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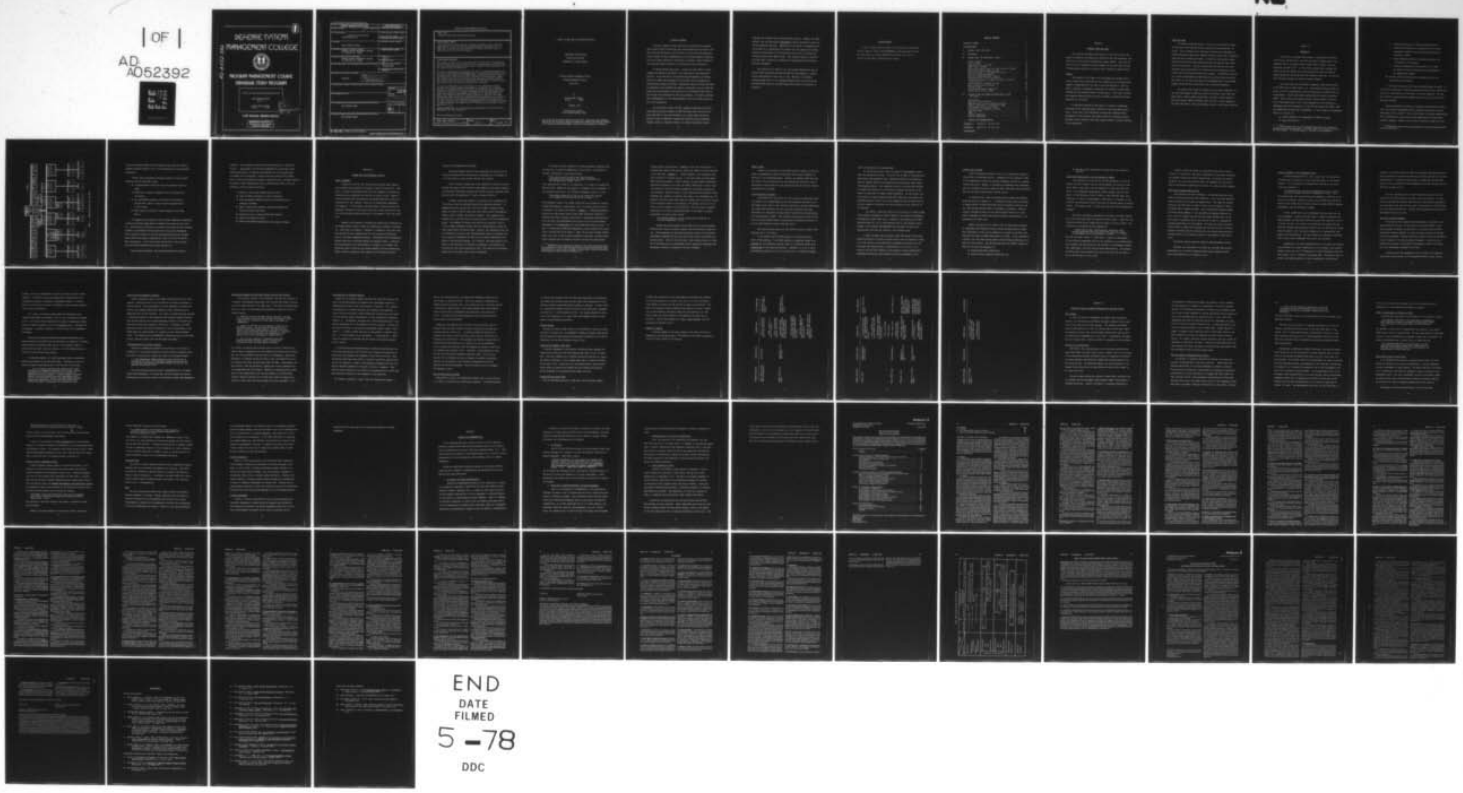

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INDIVIDUAL STUDY PROGRAM

A STUDY OF USAF TEST AND EVALUATION POLICY

STUDY PROJECT REPORT
PMC 77-2

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SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)* A STUDY OF USAF TEST AND EVALUATION POLICY		5. TYPE OF REPORT & PERIOD COVERED STUDY PROJECT REPORT 77-2 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) DAVID COUTER KESSLER		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060		12. REPORT DATE 1977-2 13. NUMBER OF PAGES 58
14. MONITORING AGENCY NAME & ADDRESS *(if different from Controlling Office)*		15. SECURITY CLASS. *(of this report)* UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

UNLIMITED

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

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DEFENSE SYSTEMS MANAGEMENT COLLEGE

STUDY TITLE:

A STUDY OF USAF TEST AND EVALUATION POLICY

STUDY PROJECT GOALS:

To investigate the background and rationale in USAF test and evaluation (T&E) policy in order to increase understanding of management's role in T&E; and, to explore the latest DoD policy changes and their impact on USAF T&E policy and program management.

STUDY REPORT ABSTRACT:

The purpose of this report was to study the Air Staff effort and rationale used in revising the current AFR 80-14, Test and Evaluation, and AFR 23-36, Air Force Test and Evaluation Center, and to compare these regulations with the recent changes to DoD policy.

The report traces high-level guidance and also the reasoning followed by an ad hoc Air Staff T&E Policy Working Group in revising the regulations. Prior versions of the regulations and DoDDs 5000.1, 5000.2 and the draft 5000.3 were compared with the current ones to determine resulting policy changes and trends. Other Air Force regulations and appropriate journal articles were reviewed, and discussions with members of the T&E Policy Working Group were held to gain the corporate memory of the revisions.

In the draft DoDD 5000.3, the requirement to test separately has been softened, with greater emphasis being placed on combined test programs. However, the proposed draft requires that all operational tests supporting a production decision be conducted independently by the OT&E agency. The draft also calls for coordination and review of the Test and Evaluation Master Plan (TEMP) by OSD. This proposal appears to conflict with long-standing DoD 5000.1 direction to decentralize responsibility for a program. The report closes with recommendations and conclusions concerning use of the T&E regulations. Two important recommendations are useful when tailoring a program: consider the "generalities" in regulations and recognize what is not said in them.

SUBJECT DESCRIPTORS: Test and Evaluation, Development Test and Evaluation, Operational Test and Evaluation

Test and Evaluation (10.08)

NAME, RANK, SERVICE	CLASS	DATE
David C. Kessler, Lt Colonel, USAF	PMC 77-2	November 1977

A STUDY OF USAF TEST AND EVALUATION POLICY

Individual Study Program

Study Project Report

Prepared as a Formal Report

Defense Systems Management College

Program Management Course

Class 77-2

by

David Couter Kessler
Lt Col USAF

November 1977

Study Project Advisor
Lt Col Joseph Arcieri, USAF

EXECUTIVE SUMMARY

The basic purpose of this study was to investigate the guidance and rationale behind current USAF test and evaluation policy found in AFR 80-14, Test and Evaluation, and AFR 23-36, Air Force Test and Evaluation Center (AFTEC); to make recommendations to the program manager concerning the use of these regulations; and finally to provide a source document of the corporate memory involved in the revision of these regulations.

To assess current T&E policy, a review was first made of correspondence and direction resulting in the initiation of the regulations' revision. Prior versions of the regulations and Department of Defense Directives (DoDD) were compared with the current ones to determine resultant policy changes and trends. Appropriate journal articles and other AF regulations were reviewed, and finally, discussions with Air Staff personnel that participated in the revision of the regulations were held to gain insight into rationale for the policy changes. The report concludes with recommendations to the program manager as to how to make better use of the T&E regulations.

The significant results include a complete discussion of the reasoning behind the major aspects of USAF T&E policy and a review of the draft DoDD 5000.3, Test and Evaluation, as it might impact AF policy. Detailed review of DoDD 5000.3 showed that there are several proposed changes in policy. Separate testing is no longer stressed but rather

combined test programs when cost/time benefits result. However, the draft proposes that the OT&E agency independently conduct operational tests supporting production decision. Importance is also given to consideration of and planning for, incorporation of software into the acquisition process. Another new requirement is the coordination and review of the Test and Evaluation Master Plan (TEMP) by OSD. This proposal appears to conflict with DoDD 5000.1 direction to decentralize responsibility for system acquisition management.

This study will be useful to not only program managers but also to program office personnel and DT&E and OT&E test team members in gaining fuller understanding of their role in T&E. Moreover, it provides a corporate memory that is not recorded elsewhere which can be used by HQ USAF and MAJCOM personnel involved in T&E policy and also historical researchers.

ACKNOWLEDGEMENT

I wish to acknowledge the support, perseverance, and dedication from Mr. Howard A. Beck of HQ USAF/XOODE for the many months of work with the author in revising AFRs 80-14 and 23-36, and also his review and assistance in preparing this report.

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SECTION I

PURPOSE, GOALS AND SCOPE

The test and evaluation (T&E) policy of the US Air Force is embodied in primarily two regulations: AFR 80-14, Test and Evaluation, and AFR 23-36, Air Force Test and Evaluation Center (AFTEC). Both were revised in 1976 in response to direct guidance by the USAF Chief of Staff to bring greater clarity to T&E policy and to modify the AFTEC charter.

Purpose

The purpose of this study is to investigate the guidance and rationale behind these revisions with the ultimate goal of increasing management's understanding of its role in test and evaluation. There is often a tendency to translate a regulation too literally without understanding the real purpose behind a certain policy. This study clarifies the reasoning behind current T&E policy in hopes of preventing misinterpretations in the future.

An additional purpose of the study is to provide a documented accounting of the corporate memory involved in rewriting these regulations. Since most of the individuals involved have completed their assignments at the Pentagon, this report should be a valuable resource document for new personnel that might become involved in future revisions of the regulations.

Goals and Scope

To assess current T&E policy, a review was first made of letters and direction that resulted in the initiation of the regulations' revision. Prior versions of the regulations and pertinent Department of Defense Directives (DoDD) were compared with the current ones to determine resulting policy changes and trends. In addition, appropriate journal articles and other Air Force regulations were reviewed for their implications in T&E policy. Finally, discussions were held with Air Staff personnel that participated in the revision of the regulations to gain insight into the rationale behind policy changes. In addition to providing a better understanding of USAF T&E policy and how future DoD policy may affect it, the report concludes with recommendations to the program manager concerning how to make better use of the T&E regulations.

The scope of this study is limited to the Air Force component; to the major T&E changes in ARFs 80-14 and 23-36 (dated 19 July 1976) and DoDDs 5000.1, Major Systems Acquisitions, and 5000.2, Major System Acquisition Process (dated 18 January 1977); and also to major changes in the draft DoDD 5000.3, Test and Evaluation, which is still under revision.

SECTION II

BACKGROUND

In mid 1975, two letters were primary in triggering the revision of AFR 80-14, and AFR 23-36. The first was from Lt General Hails, Vice Commander TAC, to Lt General Huyser, Deputy Chief of Staff, Plans and Operations, Hq USAF (1:1).[1] In his letter, General Hails stressed full support by TAC for AFTEC's role, but questioned the need for AFTEC to manage operational T&E (OT&E) after the production decision. He felt the user could best conduct the follow-on testing (FOT&E).

The second letter was from AFTEC's Commander, Major General Cross, to the USAF Chief of Staff (CSAF), (2). Since General Cross was about to retire, he felt it appropriate to give his impressions of AFTEC since its establishment. He was particularly worried that the General Accounting Office (GAO), which at the time was doing a special survey of the Services' OT&E organizations (5:2), would recommend that OSD establish an independent OSD test organization, as GAO did not believe that AFTEC, OTEA and OPTEVOR had achieved their independence. In this regard, he recommended these vital actions (2):

- Clearly establish the independence of AFTEC's missions.
- Revise AFR 80-14 to:

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[1]This notation will be used throughout the report for sources of quotations and major references. The first number is the source listed in the bibliography. The second number is the page in the reference.

1. Eliminate duplication of testing responsibilities.
2. Reassess the delegation of responsibility for overall management of DT&E and initial operational test and evaluation (IOT&E).
3. Assure dedicated IOT&E at the earliest possible time in DT&E/IOT&E test programs.
4. Establish organization of OT&E teams both in IOT&E and FOT&E and outline relationships with MAJCOMS and the implementing command.

- Provide AFTEC the flexibility to accomplish OT&E in the most realistic environment.

It had been a year and a half since the establishment of AFTEC. As with any new organization, AFTEC had experienced growing pains and had had to feel out and establish its own place in the test community. But now was a time for reevaluation and redefinition of its role in Air Force acquisition programs.

Before proceeding any further, it should be noted that when regulations are revised at Headquarters USAF, coordination generally involves Directorate level or below.[2] The Air Staff office of primary responsibility (OPR) coordinates the revision with other appropriate Air Staff offices and major commands. However, in this case, the Chief of Staff felt this

[2]Directorates are the next organizational level below Deputy Chiefs of Staff (See Chart 1).

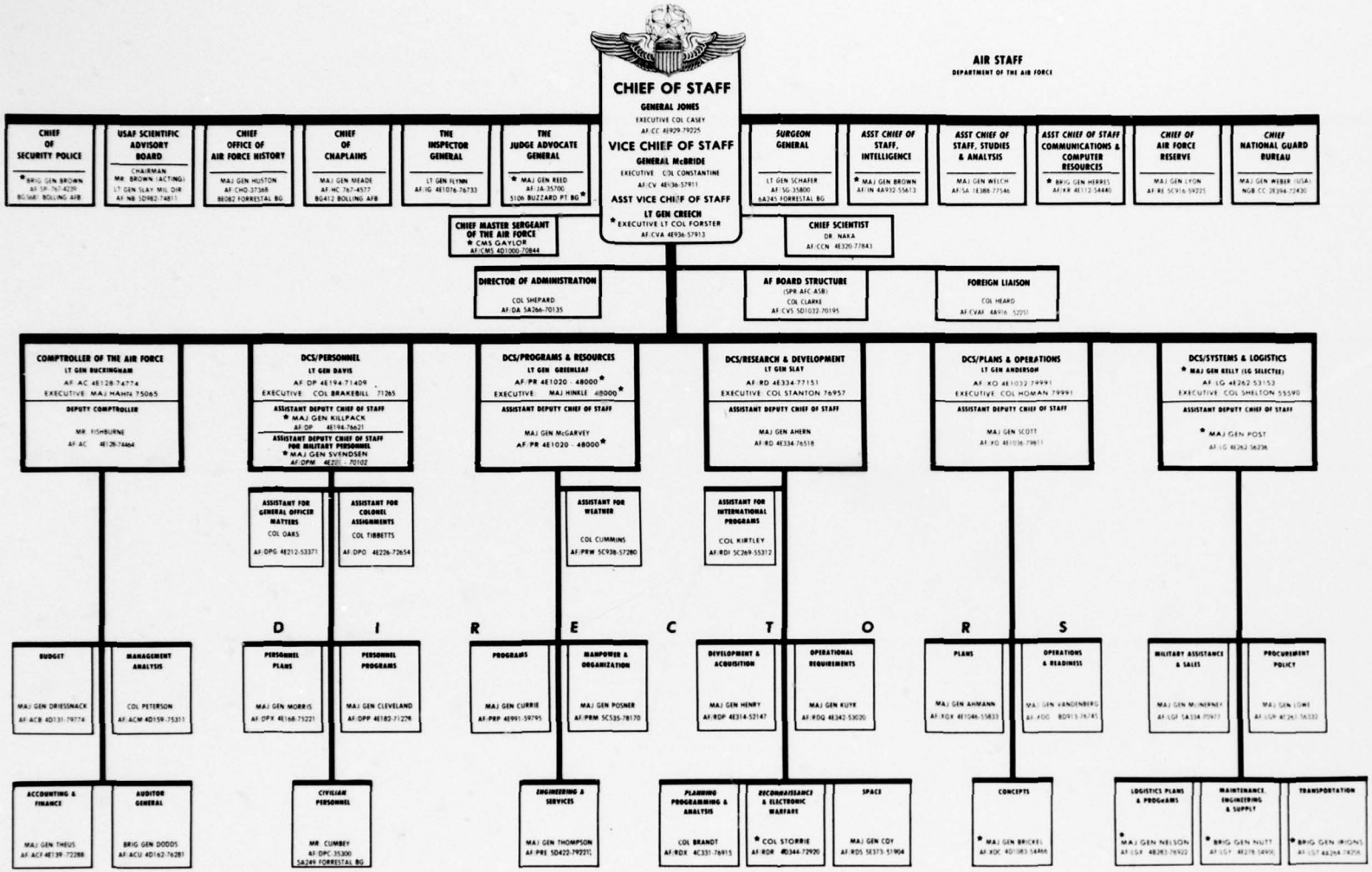

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CHART 1. ORGANIZATION OF THE AIR STAFF

issue was important enough that he personally gave some very specific guidance concerning AFTEC's role to be incorporated into the applicable regulations.

General Jones provided the following thoughts to the Air Staff concerning the TAC and AFTEC issues:

- He wanted AFTEC to have more clout and complete control of IOT&E.
- AFTEC was to assume an adversary role as the independent test agency.
- He wanted AFTEC personnel in the plant and the System Program Office (SPO) to learn as much as possible about the new system.
- AFTEC should be involved in fewer programs, but do them better.

To accomplish this direction, the Air Staff immediately established a T&E Policy Working Group made-up of members from across the Air Staff (4). The group was co-chaired by the Chiefs of the OT&E Division (formally AF/XOOFA, now AF/XOODE) and the Assistant for Acquisition Management Office (formally AF/RDM, now the Test and Evaluation Division: AF/RDXT) whose offices have primary responsibility (OPR) for AFR 23-36 and AFR 80-14 respectively. One of their first actions was to solicit inputs from all affected MAJCOMS and Air Staff agencies (3).

While awaiting responses, the group developed their revision

strategy. Both regulations would be revised concurrently to insure continuity. Though some of the MAJCOM recommendations varied widely from establishing policy, the Working Group decided not to be revolutionary, but rather to be evolutionary, staying within the present policy framework to clarify and emphasize respective responsibilities. Guidance from the the Chief of Staff and direction found in DoD Directive 5000.3, Test and Evaluation, would be used as baselines.

In addition, other issues needed resolution (26):

- Scope of AFTEC involvement in cost of ownership.
- OT&E gap between production decision and availability of production hardware.
- OT&E in modification programs, simulator programs and foreign military sales (FMS).
- Responsibilities in combined DT&E/OT&E programs.
- Control over OT&E test teams.
- AFTEC versus MAJCOM responsibility for conduct of FOT&E.

SECTION III

CURRENT USAF T&E PHILOSOPHY & POLICY

GENERAL COMMENTS

Through the fall of 1975, the T&E Policy Working Group labored over iteration and reiteration of drafts to AFRs 80-14 and 23-36. Gradually, a policy was developed within both the framework of existing objectives and the guidelines set forth by the Chief of Staff. Where no clear-cut guidance was specified, the Group based decisions on their interpretation of what Congress' intent was in establishing independent test agencies. In this manner, the Group hoped to follow not only Congressional direction but the spirit and intent of that direction so that the Air Force would be above criticism in its conduct of test and evaluation.

Related to the concern of following the latest policy guidance was the Working Group's desire to keep the regulations as general as possible (6). Terms such as "normally," "usually" or "generally" were often used. The rationale for this approach was not for the purpose of appearing vague or providing inadequate direction. The "generality" was incorporated because there are no cook-book methods for managing either a system acquisition program or the test portion of a program. As a result, the regulations were revised to give program managers and test directors the widest latitude in managing their programs while staying within the

bounds of the aforementioned guidance.

Another philosophy that was basic throughout the revision was to assure that whatever was written would be applicable to all systems, be it a light bulb or a giant rocket, and not just aircraft.

Since all policy changes were first addressed in AFR 80-14 and the changes that apply to AFR 23-36 were later added for consistency purposes, the following dissertation concerns only AFR 80-14 unless otherwise noted. When the term "the regulation" is used, it means AFR 80-14.

A primary issue that needed to be resolved in the regulation was "Just what is test and evaluation during the acquisition process?" It appeared that over the year and a half since AFTEC's inception, many people had come to believe there were three types of T&E: developmental (DT&E), initial (IOT&E), and follow-on (FOT&E). This assumption was probably due to the fact that the earlier version of AFR 80-14 appeared to stress the breakout of testing into these three categories (16:4-6). It was a common assumption by many that all programs had to include the three types during the testing phase. However, this assumption often led to confusion as to what to call the operational testing in programs that had no specific requirement for DT&E, such as certain modification programs or off-the-shelf hardware. As a baseline, the Group wanted to develop a clear definition of what T&E is comprised of and specific definitions for the various divisions of T&E. This baseline was necessary before any of the other issues could be addressed.

The Group's efforts resulted in a strong philosophy concerning T&E, and they felt it should be emphasized in the revision. The current regulation, paragraph 2a, states specifically:

> "There are two basic kinds of test and evaluation: Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E)" (17:1).

Thus, whenever T&E is used in the regulation, it is meant to include both DT&E and OT&E. Though this may appear as a somewhat obvious statement, it has important implication. For instance, paragraph 2a goes on to say:

> "The primary purpose of all T&E in the acquisition process is to estimate the military utility of a system....."

This statement indicates the common thread that runs through all testing, whether developmental or operational: T&E is to assess military utility. An example or two might prove helpful: Example 1 - Though developmental missions are very precise and are flown under controlled conditions to determine and verify stability and control or performance characteristics of an aircraft, the developmental test pilot can also provide valuable assessments to the operational test team concerning military utility. In fact, an exceptional operational background is a prime requisite for selection to the USAF Test Pilot School.[3] Thus, the Air Force Systems Command (AFSC) test pilot is often highly qualified to recognize a system's operational qualities and the impact on military utility that might become

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[3] Historically, the applicants chosen for the USAF Test Pilot School have experience in more than one operational aircraft and otherwise have excelled such as #1 in pilot training, Top Gun Award, Fighter Wing Standboard Examiner, Weapons School Graduate, etc.

evident during a DT&E mission. Feedback of this sort could result in improved OT&E missions and possibly reduce the number of flights required by the OT&E team. Example 2 - Another example is the laboratory engineer involved in a military system. It has been noted that some experimental engineers possess a natural tendency to seek technical perfection. Some design engineers will tinker and fiddle indefinitely in their quest for perfection with the resulting consequence of schedule slippage and cost problems. Though he works in highly specialized and technical areas, sometimes with concepts so abstract that there is no foreseeable use, the engineer still must never forget that his primary goal is military utility. If the resulting system is too technical, too complex, how can it be of real use to the soldier on the battlefield? The last thing an engineer should want is to have his system described in the manner of a quote attributed to a British naval officer:

> "The extreme ingenuity of this system rather blinds one to its utter uselessness" (21:32).

Though the testing baseline of military utility overlaps between DT&E and OT&E, there are primary concerns that are different between the two. DT&E encompasses the detailed engineering analysis of the system's performance, demonstrating that the system meets certain thresholds and specifications. OT&E, on the other hand, views military utility in terms of the validated military requirement and the operational employment and maintenance concepts as prepared by the major commands.

Types of OT&E

Several of the replies to the Working Group's request for revision inputs recommended that OT&E be broken down into various categories in addition to the IOT&E/FOT&E phases. However, the Working Group felt that any further division would serve no real purpose and would only tend to overburden and add confusion to the acquisition process which was already beleaguered with acronyms.

A New Definition for IOT&E

Since DoDD 5000.3 called for "an initial phase of operational testing (IOT&E)" to be accomplished prior to the production decision (13:4), the Working Group chose to stay with this definition, and more importantly, that IOT&E would terminate with the first major production decision. Thereafter, all operational testing would be called follow-on operational test and evaluation (FOT&E). This differed from the prior version of AFR 80-14 which had allowed IOT&E to continue past the production decision if all the IOT&E objectives had not been met (16:5).

There were several reasons for the definite cutoff of IOT&E at the Milestone (M.S.) III review:

- The cutoff forces the OT&E agency to do accurate and complete IOT&E planning. If an IOT&E objective is important enough to be required for the production decision, then it is important enough to be accomplished by the production decision. Otherwise, it is not a valid pre-production objective, or if it is valid, M.S. III should be slipped

until the objective can be accomplished.

- The definite cutoff limits the amount of developmental funds spent for operational testing. Since the cost of IOT&E is extracted from RDT&E funds (3600 appropriations), terminating IOT&E at the production decision changes funding to the operation and maintenance (O&M) account (3400 appropriations). This changeover results in an additional benefit. It reduces the possibility of criticism by Congress and the GAO of the amount of money spent on weapon system development. By specifically limiting IOT&E, the change prevents IOT&E from lingering on long after the production decision, which in one case dragged out over 18 months and required in excess of $2 million for just one portion of the IOT&E yet to be conducted.

- Finally, a definite cutoff at the Milestone III review allows a more orderly changeover of IOT&E to FOT&E in the Planning, Programming and Budgeting System (PPBS) cycle. Otherwise, the possibility of IOT&E continuing past M.S. III to some nebulous point in time presents quite a problem to the planners and budgeteers and also opens the Service to Congressional criticism for overruns if the schedule slips.

It might be added that the Working Group defined the "first major production decision" as that particular review where the decision is made to buy the system in large quantities as opposed to an earlier M.S. III that might have approved only a limited buy of a few articles. It is stated in the AFR 80-14 glossary as the decision to begin production of procurement-funded end items intended for Service deployment (17:3).

AFTEC's Role in FOT&E

After the production decision at M.S. III, operational testing is called FOT&E, as mentioned earlier. Fundamental to the concept of FOT&E is that operational testing can continue throughout the life of a system, lasting many years. However, in directing the Component OT&E independent agency to accomplish follow-on phases of OT&E, DoDD 5000.3 does not specify how long the agency should remain involved (13:4).

In resolving this issue, the Working Group reviewed the guidance described earlier in Section II . To summarize briefly here, TAC wanted to assume control of FOT&E from AFTEC after the production decision and the CSAF favored reducing AFTEC's involvement in programs. These two requests provided the basis for the Working Group's decision to limit AFTEC's management of FOT&E: The extent of AFTEC's participation is now determined by HQ USAF (15:1).

AFTEC's principal role in FOT&E is that of furnishing the degree of independent OT&E required to refine initial estimates made in IOT&E. This requirement is used in each program as a criteria by HQ USAF in determining the amount of AFTEC participation in FOT&E. It was concluded as a general rule that AFTEC should remain involved through production of at least the first article. The Working Group felt that AFTEC's conduct of FOT&E at its start was necessary to:

- Evaluate deficiency corrections.
- Support further production decisions; and

- Evaluate system configuration changes after the production decision.

Qualification/Operational Test and Evaluation (QOT&E)

The discussion up to this point has been building to a very important and basic premise that was used throughout the revision of AFR 80-14: OT&E is only split into the components of IOT&E and FOT&E when there is an accompanying developmental (DT&E) program involving 3600 money. By OSD direction (9:251.2) IOT&E is paid from DT&E funds, and therefore, if there is no development (3600) money in a program, it follows that any operational testing that might be required cannot be called "IOT&E." The question then is, "What do we call this type of operational testing?"

The answer originally proposed was to go back to the basic definition of T&E and simply name this special testing, "OT&E." (After all, the objectives of OT&E do not change with the prefix in front of OT&E.) This titling was to be applied to such examples as:

> "those Class IV and V modifications, simulators, commercially developed items, and other items which may require no development, per se and therefore, no DT&E....." (17:3).

Note the key words: "those.....items which....require no development." It also should be emphasized that not all simulators or all modifications are included, only those which are not involved in a development program with (3600 money), but still must be tested operationally. For instance, an off-the-shelf tape recorder works fine at sea level but how does it work at 40,000 feet in a six g turn.

However, people had become so ingrained in referring to OT&E as "initial" or "follow-on," that during coordination of the draft regulation, the notation of just plain "OT&E" confused them. To prevent any further confusion, the term "qualification OT&E" was introduced to indicate the need for operationally qualifying an item for its entry into the inventory.

Relationship Between DT&E and OT&E

Upon defining T&E and it components, the Working Group next evaluated the relationship among these components. One of the most important issues discussed was the need for separate OT&E. This issue was closely related to the USAF Chief of Staff's concern over the amount of control that AFTEC had in conducting IOT&E. After considerable discussion among the Working Group members, it was concluded that separate OT&E was the basic intent of Congress and also the Blue Ribbon Defense Panel (20:9), even though in actuality, much of the testing is done in a combined development/operational test environment. To follow the Chief's direction of more clout for AFTEC and to prevent GAO criticism that the Air Force regulation differed from the DoD directive, the Working Group placed the following words in the regulation exactly as they appear in DoDD 5000.3 (13:4):

Operational testing should be separate from development testing.

Obviously this philosophy is an ideal one, and both USAF and DoD acknowledge this by allowing combined testing where separation would cause unacceptable delay or increase in cost.

General Statement of T&E Management Policy

Air Force Regulation 800-2 (18:1) states that "all acquisition programs shall be managed by a single individual known as the Program Manager." This philosophy was incorporated in AFR 80-14, but with a clarifying exception:

> The program manager has overall responsibility for a system acquisition program (except the management of OT&E). (17:3)

The Working Group felt that excluding the management of OT&E was an important and necessary exception in order to give AFTEC more control of OT&E and also to show the Air Force's desire to endorse AFTEC's complete independence from the developing command.

However, AFTEC must also be independent from the using and supporting commands. Once the OT&E Test Team is formed of personnel from these commands, the OT&E Test Director must have full authority if he is to do his job well. As a result, the regulation now directs that the OT&E Test Director have operational control over the OT&E team to include decision authority over the use or movement of all assigned OT&E team members and OT&E resources. The team normally is comprised of personnel from at least several commands, such as TAC, ATC, and AFLC.

Regardless of the broad responsibilities of the OT&E Test Director, the individual with overall responsibility for a program is the program manager who has the job of "incorporating the OT&E requirements into the test program" (17:3) in addition to managing DT&E. Although the Test Director must provide support for OT&E as appropriate, the OT&E Test

Director, on the other hand, must make the resources under his operational control available to support the DT&E test plan when specified in the test documentation. If additional DT&E support is needed from the OT&E test team, it will be provided by mutual agreement of the Test Director and the OT&E Test Director (17:6).

The last statement hints at a most important point that was considered by the Working Group to be basic in any test program. The Test Director and OT&E Test Director must develop a close working relationship with each other right from the very start if the program is to stay within cost and schedule constraints. Clearly defined responsibilities and early, coordinated planning are vital.

OT&E Test Program Management

The question of who manages the OT&E programs was decided by the Working Group as follows. The regulation now restricts AFTEC to only major programs (as defined in DoDD 5000.1, (11:2)) and certain HQ USAF-designated non-major programs; all other non-major programs are managed by the using commands. However, AFTEC must approve test plans and comment on final reports of the latter non-major programs. In this way, the Working Group further limited AFTEC's involvement in OT&E, yet allowed for their independent assessment of all OT&E.

Concerning what the management of OT&E includes, the regulation specifically charges AFTEC (or the designated MAJCOM) to plan, direct,

conduct, control and independently evaluate and report on OT&E by OT&E personnel. The Working Group also emphasized the responsibility for independent evaluation as opposed to independent testing. As stated earlier, separate testing cannot be conducted on many programs because of time and money constraints.

As a result, the Working Group changed the designation from "combined DT&E/IOT&E test program" (16:6) to just "combined test program" (17:6). This change further emphasizes the subtle yet important concept that on a combined program it is not the evaluation that is combined, but the testing. A separate evaluation is the real task of the independent test agency.

HQ AFSC has encouraged combined developmental/operational test programs whenever practicable and cost effective, as opposed to a separate DT&E followed by a separate IOT&E (19:23). While separate IOT&E is usually best for small, low cost articles, it is often prohibitively expensive for major systems like aircraft.

In combined programs, the IOT&E requirements must be accurately defined and blended into the the DT&E effort. Evaluation, as well as testing, requires good planning due to the high cost of test data:

> It is a mistake to believe that combined test events compromise the independent evaluation of a system. But the requirement for careful planning for the evaluation of combined test data is obvious. A common problem in the past stemmed from poorly-defined user test requirements which led to a test event that failed to provide needed user data. Significant improvement in this area should result from AFTEC's involvement in operational test planning (19:24).

Innovative OT&E Management Concepts:

Several steps were taken to give AFTEC increased control over their assigned responsibilities and at the same time, stronger involvement in the T&E process. Early participation was felt necessary to provide continuity after Required Operational Capability (ROC) validation and to adequately plan the test schedule. As a result, the Working Group provided for OT&E participation in the conceptual and validation phases including test program planning and for AFTEC personnel located in the system program offices (SPOs) and contractor facilities. In addition, the AFTEC OT&E Test Director may exercise authority to rate the performance of key MAJCOM OT&E test team personnel (if agreed to by the affected MAJCOM) (15:2). This authority was recommended by the Working Group to give AFTEC further increased control over the OT&E test team members.

Responsibilities of the Test Director

Because the implementing command's Test Director is the direct representative of the program manager on the test team, his responsibilities were made to coincide very closely with those of the program manager:

> .....the implementing command provides a test director who is responsible for DT&E, for integrating combined test events and for insuring that resources are made available to carry out the combined test program (17:6).

Since the program manager has overall responsibility for a program (except OT&E management), it follows that the Test Director has overall responsibility for the test portion of the program (except OT&E management).

Relationship Between the OT&E Test Director and the Test Director

In the earlier version of the regulation, the OT&E test director on a combined developmental/operational test team had been loosely referred to as the "deputy director" for IOT&E (16:6). This title had become somewhat of an issue, and the Working Group decided to change the title for several reasons:

1. AFTEC did not like the term "deputy" because it implied that the deputy director worked for the test director. AFTEC viewed this as a violation of their basic requirement for independence.

2. Members of AFSC did not like "deputy" either, but for different reasons. The term "deputy" implied that the deputy director would take charge of the entire test program if the test director were TDY or became ill. Certainly the title was never intended to be interpreted in this manner, but it still gave people as uneasy feeling.

3. The title was incorrect in specifying only IOT&E because the deputy director usually continued his participation into the FOT&E phase of testing.

As a result, the Working Group decided upon the title of "OT&E Test Director" which is appropriate for both separate and combined test programs. The new title provides the desired degree of independence, deletes any possibility of assuming the Test Director's role, and indicates the correct generic name which includes both IOT&E and FOT&E. Nevertheless, the Test Director (from the developing command) has overall responsibility for accomplishing the test program. Besides his responsibilities listed above, he has responsibility for the safe conduct of all tests which includes "approval authority for all DT&E test events and approval authority to insure that OT&E events comply with safety standards" (17:7).

Misconceptions of Combined Testing

Except for the semantic change concerning the OT&E Test Director, the basic relationship between the combined test team members remains unchanged from the 1975 to the 1976 revisions of AFR 80-14. Yet, concerns were beginning to surface even before the regulation was published. A letter from the Vice Chief of AFSC alleged that "dividing the test effort into two distinct teams is detrimental to truly combined and integrated testing" (7). Furthermore, confusion over, and misinterpretation of this section (paragraph 17) of the regulation is still evident. A recent student report from one of the military professional schools states, "Paragraph 17.....seems to negate any sort of team concept in combined testing".....'"Joint planning is not mentioned".....'"Unfortunately.....80-14 (does not specify) an individual who has overall test program responsibility" (24:14).

In refuting these misinterpretations, it should be mentioned that one of the basic objectives in the revision was to shorten the regulation by cleaning up the verbosity and redundancy of the earlier revision. Thus, the Working Group took great effort in stating a particular guidance only once in the regulation, unless it was absolutely necessary that the guidance be repeated elsewhere for the sake of clarity or emphasis. Thus, because certain direction is not found in one paragraph does not mean that that particular direction is not elsewhere in the regulation.

For instance, paragraph 7 states, "When the implementing Command.....

begins test program planning, the appropriate MAJCOMS and agencies will participate, as required (17:4)." This joint planning is applicable to combined testing discussed later in the regulation and is certainly implied in paragraph 17 which states, "the planning should assure that combined testing would fulfill developmental and operational test objectives" (17:6). How else could planning adequately assure the T&E objectives without having "joint planning?"

Response to the concerns over division of the test effort into two distinct teams and JTF's without an overall director have already been discussed earlier in this text. It might be added that referring to combined test teams as Joint Test Forces (JTF) does not follow the terminology used in AFR 80-14. Joint programs are defined as those that are conducted with other Services, U.S. agencies or foreign governments (17:3), whereas what AFSC now calls JTF programs are defined in AFR 80-14 as "combined test programs" (17:6). Logically, a more appropriate title for the test team would be Combined Test Force (CTF). Use of a more correct title in denoting the type of program is becoming increasingly important as the number of joint programs increases with the other Services and foreign governments. The cruise missile and F-16 programs are examples of each.

OT&E in Modification Programs

Though AFSC is usually the implementing command, AFLC is also involved in a number of acquisition and modification programs. In considering OT&E

in modification programs, AFLC is tasked with identifying in coordination with AFTEC those modifications that may require the satisfaction of OT&E objectives beyond normal modification testing or proofing. In other words, if a modification program involves sufficient risk, AFLC should recommend to HQ USAF that OT&E be conducted (17:10). The purpose behind this addition to the regulation is to again assure that adequate testing is done before a system becomes operational.

Program Reviews

The Chief of Staff's (CSAF) desire to give AFTEC more clout was further satisfied in another way: The Commander of AFTEC may request AFTEC attend specific program reviews besides providing OT&E information to the CSAF in preparation for decision Milestone reviews (15:2).

Operating and Support (O&S) Costs

To clarify management of O&S costing, the Working Group expanded the regulation's direction in what had formerly been known as cost of ownership. The major commands are to develop and provide the O&TE test agency the models, techniques, or cost element data used to construct estimates of O&S costs (17:9). These are to be used during OT&E to acquire information which can improve and validate O&S cost estimates and identify system parameters or deficiencies which impact O&S costs.

Foreign Military Sales (FMS)

With the increased proportion of FMS cases involving newer weapons

systems, FMS considerations and requirements are becoming more important in the earlier phases of a system's life cycle. At first the Working Group thought to require all FMS testing to comply with AFR 80-14. However, the requesting foreign countries restricted by political, scheduling, or even monetary constraints might have good reason not to fund testing under our rules; therefore, the regulation was made less restrictive. T&E for FMS programs will comply, where feasible, with the principles of AFR 80-14 (17:3).

Summary of Changes

A concise summary of the major changes to AFR 80-14 and 23-36 is presented in the following matrix. The regulations are added as Appendices A and B to aid in review of the subject.

NEEDED REVISIONS	PREVIOUS REGS.	CURRENT REGS.	DoD DIRECTIVES
Early OT&E involvement and planning	Not defined	. Early as Conceptual Phase (80-14:2a(3)(a))	Implied but not directive (5000.3: IV.A1)
		. AFTEC in SPO and in plant (23:36:4k)	
		. Early, consolidated planning (80-14:7,17A)	
AFTEC control of OT&E	Implied but weak (90-14:12)	. Strengthens AFTEC control (use & movement of OT&E team members (80-14:16a;23-36:3d)	Undefined but implied (5000.3:IV.C1, 3,4,5)
		. May have rater authority over key team members (with MAJCOM agreement) (23-36:4g)	
		. Clarifies combined test events; not evaluation (80-14:17a,b)	
		. Separate OT&E testing if required to meet objectives (80-14:17d)	

NEEDED REVISION	PREVIOUS REGS.	CURRENT REGS.	DoD DIRECTIVES
Better OT&E	Needed emphasis and structure	. Clarifies OT&E baseline (requirement/employment concepts) (80-14:2a (2),5b) . Tasks MAJCOMS to provide concepts (80-14:21a) . Includes mod, simulators, and FMS program (80-14:2a (3)(d),6c,23c) . Early involvement . AFTEC control	Implied (5000.3:IV. A,B,C)
More AFTEC clout	Needed emphasis	. Above items, plus . Program reviews (80-14:20e;23-36:5a)	Intent (5000.3:IV.C)
Adversary role	Implied but undefined (23-36: 5a)	. Above items (especially Early Involvement and Program Reviews)	Implied; independent test agency is separate from developer and user (5000.3:IV-C.1)
AFTEC to do fewer things	Broad responsibilities	. Decreases O&S costs role (80-14:20.1) . Limits management scope of FOT&E (80-14: 20a;23-36:4b(2))	Must manage major programs through first-production article testing (5000.3:IV.C4,5)

NEEDED REVISIONS	PREVIOUS REGS.	CURRENT REGS.	DoD DIRECTIVES
AFTEC to do fewer things.		. Limits IOT&E in non-major programs to monitorship (80-14:16c) . Decreases scope of data file (80-14:20j)	

SECTION IV

EFFECTS OF NEW DoD DIRECTION PERTAINING TO USAF T&E POLICY

New Guidance

In 1976, the Office of Management and Budget (OMB) established policies to be followed by all Federal Government executive branch agencies in the acquisition of major systems. This direction has become known as OMB Circular No. A-109, (8) and has had the first major impact on acquisition policy since the Blue Ribbon Defense Panel came up with 113 substantive recommendations in 1970 (22:5). Subsequently, DoD began reviews of DoDDs 5000.1, 5000.2, and 5000.3 to implement the new guidance.

Revision of DoD Directives

DoDD 5000.3, Test and Evaluation, was to have been published soon after DoDDs 5000.1 and 5000.2 were issued in January 1977, but the length of the coordination process followed by plans to reorganize the Director of Defense Research and Engineering (DDR&E) have delayed completion of this revision (29). The following summary will focus primarily on the changes of the T&E portions of these directives and how they relate to Air Force T&E policy.

The main purpose behind the revision of DoDDs 5000.1 and 5000.2 was to introduce the Mission Element Need Statement (MENS) and Milestone 0 (Program Initiation). Briefly, the MENS is a statement prepared by a

DoD Component to identify and support the need for a new or improved mission capability as opposed to a requirement for specific hardware. Approval of the MENS by the Secretary of Defense with subsequent direction to one or more Components to explore and develop system concepts to satisfy the approved need is called Milestone 0 (12:6). DoDD 5000.3 complements the other two directives and to be in agreement with them, was put in revision slightly behind the two. As mentioned earlier, however, the draft DoDD 5000.3 is still under study. Though there are a number of changes to the directives, most of them either relate to the basic purpose for revising the documents or simply clarify previous policy. As a result, there are no major changes in the area of test and evaluation in DoDD 5000.1 or 5000.2. However the draft DoDD 5000.3 has some important revisions, and there are several which need further study and resolvement before the draft becomes final.

DT&E No Longer to Assess Military Utility?

In starting, an important deletion was noticed in the basic definition of OT&E and DT&E in the new directives. Though DoDD 5000.1 defines OT&E (11:Encl 1:2) as being conducted to estimate a system's military utility, operational effectiveness and operational suitability (referenced to the 1973 DoDD 5000.3), the draft DoDD 5000.3 drops the term "military utility" from discussions and definitions of both DT&E and OT&E which were in the older version (13:2,3). For instance, the draft DoDD 5000.3 has added a Glossary of definitions in which DT&E is defined

as:

> .....that test and evaluation conducted to assist the engineering design and development process and verify attainment of technical performance specifications and objectives.

Moreover, DoDD 5000.1 fails to give any definition at all for DT&E in its definition section.

What does all this lead to? It appears that DT&E is not to be involved in estimating military utility if the draft DoDD 5000.3 is approved. This is unfortunate because, as mentioned in Section II, feedback concerning military utility by the developmental test pilot to the OT&E test team could lead to improved OT&E missions and possibly reduce OT&E required data.

Furthermore, an additional viewpoint provided to the decision makers could reduce the risk of parochialism or biased reporting that can easily occur in the present environment where there are just a few pilots on a test program. For instance, under the DoD requirement to choose an average pilot for operational tests, the background of the individual selected may be limited to 2 or 3 aircraft as opposed to that of the developmental test pilot with a minimum of 20-30 aircraft. If the operational pilot is conditioned to poor characteristics in his past aircraft (such as weak brakes, inadequate visibility or a gunsight that jitters) and the test article exhibits much the same characteristics, he is liable to judge them as "normal" or "good." The developmental test pilot, on the other hand, is

able to give a more valid assessment of its true characteristics by comparison to a broad spectrum and number of aircraft.

AFTEC to Participate in Planning of DT&E?

A problem area that needs to be re-worded is in the draft as follows:

> The Component OT&E Agency will participate in planning of DT&E (underlining added) to ascertain which portion of DT&E will contribute to the accomplishment of OT&E objectives (14:6).

The thought is there but the interpretation that results is not correct. AFTEC does not share in planning DT&E. The main idea behind the referenced sentence is that coordinated test planning is necessary in a program. To prevent misinterpretation, a better choice of words would be:

> The Component OT&E Agency will participate with the Component's development agency during DT&E planning to ascertain which portion of DT&E will contribute to the accomplishment of OT&E objectives.

Some Changes Led by the Air Force

It is noteworthy that there are a couple areas in which Air Force policy has led DoD in its revision of DoDD 5000.3. The most important is early involvement by OT&E personnel. The draft directive is following suit and specifies that OT&E will commence as early as possible in the development cycle. This early involvement is part of the overall effort to load the front end of the acquisition process with greater planning and visibility in order to decrease production/O&S costs later on.

Furthermore, the draft defines IOT&E as the Air Force does:

> OT&E conducted prior to the Milestone III decision is designated Initial Operational Test and Evaluation (IOT&E).

It has no effect on the Air Force, but the Army and Navy should change their OT/DT and OPEVAL/TECHEVAL terminology.

Finally, joint programs with other Components are given increased emphasis in the draft including the introduction of Joint Operational Test and Evaluation (JOT&E). This emphasis gives further reason to call a USAF combined developmental/operational test team a Combined Test Force rather than a Joint Test Force, as proposed earlier in Section III.

Combined Versus Independent Testing

Another important change evident in the draft DoDD 5000.3 is the softening of current DoD philosophy that states operational testing should be separate from development testing (13:4). Admiral Kollmorgen, Asst Director of the DDR&E office responsible for DoDD 5000.3, indicates that the new T&E policy changes emphasizing earlier operational testing, valid reliability goals and combined developmental and operational testing are expected to improve the efficiency of the acquisition process (23:8). The draft version reflects this new policy by stating:

> Development testing and operational testing may be combined where clearly identified and significant cost/time benefits would result... (14:7).

This approach is much more realistic and clearly a necessity in most major programs.

However, the same paragraph in the revision takes a firmer view

toward independent testing by the OT&E agency.

> As a normal practice the operational tests supporting a production decision will be conducted independently by the OT&E organization (14:8).

With emphasis on combined test programs but independent testing, there will have to be close coordination and planning between the Test Director and the OT&E Test Director. To reduce the possibility of schedule stretch-out due to independent testing, the Test Directors will need to maximize the test missions where data is common to both, yet ensure that the required independent testing can be accommodated separately.

Long-Lead Items

The ability to order long-lead items has been a problem with Program Managers ever since concurrent development got a bad name. DoDD 5000.1 now gives the Secretary of Defense authority to approve long-lead production items at Milestone II. In addition, the draft DoDD 5000.3 allows OT&E to provide inputs to decisions made in Milestone II for long-lead items or for limited production.

TEMP

The Test and Evaluation Master Plan (TEMP) section in DoDD 5000.3 has been expanded in the draft. Besides indicating that the TEMP will prescribe compliance with environmental activities and will include electromagnetic compatibility considerations, the TEMP will be submitted to OSD "for coordination and reviews...relative to the major milestones."

This requirement appears to be removing some of the management authority from the program manager, and since DoDD 5000.1 calls for the decentralization of responsibility for program management, there seems to be a conflict between the two directives. If the draft DoDD 5000.3 is approved, the program manager can look forward to the possibility of what has been termed "micromanagement" from OSD. In addition, this new review could further lengthen the front end of acquisition programs where a growth has been noticed over the past few years.

Software Emphasized

There is a whole new section in the draft DoDD 5000.3 concerning T&E of computer software plus references to software elsewhere in the draft. At first glance it appears questionable whether software is so unique from other special programs, such as satellites, simulators or ground power carts, that it requires separate attention. However, this special emphasis is necessary because major programs have floundered as a result of inadequate development of software (28). Software has become extremely expensive in itself and therefore, must be given considered attention along with other system components in the development process.

Flexible Management

Finally, a review of DoDD 5000.1's Policy section indicates that successful management of system acquisition depends upon recognition that programs are different and require management flexibility (11:12). This acknowledgement reinforces the Air Force's philosophy used in

writing AFR 80-14 that there are no step-by-step methods in program management.

SECTION V

SUMMARY AND RECOMMENDATIONS

In the foregoing Sections, insight was given as to the important motivators behind current USAF test and evaluation policy, the rationale used in establishing this policy, and recent expected changes to it. This study should prove valuable to the program manager (PM) in giving a clearer understanding of the T&E regulations and ultimately assist in program management.

Besides the additional guidance presented in the earlier Sections, there are also a number of recommendations and conclusions that can be derived from these discussions.

1. Be careful of biased interpretation.

Though this recommendation applies to all regulations in general, it is especially important in AFRs 80-14 and 23-36 where AFTEC has been tasked to assume an adversary role. In addition, test teams are one of the most complex organizations as far as management is concerned because of the diversity in backgrounds and parent commands. There is a tendency to interpret regulations in terms of one's prejudices and biases and to fit the interpretation to benefit one's particular aspect of a management problem while disregarding an equally valid, but opposite, interpretation.

In addition to the PM's own biases, the PM must be aware of the bias possibility in other program offices and in test team members, and weigh opposing interpretations, looking first as to which is the more correct, and second, how the program will be affected.

2. Be flexible.

AFRs 80-14 and 23-36 were written to provide general rather than specific guidance for a purpose - to allow the greatest flexibility in program management. DoDD 5000.1 states:

> Successful management of system acquisition depends upon competent people, defined responsibilities and authority, realistic objectives, rational priorities and recognition that programs are different and require management flexibility (11:2). (Underlining added for emphasis)

The PM should take advantage of the "generalities" discussed earlier in T&E policy to tailor the program to its unique requirements. These generalities can provide much of the flexibility required for a successful program.

3. There are no cook-book methods in program management.

Since it is recognized in recommendation 2 that programs are different and unique, then it follows that here are no step-by-step procedures in managing a program. This conclusion results from the common belief that acquisition management does not lend itself to scientific regimentation, or as Henry Boettinger put it, "In sheer banality, few statements exceed the assertion that management is an art" (25:54). Again, the "generalities" in AFRs 80-14 and 23-36 permit the PM maximum

latitude within DoD and USAF policy constraints in which to practice his craft.

4. Recognize what is not said in regulations.

This, too, applies to all regulations and guidance, not just AFRs 80-14 and 23-36. Too often there is a tendency to criticize the policy that is found in regulations while completely neglecting what is not said. Where there is no policy given, the PM can gain additional latitude and flexibility in conducting his program as necessary without restrictions. The smart manager will take advantage of these unsaid possibilities and tailor his program accordingly.

5. Early planning is vital.

Finally, but foremost, early planning is necessary. The Air Force stressed this need early in USAF policy, and now DoD is also emphasizing its importance (23:7). Because of the numerous MAJCOMs involved during an acquisition, close coordination between all agencies is required to keep a program within cost and on schedule. Early planning between DT&E and OT&E personnel is especially important in combined DT&E/IOT&E test programs. The competition is severe for resources in order to accomplish desired objectives under schedule constraints.

In addition, the personalities of the Test Director and the OT&E Test Director are very important. These individuals must be able to work closely together without friction during planning, control, and conduct of the test program and also in resolving differences as they arise. The

French author and politician Jean-Jacques Servan-Schreiber sums up the idea: "Management is the art of arts because it is the organizer of talent"(25:55). The Test Director and the OT&E Test Director must strive to be true artists in working not only together but also with their test teams because they both have the common and ultimate goal of providing a better weapon system.

APPENDIX A

DEPARTMENT OF THE AIR FORCE
Headquarters US Air Force
Washington DC 20330

AF REGULATION 80–14

19 July 1976

Research and Development

TEST AND EVALUATION

This regulation outlines policy and procedure for managing test and evaluation activities during the development, production and deployment of defense systems in the Air Force. It establishes the management relationships among the implementing command, the Air Force Test and Evaluation Center, and the operating and supporting commands in successive phases of a system's life cycle, from the conceptual phase through deployment and employment. It applies to all Air Force organizations and activities and implements DODD 5000.3, change 2 (reprint) 20 May 1975.

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OPR:RDXT
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SECTION A—SCOPE AND CONCEPTS

1. Scope. Air Force test and evaluation (T&E) is conducted in four areas of effort: T&E in the technology base program; T&E in the acquisition process; T&E activities within Air Force engineering service resources; and joint programs with other governments or with other US Government agencies. The emphasis of this regulation is on T&E during the acquisition process (see chart in attachment 2).

2. Concepts:

a. Development and Acquisition Programs. There are two basic kinds of test and evaluation: Development Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E). DT&E and OT&E are essential parts of the system acquisition process, and may occur throughout all phases of the system's life cycle. The primary purpose of all T&E in the acquisition process is to estimate the military utility of a system, subsystem, or item of equipment (all hereafter referred to as a system).

(1) DT&E is conducted to demonstrate that engineering design and development are complete, that design risks have been minimized, and that the system will meet engineering and operational specifications. DT&E is essentially a detailed engineering analysis of a system's performance (beginning with individual subsystems and progressing through a complete system), where system design is tested and evaluated against engineering and performance criteria by the implementing command.

(2) OT&E is conducted to estimate a prospective system's operational effectiveness and operational suitability, and to identify any operational deficiencies and need for any modifications. In addition, OT&E provides information on organization, personnel requirements, doctrine, and tactics. OT&E is essentially an operational assessment of a system's performance where the complete system is tested and evaluated against operational criteria (requirement and employment concepts) by personnel with the same qualifications as those who will operate, maintain, and support the system when deployed.

(3) DT&E and OT&E will begin as early as possible in a system's life cycle and continue throughout, as necessary, to assess the system's military utility and reduce acquisition risk.

(a) During the conceptual and validation phases of a system's life cycle, T&E is conducted to demonstrate feasibility, to minimize design risks, and to determine design alternatives and trade-offs required to best achieve program objectives. Tests of subsystems, components, or system prototypes are conducted to develop data on which to base a full-scale engineering development decision. While the testing emphasis during this period is on the DT&E, a cadre of personnel responsible for OT&E will participate in the conceptual and validation phases, and will report on any OT&E conducted.

(b) During the full-scale engineering development phase, T&E progresses from subsystem and component checks to full-system tests. The objective is to further determine that design risks are minimized, system design is complete, and if the military utility of the system would justify production.

1. While DT&E will require heavy emphasis in full-scale engineering development, OT&E will play an essential role in the first major production decision for a system. A prerequisite for this decision is that an initial phase of OT&E (called IOT&E) be accomplished to provide an estimate of expected system operational effectiveness and suitability.

2. IOT&E ends with the first major production decision, and thereafter, all operational testing is called follow-on operational test and evaluation (FOT&E). These T&E relationships are shown in attachment 2.

3. Operational testing should be separate from development testing. However, early phases of OT&E may need to be combined with development testing where separation would cause delays involving unacceptable military risk, or would cause an unacceptable increase in the acquisition cost of the system.

(c) During the production and deployment phases, test and evaluation is conducted to refine system operating, maintenance, and support concepts; develop new operating concepts; determine the need for and assess the technical and operational effectiveness of system modifications; insure the effectiveness of the manufacturing process, equipment and procedures (Production Qualification and Acceptance Tests); and determine if the system is and remains in a relatively stable configuration for operational use. While DT&E may continue at a relatively high level in

the production and deployment phases, OT&E activities will normally increase in scope.

(d) In addition to OT&E application as described in (a), (b) and (c) above, there are programs for which OT&E must be performed even though there has not been a foregoing IOT&E. This type of testing is referred to as "qualification OT&E." Examples of this are those Class IV and V modifications, simulators, commercially developed items, and other items which may require no development, per se, and therefore, no DT&E or IOT&E, and which may or may not be associated with a production decision.

b. Technology Base Programs. Test and evaluation is also conducted in the research, exploratory development, and advanced development subdivisions of the Air Force Technology Base Program. In these phases of technology development, test and evaluation is conducted to verify hypotheses; measure phenomena; develop new techniques, procedures, and materials; and estimate the military utility of new components, subsystems, or technologies.

c. Engineering Services. Engineering Services (including testing) are unique capabilities provided primarily by AFSC T&E activities which are made available to support the T&E efforts of government agencies (through the AFSC Engineering Services Program) and government-sponsored agencies (AFR 80–19, Support of Non-governmental Test and Evaluation). These engineering services are not necessarily a part of any Air Force development or acquisition program, but are provided under specific support arrangements. They include technical support, facilities and knowledge not available elsewhere.

d. Joint Programs:

(1) When the Air Force is lead service in a joint-service acquisition program, T&E is conducted as outlined in this regulation.

(2) When another service or agency is the lead service, T&E is conducted in accordance with an agreement between the Air Force and other involved services or agencies.

(3) When joint service testing is sponsored by ODDR&E, T&E is conducted in accordance with agreements between ODDR&E, the Air Force, and other involved services.

(4) Joint testing with other governments will be in accordance with country-to-country agreements.

(5) Test and evaluation associated with Foreign Military Sales programs will also comply, where feasible, with the principles of this regulation.

SECTION B—POLICY GUIDANCE ON T&E MANAGEMENT

3. Relationship Between the System Program Manager and AFTEC. The program manager has overall responsibility for a system acquisition program (except the management of OT&E). His responsibility includes managing DT&E, incorporating the OT&E requirements into the test program, and providing support for OT&E as appropriate. AFTEC (or the designated major command (MAJCOM)) has responsibility for managing the OT&E in a major acquisition program. That is, AFTEC (or the designated MAJCOM) will plan, direct, conduct, control, and independently evaluate and report on OT&E.

4. Consolidating Test Events and Resources. To minimize duplication of testing, test events should be consolidated to the extent that the consolidation does not alter or compromise the test purpose and objective. Test data from all available sources will be used to the extent possible.

a. Tests will not be conducted without evaluation. However, if relevant data is available from earlier tests or other sources, evaluations may be made without additional testing.

b. Existing Government-owned T&E capabilities (for example, ranges, instrumentation, and other related resources) will be used whenever possible. However, T&E will be conducted in the most realistic operational environment that is economically prudent and feasible.

5. Documentation. Program documents, such as the Decision Coordinating Paper (DCP), Program Memorandum (PM), Program Management Directive (PMD), Test Directive (TD), or Program Management Plan (PMP), must include a statement of the critical questions and areas of risk to be resolved by T&E. This documentation will also provide a summary of test objectives, schedules, and milestones.

a. Each DCP should discuss, in its T&E section, whether or not the system is amenable to multi-service testing or two-sided testing. If such testing is appropriate, the DCP and Test and Evaluation Master Plan (TEMP) should state the intent and plans for its conduct. The following definitions apply:

(1) Multi-service testing. Testing that entails active participation (for example, personnel and money) of more than one service during the development of a weapon system potentially applicable to the needs of more than one Service.

(2) Two-sided testing. Testing in which two systems perform in adversary roles. This could involve either multiple services or a single service.

b. The OT&E and DT&E criteria used to judge the system's performance must be based on the

military requirement and on the operational employment and maintenance concepts prepared by MAJCOMS or other agencies and approved by HQ USAF. These criteria must be reflected in the Test and Evaluation Objectives Annex (TEOA) to the PMD; see attachment 3.

6. What Systems Are To Be Tested:

a. New systems, including conventional armaments, nuclear weapons systems (except subsystems that are governed by joint DOD-Energy Research and Development Administration (ERDA) agreement), associated equipment, and commercial items will be tested and evaluated in accordance with this regulation.

b. All modifications which fit the criteria for major programs (as defined in DODD 5000.1) or modification programs that require RDT&E-funded development will be tested and evaluated in accordance with this regulation.

(1) If no RDT&E funding is required, or if the modification does not fit the criteria for a major program, the engineering, prototyping, and test and proofing will satisfy preproduction T&E requirements and will not require reporting outside modification channels, unless the PMD directs otherwise. However, in these programs, the impact of the modification on operational effectiveness and suitability must be assessed early in program planning.

(2) If the production decision requires the satisfaction of OT&E objectives beyond normal modification testing or proofing, HQ USAF may require compliance with the T&E principles outlined here and require reporting as specified in paragraph 26.

c. For one-of-a-kind systems, or systems that involve the development or procurement of only a very few units over an extended period (for example, simulators), the T&E procedures outlined here will apply. Compatibility with existing or planned equipment will be tested. OT&E will be conducted as early as possible, but no later than final acceptance.

7. Participation in Program Planning. When the implementing command (or MAJCOM or AFTEC) begins test program planning, the appropriate MAJCOMS and agencies will participate, as required.

a. When more than one MAJCOM or agency is involved in a given OT&E activity or program, the program directive will designate the lead command, unless separate tests are necessary because of different mission requirements.

b. If the T&E being done by one command involves flying an aircraft of another command, or using the test articles of another command, an agreement between the commands (or the coordinated test plan) will assign supervisory responsibility under the various test arrangements. Specifically:

(1) The appropriate test director will make sure that the test items are operated within current operational limitations, and in accordance with all of the pertinent Air Force, major command and test force directives and procedures.

(2) Accountability for aircraft or drone, missile, explosive, ground, and nuclear accidents will be determined as outlined in AFR 127–4.

8. Priority for Allocating Test Articles and Equipment. The allocation and delivery of test articles, peculiar test equipment, or spares for the system undergoing test, will take precedence over any production, training or operational requirements for system equipment and personnel, unless directed otherwise by HQ USAF. Also, unless directed otherwise by HQ USAF, common items will be supplied according to the DOD Priority System.

9. Documenting Waivers. When a T&E program cannot be conducted as prescribed here, the nature and rationale for the proposed deviation must be specified in the program document (for example, the Test and Evaluation Master Plan (TEMP)) which must be approved by HQ USAF. If approved, the waiver will be documented in the proper program directives.

a. If the waiver concerns T&E outlined in a program memorandum for a non-major program, the waiver must have the approval of the Secretary of the Air Force, or a designated Assistant Secretary.

b. If the waiver concerns T&E outlined in a DCP for a major program, the waiver must have the approval of the Secretary of Defense.

10. International Constraints. Under the Strategic Arms Limitation (SAL) Agreements, there are certain constraints which restrict the conduct of USAF development, test, and operational activities. All USAF test activities will comply with these restrictions and requirements, as outlined in AFR 28–1.

SECTION C—CONCEPTS AND OBJECTIVES OF T&E PROGRAM MANAGEMENT

11. What Is Involved in the Development Testing and Evaluation Phase:

a. To determine how well the technical and operational requirements which were specified in the program documentation have been met,

DT&E is usually performed on a model, prototype, or preproduction article (this article may also be used for IOT&E). Therefore, it is essential to plan for an adequate number of test articles for DT&E and IOT&E which are fabricated and configured in a manner which represents the anticipated production item.

b. Sufficient DT&E must be accomplished before every major decision point in the program to assure that the major objectives of that phase have been met before starting the next phase. However, if development testing is not complete before the first major production decision, the implementing command may carry on additional DT&E after this decision if it is required for development or engineering testing of an updating change, or for testing a performance area not demonstrated earlier in DT&E (see the chart in attachment 2).

12. What Are the Major Objectives of DT&E. This phase of T&E is carried out in order to do the following:

a. Assess the critical questions and areas of risk of the system, and carry out the development objectives specified in the program documents. In the process:

(1) Identify deficiencies in the system, and determine the degree to which the development contract specifications have been met.

(2) Insure the compatibility and performance of the support items (for example, simulators, life-support systems, support equipment, computer resources, technical manuals, and other data).

(3) Provide estimates of system reliability and maintainability to be expected when deployed.

(4) Determine whether the system is safe and ready for operational testing.

b. Provide data with which to assess technical risk and evaluate trade-offs among specifications, requirements, life cycle cost and schedules. In addition:

(1) Accumulate and provide data for the estimation of survivability, vulnerability, and logistic support of the system.

(2) Provide data for refining estimates of requirements for training programs and training equipment.

(3) Provide information on environmental issues to be used in preparing impact assessments.

c. Insure design integrity over the specified operational and environmental range by conducting preproduction qualification tests.

13. Policy on Managing the DT&E Program:

a. The implementing command is responsible for DT&E program management. AFTEC and the MAJCOMs will support DT&E as specified in program directives and in the planning documents. The implementing command develops these documents in conjunction with AFTEC and the MAJCOMs.

b. The contractor, under the direction of the implementing command, usually conducts the early part of DT&E, which includes the preproduction qualification tests.

(1) The implementing command (with support from AFTEC and the MAJCOMs specified in the planning documents), will take part in the contractor-conducted DT&E, to assist in planning and conducting the testing; to provide visibility of potential problem areas and an early assessment of system capabilities; and to minimize duplication of Air Force and contractor testing.

(2) The Air Force will assume complete responsibility for the conduct of DT&E at the earliest practical point.

(3) Air Force Preliminary Evaluations (AFPEs) may be conducted to determine the extent that the DT&E objectives prescribed in the program documents have been met, or discrepancies have been resolved.

14. Concepts for Operational Testing and Evaluation. This phase is generally divided into two types of OT&E: initial OT&E (IOT&E) and follow-on OT&E (FOT&E).

a. In OT&E, the operational environment must be as realistic as possible, to assure that system performance and supportability criteria can be evaluated under conditions similar to those in the intended operational environment. Consequently, all OT&E objectives should be examined as thoroughly as feasible during IOT&E. However, since the estimate of the system's military utility (including the identification of operational deficiencies) is a primary factor in the first major production decision, it should be thorough enough to provide a reasonable assessment of the system's military utility in its intended operational environment. Therefore:

(1) IOT&E will begin as early as possible in the system life cycle, using prototypes (preproduction items or RDT&E-funded pilot production items) as test vehicles (if they are reasonably representative of the expected production items) and will end with the first major production decision.

(2) When major modification is required because of future system applications, threats, tactics, or doctrine, the modification program may, in itself, be considered as a new system development program, and may undergo IOT&E to support a production decision (see attachment 2).

b. FOT&E is conducted to continue to refine estimates of the system's military utility, to assist in further production decisions or system configuration changes that are necessary.

(1) FOT&E will begin after the first major production decision, and may continue throughout the system's life cycle.

(2) Pilot or preproduction test items will be used for FOT&E if production items are not yet available.

15. What Are the Major Objectives of OT&E. The objectives of this phase of T&E are as follows:

a. To estimate the operational effectiveness and operational suitability of the system, as well as other operational aspects of its military utility.

b. To identify any operational deficiencies.

c. To recommend and evaluate desirable changes and trade offs in production configuration.

d. To provide information for use in refining training concepts and programs; in developing and refining tactics, techniques and doctrine; and in supporting and updating technical orders and other publications.

e. To provide information obtained during actual use to permit

(1) Refinement of official program operating and support (O&S) cost estimates, and

(2) Identification of system characteristics or deficiencies which significantly impact O&S costs.

16. Policy on the Conduct of OT&E Programs. AFTEC is responsible for Air Force OT&E program management; responsibility for conducting OT&E is assigned to AFTEC or the MAJCOMs as follows:

a. AFTEC will conduct OT&E on major systems and on those nonmajor systems designated by HQ USAF. On these OT&E programs, the AFTEC commander appoints the OT&E test director from the AFTEC staff or from the MAJCOM (with the concurrence of the MAJCOM commander). This test director exercises operational control over the OT&E team. Here, "operational control" includes decision authority over the use or movement of all assigned OT&E team members and OT&E resources identified in the test program documentation.

b. MAJCOMs will conduct OT&E on all other nonmajor systems as designated by HQ USAF. A MAJCOM commander may also initiate an OT&E program to satisfy command requirements. The MAJCOMs will establish a command focal point to serve as the point of contact for OT&E matters.

c. AFTEC will monitor nonmajor IOT&E programs that are managed by MAJCOMS and other selected OT&E programs.

d. AFTEC (or the MAJCOM designated to conduct OT&E) will inform the program manager and the using (operating) and supporting commands of deficiences as soon as they are identified. The implementing command will initiate action to resolve the deficiencies in coordination with AFTEC and the MAJCOMs.

e. ICBM operational test, Phase I and II, are directed by the Joint Chiefs of Staff and are conducted to determine (Phase I) or verify (Phase II) the weapon system's reliability and accuracy factors for the Single Integrated Operational Plan (SIOP).

17. Conducting a Combined Test Program:

a. Operational testing should be separate from development testing. However, when separate testing would cause a delay involving unacceptable military risk or cause an unacceptable increase in the acquisition cost, combined testing should be considered early in the program planning. The planning should assure that combined testing would fulfill developmental and operational test objectives. If the test program is combined:

(1) The implementing command will prepare the DT&E plan and be responsible for integrating OT&E requirements into a combined test program.

(2) AFTEC (or the designated MAJCOM) will prepare the OT&E plan and forward it to the implementing command for incorporation into the combined program documentation.

(3) AFTEC (or the designated MAJCOM) will coordinate on the combined program documentation to insure that it includes OT&E requirements.

b. In conducting the combined test program, the implementing command provides a test director who is responsible for DT&E , for integrating combined test events, and for insuring that resources are made available to carry out the combined test program. In addition:

(1) AFTEC (or the designated MAJCOM) will provide the OT&E test director who manages the OT&E portion of the combined program. The resources under the operational control of this test director will also be made available to support the DT&E test plan, as specified in the combined test documentation.

(2) The test director and OT&E test director will make available additional support under their operational control as required and as agreed upon mutually.

c. OT&E personnel will participate actively in the combined test to enable the successful accomplishment of OT&E. To avoid duplication of testing, all test data will be made available to participating test agencies, as required to accomplish T&E objectives.

d. To assure an independent operational assessment under combined testing, the combined program documentation may specify that AFTEC or the MAJCOM conduct separate test events when AFTEC (or the MAJCOM) determines that the system's operational capabilities cannot be properly assessed under the combined testing. However, the test director from the implementing command will review the safety aspects of the program.

e. AFTEC (or the designated MAJCOM) will provide to the CSAF a separate operational evaluation of the resultant test information.

f. The implementing command test director of the combined test program is responsible for the safe conduct of all tests. He will have approval authority for all DT&E test events and approval authority to insure that OT&E events comply with safety standards.

SECTION D—ASSIGNMENT OF RESPONSIBILITIES

18. Responsibilities of HQ USAF:

a. Publish the formal Air Force programming and management documentation.

(1) Provide test and evaluation directives via PMDs (including the TEOA) and test directives (TDs); also, assign precedence ratings to all HQ USAF-directed test and evaluation projects.

(2) Establish and publish in appropriate documents the initial critical questions and areas of risk subsequently identified and refined by the implementing command, AFTEC, and the participating commands.

(3) Designate the agencies or commands to be responsible for specific test and evaluation programs, including the extent of AFTEC and MAJCOM participation in FOT&E.

(4) Review (and approve, when specified) system and project documents.

(5) Review test requirements and approve the allocation of HQ USAF-controlled resources; also provide instructions for the disposition and support of test articles in the PMD before the production decision (DSARC III on a major program).

(6) Approve the OT&E Master Program.

(7) Provide to AFTEC (or the designated MAJCOM) the O&S cost estimates for each new system as estimates are developed and refined. This includes adequate detail on the methodology and assumptions to permit the OT&E team to construct appropriate cost elements.

b. Provide an office of primary responsibility for OT&E matters and keep CSAF fully informed as to the needs and accomplishments of OT&E.

c. Resolve any intercommand differences which may exist concerning T&E.

d. Provide draft T&E directives to AFTEC or the appropriate MAJCOMs for comment.

e. Implement follow-up action on test findings, test reports, and evaluation recommendations.

f. Approve the programming of Air Force testing in support of other government agencies (as appropriate) and nongovernment agencies.

19. Responsibilities of the Implementing Command. This command (usually AFSC) will:

a. Perform planning and programming for specified acquisition programs and projects.

(1) Plan, program and budget (according to AFM 172–1) for test resources for T&E. Prepare and coordinate T&E portions of appropriation program documents with all agencies having program responsibilities.

(2) Designate the responsible development test agencies for DT&E in the PMP and related program documentation.

(3) In coordination with AFTEC or the appropriate MAJCOM, establish significant test milestones to be included in the PMP, TEMP, and related program documentation.

(4) As directed by the PMD, prepare a draft TEOA, in coordination with AFTEC and the participating MAJCOMs, and submit it to HQ USAF for approval. AFTEC and the participating MAJCOMs will also provide OT&E objectives to the implementing command.

(a) The approved TEOA, which is disseminated as an annex to the PMD, will list the specific objectives of the T&E program. These objectives will be designed to provide answers to the critical questions and areas of risk stated in the DCP or PM.

(b) The annex then becomes the baseline for test data evaluations.

(5) Provide for contractor participation in test and evaluation as required.

(6) In coordination with the participating test agencies, develop T&E alternatives early in program planning to determine whether separate or combined testing will save time, money, and insure adequacy of testing. When directed, submit recommendations to HQ USAF for review and approval.

(7) Insure that AFTEC and the appropriate MAJCOMs have an early opportunity to study and comment on DT&E of systems identified for possible acquisition.

(8) Program for Joint Test Assembly (JTA) nuclear weapons and warheads, as specified by the MAJCOM.

b. Exercise final responsibility for:

(1) DT&E in the technology base program.

(2) DT&E in all phases of the system life cycle.

(3) Implementing combined test programs.

c. In conjunction with AFTEC and MAJCOMs, identify the critical questions and areas of risk to be addressed as test objectives during T&E, and develop and plan the T&E program to meet the program decision milestones (DSARC milestones for major programs).

d. Insure that T&E planning includes preparation for logistics support of test articles, and assures adequate logistics support for all phases of T&E throughout the entire effort, to include retention as a test article for other testing after program completion.

e. As early as possible before starting full-scale engineering development, prepare the TEMP, detailed test plans, and other program documents; after coordinating these plans and documents with AFTEC and appropriate MAJCOMs, identify and integrate the effort and schedules of all T&E, and, in conjunction with AFTEC (or designated MAJCOM), insure that all necessary T&E is completed before the key decision points; keep the TEMP current; and show the rationale and approval authority for each change in it.

f. Plan and budget for required update or modification of test articles based upon HQ USAF direction.

g. In coordination with AFTEC or the appropriate MAJCOMs, develop and implement an effective data system, analytical techniques, and test procedures to assess design reliability and maintainability and logistic support models.

(1) Collect and process reliability and maintainability data (see AFR 80–5) and provide it to appropriate agencies responsible for evaluating reliability, maintainability, availability, logistics supportability, and O&S cost estimates.

(2) Collect, analyze, and evaluate test data and prepare and distribute reports on developmental tests.

(3) Review test results & reported deficiencies to recommend corrective action.

h. Provide representation and furnish engineering and test support during OT&E until AFLC assumes program management responsibility for the system.

20. Responsibilities of the Air Force Test and Evaluation Center. AFTEC, as the manager of the Air Force OT&E program will (in addition to its responsibilities assigned under AFR 23–36):

a. Plan, direct, conduct, control and independently evaluate the report to CSAF on major and HQ USAF-designated non-major OT&E programs through at least first production article testing.

b. In consonance with their mission responsibilities, insure that Air Force OT&E is effectively planned and conducted.

c. For HQ USAF-designated, MAJCOM-conducted OT&E programs, AFTEC will approve the test plans and comment on the final report, if appropriate. For IOT&E, AFTEC will participate with sufficient activity and program involvement to permit a thorough evaluation of the program. AFTEC will submit an evaluation of the final report to the CSAF, with information copies to the appropriate MAJCOM, the program manager, the HQ USAF OPR for OT&E, and other interested agencies.

d. For MAJCOM-initiated programs, comment as appropriate on MAJCOM test plans and evaluation reports and include appropriate information in the OT&E data file (see below, subpara j).

e. Serve as the principal field command for providing OT&E information to the Secretary of Air Force (SAF) and CSAF in preparation for DSARC or Air Force decision milestone reviews for major programs, other program reviews, and in support of Air Force procurement requests for which OT&E information is statutorily required to be supplied to the Congress (through HQ USAF).

f. Submit for HQ USAF approval the OT&E portions of DCPs, PMs, PMDs, and other appropriate documents with inputs from the MAJCOMs.

g. Accomplish detailed planning and budgeting for OT&E in accordance with AFM 172–1. Furnish the implementing command and other participating commands copies of the detailed planning in sufficient time to permit inclusion of support requirements in their budget.

h. Participate with the implementing command in preparation of the TEMP/TEOA, prepare the OT&E portion of the TEMP/TEOA, and coordinate on the TEMP/TEOA.

i. Provide information on deficiencies, as they occur, to the program manager and to affected MAJCOMs.

j. Maintain an OT&E Master Program, Master Instrumentation/Capabilities Plan/Guide, and a data file on Air Force OT&E programs, as appropriate.

k. Provide copies of planning documents, interim reports, and final reports of electronic warfare—related T&E (including radar cross section tests) to the USAFSS/Air Force Electronic

Warfare Center/SUD for inclusion in the T&E USAF electronic warfare (EW) data bank.

l. Provide operating and support (O&S) cost information resulting from operational suitability testing to agencies responsible for developing, validating, or updating the inputs and cost factors used in O&S cost models. This information will emphasize the test sensitive elements of O&S cost estimates.

m. Identify to HQ USAF those modification programs that will require the satisfaction of OT&E objectives beyond normal modification testing or proofing.

21. Responsibilities of the Major Commands. Each MAJCOM will maintain a command focal point for T&E and perform these functions, as appropriate:

a. Provide operational employment and maintenance concepts for T&E program use in accordance with paragraph 5b above.

b. Identify critical questions and areas of risk (within their cognizance) for DT&E and OT&E for submission to the responsible test organizations.

b. Participate early in the planning and programming of test and evaluations. Provide budget requirements, system test requirements (to include training required for operational personnel), and test article requirements for OT&E to AFTEC on a schedule to support established budget and RFP cycles. Fund for resources as prescribed in AFM 172–1. Participate in preparation of the TEMP/TEOA and in T&E as directed by program documentation (for example, PMDs, PMPs, and HQ USAF TDs).

(1) Review and coordinate on test plans and, as specified (in PMDs, TDs, or approved test plans), provide qualified personnel to the test teams and provide resources to other commands or agencies for the T&E projects.

(2) In coordination with AFTEC and the implementing command, plan and program required manpower spaces to insure that qualified personnel are available for T&E.

d. Provide data on the adequacy of established requirements for manpower and training to operate and maintain the system in its operational environment, with recommendations for establishing or changing Air Force specialties. Also, determine the adequacy of:

(1) Technical data available to support and operate the system.

(2) Health protection, life support, and medical safety procedures, directives, and equipment.

(3) Support equipment (including materials handling equipment).

(4) Facilities programmed and unique or additional requirements essential to successful employment.

e. Collect and process data, using standard Air Force data systems or command-unique systems, to assess reliability, maintainability, availability, logistics supportability, and O&S cost impacts. Standard or specially developed data retrieval and analysis programs will be used for the assessments.

(1) Develop and provide to AFTEC (or the designated MAJCOM) the models, techniques or cost element data used to construct estimates of operating and support costs. These are to be used during OT&E to acquire information which can be used to improve and validate O&S cost estimates and identify system characteristics or deficiencies which impact O&S costs.

(2) Develop and establish procedures to bring about a continuing interchange of information with other commands or agencies.

(3) Provide technical information requested by the testing activity for the planning and conduct of testing.

(4) Provide copies of planning documents, interim reports, and final reports of electronic warfare (EW) related T&E (including radar cross section tests) to the USAFSS/Air Force Electronic Warfare Center/SUD for inclusion in the T&E USAF EW data bank.

f. Review test reports and recommendations, and implement actions on test findings falling within command cognizance.

22. Responsibilities of the Using Commands. In addition to the responsibilities in paragraph 21, the using commands will:

a. Accomplish HQ USAF-designated (or command-initiated) OT&E, with support from the implementing command or participating MAJCOMs.

(1) For HQ USAF-designated OT&E, obtain AFTEC approval on test plans.

(2) Forward reports on OT&E to AFTEC for evaluation, comment and submission to CSAF, as specified in paragraph 26c.

(3) For command-initiated OT&E, prepare and coordinate plans with all participating MAJCOMs; forward test plans and reports to AFTEC for review and comment.

(4) For HQ USAF-designated OT&E, provide a Test Director; also, for AFTEC-conducted OT&E, when requested by the AFTEC commander.

(5) For HQ USAF-designated OT&E, provide O&S cost information resulting from operational suitability testing to responsible agencies

for updating official program O&S cost estimates. Emphasis will be on the elements of these estimates which are test sensitive.

b. Plan, program, budget (according to AFM 172–1), and provide, from within the command, the resources (personnel, equipment, flying hours, operating budgets, and so forth) necessary to accomplish OT&E.

c. Manage that OT&E which primarily concerns operational training; employment exercises, tests undertaken to develop or refine tactics, techniques, procedures, and doctrine; or tests and exercises to establish or verify system reliability and accuracy factors for deployed strategic forces as required by the JCS for the SIOP.

23. Responsibilities of the Air Force Logistics Command. In addition to the responsibilities in paragraph 21, AFLC will:

a. Provide logistic support and planning for test programs.

b. Identify, to the test organization, the test objectives and data requirements in logistic areas for new systems under T&E. Define maintenance test objectives in relation to the initial collection and preparation of equipment allowances list of tools, test sets, and calibration equipment requirements.

c. In coordination with AFTEC, identify to HQ USAF those modification programs that may require the satisfaction of OT&E objectives beyond normal modification test or proofing.

d. When designated as a supporting command, participate on test teams for planning, conducting, and reporting determination of logistics supportability for DT&E, and verify or assess these factors for OT&E.

(1) During MAJCOM-conducted OT&E, participate on the test team as necessary to assess reliability, maintainability, availability, supportability and, when applicable, O&S cost impacts.

(2) When DT&E and OT&E programs are separate, provide a special assistant for integrated logistics to the test director (from the implementing command) during DT&E, and to the OT&E test director, to assist in making a valid assessment of logistics supportability.

(3) For an AFTEC-conducted OT&E program, provide membership on, and a special assistant for integrated logistics to chair, the Logistics Supportability Evaluation Team (LSET). This Team is responsible for assessing logistics supportability and to the extent testing permits, the validity of operating and support cost estimates.

(4) In a combined test program, the LSET will assist in DT&E and OT&E, as mutually agreed upon by both test directors.

e. Assist AFTEC (or if appropriate, the MAJCOM), in developing definitions, criteria, and computational procedures for use in making OT&E assessments of reliability, maintainability, availability, supportability, and O&S cost impacts. Through evaluating the developmental, operational, and related test and management data, provide input to test reports on logistics supportability, and system effectiveness and suitability.

f. Participate with the test organization in assuring that failure rate data are directed to all appropriate agencies by priority procedures; also:

(1) Incorporate the resultant changes into logistics planning for the operational inventory as early as practicable.

(2) Insure that procedures are established for timely feedback of T&E-generated reliability and maintainability (R&M) data into the maintenance-planning and provisioning procedures.

g. Provide engineering support (including Air Force and contractor personnel) during OT&E when assigned program management responsibility.

h. Perform the functions of paragraph 19 when designated as the implementing command.

24. Responsibilities of the USAF Security Service. This agency will:

a. For SIGINT Systems:

(1) Developed by the National Security Agency (NSA) for multiservice (including Air Force) use:

(a) Monitor NSA DT&E and plan, program, and provide for Air Force participation during the NSA planning and conduct the OT&E.

(b) Prepare comments on the NSA operational test reports. These comments, along with a copy of the NSA report, should evaluate the adequacy of NSA testing, discuss any disagreements with the conclusions and recommendations, and describe the action taken to resolve any differences. Forward these comments to CSAF through AFTEC.

(2) Developed by NSA for sole use by Air Force:

(a) Monitor NSA DT&E.

(b) Plan, program, conduct, and report on OT&E. Forward OT&E report to NSA and AFTEC with copies to other interested MAJCOMs and agencies.

(3) Conduct IOT&E or IOT&E portions of combined tests of systems developed by AFSC.

b. For COMSEC Equipment.

(1) Monitor and participate in NSA-conducted development tests of NSA-developed COMSEC equipment proposed for Air Force use.

(2) For NSA-developed COMSEC equipment.

(a) Provide for Air Force participation in joint service DT&E, IOT&E, and combined test programs by planning, programming and coordinating with AFTEC and the participating MAJCOMs-SOAs.

(b) Conduct DT&E and furnish technical advice and assistance to AFTEC (or the using commands, as appropriate) in the conduct of OT&E of systems intended for Air Force use, including the Air Force portion of joint service tests.

(c) Acquire all COMSEC equipment required for Air Force testing.

(d) Evaluate and program logistic support during NSA development testing, DT&E and IOT&E, to provide for continuing logistic support of equipment owned by the Air Force.

(e) Coordinate with NSA on changes required as a result of deficiencies identified during Air Force testing.

(3) Participate with AFSC in DT&E of combined test programs for equipment development and production delegated to the Air Force as outlined in AFM 100–45; conduct the IOT&E for such systems. Service tests of NSA-developed COMSEC equipment are considered combined test programs. Here, NSA uses the term "service test" for testing that the military services perform to verify compliance with their requirements before the major production decision.

c. Conduct all required Air Force TEMPEST testing of classified information processing systems acquired for Air Force use, as prescribed by AFR 100–51.

d. Provide electronic warfare (EW) support as follows:

(1) Establish and maintain the USAF EW data bank according to AFR 55–90.

(2) Provide EW research services to MAJCOMs.

(3) Provide technical assistance to MAJCOMs in planning, conducting, and evaluating tests of EW systems.

25. Responsibilities of the Air Training Command. In addition to the responsibilities in paragraph 21, this command will:

a. Participate in system acquisition from publication of the formal Air Force requirements document through DT&E and OT&E.

b. Prepare a test plan to support AFTEC and MAJCOMs during T&E, provide qualified personnel to test teams as required by PMD's or Test directives, and compile and verify the training data, training programs, curricula, training standards, and activities.

c. Plan, develop, and provide adequate and timely training for personnel to test, operate, and maintain equipment, and, when appropriate, accomplish this according to AFM 50–2, Instructional System Development.

d. Develop tentative specialty training standards for new or revised Air Force specialties from evaluation during testing. Include the evaluation of these standards as a test objective in the ATC portion of the test plan.

SECTION E—ADMINISTRATION

26. Reporting Requirements:

a. T&E Procedures. Reporting requirements are specified here, in AFR 23–36, and in PMDs.

(1) Unless otherwise specified, each test report is to be released for publication no later than 60 calendar days after the final test event is completed. Interim reports may also be published. However:

(a) Each test report must first be reviewed for the proper security classification and assigned the proper distribution statement as required by AFR 80–45.

(b) COMINT, ELINT, and COMSEC final test reports must be distributed as specified in NSA Circular 80–6 (2).

(c) Copies of all other reports must be sent to the Defense Documentation Center, Cameron Station, Alexandria VA 22314 (if it carries a distribution statement A, send 12 copies; if it carries distribution statement B, send 2 copies).

(2) If the testing is conducted as an engineering service, the participating agencies will mutually determine the reporting requirements.

(3) When ICBM tests are conducted at the direction of JCS, submit reports as directed in JCSM 478–75; these reports are controlled and distributed as outlined in AFR 11–11 and JCS policy memorandum 39.

(4) Test reports that provide evaluation data or information relative to competitive procurement will be handled according to AFR 70–15.

b. DT&E Procedures. The implementing command will submit DT&E reports to the HQ USAF OPR, with information copies to AFTEC and participating MAJCOMs.

c. OT&E Procedures.

(1) On each AFTEC-conducted OT&E program, the AFTEC commander will forward the OT&E evaluation report directly to the CSAF, with information copies to the commanders of the participating MAJCOMs, HQ USAF OT&E OPR, and other interested agencies.

(2) On each HQ USAF-designated, MAJCOM-conducted OT&E program, the MAJCOM will forward copies of the evaluation report to the CSAF through the AFTEC commander who evaluates and comments on the report, if appropriate.

(a) The MAJCOM will forward information copies of the evaluation report concurrently to the HQ USAF OPR for OT&E, and to other interested agencies.

(b) The AFTEC commander will forward comments on the evaluation report to the CSAF, with information copies to the HQ USAF OPR for OT&E, to the participating MAJCOMs, and to other interested agencies.

(3) On each MAJCOM-initiated OT&E program, test plans, and evaluation reports are forwarded to the AFTEC commander for comment, if appropriate.

(4) During the conduct of OT&E, any system deficiency will be reported as soon as possible to the implementing and participating commands in accordance with HQ USAF Air Force directives and policies.

27. Authority for Direct Communication. Direct communication is authorized between Air Force Commands and the Army, Navy, Marine Corps, and other Government agencies in implementing this regulation.

28. Document Disposition. Disposition of documentation prescribed by this directive will be made according to AFM 12–50.

29. Funding. Funding for T&E will be in accordance with AFM 172–1.

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

DAVID C. JONES, General, USAF
Chief of Staff

JAMES J. SHEPARD, Colonel, USAF
Director of Administration

SUMMARY OF REVISED, DELETED, OR ADDED MATERIAL

This revision clarifies management relationships and responsibilities between AFTEC, the implementing command, and other commands in the conduct of OT&E and combined development/operational testing (Sections B & D); stipulates the participation early in system development of OT&E personnel (para 2a, (3), 7, 14a(1)); redefines IOT&E as that OT&E conducted prior to the first major production decision, and FOT&E as all OT&E after that decision (para 14); addresses the conduct of ODDR&E sponsored joint Service testing, and applies the principles of the regulation to Foreign Military Sales, where feasible (para 2d (5)); encompasses T&E in simulator and system modification programs (para 2a(3)(d), 6b, 6c); implements the requirement to investigate the appropriateness of multi-service testing and two-sided testing during DCP development (para 5); changes the title of Master Instrumentation/capabilities Program to Master Instrumentation/Capabilities Plan-Guide (para 20j); limits AFTEC's monitorship role (para 20c, 22a(1) and 26c(3); and adds a format for the Test and Evaluation Objectives Annex (atch 3).

GLOSSARY

1. Acceptance Tests. Those tests performed to demonstrate that a specific lot of articles have been manufactured to specification tolerances.

2. Acquisition Process. Normally, it consists of five phases (Conceptual, Validation, Full Scale Engineering Development, Production and Deployment) with key decision points after each of the first three phases. A program may skip a phase, or may have program elements in any or all phases. (See AFR 800–2 for complete explanation.)

3. Air Force Preliminary Evaluation (AFPE). The AFPE is conducted to evaluate the system performance and the technical and engineering potential, identify any gross deficiencies, and determine the degree to which contract specifications are being met (will include an assessment of operational effectiveness and suitability).

4. Availability. Availability is a measure of the degree to which an item is in the operable and commitable state at the start of the mission when the mission is called for at an unknown (random) time (inherent availability) (MIL–STD–721B). For OT&E purposes, availability is considered synonymous with operational readiness.

5. Compatibility. The capability of two or more operational items/systems to exist or function as elements of a larger operational system or operational environmental without mutual interference.

6. Defense Systems Acquisition Review Council (DSARC). An advisory council established by and functioning for the Secretary of Defense (SECDEF) to apprise the SECDEF of the program status and readiness of a major defense system prior to proceeding to the next phase in the acquisition process.

7. Evaluation. The review and analysis of qualitative and/or quantitative data obtained from design review, hardware inspection, testing, and/or operational usage of equipment.

8. First Major Production Decision. The decision to begin production of procurement-funded end items intended for Service deployment.

9. Follow-on OT&E. That test and evaluation which is conducted after IOT&E to continue and refine the estimates made during the IOT&E, to evaluate changes, and to reevaluate the system to insure that it continues to meet operational needs and retain its effectiveness in a new environment or against a new threat.

10. Implementing Command. The command responsible for the acquisition and/or modification of the system, subsystem, or item of equipment.

11. Initial Operational Test and Evaluation (IOT&E). That portion of operational test and evaluation conducted prior to the first major production decision.

12. Interoperability. The ability of systems, units or forces to provide services to, and accept services from, other systems, units, or forces, and to use the services so exchanged to enable them to operate effectively together.

13. Life Cycle Cost. The total cost of an item or system over its full life. It includes the cost of development, production, ownership (operation, maintenance, support, etc.) and, where applicable, disposal (see AFR 800–11).

14. Logistics Supportability. How well the composite of support considerations necessary to achieve the effective and economical support of a system or equipment for its life cycle meets stated quantitative and qualitative requirements. This includes integrated logistics support (ILS) and logistics related O&S cost considerations.

15. Logistics Supportability Evaluation Team (LSET). An AFTEC or MAJCOM OT&E test team activity assigned overall responsibility for preparing a unified assessment of logistics supportability. The LSET is normally chaired by the AFLC Special Assistant for Integrated Logistics and includes representation from the MAJCOMs and other activities having logistics interest.

16. Maintainability. A characteristic of design and installation expressed as the probability that an item will be restored to a specified condition within a given period of time when the maintenance is performed using prescribed procedures and resources. System maintainability may also be expressed in such terms as Mean-Time-to-Repair, Maintenance Manhours per Flying Hour, or Mean Down-Time (see AFR 80–5).

17. Military Utility. A generic term used to describe the value of an item or system with respect to a current concept of operation.

18. Operational Effectiveness. How well the system performs its intended mission in its intended environment, exclusive of system support considerations. Survivability, compatibility, and interoperability may be considerations in evaluating effectiveness.

19. Operational Suitability. How well the system performs its intended mission when operated and maintained by military personnel in the field. This normally includes capability, availability, reliability, maintainability, logistics supportability, training requirements, and an assessment of operating and support cost characteristics.

20. Pilot Production. A limited production run of a new system which has completed engineering development and for which the capability to mass produce the item for inventory needs to be demonstrated.

21. Preproduction Article. An article which is in final form, employs standard parts (or nonstandard parts approved by the agency concerned), and is representative of final equipment.

22. Program Manager. The single Air Force manager during any specific phase of the acquisition process (Program Manager or System Manager/ Item Manager).

23. Prototype. First full-scale functional form of a new system, subsystem, or component, on which the design of subsequent production items is patterned.

24. Qualification Tests. Those tests that verify the design and manufacturing process and thus provide a baseline for subsequent acceptance tests. Qualification testing is conducted to accomplish two separate functions:

a. Preproduction Qualification Tests. A series of formal contractual tests are conducted to insure design integrity over the specified operational and environmental range. The test should be conducted on prototype or preproduction items fabricated to the proposed production design specifications and drawings. These tests are a constraint to production release on programs which involve volume acquisition. The preproduction qualification tests include those contractual reliability and maintainability demonstration tests required prior to production release.

b. Production Qualification and Acceptance Tests. A series of formal contractual tests are conducted to insure the effectiveness of the manufacturing process, equipment, and procedures. These tests are conducted on a sample taken at random from the first production lot, and are repeated if the process is changed significantly and when a second or alternate source is brought on line.

25. Reliability:

a. Hardware Reliability. Hardware reliability is the probability that a part, component, subassembly, assembly, subsystem, or system will perform for a specified interval under stated conditions with no malfunction or degradation that requires corrective maintenance actions (AFR 80–5).

b. Operational Reliability. The probability that an operationally ready system will perform as required to accomplish its intended mission or function as planned (AFR 80–5).

26. Supporting Command. A command that provides direct support to a system or test program. Normally refers to AFLC, USAFSS, and ATC in their role as logistics support and training organizations.

27. 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.

28. T&E Master Plan (TEMP). This is an overall test and evaluation plan designed to identify and integrate the effort and schedules of all T&E to be accomplished in connection with an acquisition program.

29. Test and Evaluation Objectives Annexes (TEOA) To PMD. The TEOA provides a common baseline for the independent evaluations by the implementing command and AFTEC or operating/supporting commands. The TEOA delineates discrete objectives of the overall test program. The attainment of these objectives will provide the answers to the critical questions and areas of risk presented in the DCP.

30. Test. Any program or procedure which is designed to obtain, verify, or provide data for the evaluation of: research and development (other than laboratory experiments); progress in accomplishing development objectives; or performance and operational capability of systems, subsystems, components, and equipment items.

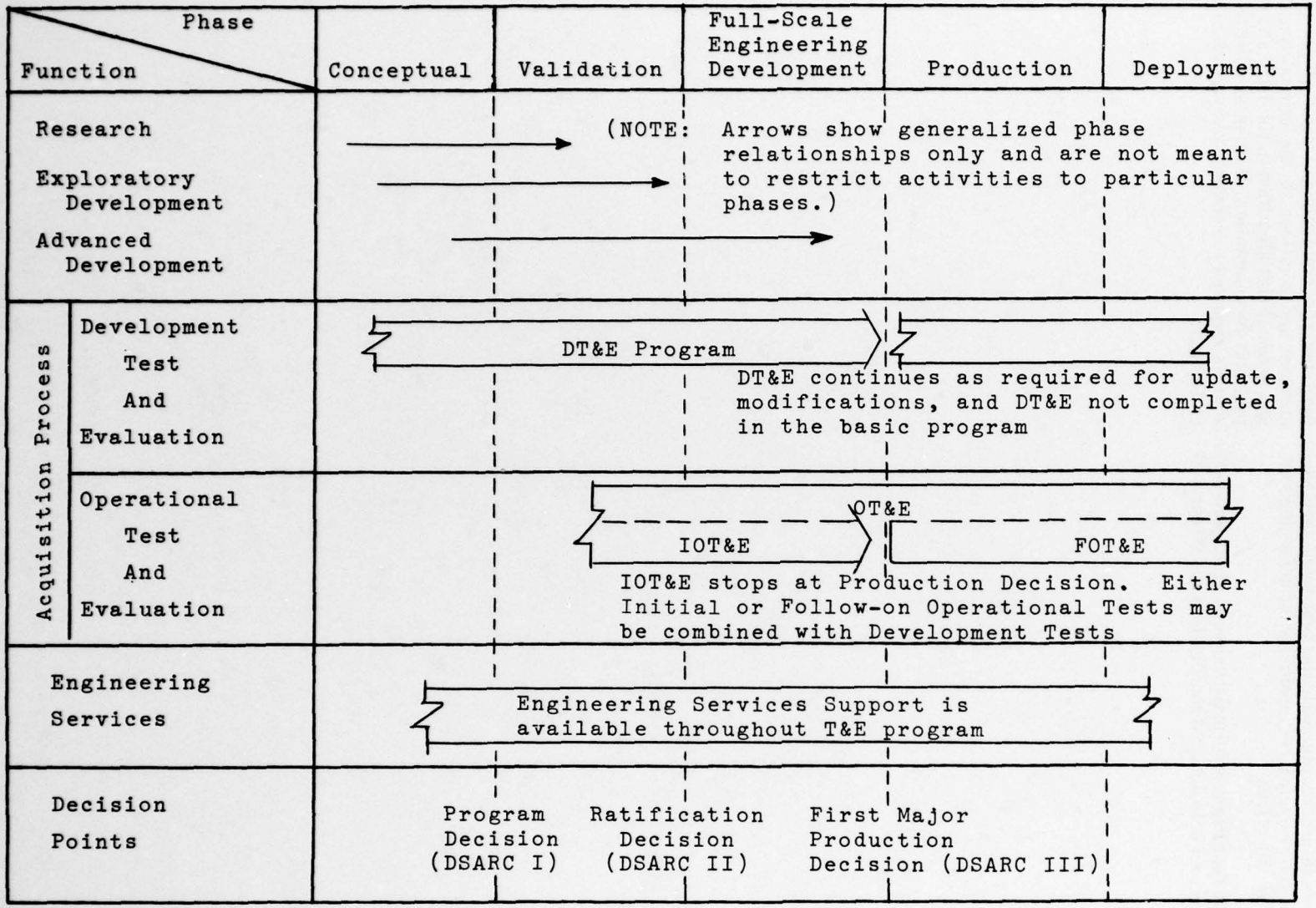
31. Test Directive. A HQ USAF document which provides direction and guidance for OT&E for those cases not covered by PMD.

32. Test Director. A person assigned to conduct a

test in accordance with the test plan, and who exercises overall responsibility for achieving test plan objectives.

33. Test Plan. A formal document which provides the complete detailed coordination and integrated plan for the time phased task of providing answers and solutions to the critical questions and areas of risk identified in the DCP and other program documentation. It must also list the resources required to conduct, analyze, and report on the test.

TEST AND EVALUATION ACTIVITIES



TEST AND EVALUATION OBJECTIVES ANNEX (TEOA)

Explanation. The TEOA is intended to be a brief statement of specific T&E objectives that will serve as the baseline for all evaluations of DT&E and OT&E programs. In order to insure that all of the commands and agencies involved are directed toward the same objectives in their evaluation, the TEOA will be employed when more than one command or agency is testing or evaluating a system. Its only purpose is to furnish a clear and concise statement of the T&E objectives. (Organizational relationships and responsibilities are outlined in the PMD or Program Management Plan, as required, but not in the TEOA.)

Since satisfaction of most DT&E and IOT&E objectives is requisite to the first major production decision, the TEOA should delineate which objectives must be accomplished before production decision, and which after. At the time the TEOA is first issued, FOT&E objectives may be fully developed. Subsequent updating of the TEOA may then be required to complete the statement of FOT&E objectives.

The following outline serves as the basic format for the TEOA:

TEST AND EVALUATION OBJECTIVES ANNEX (TEOA) FOR (Subject System)

I. INTRODUCTION: An introductory statement should firmly establish the intent of the TEOA; for example, "This Test and Evaluation Objectives Annex (TEOA) establishes the specific objectives of the overall test and evaluation program in terms of the operational and engineering criteria for judging of the system's performance. It will be the common baseline for independent evaluation by all participating organizations. Achievement of the objectives in this TEOA will provide answers to the critical questions and areas of risk stated in Decision Coordinating Paper (or PMD) #___, (date)."

II. SYSTEM PARAMETERS: Describe those key system characteristics and performance parameters which will be tested and evaluated. Do not attempt to list all parameters that will be measured in the test program.

III. THE CRITICAL QUESTIONS AND AREAS OF RISK: (Both development and operational) to be addressed by test and evaluation may be included here if not already specified in the PMD.

IV. GENERAL OBJECTIVES: Brief summary statements of both DT&E and OT&E objectives *may* be provided here. Include objectives to be addressed both by contractor-conducted and Air Force-conducted tests.

V. SPECIFIC OBJECTIVES: List the specific objectives for DT&E and OT&E which address those critical issues and areas of risk stated in the DCP and PMD which can be resolved by testing. Clearly indicate the relationship between the issues/risks and the test objectives. (Do not enumerate test methods or procedures, these will be established in the TEMP.) Some DT&E and/or OT&E not critical to the production decision may occur after the first major production decision. Therefore, indicate (either by asterisk, or if required for clarity, by sectioning) which objectives must be satisfied prior to the production decision. In cases where several production decisions are required, e.g., (DSARC IIIA, B, or C) indicate which objectives are to be satisfied prior to each decision.

APPENDIX B

DEPARTMENT OF THE AIR FORCE
Headquarters US Air Force
Washington DC 20330

AF REGULATION 23-36

19 July 197

Organization and Mission—Field

AIR FORCE TEST AND EVALUATION CENTER (AFTEC)

This regulation establishes AFTEC as a separate operating agency (SOA) and explains its mission, organization, relationships, policies and responsibilities.

1. Mission. The mission of AFTEC is to manage the Air Force's Operational Test and Evaluation (OT&E) program in accordance with Air Force policy. AFTEC operates within the Air Force concept of T&E as outlined in AFR 80-14 and serves as the principal field command for providing OT&E information to the Air Force Chief of Staff (CSAF) and Secretary of the Air Force (SAF). AFTEC plans, directs, controls, and independently evaluates and reports on OT&E as well as recommends OT&E policy to HQ USAF.

2. Organization. Principal AFTEC organizational elements include:

a. AFTEC-assigned personnel consisting of test directors, managers, monitors, and other specialists.

b. OT&E teams consisting of AFTEC-assigned personnel and other resources (for example, personnel, forces, and equipment) provided by major commands (MAJCOMs) according to HQ USAF program management directives (PMDs) or test directives (TDs).

3. Command Relationships:

a. The AFTEC commander commands a SOA and reports directly to the CSAF.

b. MAJCOMs support AFTEC as directed by HQ USAF PMDs, TDs, and other directives.

c. AFTEC obtains support from Air Force, DOD, and governmental ranges or centers in the same manner as other governmental users of such facilities.

d. The AFTEC commander has command jurisdiction over those personnel, facilities, property, and funds organic to AFTEC. He also exercises operational control over OT&E team resources during specific OT&E programs. However, commanders of MAJCOMs retain command jurisdiction over those resources provided AFTEC OT&E teams, except as specified in paragraph 4g for key OT&E team personnel.

Supersedes AFR 23-36, 1 January 1974. (For summary of revised, deleted, or added material, see signature page.)
OPR: XOOE
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4. Policies. The following policies apply in the management of the Air Force OT&E program.

a. OT&E is conducted to estimate the military utility, to include the operational effectiveness, operational suitability and operating and support cost information (as defined in AFR 80-14) of a system, subsystem, or equipment item (hereinafter referred to as a system) and to identify any operational deficiencies of the system.

b. OT&E in the system acquisition process is normally conducted in phases:

(1) Initial OT & E (IOT&E). While all OT&E objectives should be thoroughly examined during IOT&E, its primary objective is to estimate the military utility (as well as identify operational deficiencies) of the system. Since such an estimate is a major factor in the first major production decision, it should be thorough enough to provide a reasonable assessment of the system's military utility in its intended operational environment. IOT&E begins as early as possible in a system's life cycle and ends with the first major production decision. However, when any future system application, threat, tactic, or doctrine requires a major modification to the system, the modification program itself may be considered as new system development and require IOT&E leading to a production decision.

(2) Follow-on OT&E (FOT&E). The objective of this phase is to refine the estimates of a system's military utility as the basis for further possible production decisions, system configuration changes, and operational use. FOT&E begins after the first major production decision and may continue throughout the system's life cycle. Pilot or preproduction test items (if they are reasonably representative of the expected production items) will be used should conditions warrant continuing OT&E before production items are available. The principal AFTEC role in FOT&E is that of furnishing the degree of independent operational testing and evaluation required to refine initial estimates made in IOT&E. These refined estimates are essential to support further production decisions and system configuration changes after the first major production decision. The extent (phasing and activity level) of the AFTEC role in FOT&E projects is determined by HQ USAF.

c. OT&E is conducted and reported in consonance with the system's operational employment and maintenance concepts prepared by MAJCOMs and other agencies and approved by HQ USAF.

d. AFTEC conducts OT&E on all major and designated non-major Air Force systems. Major systems are those designated by the Secretary of Defense (SECDEF) for his decision to initiate or increase program commitments. Designated non-major systems are usually identified by the HQ USAF for special attention, but AFTEC may also recommend those non-major programs which AFTEC should conduct. HQ USAF assigns OT&E programs that AFTEC conducts as well as some OT&E programs that MAJCOMs conduct. Other OT&E programs are conducted by the MAJCOMs when directed by their commanders.

e. AFTEC's responsibilities do not include operational training, employment exercises, tests undertaken primarily to develop or refine tactics, techniques, procedures, and doctrine or to establish or verify system reliability and accuracy factors for deployed strategic forces as required by the Joint Chiefs of Staff for the Single Integrated Operational Plan. Information derived from OT&E may be used by the MAJCOMs to refine tactics.

f. In addition to its own system acquisition programs, the Air Force conducts joint OT&E of systems (including DDR&E-sponsored joint OT&E) with other Armed Services and governmental agencies, as directed by HQ USAF. AFTEC manages the Air Force's portion of this joint OT&E, using organic capabilities and other resources provided by MAJCOMs according to USAF directives. The AFTEC commander establishes liaison with the other services and governmental agencies as he deems appropriate to conduct designated joint OT&E programs.

g. On AFTEC-conducted OT&E programs, the AFTEC commander designates a test director to head OT&E teams. The AFTEC commander appoints test directors from (1) AFTEC personnel or (2) MAJCOMs with the concurrence of the MAJCOM commander. The AFTEC test director exercises operational control over OT&E team resources during a specific OT&E program and may exercise authority to rate the performance of key MAJCOM OT&E test team personnel with agreement of the affected MAJCOM.

h. While OT&E must ensure an independent assessment of a system's military utility, operational testing is often conducted concurrently with development testing. At such times, the planning for OT&E and DT&E must consider integration into a combined test program. In this situation, the implementing command (normally AFSC) provides a Test Director and has responsibility for DT&E and for integrating the combined test events.

(1) On AFTEC-conducted OT&E programs, the AFTEC commander assigns a Test Director for OT&E who manages the OT&E part of the combined test and has operational control over the OT&E team and the OT&E portion of the test program.

(2) The resources under the operational control of the AFTEC OT&E Test Director will, in addition to supporting the OT&E effort, be made available as specified in the combined development/operational test plan, to support the DT&E portion of the combined test program.

(3) Additional DT&E support from the OT&E test team is made available, as required, by mutual agreement of the DT&E and OT&E test directors.

(4) AFTEC prepares the OT&E part of the combined plan, coordinates on the entire plan, and ensures that OT&E does not unnecessarily duplicate any programmed DT&E.

i. When combined testing does not permit AFTEC to properly assess the operational capabilities of the system, AFTEC may conduct some separate test events to ensure an independent operational assessment. These separate OT&E requirements are defined as an integral part of the combined test. The AFTEC commander has full responsibility for managing and funding such activities.

j. For HQ USAF-designated, MAJCOM-conducted OT&E programs, AFTEC will participate sufficiently in test planning to permit approval of the test plans and comment on the final report if appropriate. For IOT&E, AFTEC will participate with sufficient activity and program involvement to permit a thorough evaluation of the program.

k. To assure adequate familiarity with systems that are expected to reach OT&E, AFTEC will participate in, or observe, the pre-DT&E development of major and other HQ USAF-designated systems to the extent agreed upon by AFTEC and the implementing command, or as directed by HQ USAF. This may include locating AFTEC team personnel at the system program offices (SPOs), or with SPO personnel at contractor facilities.

5. Responsibilities:

a. AFTEC provides OT&E information to the SAF and the CSAF in preparation for DSARC and Air Force decision milestone reviews for major programs, and as otherwise requested by HQ USAF. The Commander of AFTEC may also request attendance at specific program reviews. Such attendance is contingent upon approval by HQ USAF.

b. AFTEC provides OT&E information to support those Air Force procurement requests for which OT&E information is statutorily required to be supplied to Congress.

c. AFTEC recommends to CSAF the accomplishment of adequate OT&E.

d. AFTEC maintains a data file on all Air Force OT&E programs which includes relevant information from system DT&E, OT&E, joint tests, Weapon System Evaluation Programs, and other appropriate test and evaluation programs for Air Force and DOD evaluation.

e. AFTEC assists HQ USAF in the preparation of the annual Program Objective Memorandum (POM) and budget by maintaining and updating annually the following documents:

(1) The OT&E Master Program which identifies systems to be tested, the scope and objectives of OT&E, milestones, participating commands, and estimates of resources required for the period of the Five-Year Defense Program.

(2) The OT&E Master Instrumentation/Capabilities Plan/Guide which identifies existing and required (funded and unfunded) Air Force OT&E instrumentation and facilities.

f. AFTEC prepares, for HQ USAF use and approval, the OT&E portions of Decision Coordinating Papers (DCPs), Program Memoranda, PMDs, Area Coordinating Papers, and similar DOD documentation including critical questions and areas of risk to be addressed in OT&E.

g. The AFTEC commander is responsible for OT&E funding which includes:

(1) Funds "for AFTEC support (overhead costs)." These costs include such items as pay for civilian personnel, as well as travel, transportation, per diem, rents, "facility projects by contract," contractual services, supplies, and equipment necessary to accomplish AFTEC's mission.

(2) Funds (R&D) to support specific IOT&E programs, both AFTEC-conducted and other MAJCOM-conducted (per AFM 172–1, Vol I).

(3) Funds (O&M) to support specific FOT&E programs and OT&E for one-of-a-kind systems such as simulators and Class IV & V modification programs which HQ USAF has directed AFTEC to conduct (per AFM 172–1, Vol I).

NOTE: Procurement of actual test items, flying-hour costs of supporting aircraft, munitions, and regular pay of personnel are not included in AFTEC's funding responsibilities except when required by the DOD uniform funding policy for T&E.

h. On AFTEC-conducted OT&E programs:

(1) The AFTEC test director assigns specific tasks to OT&E team members and directs and controls test operations.

(2) The OT&E teams plan, conduct, evaluate, and report on assigned OT&E programs. Reports are submitted by the AFTEC commander directly the CSAF with copies provided to commanders of appropriate MAJCOMs.

(3) AFTEC participates with the implementing command (normally AFSC) in preparing the T&E Master Plan (TEMP)/Test and Evaluation Objectives Annex (TEOA) and prepares the OT&E portion of that TEMP/TEOA and coordinates on the TEMP/TEOA.

i. On HQ USAF-designated, MAJCOM-conducted OT&E programs:

(1) AFTEC must approve all test plans before they are implemented (except as stated in paragraph 4e). To facilitate approval of the MAJCOM test plan, AFTEC participates, in formulating all MAJCOM documentation, test orders, and so forth, associated with IOT&E and appropriate FOT&E programs (see 4b(2)). Additionally, under this category, if an operational test program is combined with a development test program, AFTEC approves the IOT&E portion of and coordinates on the combined test program documentation.

(2) Reports of these tests are submitted to the CSAF through the AFTEC commander for evaluation and comment on IOT&E and other appropriate OT&E programs. Copies of the AFTEC commander's evaluation and comments are provided to commanders of appropriate MAJCOMs, the HQ USAF OPR for OT&E, and other interested agencies.

j. On MAJCOM-initiated OT&E programs: AFTEC comments, as appropriate, on test plans and evaluation reports and includes appropriate information in the OT&E data file (reference paragraph 5d).

6. T&E Waivers. In the case of major programs, any waiver of the T&E outlined in the approved DCP is granted only by the Secretary of Defense. For programs directed by a program memorandum (PM), waiver of T&E outlined in the PM may be approved by the Secretary of the Air Force or a designated Assistant Secretary. For other programs, waiver of HQ USAF-approved T&E objectives may be approved by HQ USAF. Approved waivers are documented in the appropriate program directives.

7. Reports. Reports published by AFTEC will be submitted by AFTEC/CC to the participating MAJCOMs, to the HQ USAF OPR for OT&E, to other interested agencies, and to CSAF when appropriate. Categories of reports published by AFTEC are:

a. **Status Reports.** These reports provide periodic (weekly, monthly, etc) information or important test findings.

b. **Quarterly Report.** This report, normally a letter report, will provide information on appropriate major and designated non-major programs for senior management level review.

c. **Interim Report.** This report is written at the request of HQ USAF when required for a major program milestone or if operational test findings result in a significant impact on the test program.

d. **Final Report.** This report presents the final test results.

8. Direct Communication. Direct communication is authorized between the Commander, AFTEC, and the commanders of other USAF commands, other government agencies, the Office of the SECDEF, and other Armed Services on matters pertaining to AFTEC responsibilities.

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

DAVID C. JONES, General, USAF
Chief of Staff

JAMES J. SHEPARD, Colonel, USAF
Director of Administration

SUMMARY OF REVISED, DELETED, OR ADDED MATERIAL

This revision clarifies management relationships and responsibilities between AFTEC, the implementing command, and other commands in the conduct of OT&E and combined development/operational testing (para 2, 3, 4, 5, & 8); stipulates the participation, early in system development of OT&E personnel (para 4j); redefines IOT&E as that OT&E conducted prior to the first major production decision, and FOT&E as all OT&E after that decision (para 4b(1) and (2)); addresses the conduct of ODDR&E sponsored joint Service testing (para 4f); outlines the revised OT&E funding policy applicable to AFTEC (para 5g); requires AFTEC to provide information to SAF and CSAF in preparation for decision milestone reviews for major programs (para 5a); limits AFTEC reviews of MAJCOM conducted programs to IOT&E and selected FOT&E (para 4b and j); and changes the title of the OT&E Master Instrumentation/Capabilities Program to the OT&E Master Instrumentation/Capabilities Guide/Plan (para 5e(2)); defines the authority, distribution, and categories of AFTEC OT&E reports (para 7).

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