

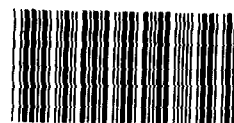
GAO

Report to the Ranking Minority
Member, Committee on Governmental
Affairs, U.S. Senate

September 1990

TEST AND EVALUATION

Improvements Are Being Made in the Department of Defense's Test Planning



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**National Security and
International Affairs Division**

B-241231

September 28, 1990

The Honorable William V. Roth, Jr.
Ranking Minority Member
Committee on Governmental Affairs
United States Senate

Dear Senator Roth:

At your request, we reviewed the Department of Defense's (DOD) test planning processes focusing on the Test and Evaluation Master Plan (TEMP) process. Our objectives were to review (1) those processes that the services have instituted for creating, evaluating, and approving TEMPs; (2) the strengths and weaknesses of the services' test planning and TEMP processes; and (3) the extent to which recent and ongoing DOD actions address TEMP weaknesses that have been of particular concern (e.g., lack of timeliness, inadequate test schedules, insufficient test resources, etc.).

Results in Brief

DOD has focused a great deal of attention on improving test planning processes and has made several improvements in TEMP guidance. More specifically, our review indicated the following:

- The military services have each instituted similar TEMP and test planning processes in accordance with Office of the Secretary of Defense (OSD) guidance.
- DOD has adequately identified the key weaknesses and strengths of the TEMP and test planning processes.
- DOD actions address historical weaknesses and, if properly implemented, should significantly improve the timeliness and quality of TEMPs and the test planning processes.

Background

In the process of acquiring weapons systems, it is axiomatic that test planning should start early, usually at the initiation of a major defense program. Moreover, this planning should provide the basis for identifying required test resources and test schedules.

Test and evaluation is an integral part of the systems acquisition process. Within DOD, the basis for all test and evaluation requirements related to a particular system acquisition program is the TEMP. This key

management control document is required to be used by OSD and all military service components in planning, reviewing, and approving weapon system test and evaluation.

The TEMP is the primary means by which OSD and the military services determine the adequacy of test planning. The TEMP also defines performance criteria that a program is to meet before it can advance to the next acquisition milestone. Department of Defense Directive 5000.3, Test and Evaluation, requires that each major system acquisition program have an approved TEMP before the start of any testing.

GAO's Analysis

Military Service TEMP Processes Are Similar

Each service structures its acquisition process based on guidance in DOD directives and instructions. There are few, if any, significant differences in the way the services have implemented OSD guidance concerning TEMPs. For example, in each service the TEMP is prepared by the program management office responsible for developing acquisition and development testing plans. Operational test information contained in the TEMP is provided by the military services' operational test agencies.

As needed, each service uses similar test coordination and working groups to execute the TEMP and test planning processes. Also, the OSD and service TEMP guidance require that certain potential problem areas (test resource sufficiency, test schedules, threat realism, etc.) be addressed.

DOD Has Enumerated TEMP Weaknesses

We found that, as part of self-initiated efforts to improve their TEMP and test planning processes, OSD and the services have identified the key weaknesses. A major concern is a lack of TEMP timeliness throughout DOD. For example, in January 1990, the Under Secretary of Defense for Acquisition, commenting on disapproved TEMPs for 22 major systems acquisition programs, stated that "...TEMPS seem to be chronically out of date, awaiting revisions, or involved in lengthy review and approval cycles..." Other TEMP weaknesses identified by DOD include insufficient resources planned for tests, inadequate threat realism, and poorly written critical operational issues.

Although we found no criteria concerning how long each phase of the TEMP coordination and review cycle should be, several DOD officials told us that a lack of timeliness was the predominant weakness in the TEMP process. They indicated that OSD TEMP review and service TEMP coordination cycles were too long and, as a result, the TEMP was almost always out of date and lagged behind detailed test planning. There has also been a lack of consensus concerning the appropriate role, definition, and level of detail for the TEMP. For example, the TEMP's utility as a management oversight tool or working-level document and the value added by the various review and approval levels are still issues of concern to some DOD officials. Resolving this lack of consensus remains a joint OSD and service goal.

Strength of the TEMP Process Is the Involvement of Key Organizations

The TEMP process in each of the services assures that the expertise and perspectives of relevant organizations are utilized in test planning, primarily through test coordination and working groups. A key strength of the process is the formality and discipline of this involvement, which is accepted as valid and useful throughout DOD. Some DOD officials believe that the true value of the TEMP process is the planning involved—not the detailed, approved TEMP document. Also, in advance, the TEMP and test planning processes establish expectations regarding responsibilities, required test resources, and organizational involvement.

DOD Has Taken Action to Improve Test Planning

DOD has taken actions that should address identified weaknesses and improve TEMPs and related test planning. In particular, DOD has focused attention on improving the timeliness of the TEMP process as a key goal. Specific actions include: (1) revision of guidelines and (2) establishment of a review of the TEMP process. As a result, OSD's TEMP review cycle has improved significantly during the past year. For example, DOD reported that in the first quarter of fiscal year 1990, the OSD TEMP review cycle was 90 days. In the second quarter, OSD took an average of 45 days to process the TEMPs.

Recently Issued TEMP Guidelines Are a Good Start

In 1988, OSD initiated a field survey to determine what needed to be done to improve the usefulness and timeliness of TEMPs. Based primarily on the results of the survey, new guidelines were issued in January 1990. The revised guidelines refer to existing DOD guidance for details regarding TEMP creation and evaluation.

These revised guidelines target many of the issues of concern to the Congress and DOD, including timeliness, test resource sufficiency, and adequacy of test schedules. For example, to improve the timeliness of TEMP creation, evaluation, and approval, the guidance (1) limits the basic TEMP document to 30 pages of text and (2) requires a new integrated test schedule supporting the acquisition strategy that relates resources to test schedules.

A significant area in the revised guidelines requires a discussion of the effects of test resource shortfalls on the assessment of test results. We believe this should provide decisionmakers with a clear idea of the risks and impacts associated with failure to provide adequate test resources.

Current Improvement Actions Should Increase the Effectiveness of Test Planning

In January 1990, the Under Secretary of Defense for Acquisition, concerned about continuing TEMP timeliness and content problems, initiated another OSD-level review of the TEMP cycle. The goal of this review was to determine how the TEMP and test and evaluation processes could be improved. The Director, Operational Test and Evaluation, was directed to coordinate this review.

Interim and final reports were issued in March and May 1990, respectively. In the process, many of the weaknesses identified by OSD's 1988 field survey were revalidated. The interim report concluded that the revised TEMP guidance issued in January 1990 was needed and that the TEMP needs to be tied to other key program decision documents, such as the Mission Need Statement, Baseline Document, and Cost and Operational Effectiveness Analysis (see glossary).

The study concluded that this action could reduce the primary reasons OSD rejects TEMPs, namely (1) insufficient definition of the mission at the systems level and (2) inadequate specification or representation of the operational environment in the test plan.

The final report highlighted that each of the military services has an ongoing TEMP process improvement initiative and discussed overall plans to improve TEMP and test planning processes. The report called for

- TEMP updates based on test events rather than on other acquisition schedules,
- early OSD-approved TEMPs and a Test Concept Brief before a system acquisition request for proposal is made,

-
- use of the TEMP as a contract (e.g., an agreement between OSD and the services, as well as among organizations within the services), and
 - definition of the level of detail appropriate for the TEMP.

These key initiatives cited in the interim and final test and evaluation improvement reports have not yet been implemented. Recently revised acquisition directives have not yet been approved, and a policy statement describing how to better integrate the TEMP with other key program decision documents has not yet been issued.

Scope and Methodology

To review the TEMP and test planning process, we looked at records and interviewed officials at test and program oversight offices within OSD, service headquarters, test and evaluation agencies, and program executive and management offices. We analyzed OSD's and the services' TEMP guidance and related documents, searched the relevant literature, and synthesized the results of past and ongoing work by DOD.

We compared and contrasted those processes that the services have instituted for creating, evaluating, and approving TEMPS; examined the strengths and weaknesses of the services' TEMP and test planning processes; and examined the extent to which recent and ongoing DOD actions address TEMP and test planning weaknesses.

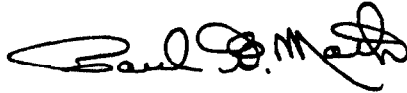
We conducted our work between January and September 1990 in accordance with generally accepted government auditing standards.

As requested, we did not obtain written agency comments on this report. However, we discussed the information in this report with officials from the Office of the Deputy Director, Defense Research and Engineering (Test and Evaluation), and the Office of the Director, Operational Test and Evaluation. They supported our findings, and we incorporated their specific comments in the report where appropriate.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies of this report to the Secretary of Defense and the Secretaries of the Army, the Navy, and the Air Force; the Deputy Director, Defense Research and Engineering (Test and Evaluation); the Director, Operational Test and Evaluation; the Director, Office of Management and Budget; and other interested parties.

Please contact me at (202) 275-8400 if you or your staff have any questions. Major contributors to this report are listed in appendix I.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Paul F. Math". The signature is stylized with loops and a long horizontal stroke at the end.

Paul F. Math
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Glossary

Baseline Document	For full-scale development programs, description of the system requirements, the unit cost, the total development cost, and the milestone schedule. For production programs, description of the system requirements, the total program cost, the cost profile, and the production schedule.
Cost and Operational Effective Analysis	Assessment of program operational effectiveness against mission areas.
Critical Operational Issues	Aspects of a system's operational capability that must be questioned before its operational effectiveness can be properly evaluated.
Mission Need Statement	Description of the need for a new major weapon system and its use to support the services' initial request for funds.



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