and thorough validation a system will undergo since it is essential at this point to confirm and define the differences between actual measured simulator data and the DIA approved threat data.

(3) Operational validation is accomplished on threat simulators after major modifications and periodically throughout their operational life cycle to document their continued capability to represent threat systems as described by current intelligence estimates. The

IOC Validation Report will recommend critical parameters and intervals for operational validation. The VWG chairman will review the recommended intervals as well as the critical parameters to be considered. Operational validations consist of comparison and analysis of simulator performance, configuration, and fidelity to current threat estimates. DTTSG in operational validations but only for the critical parameters.The simulator/target Materiel Developer representatives, in coordination with the operational VWG, may be required to designate or select the critical parameters if they have not previously been identified. For those systems, the first Operational Validation Report may require a more extensive critical parameter list and other descriptive data to adequately establish the baseline information normally found in an IOC Validation Report.

c. General validation process. The general validation process requires both the engineering and technical limitations of the simulator and its projected use be reviewed. To accomplish this review, the combined expertise of the intelligence community, the target or threat simulator developer, developmental and operational testers, and trainers is required. Accordingly, a VWG composed of representatives from the above organizations will constitute the primary Army validation organization.

(1) *Engineering and technical analysis.* During the engineering and technical analysis process,the engineering and technical characteristics and capabilities of a threat simulator (as outlined in the system description or other simulator related documents) are analyzed and compared to current DIA-approved threat intelligence (as outlined in the TSP or other threat related documents) for the related threat system. The DR will delineate the similarities and differences between the simulator or target and the threat. While reviewing the DR, the VWG will complete this engineering and technical analysis process which will describe the technical implications of the differences on the capabilities of the target or simulator. The results of this process will be documented in Section 5, and summarized in Section 6, of the Validation Report.

(2) *Operational analysis.* An operational analysis is also accomplished by the VWG.It compares the capabilities and limitations of the threat simulator, found during the engineering and technical analysis, with the threat's operational characteristics to ascertain the performance capability of the simulator. Details from this operational analysis will also be discussed in Section 5 and summarized in Section 6 of the Validation Report.

d. Validation Working Groups (VWGs). VWGs will evaluate and report on target or threat simulators at the required points in the life cycle identified in paragraph 11–22b (validation requirements).

(1) A VWG will be established and chartered for each target or threat simulator, and usually for each validation requirement.TEMA will charter VWGs based on schedules provided by PM ITTS or the Materiel Developer, if other than PM ITTS. The charter will establish TEMA or some other appropriate agency as chairman and designate the organizations to participate in the VWG.

(2) As a minimum, VWGs will be composed of representatives from the responsible user, intelligence, PM ITTS, and simulator or target Materiel Developer organizations. Representatives from the following organizations will participate in VWGs as indicated:

(a) Mandatory members include United States Army Test and Evaluation Command (TECOM), United States Army Operational Test and Evaluation Command (OPTEC), the appropriate NIP Center for the systems involved, United States Army Materiel Systems Analysis Agency (AMSAA), PM ITTS, and the Threat Simulator or Target Materiel Developer (if other than PM ITTS).

(b) Members as required include United States Army Research Laboratory (USARL), United States Army Materiel Command Research Development and Engineering Centers (RDECs), United States Army Training and Doctrine Command (TRADOC), PEO/PM (appropriate blue systems), other Army organizations, and other Department of Defense representatives.

(3) The events involved in validation are illustrated in Figure 11–18. General functional areas of specific member organizations are outlined in Figure 11–19. The functions and responsibilities of the VWG are discussed below.

(d) Members of the IOC VWG will recommend a schedule and a list of critical parameters to be used for Operational Validation.

(e) The VWG will submit the required Validation Report for approval (at DSR and IOC) or for notification, information, and retention (at operational validation) through the CROSSBOW committee to the DTTSG. The Validation Report should be forwarded using a letter of transmittal as explained in Figure 11–20. The content of the Validation Report is explained in Figure11–21. The Validation Report parametric data format is illustrated in Figure 11–22.

(a) The CROSSBOW committee has established standard validation criteria covering a broad spectrum of parameters which describe threat systems. Upon establishment of a VWG, the simulator Materiel Developer representative, in coordination with the NIP Center representative, will tailor a set of standard validation criteria for use in validating the simulator in question. The proposed criteria will be drawn from approved CROSSBOW standard criteria and may be augmented if required. The VWG will ensure that the standard validation criteria (parametric listings) describing threat equipment, prepared from listings approved by the CROSSBOW Committee, are used for both the TSP and system description. If CROSSBOW approved standard validation criteria are not available, the simulator/target Materiel Developer, in coordination with the NIP Center, will develop a proposed set of criteria to be used for the validation. The coordinated proposed validation criteria will be forwarded to the VWG chairman for approval, and to CROSSBOW for information. The same standard criteria will be used for DSR and IOC validations.

(b) Engineering, technical, and operational analyses will be conducted by the VWG as described in paragraph 11–22c.

(c) The above information will be documented in a Validation Report.

(d) Members of the IOC VWG will recommend a schedule and a list of critical parameters to be used for Operational Validation.

(e) The VWG will submit the required Validation Report for approval (at DSR and IOC) or for notification, information, and retention (at operational validation) through the CROSSBOW committee to the DTTSG. The Validation Report should be forwarded using a letter of transmittal as explained in Figure 11–20. The content of the Validation Report is explained in Figure 11–21.The Validation Report parametric data format is illustrated in Figure 11–22.

(f) Threat simulators developed and fielded prior to the implementation of DOD validation procedures were not subjected to the developmental validation process, that is, DSR and IOC. They are, however, subject to the provisions for operational validation.For those systems, the Materiel Developer, together with the user or determine the future operational validation cycle. TEMA will receive the resulting schedule to establish and notify members of operational VWGs. If critical parameters for operational validations have not previously been developed, the Materiel Developer, together with the user or the owning organization, and the appropriate NIP Center will develop a list of critical parameters and forward them to the VWG chairman for approval. Any unresolved issues regarding operational validations will be sent to TEMA for resolution.

(g) The operational VWG will determine an appropriate location for the conduct of the operational validation. The VWG will base its decision on a thorough review of changes in the threat and other pertinent factors that may impact the amount of effort involved in conducting the operational validation. The VWG will then select the most convenient, least disruptive (to testing), and least expensive location adequate to conduct operational validation measurements.

(h) Operational VWGs are semi-permanent bodies designed to conduct operational validations for categories of systems: radar electronics, aviation, EO/IR, and C3. Each VWG will handle all operational validations of the systems within its group as assigned by TEMA.

e. Specific validation procedures. It is essential to keep the validation process as simplified and non time-consuming as possible

without degrading the quality of the reports. Content versus appearance should be the primary focus.

(1) Figure 11–23 outlines the validation procedures for systems in DSR and IOC.

(2) Operational validation procedures are designed for systems already fielded and are a modification of the general validation procedures. Figure 11–24 outlines the procedures for operational validation. The operational validation is concerned only with the critical parameters. The owning organization will provide to TEMA updated simulator/target data and updated threat DIA approved intelligence from the NIP Center. TEMA will determine if a full operational validation report is required. The decision will be based on an analysis of both the updated threat and simulator/target data to determine if significant changes have taken significant changes have not taken place, TEMA will coordinate with the VWG members to sign off on a statement to that fact. The statement is attached to the front of the last VWG report and serves as an updated operational validation. If significant changes have taken place, the owning organization will produce an abbreviated Delta Report (limited to the critical parameters) and the general validation procedures will be followed.

(3) Foreign materiel validation procedures are also a modification of the threat simulator/target validation process.Foreign systems are generally exploited or baselined by the NIP Centers. Baseline or exploitation data will be made available by the NIP Center. When available, the NIP Center Exploitation Report will be used by the VWG as the basis for validation of the exploited system. For actual systems where no intelligence data exists, the measured data will be approved by the NIP Center, and used to establish the threat baseline. Certification is designed simply to verify the authenticity of the threat and to document any shortcomings, degradations, or modifications to the system.Certification Reports for actual systems may be used in lieu of Validation Reports for the accreditation process.

(a) If an actual threat system is to be used as a surrogate for another threat, (for example, a T–72 tank used to represent a T–80 tank), the surrogate will be subjected to the validation and accreditation procedures outlined in this document.

(b) Actual threat systems will be considered validated after completing the certification procedures outlined below. The Materiel Developer will coordinate the development of a list of the critical parameters necessary to adequately identify and describe the threat system undergoing certification. As a minimum, concurrence from the appropriate NIP Center and user will be received. To the extent possible, the parameter listing should be in CROSSBOW format to facilitate documenting the configuration of the actual threat system.

(c) The Materiel Developer will obtain DIA-approved system specification data from the appropriate NIP Center for the type system undergoing certification. The Materiel Developer will then extract the necessary threat values for the certification parameter listing previously developed for the system. Additionally, the Materiel Developer will extract sufficient descriptive data to provide a short narrative description and overview of the system and its capabilities. Where possible, information concerning any variants of the system should be included (for example, how an A model differs from a B model). All data sources will be properly documented.

(d) PM ITTS will inspect the actual threat system undergoing certification and verify that the parametric data values obtained from DIA sources are present on the actual equipment. Any differences noted will be documented. Draft impact statements will be prepared reflecting any potential test or training limitations caused by the deltas. Parameters which may not have been addressed during the validation process and are considered critical to a particular tester will be measured and compared to DIA approved intelligence data during the accreditation process for that test.

(e) The completed certification report (parameter listing, descriptive data, and impact statements) will be staffed with the appropriate NIP Center and user then forwarded to TEMA for approval.If necessary, a VWG meeting will be held to finalize the comments.A copy of the certification report will also be forwarded to the CROSSBOW Office for information purposes.

(f) Certification reports will be maintained as part of the maintenance and usage records of the equipment. Organizations owning actual threat systems must ensure that any changes in the actual threat system configurations are properly documented. The Materiel Developer, in conjunction with the owning organization and the responsible NIP Center, will periodically review the changes and make recommendations to TEMA regarding the need for recertification or possibly an OPN validation.

f. Program functions

(1) The Deputy Under Secretary of the Army (Operations Research) (DUSA(OR)) provides overall DA-level program direction, guidance, review, and approval authority.

(2) Test and Evaluation Management Agency (TEMA)—

(a) Approves and transmits copies of Validation Reports with appropriate forwarding or notification letters to the CROSSBOW and DTTSG as required.

(b) When required, coordinates Air Force and Navy participationÏ

(c) Using the validation information submitted by the Materiel Developer, sets priorities and requests DAMI-ST to task the appropriate NIP Center to provide the necessary DIA-approved threat data. Provides an information copy to CROSSBOW for tri-service coordination.

(d) As the Army Representative to the OSD CROSSBOW and DTTSG Committees, monitors DIA and NIP Center reports to ensure DIA-approved updated threat data are available at the appropriate time for VWG use.

(e) Sets priorities and coordinates all Army requests for threat data in support of validation.

(f) Charters all VWGs and appoints the chairman.

(3) United States Army Training and Doctrine Command(USATRADOC)—

(a) Identifies and documents threat simulator and target requirements to support combat development efforts.

(b) Participates in VWGs as required.

(4) United States Army Materiel Command (USAMC)

(a) Identifies and documents threat simulator and target requirements to support developmental testing.

(b) Participates in VWGs as required.

(c) For systems under development, conducts the measurement of threat simulator or target parameters required for validation.

(d) Assists in gaining DIA approval of TSPs when the TSP does not originate at the NIP Center.

(e) Coordinates with TEMA to prioritize Production Requests.

(5) United States Army Operational Test and Evaluation Command(USAOPTEC)—

(a) Identifies and documents threat simulator and target requirements to support operational testing.

(b) Participates in VWGs.

(c) Conducts the measurement of threat simulators and targetsÏ

(d) Notifies TEMA when OPN validations are due so that VWGs can be established.

(e) In the absence of IOC VWG approved critical parameters, develops a proposed set of operational validation criteria in coordination with the simulator system materiel developer and the appropriate NIP Center.

(f) Notifies TEMA of the need for TSPs.

(g) For owned systems undergoing operational validation, develops an updated system description containing complete narrative, pictorial, and parametric description of simulator for comparison with TSP. Forwards updated system description along with updated TSP data from NIP Center to TEMA.

(h) Provides system description and data required for Section 4 and Appendix A of Operational Validation Report.

(i) Funds operational threat simulator validations.

(6) NIP Centers, as appropriate for the system being validated, must coordinate through Air Force or Navy channels as required). In addition they—

(a) Prepare TSPs as tasked by DIA, and provide to the simulator materiel developer.

(b) Participate in VWGs.

(c) In coordination with the simulator or target Materiel Developer, develop a set of validation criteria.

(d) Provide exploitation baseline data for actual threat systems.

(7) Project Manager Instrumentation, Targets, and Threat Simulators (PM ITTS, or Materiel Developer if other than PM ITTS)—

(a) Maintains an information and suspense file on all validation activities assigned by TEMA.

(b) Notifies TEMA when DSR and IOC validations are due so that VWGs can be established.

(c) In coordination with the simulator materiel developer and the appropriate NIP Center, develops a proposed set of validation criteria.

(d) Participates in VWGs.

(e) Coordinates measurement of threat simulator and target parameters as required for comparison to the current DIA- approved NIP Center estimates for the threat system. To the extent possible, simulator owning organization NIP Center capabilities will be used.

(f) Notifies TEMA of the need for TSPs.

(g) Develops a complete system description containing complete narrative, pictorial, and parametric description of simulator or target for comparison with the TSP. As required, serves as a consultant on VWGs where PM ITTS is not the Materiel Developer.

(h) Prepares certification reports as required.

(i) Provides system description and data required for Section 4 and Appendix A of DSR and IOC Validation Reports.

(j) Funds DSR and IOC threat simulator validation.

(8) PEO/PM—

(a) Identifies and documents threat simulator and target requirements to support simulator materiel development efforts.

(b) Participates in VWGs as required.

11–23. Targets

a. Overview

(1) Target validation will be accomplished and documented by a VWG. Due to the specificity and uniqueness associated with signature development, many of the generic aspects of validation are not applicable. The procedures for validation and accreditation of targets will be modified as outlined in this section.

(2) Target developments generally fall into two broad categories. First, there are generic targets used to represent a wide range of similar type threats. An example of this type of target would be the MQM 107 used to represent subsonic fixed wing aircraft. Second, there are targets (which could include actual systems)designed to represent a single threat, with signature replication to meet specific testing milestones. For each of these cases, the validation can be streamlined by making modifications to the procedures outlined for threat simulator validation.

(3) For all targets projected for use in training or testing which will support a milestone decision, validation will occur at DSR and IOC. Operational validations are required periodically throughout the life cycle or after major modifications which affect target fidelity or alter the signature of the target, that is, addition of reactive armor or engine upgrade. This is normally required only for targets representing a specific threat.

(4) All target Validation Reports will be forwarded to TEMA for approval. DSR validation will be completed during target development. IOC reports will be approved prior to a target being used to support training or testing. The target Materiel Developer provides funding validation.

b. Target validation process. The process described in this section is shown in Figure 11–25, below.

(1) Generic targets are defined as targets not designed to represent a specific threat. They are generally used to portray a family of threats such as fixed wing subsonic aircraft and rotary wing aircraft. These targets are often augmented with add-on kits to meet specific signature requirements for a given test. These types of targets will be baselined. Baselining is simply the description, measurement, and documentation of the key parameters associated with the physical and operational characteristics of the target. Examples of the types of information documented include, but are not limited to, the length, width, weight, maximum speed, maximum altitude, turning radius, and so forth. The baselining effort provides sufficient data to the tester/developer so they can determine if the target will meet their general requirements.Separate appendices should be included in the baseline report to describe any augmentation kits that can be attached to the generic target. Generic target baseline reports will be prepared and approved by the target Materiel Developer and an information copy forwarded to the Director, TEMA. All comparisons of generic targets to specific threats will occur during the accreditation process.Target accreditation will follow the accreditation procedures outlined for threat simulators.

(2) Threat specific targets will follow a modified threat simulator validation process as outlined below. As an exception, threat specific targets which do not portray electronic signature data (that is, only visual and performance characteristics) will be validated according to the threat simulator procedures as described in paragraph 11–27 (validation of threat simulators).Infrared (IR), millimeter wave (MMW), seismic, and acoustic data are considered electronic. The Materiel Developer representative, in coordination with the NIP Center representative, will tailor a set of standard validation criteria for use in validating the threat in question. The proposed criteria will be drawn from approved CROSSBOW standard validation criteria and may be augmented if required. The VWG will ensure that the standard validation criteria(parametric listings) describing threat equipment, prepared from the listings approved by the CROSSBOW Committee, are used. If CROSSBOW approved standard validation criteria are not available, the Materiel Developer, in coordination with the NIP Center, will develop a proposed set of criteria to be used for the validation.The coordinated proposed validation criteria will be forwarded to the VWG chairman for approval. The same standard validation criteria will be used for DSR and IOC validations.

(3) Signature data for threat specific targets will be validated as indicated below.

(a) The specific signature requirements for known tests will be collected.

(b) Signature parameter definitions will be developed by the supporting NIP Center.

(c) Threat signature data will be collected or developed by the supporting NIP Center in accordance with the developed parameter definitions and the approved test requirements.

(d) Target signature data will be measured in accordance with the parameter definitions and the approved test requirements. The Materiel Developer will arrange for the appropriate organization to conduct the target signature measurements. The Materiel Developer and other members of the VWG will complete a draft engineering and technical analysis process comparing the target and threat signature data. Complete actual signature measurements are possible only at the IOC validation point. For DSR, the results of the engineering and technical analysis process of the specifications along with any should be made to use advanced modeling and simulation techniques to predict signature replications. The results of the engineering and technical analysis process will be documented in Section 5 and Section 6 of the Validation Report.

(e) The VWG membership will review the Delta Report and provide appropriate comments to TEMA.

(f) TEMA, or the designated VWG chairman, will convene the target VWG to coordinate and finalize comments on the Delta Report.The VWG will compare the capabilities and limitations of the target with its operational use to determine the target utility, complete the Validation Report, and submit it to TEMA for approval.

(g) All future signature data requirements for the validated target will be reviewed, developed, and approved as part of the accreditation process.

(4) Actual foreign equipment utilized as targets should follow the procedures outlined in paragraph 11–22e(3). Any additional data required for training or testing should be documented as part of the accreditation process. Procedures outlined for threat simulator accreditation should be followed.

(5) Joint use targets will require approval by TEMA and at the

Department of Defense (DOD) level. The details of the policy are being worked by the Joint Target Oversight Council (JTOC). For further details, contact the JTOC Secretariat, DSN 351–5103, or commercial (805) 989–5103.

11–24. Accreditation

a. Overview. Accreditation is the process used to determine whether threat simulators, surrogates, actual threat systems, and targets are suitable for a specific test. The data requirements are compared to the latest intelligence and the capabilities of Army threat simulators and targets as shown in current Validation Reports. Cases where Validation Reports are not available, or when time constraints make validation unfeasible, will be handled on an exception basis. All requests for exception will be forwarded to TEMA for approval. Accreditation examines any parametric differences to determine their impacts on the test or training application. The Accreditation Event Cycle is depicted in Figure 11–26. General functional areas for organizations are outlined in Figure 11–27.

(1)

(a) Any differences between threat simulators and targets and the corresponding threat systems can distort representation of the threat. Even the differences accepted during development and validation can make the simulator or target incapable of adequately representing the threat for a specific test or training exercise.

(b) The intelligence concerning threat systems is dynamic. New intelligence can make a simulator or target inappropriate for a given test or training application.

(c) Threat simulators and targets experience deterioration and failures which can make them non threat-representative.Accreditation decisions, therefore, must be based on current assessments of the performance of the simulators and targets.

(2) Accreditation for testing is accomplished under the auspices of the weapon system PEO/PM whose system is undergoing test and is documented in support of the weapon system TIWG. The weapon system PEO/PM provides accreditation costs in support of DT in accordance with AR 73–1, paragraph 5–3.Responsibilities for accreditation costs in support of operational testing will be in accordance with AR 73–1, paragraph 5–3. Threat simulator, target and test usage requirements will be identified in paragraphs 4 and 5 of Part V of the system TEMP. These paragraphs should include the number, type, and fidelity requirement, compare threat requirements, and note the shortfalls.

(3) Accreditation is required for any testing where the data will be used to support milestone decision reviews. The use of the threat simulator or target must be incorporated into the planning and preparation for tests which will be used to support milestone decision reviews. For operational testing, the accreditation process complements the function of the Threat Coordinating Group(TCG) and TIWG to improve test planning by specifically defining test resource requirements for the specific application in the Outline Test Plan (OTP), which must be submitted for approval to the TSARC before test design and threat support planning can be fully documented. For all testing, TCG and accreditation affords an early opportunity for the weapons system Materiel Developer, evaluator, tester, and threat manager (TM)/Foreign Intelligence Officer to coordinate respective test planning efforts.

(4)

b. Threat Accreditation Working Group (TAWG)

(1) TAWGs will be established under the auspices of the TIWG by the PEO/PM whose weapon system is being tested. For operational tests, the TAWG will be chaired or designated by USAOPTEC. For developmental tests, the TAWG will be chaired or designated by USAMSAA for ACAT I systems, ACAT II systems, and any other systems on the OSD T&E oversight list; USATECOM will designate or chair the TAWG for all other systems. DT and OT TAWGs should be combined whenever possible to produce a single accreditation report. The chairman of the TIWG will coordinate with the appropriate organization to have a TAWG Chairman appointed; the TAWG membership will then be notified that the TAWG is established and its chairman appointed. Future TAWG direction will come from the TAWG Chairman.A TAWG determines if the simulators and targets proposed for a specific test have the capability to represent the relevant threat characteristics needed during that test. All parties to the test planning process, particularly the threat proponents, must be aware of the requirement to accredit targets and threat simulators and share the responsibility to notify the TIWG Chairman, as early as possible, of the need to establish a TAWG.

(2) TAWGs will be composed of representatives from the responsible PM, PEO, T&E, intelligence, threat simulator, and target developmental or operational organizations. The chairman and membership will be in accordance with the accreditation functions section described in paragraph 11–24c. Representatives of the following organizations will participate as determined by the chair:DCSINT/TISO, USATRADOC, (designated threat manager or TRADOC ODCSINT), USAOPTEC (tester, evaluator and, as required, OTSA), USAMC, USATECOM, USAMSAA, appropriate NIP Center, Materiel Developer and others as required.

(3) The TAWG will review the technical requirements for the threat simulators and targets, and the simulator and target validation data, to determine the capability of the simulator and target to represent relevant system characteristics for the test under consideration.

(4) The TAWG will document, via an accreditation report to the TIWG Chairman, the suitability of the individual threat simulators and targets for use in support of the specified test under consideration. A letter of transmittal (fig 11–28) will be used to forward the report to the TIWG Chairman. Where more than one threat simulator or target is being accredited for the same test, the findings regarding each may be combined into a single report and forwarded to the TIWG Chairman using the same transmittal letter.

(5) Due to the diverse nature of issues which may be addressed during accreditation, a standard format is not provided. The content of the transmittal letter, as explained in Figure 11–28, serves as a guide for what should be contained in the accreditation report.

(6) The TAWGs should encompass the procedures listed below.

(a) The TAWG members first identify specific parametric data needs to satisfy the critical operational issues and criteria(COIC)for the planned testing. The threat simulator/target developer,or simulator/target owning organization, for systems already fielded will verify that all parametric data provided in the Validation Report are current. Any required data not included in the Validation Report must be collected or measured as part of the accreditation process. The Threat Integration Staff Officer(TISO)will coordinate the verification and update of applicable parameters(characteristics and capabilities) of the threat system. The threat simulator and target developer, or simulator/target owning organization, for systems already fielded will verify or update the same parameters of the corresponding threat simulator or target.The TAWG documents the differences between the simulator or target andÏ

(b) For generic targets or targets not previously subjected to the validation process which will be used to represent a specific threat for a given test, the responsible Materiel Developer must provide the TISO with documented system parameters for comparison with the intelligence on the corresponding threat system. These parameters should consist of only those necessary to support the particular test or training scenario for which the system is to be used. For actual threat systems and surrogate systems, the TAWG NIP Center member may use intelligence exploitation validation, certification, or baselining reports. The parametrics on the threat systems and those of the corresponding threat simulator and target, and the differences between them, will be formally documented by the TAWG in the accreditation report.

(c) Differences between the threat simulators or targets and the intelligence concerning the capabilities of the relevant threat system must be assessed against the critical intelligence parameters(CIPs) to determine whether the performance characteristics representing the threat are within the CIPs established by the system program manager. Differences, particularly those which breach CIP thresholds, which cannot be accommodated or offset in test planning, are defined and assessed to justify modification of the simulator and

targets, or acquisition of alternate simulators of targets. Differences assessed to breach CIP thresholds and impact on the effectiveness, survivability, and cost of the United States systems under development must be reported to the TIWG with recommendations.

(d) Collectively, the TAWG assesses the differences between the threat simulators or targets and the intelligence concerning the capabilities of relevant threat systems in the context of test data requirements to determine the impacts on the test, including test limitations. These differences are then documented in the accreditation report.

c. Functions

(1) Deputy Chief of Staff for Intelligence (DCSINT)—

(a) Maintains, reviews, and validates CIPs that affect the effectiveness, survivability, or security of United States systems.

(b) Designates TISOs for ACAT I systems, ACAT II systems, and other OSD T&E oversight systems.

(c) Coordinates and reviews threat support throughout the life cycle of developmental systems.

(d) Participates in TIWGs, TCGs, and TAWGs as appropriate.

(2) Test and Evaluation Management Agency coordinates with the DCSINT for the integration of Army-approved threat in test programs, including developmental testing (DT), operational testing (OT), force development testing and experimentation (FDTE), and joint testing.

(3) United States Army Training and Doctrine Command(USATRADOC)—

(a) Provides COIC/AOIC for use by the TAWG.

(b) Provides Threat TSP.

(c) Chairs the Threat Coordination Group (TCG).

(4) United States Army Materiel Command (USAMC)—

(a) Chairs the TAWG for developmental testing (AMSAA for ACATI systems, ACAT II systems, and other OSD T&E oversight systems;USATECOM for others).

(b) Ensures the integration of approved threat in developmental testing.

(c) Participates in TIWGs and TAWGs, as required for appropriate AMC activities.

(d) Provides critical developmental test issues and criteria and threat scenarios to the TAWG for its use in assessing threat simulator and target suitability and adequacy.

(e) Provides the Threat TSP for a developmental test if threat force operations are to be represented.

(f) Provides target and threat simulator technical and performance data for use by the TAWG in assessing threat simulator and target suitability and adequacy.

(g) Measures threat simulators as required to ensureÏ

(5) United States Army Operational Test and Evaluation Command(USAOPTEC)—

(a) Coordinates test planning with the appropriate threat approval authority (see AR 381–11) to define the conditions and environment of the operational test and to ensure that an appropriate battlefield environment will be portrayed.

(b) Participates in TIWGs, TCGs, and chairs the TAWG for operational testing.

(c) Provides test concept and test design to the TCG and TAWG for their use in assessing threat simulator and target suitability and adequacy.

(d) For owned systems, provides target and threat simulator technical and performance data for use by the TAWG in assessing threat simulator and target suitability and adequacy.

(6) PM ITTS (or Materiel Developer)—

(a) Provides the current Validation Report for use by the TAWG in assessing threat simulator and target suitability and adequacy.

(b) For systems in development, provides target and threat simulator technical and performance data for use by the TAWG in assessing threat simulator and target suitability and adequacy.

(c) For systems in development, measures threat simulators as required to ensure availability and accuracy of simulator data for accreditation.

(d) Participates in TAWGs.

(7) NIP Center (as appropriate for the threat systems undergoing accreditation)—

(a) Participates in TIWGs, TCGs, and TAWGs as required to explain capabilities and limitations of threat simulators. The NIP Center representative should be an expert on the threat system being simulated.

(b) Participates in the TAWG to refine threat simulator/target requirements and assess the impacts of difference between the simulator/target and the threat.

(c)

(d) Updates or verifies threat data as required.

(8) PEO/PM (as appropriate for weapon system undergoing test)—

(a) Establishes TAWGs under the auspices of the TIWG.

(b) Participates in TAWGs as appropriate.

(c) Requests waiver for systems which have not undergone validation.

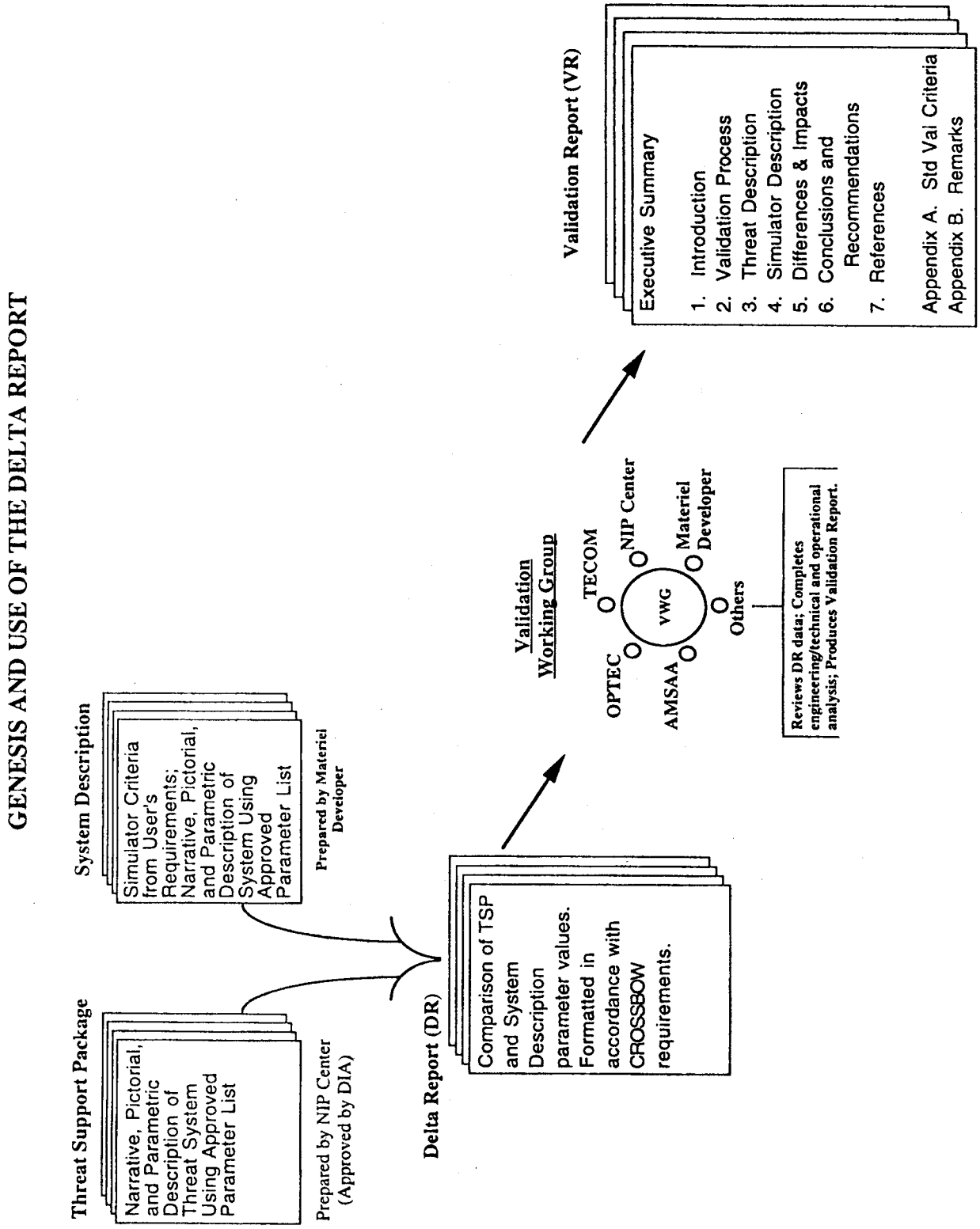

Figure 11-16. Genesis and Use of the Delta Report

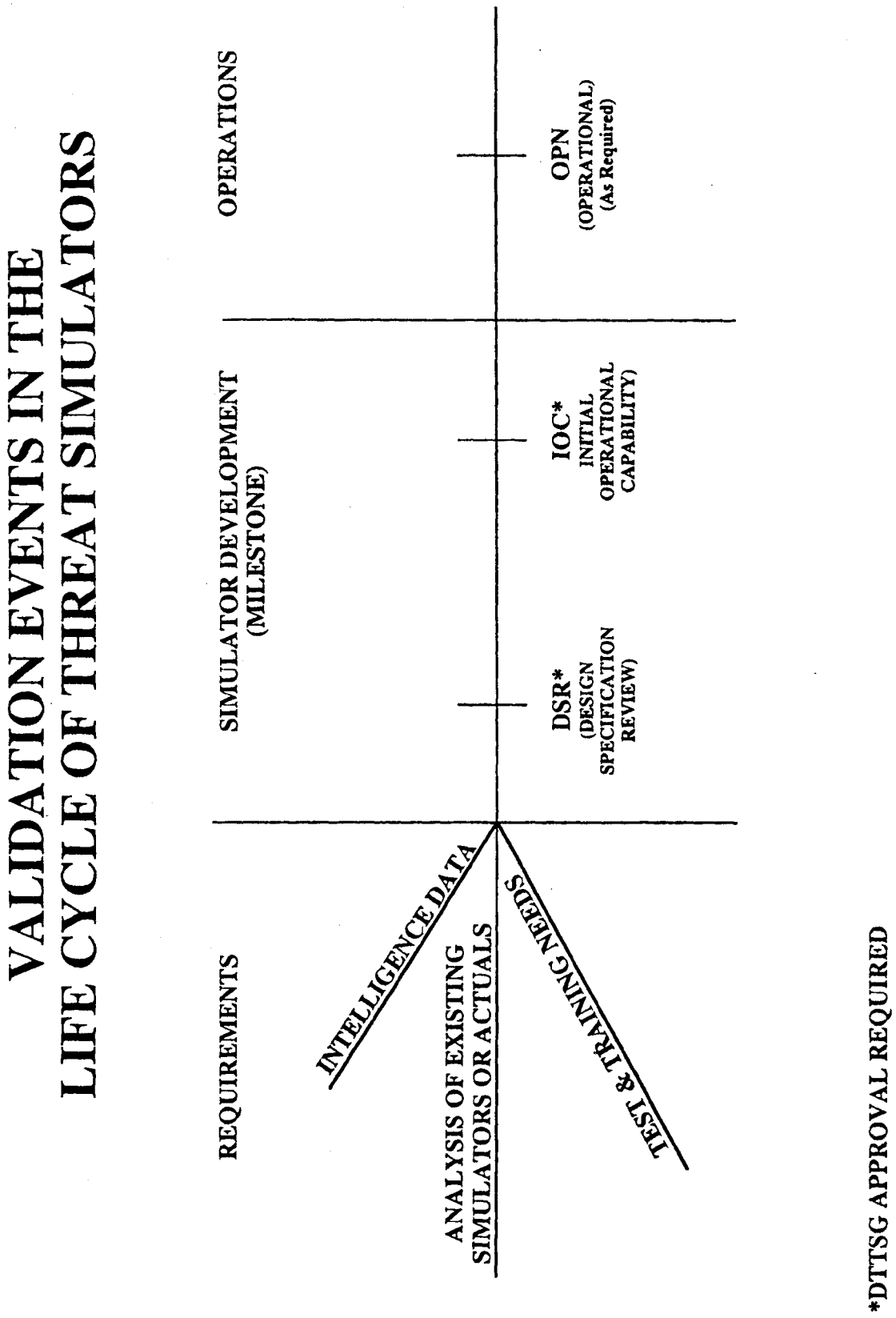

Figure 11-17. Validation Events in the Life Cycle of Threat Simulators

VALIDATION EVENT CYCLE

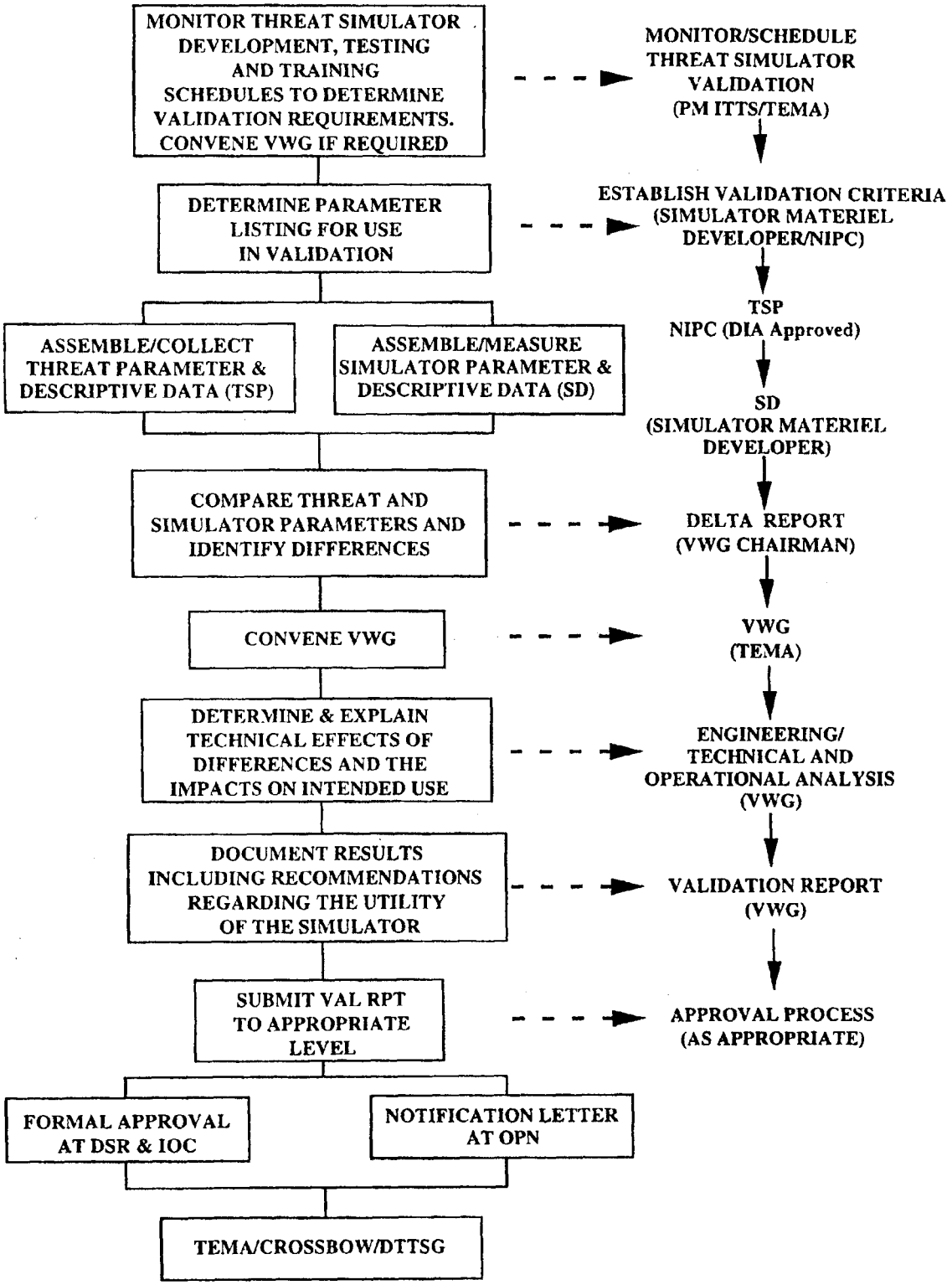

Figure 11-18. Validation Event Cycle

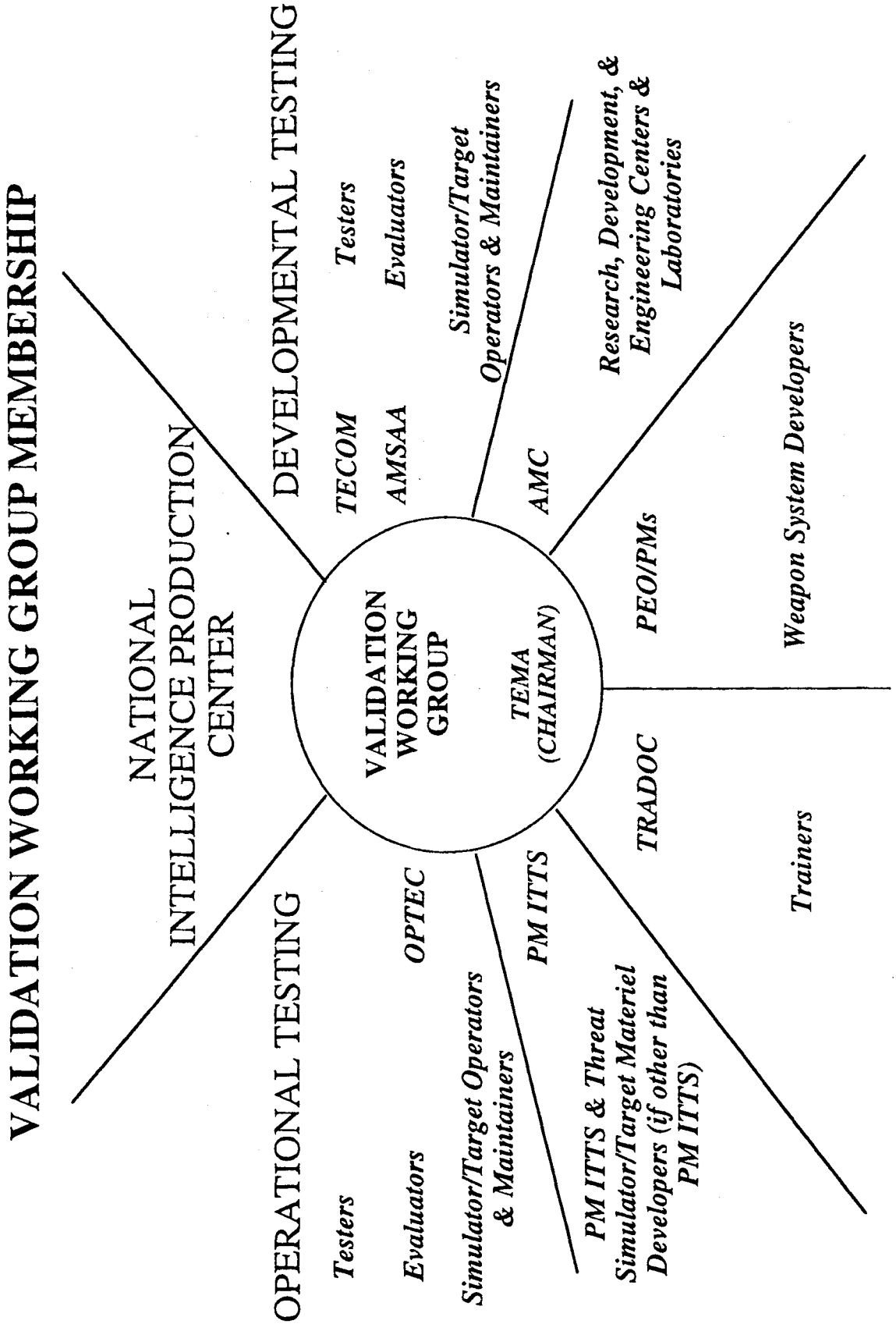

Figure 11-19. Validation Working Group Membership

[CLASSIFICATION]

TO: DIRECTOR, U.S. ARMY TEST AND EVALUATION MANAGEMENT AGENCY,
ATTN: DACS-TE, 200 ARMY PENTAGON, WASHINGTON, D.C. 20310-0200

SUBJECT: Threat Simulator/Target Validation Report for [name of target/threat simulator]

1. Provide the complete Validation/Target Validation Report title.

2. Provide the authority by which the report was prepared. Identify the validation working group charter by issuing headquarters, title, and date. Append a list of the working group membership and their parent headquarters or refer to section where listed in the report.

3. Identify, by title and date, the DIA Threat Estimate which was used for the report preparation.

4. Summarize the results of the analyses. Identify major differences and the effect on simulator/target capability.

5. Suumarize the major impacts on testing.

6. Provide recommendation(s). For example: proceed to next developmental phase; additional testing or analysis is required; modification of the simulator/target is required to enhance threat representation or to correct design deficiencies; terminate program.

SIGNATURES: All appointed members of the VWG

[CLASSIFICATION]

Figure 11-20. Validation Report Letter of Transmittal

[CLASSIFICATION]

TABLE OF CONTENTS

EXECUTIVE SUMMARY

SECTION I INTRODUCTION
1. Purpose
2. Threat Representation
3. Points of Contact

SECTION II- VALIDATION PROCEDURES

SECTION III- THREAT DESCRIPTION

SECTION IV- SIMULATOR/TARGET DESCRIPTION

SECTION V- DISCUSSION OF DIFFERENCES AND IMPACTS

SECTION VI- CONCLUSIONS AND RECOMMENDATIONS

SECTION VII- REFERENCES

APPENDIX A- STANDARD VALIDATION CRITERIA DATA

The intended content for the Executive Summary, each section, and Appendix A is summarized as follows:

EXECUTIVE SUMMARY - This section is the last section written and is a condensed version of Sections I through VI. The major elements of the six sections should be covered. No material is provided here that is not provided in the other six sections in greater detail. Much of the detailed dIscussion is not included here, but is found only in the main body of the report. This section should be two to three pages in length, unless there are a very large number of differences and impacts to address. This should be a stand-alone section.

Section I, INTRODUCTION - This section should briefly state what threat this simulator/target is expected to represent, what portion of the threat is included, what is left out, and the relationship of this simulator/target to others if it is a portion of a larger system, or a modification of a larger system. It also should state whether the simulator/target is expected to represent multiple variants of the threat, if such variants exist. The purpose or objective of the validation report should be stated. This section should include a statement that the validation report describes the status of the simulator's/target's ability to emulate the threat at that point in time, and that there may have been changes in the threat definition or in the simulator/target since the validation report was written. The introduction should identify a point of contact for users to gain additional information.

[CLASSIFICATION]

Figure 11-21. Validation Report Content

[CLASSIFICATION]

Section II, VALIDATION PROCEDURES - This section should identify the directives that apply to this report. It should identify the sources of data for both the threat and the simulator/target, along with the process used in determining the impacts of differences between the threat and the simulator/target that have been documented.

Section III, THREAT DESCRIPTION - This section should provide a brief narrative description of the threat as it is currently defined. It should also state that the data has been extracted from DIA documents, or identify the other documents used as source data for the threat information. State if the DIA has approved any or all of the data that was drawn from non-DIA documents. Generally, block diagrams should be placed in Appendix A rather than in this section. Operational doctrine, time sequence from Acquisition to Track to Launch to Intercept, type of system, etc. are appropriate in this section. Discussion that builds on the data provided in Appendix A, or provides additional explanation of the information in Appendix A should be included.

Section IV, SIMULATOR/TARGET DESCRIPTION - This section should specifically identify all the functions of the threat that are included, and any of the functions of the threat system that are not included as part of the simulation. If some portions are simulated in hardware (e.g. target tracker and missile seeker), while other portions are simulated in software (e.g. missile fly-out), that too should be stated. It is preferred that a simulator/target system be fully addressed in one report, rather than breaking it apart into two or more reports (e.g. the target tracker in one report, with the missile seeker and the fly-out model in a separate report). In many cases the simulator/target is programmable in a number of areas and could be readily changed as the threat definition changes. Significant programmability should be covered in this section. As it is also important that the programmable features cover the current threat estimate, the report should include that information. If there are any special modes of operation they should be described here.

Section V, DISCUSSION OF DIFFERENCES AND IMPACTS - This section should address all the significant impacts on testing or training that may occur due to differences between the current threat and the simulator/target. These statements of impacts may be based on a single difference between the threat and the simulator/target, or they could be based upon a group of differences. If there are differences which tend to counter-balance the impact each may have individually, they should be discussed together. There is no need to address each difference between the threat and the simulator/target, only those which individually or collectively could be expected to have an impact on test or training results. While specific systems that have been designated to be tested against the simulator/target can be useful in identifying some of the impacts of differences, the VWG should consider all types of systems that may undergo testing with this simulator/target when they identify the impacts of differences.

[CLASSIFICATION]

Figure 11-21 (PAGE 2). Validation Report Content

[CLASSIFICATION]

Section VI, CONCLUSIONS AND RECOMMENDATIONS - This section should address the overall conclusions and recommendations that can be reached on the basis of the impacts of the differences between the current threat and the simulator/target. There may be several significant impacts that affect only one type of test, leaving the simulator/target well suited for other tests. This should be stated. It is possible that the simulator/target is so different from the threat in any one or several different areas that a modification is recommended.

Section VII, REFERENCES - This section should list all the references used in the report.

APPENDIX A

Section A1 - This section should provide a key to the abbreviations used in the data entries in Section A2. All the items such as NA or N/A, NAp, NSm, etc. that may be used should be explained. Whenever threat data has no confidence level associated with it, the report should state how the data in the Confidence Level column has been coded to show that fact.

Section A2 - This section should contain the Standard Validation Criteria (SVC) from the appropriate Appendix/Annex of the DoD Threat Simulator Program Plan with all the threat and simulator/target data. In cases where the simulator/target has been made programmable, do not simply state programmable. The range of progammability must be stated along with the fact that the function is programmable. If any of the programmable items have been programmed such that they do not match the current threat definition, this also must be stated. Validators' notes and threat analysts' comments should be identified in the Remarks column, and included at the end of this section. All portions of the SVC should be addressed, however for those portions which do not apply, such as Continuous Wave parameters for a pulsed radar system, simply state "Not Applicable" for the header entry for that group of parameters, and delete subordinate parameter numbers and names in the group from the report. The threat analyst should already have accomplished this. Do not leave out a portion of the SVC without some explanation.

[CLASSIFICATION]

Figure 11-21 (PAGE 3). Validation Report Content

STANDARD VALIDATON CRITERIA

CROSSBOW #	Subsystem/Parameter	Units	DIA Threat Estimate Low-Most-High	Conf. Level	Simulator/Target Value	Remarks	Deltas

Figure 11-22. Parametric Data Format

THREAT SIMULATOR DSR & IOC VALIDATION PROCESS

1. PM ITTS MONITORS/COORDINATES TSP REQUIREMENTS AND VALIDATION SCHEDULES AND SUBMITS DATA TO TEMA.

↓

2. TEMA COORDINATES/TRANSMITS TSP REQUIREMENTS WITH DCSINT AND CROSSBOW.

↓

3 TEMA CHARTERS A VWG. IF REQUIRED, A PLANNING AND COORDINATION MEETING WILL BE CONVENED TO ESTABLISH THE VALIDATION PARAMETER LISTING.

↓

4. THE APPROPRIATE NICP PROVIDES OR PRODUCES THE THREAT SUPPORT PACKAGE (TSP) AND FORWARDS IT TO THE VWG CHAIRMAN.

↓

5. SIMULATOR DEVELOPER PRODUCES THE SYSTEM DESCRIPTION DOCUMENT (SD)

↓

6. THE VALIDATION WORKING GROUP CHAIRMAN PRODUCES A DELTA REPORT (DR) LISTING THE VALIDATION PARAMETERS, THE THREAT VALUES, THE SIMULATOR VALUES AND THE DIFFERENCES BETWEEN THE THREAT & SIMULATOR VALUES (DELTAS).

↓

7. THE VWG ANALYSIZES THE DELTA REPORT FOR THE ENGINEERING/TECHNICAL IMPLICATIONS OF THE DIFFERENCES ON THE CAPABILITIES OF THE SIMULATOR. THE RESULTING LIMITATIONS ARE FURTHER ANALYZED AGAINST THE PROJECTED USE OF THE SIMULATOR TO DETERMINE ITS UTILITY.

↓

8. TEMA OR THE DESIGNATED ORGANIZATION CONVENES AND CHAIRS THE VWG. VWG'S WILL NORMALLY BE SCHEDULED AS ONE (1) DAY MEETINGS. THE ANALYSIS IS REVIEWED, FINAL COORDINATION COMPLETED AND THE VALIDATION REPORT IS DRAFTED. THE REPORT WILL BE SIGNED BY ALL VWG MEMBERS AND WHEN APPROPRIATE FORWARDED TO CROSSBOW/DTTSG FOR APPROVAL.

NOTE: VALIDATION REPORT CONTAINS THE FOLLOWING:

- DELTA REPORT CONTAINING THE VALIDATION PARAMETERS, SIMULATOR PARAMETRIC VALUES, THREAT PARAMETRIC VALUES AND THE PARAMETRIC DIFFERENCES BETWEEN THE THREAT & THE SIMULATOR.
- ANALYSIS OUTLINING THE ENGINEERING/TECHNICAL IMPACTS OF THE PARAMETRIC DIFFERENCES BETWEEN THE THREAT AND THE SIMULATOR ON THE OPERATION OF THE SIMULATOR.
- ANALYSIS OUTLINING THE IMPACTS ON TESTING OF THE PARAMETRIC DIFFERENCES.
- COVER LETTER FORWARDING THE REPORT WITH THE RESULTS OF THE ANALYSIS AND RECOMMENDATIONS CONCERNING CONTINUED DEVELOPMENT/ADDITIONAL DATA REQUIREMENTS/AND/OR MODIFICATIONS
- IOC VALIDATION REPORTS CONTAIN CRITICAL PARAMETERS AND TIME INTERVALS BETWEEN OPERATIONAL VALIDATIONS.

Figure 11-23. Threat Simulator DSR and IOC Validation Process

THREAT SIMULATOR OPERATIONAL VALIDATION PROCESS

1. PM ITTS MONITORS/COORDINATES OPERATIONAL VALIDATION SCHEDULES AND PROVIDES INFORMATION TO TEMA. IF NOT PREVIOUSLY DESIGNATED, PM ITTS, IN COORDINATION WITH THE SIMULATOR OWNER, AND THE APPROPRIATE NIP CENTER WILL RECOMMEND TO TEMA, CRITICAL PARAMETERS AND SCHEDULES FOR USE IN OPERATIONAL VALIDATION.

↓

2. TEMA COORDINATES WITH DCSINT AND CROSSBOW, ARMY OPN VALIDATION TSP REQUIREMENTS.

↓

3 APPROPRIATE NIP CENTER PRODUCES AN UPDATED TSP FOR THE CRITICAL OPN PARAMETERS ONLY.

↓

4. THE OWNING ORGANIZATION WILL PROVIDE TO TEMA, UPDATED DESCRIPTIVE DATA AND MEASUREMENTS OF THE CRITICAL OPN PARAMETERS. (I.E., MODIFIED SD TO MATCH MODIFIED TSP)

↓

5. TEMA DETERMINES WHETHER OR NOT A FULL VALIDATION REPORT IS REQUIRED. THE DECISION IS BASED ON AN ANALYSIS OF BOTH THE UPDATED THREAT AND UPDATED SIMULATOR DATA TO DETERMINE IF SIGNIFICANT CHANGES HAVE TAKEN PLACE BETWEEN THE CRITICAL PARAMETERS OF THE SIMULATOR AND THE THREAT. IF IT IS DETERMINED THAT SIGNIFICANT CHANGES HAVE NOT TAKEN PLACE TEMA COORDINATES WITH THE VWG TO SIGN OFF ON A STATEMENT TO THAT FACT. CROSSBOW IS NOTIFIED. THIS WILL COMPLETE THE OPERATIONAL VALIDATION PROCESS.

↓

6. IF SIGNIFICANT CHANGES HAVE TAKEN PLACE, TEMA WILL PRODUCE AN ABBREVIATED DELTA REPORT. (LIMITED TO THE CRITICAL OPN PARAMETERS)

↓

7. TEMA NOTIFIES THE APPROPRIATE VWG, SENDS UPDATED ABBREVIATED DR TO THE VWG MEMBERS FOR REVIEW AND ANALYSIS OF THE ENGINEERING/TECHNICAL IMPLICATIONS OF THE DIFFERENCES AND THE RESULTING IMPACTS OF THE LIMITATIONS ON PROJECTED SIMULATOR USE.

↓

8. TEMA OR A DESIGNATED ORGANIZATION CONVENES AND CHAIRS THE VWG. VWG'S WILL NORMALLY BE SCHEDULED AS ONE (1) DAY MEETINGS. THE DRAFT IMPACT STATEMENTS ARE REVIEWED, FINAL COORDINATION COMPLETED AND THE VALIDATION REPORT IS DRAFTED. THE REPORT WILL BE SIGNED BY ALL VWG MEMBERS.

NOTE:

1. OPERATIONAL VALIDATIONS MAY BE LIMITED TO ONE PAGE OF STATEMENTS INDICATING NO SIGNIFICANT DELTAS EXIST BETWEEN THE CRITICAL PARAMETERS OF THE THREAT AND SIMULATOR THAT WERE NOT COVERED IN PREVIOUS REPORTS. THIS ONE PAGE IS ATTACHED TO THE LAST REPORT TO SERVE AS AN UPDATED OPERATIONAL VALIDATION.

2. FULL OPERATIONAL VALIDATION REPORT CONTAINS THE FOLLOWING:

   - DELTA REPORT CONTAINING THE CRITICAL PARAMETERS, THREAT AND SIMULATOR VALUES OF THE CRITICAL PARAMETERS AND THE DIFFERENCES.
   - ANALYSIS OUTLINING THE ENGINEERING/TECHNICAL IMPACTS OF THE CRITICAL PARAMETRIC DIFFERENCES BETWEEN THE THREAT AND THE SIMULATOR ON THE OPERATION OF THE SIMULATOR.
   - ANALYSIS OUTLINING THE IMPACTS ON TESTING OF THE CRITICAL PARAMETRIC DIFFERENCES.
   - COVER LETTER FORWARDING THE REPORT WITH RESULTS OF THE ANALYSIS AND RECOMMENDATIONS CONCERNING ADDITIONAL DATA REQUIREMENTS AND/OR MODIFICATIONS.

Figure 11-24. Threat Simulator Operational Validation Process

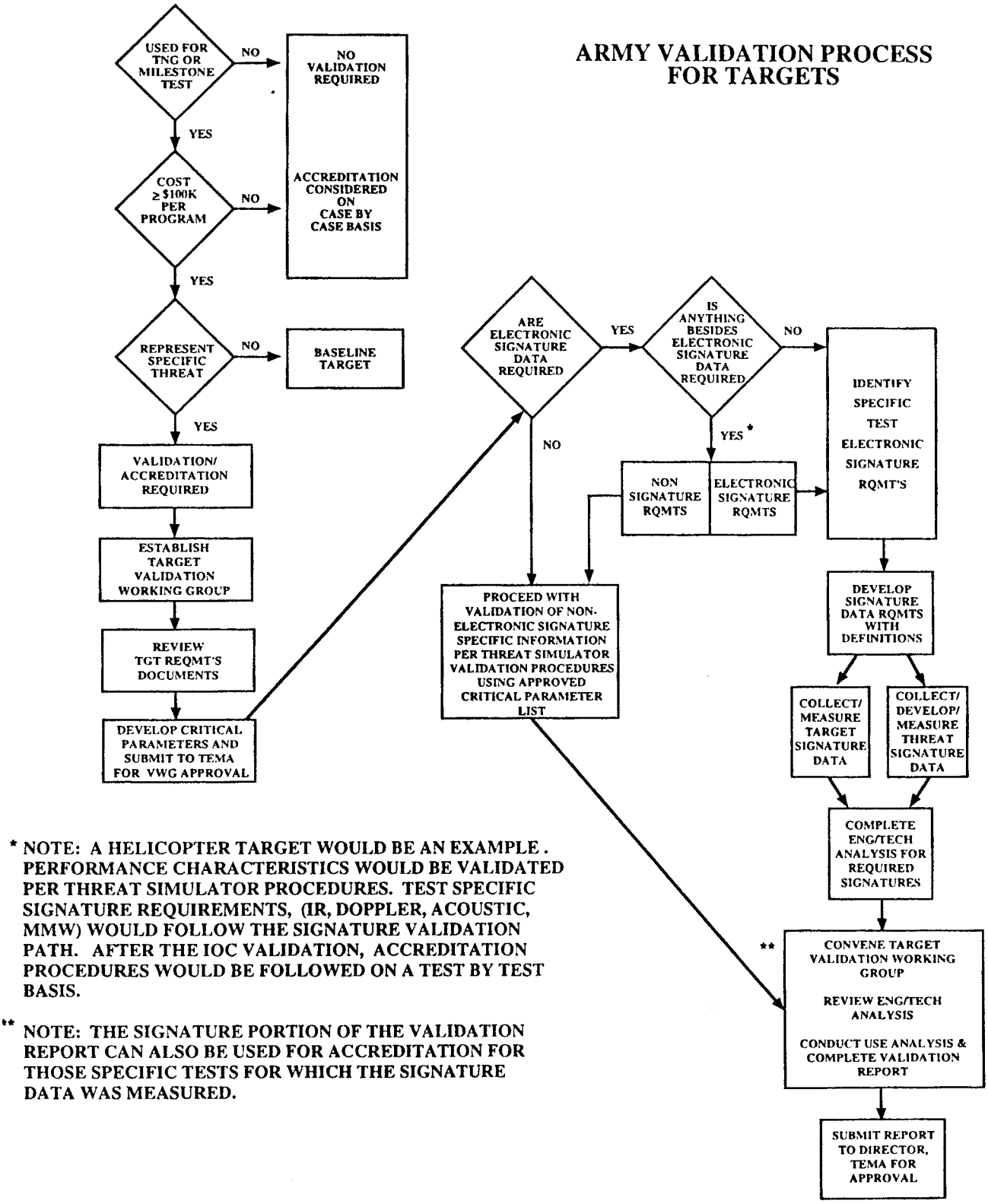

Figure 11-25. Threat Simulator Operational Validation Process

ACCREDITATION EVENT CYCLE

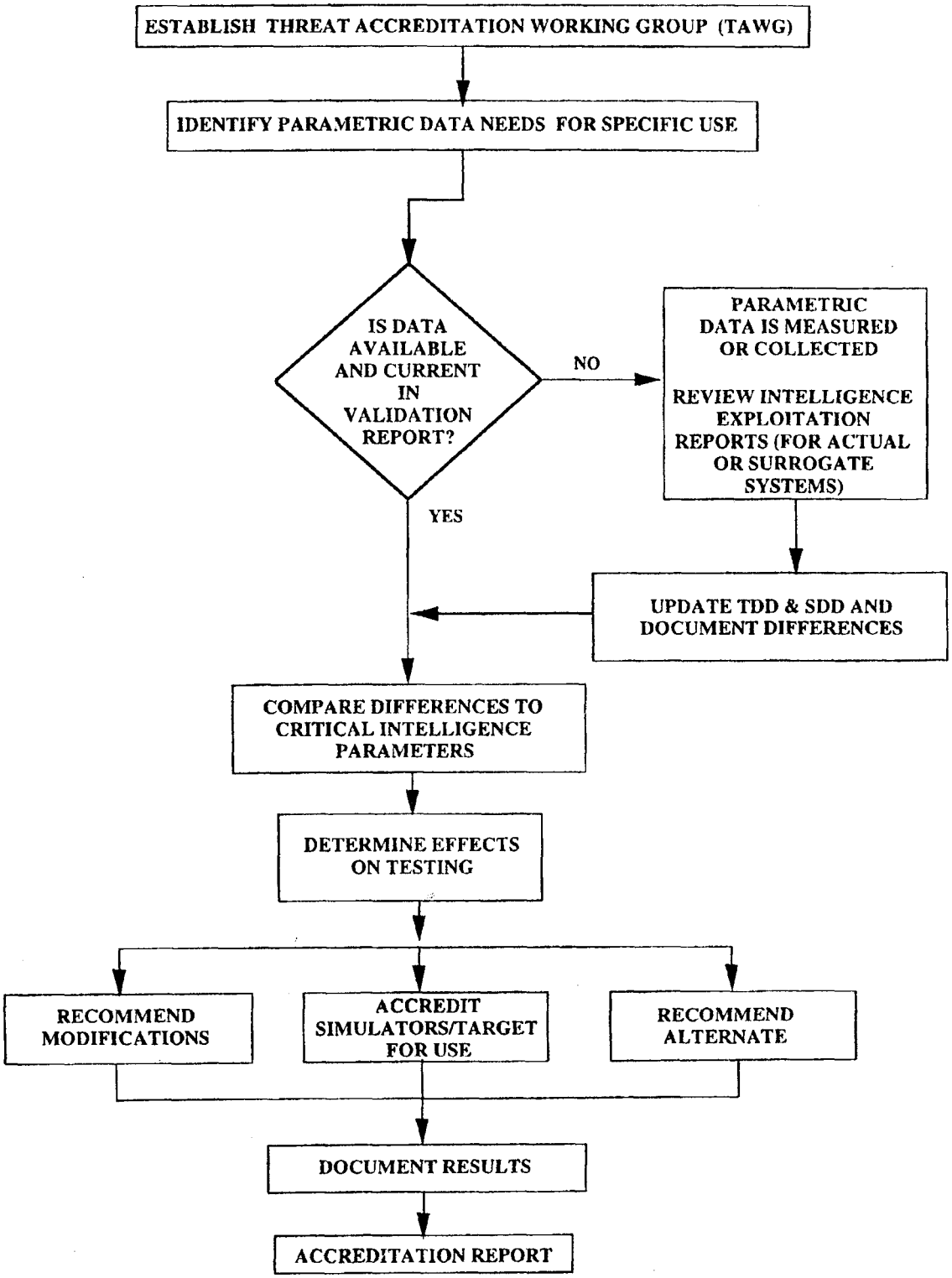

Figure 11-26. Accreditation Event Cycle

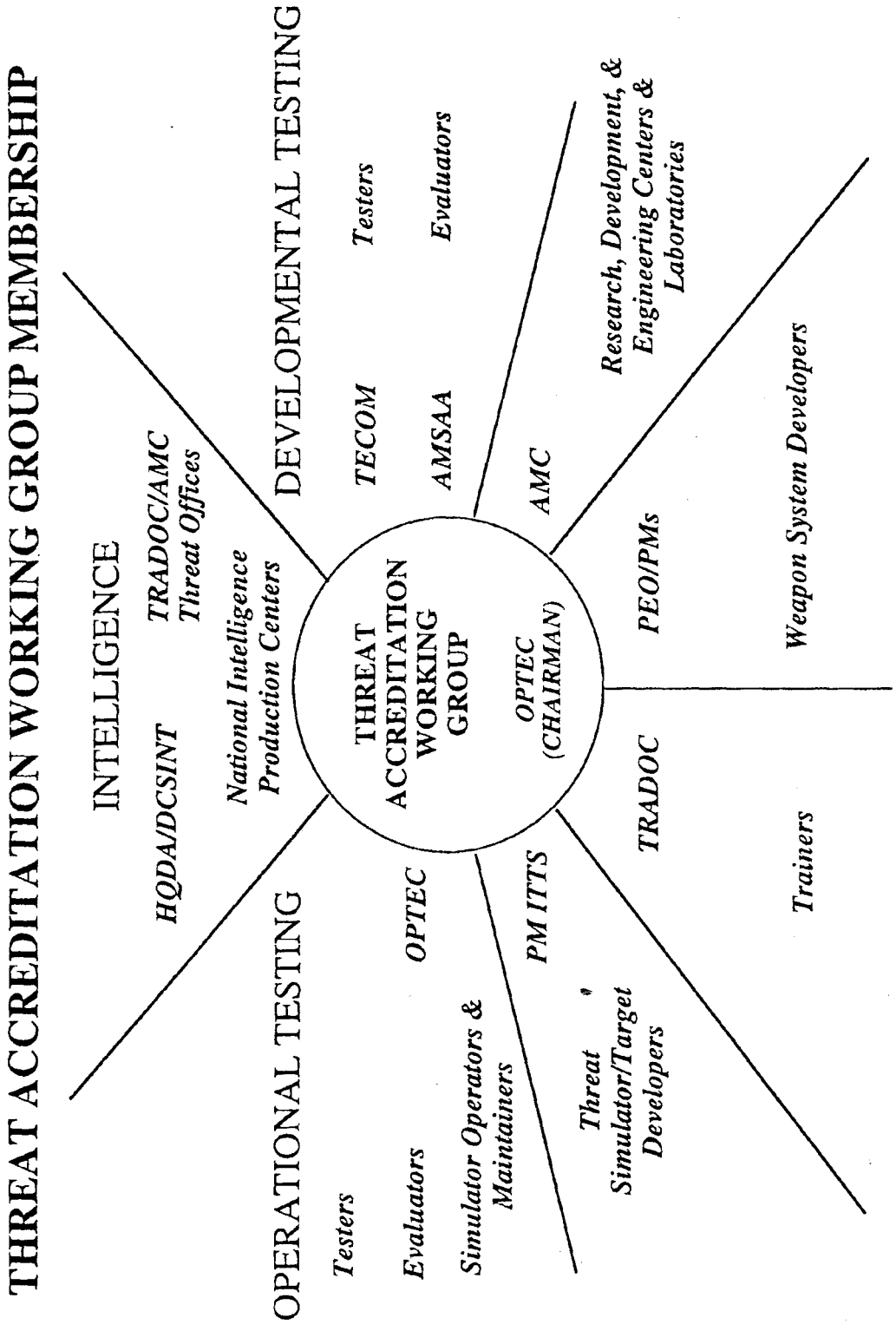

Figure 11-27. Threat Accreditation Working Group Membership

[CLASSIFICATION]

TO: [CHAIRMAN, APPROPRIATE TEST INTEGRATION WORKING GROUP (TIWG)]

SUBJECT: [Name of Threat Simulator / Target Accreditation Report]

1. Provide the title of the threat simulator(s) or target(s) being accredited.

2. Identify the applicable test event by title and Test Schedule and Review Committee (TSARC) number.

3. Identify the working group charter by issuing headquarters, title and date. Append a list of the working group membership.

4. Identify, by title and date, the DIA Threat Estimate used for the report preparation.

5. Parameterss are only referenced in the transmittal letter, with details contained in the subject report. The report should include CIP as defined in AR 381-11, user required critical operational characteristics and capabilities as defined in the requirement document, and applicable Standard Validation Criteria.

6. Data collection/analysis is summarized in the transmittal letter, with details contained in the subject report. The report should itemize any data collection/analyses conducted (by whom, when, and where) to determine the suitability of the simulator or target to support the critical issues and criteria of the test being supported.

7. A brief summary of the major results of the data collection/analysis should be in the transmittal letter. The full report should provide full results, plus identify differences and the effect on simulator/target capability.

8. Only differences with a significant impact on testing or training need to be mentioned in the transmittal letter, with all remaining differences discussed in the subject report.

SIGNATURES: All appointed members of the TAWG

[CLASSIFICATION]

Figure 11-28. Accreditation Report Letter of Transmittal

Appendix A
References

Section I
Required Publications

DA Pam 73–1
Test and Evaluation in Support of System Acquisition. (Cited in para 4–1.)

DA Pam 73–2
Test and Evaluation Master Plan Guidelines. (Cited in paras 5–2, 5–3, 5–4.)

DODI 5000.2
Defense Acquisition Management Policies and Procedures.(Cited in paras 2–4, 3–1, and 4– 2.)

DOD 5000.2&–M
Defense Acquisition Management—Documentation and Reports. (Cited in paras 3–1 and 3–2.)

HQDA Memorandum
Implementation Effects of Sections 3012 and 3014 of the Federal Acquisition Streamlining Act of 1994 on Live Fire Test and Evaluation. (Cited in paras 5–3 and 5–6.) Copies of this memorandum may be obtained from the Test and Evaluation Management Agency, 200 Army Pentagon, WASH DC 2031–200

Section II
Related Publications

AR 70–1
Army Acquisition Policy

AR 73–1
Test and Evaluation Policy

DODD 5000.1
Defense Acquisition United States Code Chapter 139, Title 10 of United States Code

Letter
National Research Council, Commission on Engineering and Technical Systems, Board on Army Science and Technology, 20 October 1986, subject: Methodology for Choosing Live- Fire Test Shotlines.Copies of this letter and all the reports and documents listed below may be obtained from the Test and Evaluation Management Agency, 200 Army Pentagon, WASH DC 2031–200.

Memorandum
SAUS-OR, 20 September 1989, subject: Live Fire Candidate Systems.

Memorandum
OSD, 27 January 1994, subject: Live Fire Test and Evaluation Guidelines.

Memorandum
OSD, 1 June 1988, subject: Live Fire Test and Evaluation Guidelines.

Memoranda
AMSAA, 14 March 1989 and 19 May 1989, subject: Live Fire Lethality Test Target Surrogates.

Memorandum
AMSAA, 7 April 1989, subject: AMSAA Live Fire Test Policy.

Report
Medical Evaluation of Non-fragment Injury in Armored Vehicle Live Fire Tests— Instrumentation Requirements and Injury Criteria, Walter Reed Army Institute of Research, Washington, D.C., September 1989, ADA 233 058.

Report
Live Fire Test and Evaluation Planning Guide, Director, Live Fire Testing, Office of the Deputy Director, Defense Research and Engineering, June 1989.

Report
Combat Vehicle Vulnerability to Anti-Armor Weapons—A Review of the Army's Assessment Methodology, National Research Council, 1989.

Army Research and Acquisition Bulletin
Live Fire Testing: Legislation and Its Impact, O'Bryon, J.F., pp. 1–3, 1987.

Section III
Prescribed Forms
This section contains no entries.

Section IV
Referenced Forms
This section contains no entries.

Glossary

Section I
Abbreviations

AAE
Army Acquisition Executive

ACAT
acquisition category

ACCS
Army Command Control System

ACTD
Advanced Concept Technology Demonstration

AIL
Action Item List

AIS
Automated Information Systems

AMC
United States Army Materiel Command

AMSAA
United States Army Materiel Systems Analysis Activity

AOA
Abbreviated Operational Assessment

AOI
Additional Operational Issues

APG
Agency Procurement Ground

APR
Agency Procurement Record

APTU
Army Participating Test Unit

AR
Analysis Report

ARL
United States Army Research Laboratory (formerly United States Army Ballistic Research Laboratory)

ARTEP
Army Training Evaluation Program

AS
Acquisition Strategy

ASARC
Army Systems Acquisition Review Council

ASDP
Accelerated Software Development Process

ASTMP
Army Science and Technology Master Plan

AT
Acqusition Team

ATC
United States Army Aberdeen Test Center (formerly United States Army Combat Systems Test Activity)

ATD
Advanced Technology Demonstration

ATEC
Army Test and Evaluation Committee

ATIRS
Army Test Incident Reporting System

ATS
Army Threat Simulators

ATSP
Army thrat Simulator Program

BOIP
Basis of Issue Plan

BRL
United States Army Ballistic Research Laboratory

BVLD
Ballistic Vulnerability/Lethality Division

C3I
Command, Control, Communications, and Intelliegence

C4I
Command, Control, Communications, Computers, and Intelligence

CA
corrective action

CAP
Central Asset Pool

CBRS
Concept Based Requrements System

CBTDEV
Combat Developer

CCB
Configuration Control Board

CCM
counter-countermeasure

CDR
Critical Design Review

CE
Continuous Evaluation

CEP
Concept Evaluation Program

CEPSARC
Concept Evaluation Program Schedule and Review Council

CG
Commanding General

CIP
Critical Intelligence Parameters

CM
Configuration Manager

CMF
Critical Mission Functions

CNP
Candidate Nomination Proposal

COE
Chief of Engineers

COEA
Cost and Operational Effectiveness Analysis

COIC
Critical Operational Issues and Criteria

COTS
commercial-off-the-shelf

CRU
Computer Resource Utilization

CRWG
Computer Resources Working Group

CS
competition sensitive

CTEA
Cost and Training Effectiveness Analysis

CTEIP
Central test and Evaluation Investment Program

CTP
Critical technical parameters

D&O TSP
Doctrinal and Organizational Test Support Package

DA
Department of the Army

DAB
Defense Acquisition Board

DAG
Data AuthenTication Group

DASAF
Director of Army Safety

DCSINT
Deputy Chief of Staff for Intelligence

DCSLOG
Deputy Chief of Staff for Logistics

DCSOPS
Deputy Chief of Staff for Operations and Plans

DCSPER
Deputy Chief of Staff for Personnel

DDN
Defense Data Network

DIA
Defense Intelligence Agency

DISA
Defense Information Systems Agency

DISC4
Dirctor of Information Systems for Command, Control, Communications, and Computers

DMSO
Defense Modeling and Simulation Organization

DOD
Department of Defense

DOT&E
Director of Operational Test and Evaluation

DT
developmental test

DT&E
Director, Operational Test and Evaluation

DTP
Detailed Test Plan

DTR
Detailed Test Report

DTRR
Developmental Test Readiness Review

DTRS
Developmental Test Readiness Statement

DTSE&E
Director for Test, System Engineering and Evaluation

DUSA(OR)
Deputy Under Secretary of the Army (Operations Research)

EA
economic analysis

ECM/ECCM
Electronic Countermeasures and Electronic Counter Countermeasures

ECP
Engineering Change Proposal

EDT
Engineering Change Propsal

EIS
Environmental Impact Statement

EOA
Early Operational Assessment

EOP
Evaluation Operatonal Plan

EUTE
Early User Test and Experiment

FC
Field Circular

FCT
Foreign Comparative Testing

FD
Functional Description

FDE
Force Development Experiment

FDT
Force Development Test

FDTE
Force Development, Test, and Experimentation

FIO
Foreign Intelligence Officer

FM
Field Manual

FORSCOM
United States Army Forces Command

FOT
Follow-on Operational Test

FOTE
Follow-on Operational Test and Evaluation

FP
Functional Proponent

FTX
Field Training Exercises

FYTP
Five-Year Test Program

HFE
Human Factors Engineering

HLFD
High-Level Functional Description

HUC
Human Use Committee

IAP
Independent Assessment Plan

IAR
Independent Assessment Report

IEP
Independent Evaluation Plan

IEP/TDP
Independent Evaluation Plan/Test Design Plan

IER
Independent Evaluation Report

IKPT
Instructor and Key Personnel Training

ILS
Integrated Logistics Support

ILSMT
Integrated Logistics Support Management Team

ILSP
Integrated Logistics Support Plan

IMA
Information Mission Area

INF
Intermediate-Range Nuclear Forces

INSCOM
Intelligence and security Command

IOC
Initial Operational Capability

IOT
Initial Operational Test

IOTE
Initial Operational Test Evaluation

IPA
Integrated Program Assessment

IPR
In-Process Review

IPS
Integrated Program Summary

IR
infrared

ITEAMS
Integrated Technical Evaluation and Analysis of Multiple Sources

ITTOP
Integrated Threat Tactical Operations Plan

ITTS
Instrumentation, Targets, and Threat Simulators

IWG
ITTS Working Group

JIEO
Joint Interoperability and Engineering Organization

JTOC
Joint Target Oversight Council

JTSH
Joint Threat Simulator Handbook

LCM
Life Cycle Management

LCSMM
Life Cycle System Management Model

LD
Logistics Demonstration

LFT&E
Live Fire Test and Evaluation

LFT&EWG
Live Fire Test and Evaluation Working Group

LLI
Long Lead Item

LP
limited procurement

LRIP
low-rate initial production

MAA
Mission Area Analysis

MC
Materiel change

MOA
Memorandum of Agreement

MOU
Memorandum of Understanding

NDI
Non-developmental item

OMB
Office of Management and Budget

OPSEC
Operations Security

OPTEC
Operational Test and Evaluation Command

O&S
Operation and support

OSD
Office of the Secretary of Defense

PEO
Program Executive Officer

PIP
Product Improvement Program

PM
Program/Product Manager

PM ITTS
Project Manager for Instrumentation, Targets, and Threat Simulators

PMO
Program Manager's Office

PQT
production qualification test

PVT
production verification test

RAM
reliability, availability, and maintainability

RHA
rolled homogeneous armor

SLAD
Survivability/Lethality Analysis Directorate

SSEB
Source Selection Evaluation Board

STAR
System Threat Assessment Report Sub-sys Sub-system

TDP
test design plan

T&E
Test and Evaluation

TECOM
U.S. Army Test and Evaluation Command

TEMP
Test and Evaluation Master Plan

TIWG
Test Integration Working Group

TRADOC
U.S. Army Training and Doctrine Command

USC
United States Code

VLAMO
U.S. Army Vulnerability/Lethality Assessment Management Office

WRAIR
Walter Reed Army Institute of Research

Section II
Terms

Army Live fire
Live Fire testing of the Bradley, the Abrams, and the M113 Family of Vehicles; program completed in 1988.

Ballistic hull and turret
An armored structure representative of a system without powerpack or component subsystems.

Building-block approach
An approach to vulnerability/lethality testing beginning with component level testing and progressing through sub-system, system, BH&T testing, and culminating in a full-up, system-level LFT.

Catastrophic kill
An armored vehicle sustains a K-kill when both a M-kill and a F-kill occur and it is not economically repairable.

Compartment model
A low resolution vulnerability/lethality assessment computer model used to predict the vulnerability of armored vehicles and the lethality of anti-armor munitions (see chapter 6, table 6–1).

Conventional weapon
Those weapons which are neither nuclear, chemical, or biological.

Covered Product Improvement Program
A covered system and/or major munition or missile program for which a planned modification or upgrade is likely to produce a significant effect on the vulnerability and/or lethality of that system/munition or missile.

Covered system
Any vehicle, weapon platform, or conventional weapon system that includes features designed to provide some degree of protection to users in combat and is a major system.

Depot level support
The level of repair performed by depot mechanics with depot tools and precedures.

Engineering and Manufacturing Development
The acquisition phase between Milestone II and Milestone III (formerly, Full-Scale Development).

Firepower kill
An armored vehicle suffers a F-kill if it becomes incapable of delivering accurate, controlled firepower and cannot be repaired by the crew (within approximately ten minutes) on the battlefield.

Full-up testing
Firings against full-scale targets containing all of the dangerous materials (for example, ammunition, fuel, hydraulic fluids, etc.), system parts (for example, electrical lines with operating voltages and currents applied, hydraulic lines containing appropriate fluids at operating pressures, etc.), and stowage items normally found on that target when operating in combat. Full-up testing includes firings against full-up components, full-up sub-systems, full-up sub-assemblies, or full-up systems. The term"full-up, system-level testing" is synonymous with"realistic survivability testing" or "realistic lethality testing" as defined in the legislation covering LFT.

Lethality
The ability of a munition to cause damage that will cause the loss of, or a degradation in, the ability of a target system to complete its designated mission(s).

Live Fire test
A test event within an overall LFT&E strategy which involves the firing of actual munitions at target components, target subsystems, target sub-assemblies, and/or subscale or full-scale targets to examine personnel casualty, vulnerability, and/or lethality issues.

Major munitions program
A conventional munitions program that is a major system within the definition given below or for which more than 1,000,000 rounds are planned to be acquired.

Major System
As specified in Title 10, United States Code, Section 2302(5), a major system means a combination of elements that will function together to produce the capabilities required to fulfill a mission need. The elements may include hardware, equipment, software, or any combination thereof, but excludes construction or other improvements to real property. A system shall be considered a major system if:

a. The DoD is responsible for the system and the total expenditures for research, development, and test and evaluation for the system are estimated to be more than 7520million dollars (based on fiscal year 1980 constant dollars), or the eventual total expenditure for procurement of more than 30020million dollars(based on fiscal year 1980 constant dollars).

b. A civilian agency is responsible for the system and the total expenditures for the system are estimated to exceed 750,000 dollars (based on fiscal year 1980 constant dollars) or the dollar threshold for a "major system" established by the agency pursuant to Office of Management and Budget, Circular A–109, entitled "Major Systems Acquisitions,"whichever is greater.

c. The system is designated a "major system" by the Secretary of the Army. (Per DoDI 5000.2, fiscal year 1990 constant dollars are 115 million dollars for research, development, and test and evaluation and 540 million dollars for procurement.)

Milestone IIIB
In the OSD LFT&E Guidelines, the full-rate production decision milestone (always follows an LRIP) before which LFT&E must be completed and reported upon to Congress. Under the current DoD policy (reference DoDI 5000.2) there is no Milestone IIIB. LFT&E must be completed and reported prior to Milestone III (Production Approval); LRIP will now be conducted during the EMD phase prior to Milestone III.

Mobility kill
An armored vehicle suffers a M-kill if it becomes incapable of executing controlled movement and cannot be repaired by the crew(within approximately ten minutes) on the battlefield.

Model/Modeling
A vulnerability/lethality assessment tool used to predict one or more aspects of a given munition/target interaction. A model may be anything from a sophisticated computer code (employing many individual algorithms to assess total system vulnerability/lethality) to a simple mathematical expression or empirical relationship used to predict a single element of a munition/target interaction (e.g., the penetration performance of a given munition).

Pk
Not a probability in the pure sense, but a fractional estimate of a systems loss of function.

Pk/h
Not a probability in the pure sense, but a fractional estimate of a systems loss of function given an impact on the system of interest.

Pre-shot prediction
An priori prediction of the expected outcome(s) of a Live Fire shot. The prediction might, in special circumstances, be a quantified value of the probability of kill given a hit and/or the expected number of casualties. Most often, the pre- shot prediction will be in the form of quantitative or qualitative expectations of the ability of the attacking munition to defeat the armor or other protective design features of the target and inflict damage to components or personnel; or conversely, the ability of the target to defeat or mitigate the effects of the attacking munition. These predictions can be either absolute expectations of performance or comparative expectations of the relative performance of two or more munitions or targets. The pre-shot predictions may be based on computer models, engineering principles, or engineering judgments.

Realistic lethality testing
Testing for lethality by firing the munition or missile concerned at appropriate targets configured for combat.

Realistic survivability testing
Testing for vulnerability and survivability of a system in combat by firing weapons likely to be encountered in combat (or munitions with a capability similar to such munitions) at the system configured for combat, with the primary emphasis on testing vulnerability with respect to potential user casualties and taking into account equal consideration for the operational requirements and combat performance of the system.

Realistic Testing
For vulnerability testing: the firing of munitions, likely to be encountered in combat, at the weapon system configured for combat. For lethality testing: the firing of the munition or missile concerned at appropriate targets configured for combat.

Stochastic
Involving or containing random variables; the interaction between the munition and the target is stochastic.

Survivability
The capability of a system to avoid or withstand a man-made hostile environment without suffering an abortive impairment of its ability to accomplish its designated mission.

Test Issues
Questions which must be answered in operational and developmental testing. Test issues are not necessarily stated in the same form as the system evaluation issues or system test and evaluation critical issues from which they are derived, but test issues must be stated in a manner that ensures those evaluation issues amenable to test can be answered. The emphasis of test issues is on producing data in support of the operational and developmental evaluations. Test issues have criteria when needed.Test issues and their criteria are identified by the independent evaluators and published in Independent Evaluation Plans (IEPs) and Test Design Plans (TDPs).

Vulnerability
The characteristics of a system that cause it to suffer a definite degradation (loss or reduction of capability to perform its designated mission(s)) as a result of having been subjected to a certain level of effects in a man-made hostile environment.

Section III
Special Abbreviations and Terms

AAL
additional authorization list

BAD
behind-armor debris

BAST
Board on Army Science and Technology

BDAR
battlefield damage assessment and repair

BH&T
ballistic hull and turret

BII
basic issue items

DAL
damage assessment list

DAT
damage assessment team F-kill firepower kill

frag
fragment K-kill catastrophic kill

JLF
Joint Live Fire

LFT
Live Fire test

LOF
loss of function M-kill mobility kill

Pen
penetration

Pk
probability of kill

Pk/h
probability of kill given a hit

SLV
survivability/lethality and vulnerability

SPARC
Sustainability Predictions for Army Requirements for Combat

V/L
vulnerability/lethality

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