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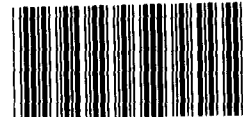
THURSDAY JUNE 23, 1983

STATEMENT OF
FRANK C. CONAHAN, DIRECTOR
NATIONAL SECURITY AND INTERNATIONAL AFFAIRS DIVISION

BEFORE THE
COMMITTEE ON GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

ON

ADEQUACY OF DEPARTMENT OF DEFENSE
OPERATIONAL TEST AND EVALUATION AND
GAO VIEWS ON S.1170



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It is my pleasure to appear before you today to discuss our views on the adequacy of the Department of Defense's (DOD's) test and evaluation of major systems and to highlight various problems through the use of examples. Accompanying me is Lester C. Farrington, a Group Director who has been heavily involved in our test and evaluation work.

For several years, we have reported on the capability of weapon systems to perform their intended missions and the adequacy of test and evaluation performed on these systems. We have issued many reports containing examples where developmental and operational test and evaluation was not comprehensive, realistic, or rigorous. In addition, we have reported on operational test and evaluation done by each of the three independent test organizations. While the quality of test and evaluation has improved since the early 1970s, problems still exist and improvements are still needed.

Today I would like to address several test and evaluation issues: the adequacy of test resources, the emphasis placed on test results, and the adequacy of operational test and evaluation results reported to the Congress in Congressional Data Sheets. In addition, I will also highlight our views on bill S.1170 which would establish a Director of Operational Testing and Evaluation in DOD.

THE ADEQUACY OF TEST RESOURCES

In a report issued today, Better Planning and Management of Threat Simulator and Aerial Targets is Crucial to Effective Weapon Systems Performance,¹ we state that there are major problems in existing test resources, particularly electronic warfare threat simulators and aerial targets. Threat simulators used in testing weapon systems are limited in both quality and quantity. As the chart indicates, as of 1981 no simulators existed or were planned for some threats such as airborne jammers that have been in existence for years. Furthermore, the services still do not have aerial targets that can be used to realistically assess the performance of weapon systems against increasingly sophisticated systems such as the Soviet's Foxbat aircraft or its supersonic low-altitude antiship cruise missiles. As a result, major weapon systems such as the Navy's Aegis cruiser and improved Phoenix air-to-air missile and the Air Force's new B-52 offensive avionics system, are being fielded without fully demonstrating that they will meet performance expectations.

¹ [GAO/MASAD-83-27, June 23, 1983.]

Coverage of Potential Threat Systems
with existing United States Simulator Resources
(as of 1981) .

<u>Type of threat</u>	<u>Percent simulated</u>
Early warning/ground controlled intercept radars	34
Surface-to-air missile radars	61
Antiaircraft artillery radars	60
Airborne intercept radars	27
Infrared systems	50
Ground-based jammers	14
Shipborne jammers	0
Airborne jammers	0

Source: Derived from data contained in the Threat Simulator Master Plan, Office of the Secretary of Defense (OSD)/Director, Defense Test and Evaluation, February 1982.

Let me illustrate the threat simulator problem by using the B-52 as an example. The new offensive avionics system, a multi-billion dollar program developed for use with the air-launched cruise missile, was approved for production in July 1979 but did not start operational testing until June 1980. The system was not adequately tested, however, because only a few of the threat simulators necessary to obtain sufficient assurance of its operational effectiveness were available. To make matters worse, some of the simulators that were available malfunctioned and did not provide valid results.

Eagerness to replace the aging B-52's existing capabilities spurred the Air Force's efforts to meet a 1-year time limit for testing. As a result, the test program continued in spite of simulator problems. The Air Force test report recognized the test limitations and recommended additional testing by using computer simulations and analytical models to overcome threat simulator shortages. The test manager, however, told us that the necessary simulations and computer models are not available to satisfy the recommendations contained in the test report. He also said he was unable to satisfy himself that the B-52's offensive avionics system could successfully counter the threat.

Since test and evaluation has not shown that the system will be operationally effective, the Air Force deployed a new avionics system without assurance that it will perform its mission as designed. The Air Force recognizes the inadequate testing and plans to make any needed modifications at a later date.

A similar situation exists for certain aerial targets. For example, no existing aerial target can reasonably duplicate the threat posed by the sea-skimming supersonic cruise missile. Consequently, the U.S.S. Ticonderoga, equipped with the Aegis fleet air defense system, will be deployed without demonstrating an ability to defeat this major threat to Navy ships. The Air Force faces similar problems with the new Advanced Medium Range Air-to-Air Missile. For example, no existing target can adequately duplicate the high-speed, high-altitude aircraft.

Before we started our review of test resources, we were aware of significant problems, so we concentrated on identifying the root causes of the test resource inadequacies, and identifying solutions to the well-known problems. We set out to determine why the DOD does not have adequate test resources.

We identified four areas where improvements could be made to better ensure the timely development, acquisition, and use of threat simulators and aerial targets. These areas affect almost every threat simulator and target development program; they are

- planning,
- organization,
- management emphasis, and
- intelligence support.

Successful accomplishment of these functions will remove some of the most serious obstacles to satisfactory threat simulator and aerial target development. We believe the problems in planning and management emphasis are systemic and adversely affect testing and test resources in general.

Our concerns are not new. Our prior reports as well as many DOD reports have also raised these same issues. For example, a DOD Office of the Inspector General report, DOD Systems Independent Test and Evaluation Program--Air Force, dated November 23, 1982, specified that the Air Force activities responsible for independent tests of selected electronic warfare systems costing \$9.5 billion experienced too many shortcomings to provide valid test results. These shortcomings were caused by incomplete testing criteria, inadequate test facilities, lack of sufficient testing equipment, and tests that were too limited in scope and duration.

Another example, a Naval Audit Service Report, Naval Electronic Warfare Capabilities, dated July 18, 1978, revealed major deficiencies in the Navy's ability to test and evaluate its weapons systems in an electronic warfare environment. The report identified a lack of visibility at high management levels, insufficient funding and planning, and fragmented management as the basic causes of the problems. While several recommendations were made to resolve test resource limitations, the Navy has yet to approve and implement a plan to overcome the deficiencies.

In our report we make several recommendations to the Secretary of Defense that will, if implemented, strengthen the quality and usefulness of test planning, overcome the organizational issues, improve the management emphasis, and better identify the problems involved in providing adequate intelligence support to the test and evaluation community.

In commenting on a draft of the report, DOD stated that its existing policies and procedures address the problems identified by GAO. However, we believe our findings show that current procedures have not been effective and further actions are needed.

Next, let me turn your attention to the emphasis placed on test results by decisionmakers.

EMPHASIS PLACED ON TEST RESULTS

The role of test and evaluation in the decisionmaking process has changed significantly over the last several years. DOD has tried repeatedly to find ways to shorten the acquisition cycle without incurring unacceptable risks. But the risks are high without adequate testing.

In the early 1970s, the Congress expressed serious concern over weapon system performance degradation and the need for reliable, accurate measurement of program progress. As a result, several studies were performed pointing out the need to

(1) reduce concurrency in weapon system development and production and (2) establish an independent office of test and evaluation at the OSD level to oversee weapon system testing performed by the services.

We have long been concerned that decisionmakers have not adequately considered test results because of enormous pressures to proceed with production regardless of the risks or the maturity of the system. These pressures include the national priority of a program, the threat, the long lead times, and the influence by special interest groups. For example:

--In 1978 we found that the Army deferred critical tests needed to support low rate production decisions for the AN/TPQ-37 Radar, the Tactical Fire Direction System, and an air defense system until after production units were available.

--In 1981 and again in 1983 we reported that performance limitations severely reduced the effectiveness of the Navy's conventionally armed land attack TOMAHAWK cruise missile. According to the Commander In Chief, Pacific, this TOMAHAWK variant needs substantial modifications to be effective against most targets assigned to the Pacific Command. Forty-four missiles have been produced through 1982 and the Navy plans to resume production in 1985. We are again recommending there be no further procurement until the missile's effectiveness is demonstrated.

--In 1982 the Navy's Operational Test and Evaluation Force evaluated the F/A-18's effectiveness and suitability in an attack role. The Test Force noted some deficiencies, such as inadequate range, and recommended against approval for service use. In December 1982, the Navy nevertheless recommended full production because it felt that the problems identified during operational testing have been or will be corrected.

These are not isolated instances. Similar situations also occurred in the Pershing II and Patriot missiles, the M-1 tank and the Sergeant York program. In each case, the Army believed it necessary to proceed even though test results identified major problems.

We are reviewing the Army's use of developmental and operational test and evaluation data in decisionmaking. We are finding that the scope and value of test and evaluation done by the Army is restricted by (1) the inability of the evaluations to counter balance the project manager's advocacy, (2) fragmentation of test and evaluation among numerous agencies, and (3) the lack of sufficient involvement by the Army's studies and analysis community. We are also finding that test evaluators do not adequately address the effects of fielding a system that has known shortcomings. Based on our work to date, it appears to us that better integration and focus of the many test and analysis

agencies could set the stage for providing more useful information to the decisionmakers about the weapon systems on which they must act.

We are also concerned that the importance of test and evaluation in the decisionmaking process may be jeopardized because of recent DOD initiatives in its Acquisition Improvement Program. Only initiative number 12--provide adequate front end funding for test hardware--addresses test and evaluation. However, test hardware is only one of several considerations in performance of test and evaluation.

Several of the remaining initiatives, such as decentralization, the desire to compress acquisition time, and concurrent development and production may also negatively effect the time and resources available for test and evaluation. As a consequence, risks may not be adequately identified and faulty weapon systems could be fielded requiring costly redesign and/or retrofit. In view of current DOD acquisition initiatives, we believe that DOD needs to emphasize the critical role of test and evaluation.

**THE ADEQUACY OF OPERATIONAL TEST
RESULTS REPORTED TO THE CONGRESS IN
CONGRESSIONAL DATA SHEETS**

Congressional Data Sheets are one of several ways the Congress receives data on the results of operational test and evaluation. The operational test and evaluation section of Data

Sheets includes a narrative of operational test and evaluations completed to date; operational testing that is to be completed before major production contract award; and, if necessary, reasons why required testing will not be completed by that date.

We have issued two reports dealing with the adequacy of test and evaluation information provided to the Congress. In 1979 and again in 1980 we stated that information given to the Congress on major weapon systems needs to be more accurate, complete, and useful.

Subsequent to our 1979 report, we found that DOD took measures to improve Congressional Data Sheet reporting. Although some improvements were made, significant problems still existed in 1980. In both reports we cited several instances where conclusions concerning system limitations were not reported, specific test results and conclusions were omitted, and system weaknesses were not identified.

We have not undertaken a full-scale review of Congressional Data Sheets since 1980, but a limited review of 14 selected Data Sheets revealed several shortcomings. For instance:

--The Data Sheet on the Bradley Fighting Vehicle does not mention limitations imposed by armor deficiencies or by the lack of internal space for troops.

- The Highspeed Antiradiation Missile Data Sheet does not identify known shortcomings of the system's performance.

- The Data Sheet on the F/A-18 ignored aircraft range limitations identified by the Navy's Operational Test and Evaluation Force.

- The operational test and evaluation section of the TOMAHAWK Data Sheet merely highlights the status of operational testing and provides no specifics on the number of test flights, the number of failures, and the reasons for such failures. Moreover, the demonstrated accuracy of the TOMAHAWK missile with a conventional warhead is overstated in the Data Sheet.

- Several performance limitations of the Sergeant York system, such as susceptibility to electronic noise, were identified by the Army's Operational Test and Evaluation Agency, but were totally ignored in the Data Sheet.

In 1980 we recommended that DOD continue its efforts to improve the completeness and accuracy of Congressional Data Sheets. Three years later, it appears that many of our concerns still exist. Accurate, complete, and useful operational test information is essential if the Congress is to make informed decisions on weapon systems acquisition programs.

OUR VIEWS ON S.1170

Before closing, I would like to briefly discuss our views on S.1170. If enacted, S.1170 would establish a Director of Operational Testing and Evaluation in DOD. The Director would be a civilian appointed by the President, with the advice and consent of the Senate. The Director would, among other things;

--be the principal adviser to the Secretary of Defense on operational test and evaluation matters;

--prescribe the administrative organization in the military departments for planning and conducting operational test and evaluation;

- prescribe policies and procedures for the conduct of operational test and evaluation;
- monitor, review, and provide guidance for all operational test and evaluation, including the adequacy of test plans and the funds available for operational testing;
- analyze the results of operational testing and report to the Secretary of Defense on (1) the adequacy of test and evaluation performed and (2) whether test results confirm a system's effectiveness and suitability for combat; and
- report to the Secretary of Defense on all budgetary and financial matters relating to operational testing and evaluation, including test facilities and equipment.

We have long been a strong advocate of the need for better operational test and evaluation, even at the expense of delaying a program, and have supported the establishment of independent test and evaluation organizations in the services. Our reviews in 1978 and 1979 pointed out that definite progress had been made in the performance of operational test and evaluation over the years but more still needed to be done. For example, we said:

--The test agencies should (1) better demonstrate that weapon systems can perform their missions in typical combat environments before they are approved for production, (2) inject more realism in operational testing by using operational and support personnel of the type and qualifications of those expected to use and maintain the system when deployed, and (3) identify and assess limitations and restrictions affecting the realism of operational tests in test plans (before the fact) and test reports (after the fact).

Many of these same problems exist today.

In addition to operational test and evaluation done by the military services, we have continually pointed out the need for a stronger OSD organization to ensure that operational tests critical to determining system effectiveness and suitability are accomplished before production. In our test resources report issued today, we emphasize that OSD needs to take more aggressive action in enforcing existing policies that would ensure the availability and adequacy of critical test resources.

S.1170 echoes the theme of better operational test and evaluation and we fully support and endorse the thrust behind the bill. There may be several ways to ensure improvements in operational test and evaluation. For example, direct reporting of the results of operational test and evaluation by the existing military service test organizations to the Secretary of Defense and perhaps even to congressional committees may be practical under certain circumstances. The establishment of a Director of Operational Testing and Evaluation with the authority and responsibility envisioned by S.1170 is one way to accomplish the job. While our work has not focused specifically on how DOD should be organized to perform operational test and evaluation, we nonetheless support a stronger OSD organization that is more involved in enforcing existing test and evaluation policies.

This concludes my prepared testimony. I would be happy to answer any questions you might have. Thank you.