

VOLUME IV
FLIGHT TEST MANAGEMENT

CHAPTER 2
TEST PLANNING

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TEST PLANNING

2.1 INTRODUCTION

We must never make test and evaluation (T&E) an end unto itself. T&E is a subset of engineering. Regardless of who conducts the tests, makes the evaluations, and how the test results are used for program approval, T&E must be structured to take its input from and give its output to engineering. It must be tailored to the technical issues of the particular endeavor it is supporting whether it be an R&D experiment, an operational test, a first article test or even an in-house maintenance test. Our customers, the Defense establishment, and the public cannot afford T&E programs that are fully standardized, stand-alone and are planned to prove everything. T&E must be judiciously planned to ensure it is efficient and cost effective.

The following sections will introduce the acquisition process and discuss test planning from both a mechanical and philosophical approach. The final section outlines the mechanics of planning the USAF Test Pilot School test management project. The appendices contain documents, forms, and samples to simplify the TPS test management projects as well as instruct.

2.2 AIR FORCE TEST AND EVALUATION POLICY BACKGROUND

The test and evaluation (T&E) of aircraft and air weapons systems can be traced directly to the contract awarded the Wright brothers in 1908. This document specified a craft capable of lifting two men with a total weight of 350 pounds, carrying enough fuel for a flight of 125 miles, and flying 40 mph in still air. It outlined tests to assure this capability.

In 1934, the Baker Committee (formed to study all aspects of the Air Corps) recommended that a separate branch be established for research and flight testing. In 1941, helped by the availability of the Choctawhatchee National Forest, an air proving ground was established in the area that is now Eglin Air Force Base. Disputes over the jurisdiction of the area with the Department of Interior delayed rapid progress of the Air Proving Ground until the spring of 1942. Progress was further delayed as World War II focused attention on total

weapons production and the training, equipping, and deployment of combat forces. New weapons often saw their first extensive tests in the field, and concepts and doctrine for employment were developed as a result of the day's losses. Under these conditions, a strictly disciplined test and evaluation effort by the Air Proving Ground was practically impossible.

Still, by March 1942, as a part of the reorganization of the Army Air Corps, the Eglin organization was redesignated the Air Corps Proving Ground Command. By 1943 it had ordnance detachments in Maryland, Indiana, and Arkansas. It also had an electronic proving ground in Alabama and an Arctic, Desert, and Tropic Information Center.

At the same time, the Army Air Forces School of Applied Tactics was forming to test the tactical suitability of equipment the Proving Ground had found to be operationally suitable. Thus two of the basic tasks of T&E were recognized and independent organizations were established to assess them. Prior to this time, nearly all T&E was performed at Wright-Patterson Field as part of the procurement process. T&E at Wright-Patterson was necessarily oriented toward development and satisfaction of contract specifications.

Following World War II and the creation of the U.S. Air Force, the Air Proving Ground Command retained its mission as an independent testing agency reporting directly to the Air Force Chief of Staff. It drew its manning from operationally experienced people. Tests were designed and executed in as near the anticipated operational environment as could be simulated. Tactics development was part of the test when possible.

The Air Proving Ground Command flourished and grew until by the mid 1950s it consisted of approximately 11,000 personnel. Additional forces were introduced on a temporary basis to perform tests. It had an extensive inventory of the latest aircraft and equipment. However, much of its efforts appeared to be diverted to its periodic fire power demonstrations. With this growth and high visibility, the Air Proving Ground Command became vulnerable to its critics. Charges that it was too big, too cumbersome, and slow to respond to developers, users, and the Chief of Staff brought a reorganization in 1957. It was reduced to Center status, 4000 personnel were reassigned, and it was made subordinate to Air Force Systems Command. It quickly lost its capability to do effective independent T&E. Eventually, the Air Proving Ground Center was combined with the Armament Development and Test Center.

At the same time, responsibility for the funding, planning and conducting of Air Force operational T&E was transferred to using commands. No provision was made for the separate funding of operational T&E and the function was absorbed into Operations and Maintenance funding, vulnerable to every operational squeeze for manpower and money. Thus operational T&E became fragmented as each using command pursued its own perceived interests.

Concurrently, the Air Force developed a highly formalized testing procedure and related it to the weapons acquisition and deployment schedules (not the other way around). Testing was divided into three separate categories. Category I tests were performed by the contractor, often at his own facility, and devoted primarily to verifying technical performance of subsystems. Category II testing was the responsibility of Air Force Systems Command and was usually carried out by a joint effort of Air Force and contractor personnel. Testing was designed to validate technical performance against specification. The using command and AFLC were to monitor the testing in Category I and II, but neither participated. Category III was conducted by the using command with early production equipment. This gearing of category testing to acquisition cycle presented little opportunity for operational test and evaluation results to influence the production decision. During the 1960s, the press of supporting commitments in Southeast Asia led to a greater use of concurrency in the acquisition process. This involved greater use of high-risk fixed-price contracts in which development and production were defined in a single effort. Such arrangements called for commitments on performance, schedule, and price before development began. This was to become known as "total package procurement."

An inherent problem with the "total package" concept was that weapon systems were delayed from operational employment by performance, reliability, and maintenance problems discovered after they were deployed. Delays in performance achievement often resulted in a compression of schedule that decreased adequate development testing and practically eliminated operational testing.

By 1970, system failures, high cost of procurement, and extensive post-production modifications began to draw deserved criticism from Congress and DOD. These agencies began advocating establishment of an independent testing agency that could stop production until tests verified performance and reliability requirements.

The current trends in T&E can best be traced to the July 1970 Report of the Blue Ribbon Defense Panel. The panel recommended that: (a) responsibility for T&E should be assigned to an Assistant Secretary of Defense for Test and Evaluation; (b) a separate funding program element should be established for T&E and; (c) a Defense Test Agency should be set up to supervise the whole T&E effort.

The General Accounting Office viewed a number of Air Force programs. They concluded that most programs had inadequate test plans. T&E was not generally accomplished in a timely and effective manner and the value of test reports was diminished by inadequate planning and implementation. More significant to policy was their conclusion that complete and adequate test data was not available to decision makers at key points in the acquisition cycle.

The Air Force brought the matter under study first by the Bolender Committee, and in 1971, by a Test Concept Review Board. Both committees generally supported previous criticisms that the operational test and evaluation program within the Air Force could be improved for more responsiveness to the decision maker's needs.

Congress got into the picture in 1972 with Public Law 92-156. This law requires "a written report regarding development and procurement schedules for each weapon system for which fund authorization is required and for which any such funds are requested in such budget." Further it requires, "Beginning with calendar year 1973, there shall be included in the report data on operational testing and evaluation for such weapon systems for which funds for procurement are requested."

With this congressional emphasis, the Office of Management and Budget issued firm policy (Circular A-109, 5 Apr 76) to be followed by all executive branch agencies in the acquisition of major systems. DOD implemented this policy with DODD 5000.1, DODI 5000.2, and DODD 5000.3.

DODD 5000.1 details the DOD systems acquisition policy. The acquisition cycle begins with identification of an operational with mission need (i.e., kill tanks at night, defend the east and west coasts from bombers, etc.) This need normally comes from a using command (TAC, SAC, MAC, ATC, etc.) and should be stated in as general terms as possible. This need is formalized via the coordination and publication of a Statement of Operational Need (SON). After further coordination and evaluation, the Air Staff (HQ USAF) issues a Mission

Needs statement (MNS) for all SONs expected to lead to the acquisition of a major system. The MNS is "attached" to the Air Force Program Objective Memorandum (POM) which is essentially nothing more than a budget request. When the Secretary of Defense issues an Acquisition Decision Memorandum indicating his concurrence with the need, the program is born (ONCE FUNDS ARE MADE AVAILABLE).

With money, the program enters the concept exploration phase. During this phase Requests for Proposals (RFPs) are issued to contractors for them to explore ways to satisfy the particular need. The Systems Program Office (SPO) and the Program Manager are designated at the beginning of the concept exploration phase. The Program Manager convenes a initial Test Planning Working Group (TPWG) composed of all interested players. The TPWG constructs a Test and Evaluation Master Plan (TEMP) that outlines the overall T&E plan in general terms. After appropriate data is available, the Program Manager prepares a System Concept Paper (SCP) that recommends a concept to answer the need (i.e., kill tanks at night with air-to-ground missiles). The SCP must pass through the Defense System Acquisition Review Council (DSARC) which will recommend approval or disapproval to the Secretary of Defense (OSD). When OSD approves the concept, Milestone I has been reached. The system then enters the demonstration and validation phase.

The demonstration and validation phase is where fly-offs occur. The TPWG is reconvened, and a revised TEMP is written. Test planning, flying, and reporting are done at the local level (i.e., AFFTC). From the test results a Decision Coordinating Paper/Integrated Program Summary (DCP/IPS) is submitted by the Program Manager for DSARC review and OSD approval. When OSD picks a winner, Milestone II has been reached. The system then enters the full-scale development phase.

Once again, a TPWG is called together and a new TEMP is written. T&E is accomplished and reports written to provide data for a production decision (Milestone III). The production decision (once made at the OSD level), is now made by the applicable service secretary. After the production decision, T&E mostly consists of evaluating modifications.

The above described acquisition process summarizes DODD 5000.1 and DODI 5000.2. The Air Force implemented DOD 5000.1 and DODI 5000.2 with AFR 800-2. DODD 5000.3 deals with T&E within this process. Specifically, "Test and evaluation shall begin as early as possible and be conducted throughout the system acquisition process to assess and reduce

acquisition risks and to estimate the operational effectiveness and operational suitability of the system being developed." The Air Force implemented DODD 5000.3 with AFR 80-14.

Testing to "...assess and reduce acquisition risks..." is called Development Test and Evaluation (DT&E). This testing is conducted by the implementing command, normally AFSC. Testing to "...estimate the operational effectiveness and operational suitability..." is called Operational Test and Evaluation (OT&E). The Air Force Operational Test and Evaluation Center (AFOTEC) conducts OT&E for all major systems IAW AFR 980-14. AFOTEC is an independent organization reporting directly to the Air Force Chief of Staff. Follow-on OT&E for non-major systems is sometimes conducted by the using command. AFR 80-14 defines OT&E conducted before the production decision as Initial Operational Test and Evaluation (IOT&E) and OT&E conducted after the production decision as Follow-on Operational Test and Evaluation (FOT&E).

2.3 TEST PLANNING PROCESS

A successful test program begins with good planning. If the plan is comprehensive and concise with a clear understanding of questions to be answered, the actual testing and report writing will be straightforward. This means that you, as a project manager, must spend a good deal of time and effort planning. Unfortunately, you will rarely be given adequate time. Therefore, it is essential that you understand the test planning process so you can plan efficiently and effectively.

Overall program management rests with the SPO. They take the program through the system acquisition cycle. Test data is needed for the various milestone decisions, but the SPO has no inherent capability to do testing. Therefore, each program has a Responsible Test Organization (RTO) assigned. The RTO designs and conducts tests and reports back to the SPO. Participating Test Organizations (PTOs) may be assigned to assist the RTO by providing resources and support that are beyond the RTO's capability. Support agencies assist each of these organizations with common tasks. Specific RTO and PTO responsibilities are described in AFR 80-14/AFSC Sup 1.

RTOs are appointed by AFSC/XT (with the concurrence of the SPO). Typical RTOs are the 6510 Test Wing (Edwards), the 3246 Test Wing (Eglin), the 4950 Test Wing

(Wright-Patterson), or some other test organizations based on the nature of the program. Normally at this time, PTOs are also appointed.

Each acquisition program will contain some overall guidance for the test and evaluation effort. Normally, this guidance will be in the form of a TEMP that is written by a TPWG. The TPWG is convened by the Program Manager (the SPO director) and normally includes representatives from the RTO, PTOs (if applicable), SPO, contractor(s), AFLC, AFOTEC, using command(s), and other involved agencies.

The SPO formally requests test services by sending a Program Introduction letter with a Program Introduction Document (PID) to the RTO's program office (i.e., at Edwards and Eglin the office is called "Plans and Programs"). The RTO program office will ask the local Project Manager (PM) to define this program for them in RTO terms; Request for Test Concept. The Test Concept should indicate everything the RTO Project Manager needs to satisfy the objectives. If the objectives are not crystal clear, the RTO must get them clarified. Based on the Test Concept, the RTO program office will internally coordinate an effort to list the existing and needed resources and capabilities required to accomplish the test objectives. They will conduct a mirror process and request internal statements of capability, letters of intent to provide services, etcetera and respond to the SPO (often referred to as the "customer", but in reality, the SPO is responding to their own "customer") with an overall Statement of Capability (SOC).

The SOC is nothing more than a cost estimate of what the organization perceives as needed and is capable of doing. If the customer(s) concurs with the SOC, they will forward funds for test planning, conduct, and reporting. The product that the customer is ultimately paying for is a test report (which normally includes a formal briefing). The relationship between an RTO and PTO is virtually the same as between a SPO and RTO.

Normally, one person at the RTO (or PTO) is responsible for the test planning, conduct, and reporting. That person is usually the Project Manager (PM). The next section will discuss the principles that this person must apply in order to effectively plan the test so that conduct and reporting can be accomplished smoothly and efficiently.

2.4 PLANNING A TEST

DT&E must determine the degree to which contract specifications have been met. But that is not enough. There are two basic questions which must be addressed in development testing:

- (1) does the equipment meet specifications and;
- (2) does the equipment do what it was intended to do?

We may not always be able to obtain clear answers to the second question, particularly in early tests of complex systems, but we must keep the question in mind.

The specifications in the early design stages of some systems may be based on experience and engineering judgment. They may not necessarily guarantee that the intended mission can be accomplished. If we concentrate on testing for specification compliance only and lose sight of mission suitability, we could find ourselves downstream with a system that meets specification's beautifully, but will not do the mission. In this case we've fallen into Pitfall Number 1.

In a black and white world, development tests would be conducted under completely controlled conditions and operational testing would be free-play. However, in the real world neither of these extremes is fully obtainable. Remember that in order to be a valid test it must be a repeatable test and one must control conditions to obtain repeatable results. If you can't obtain repeatable results, you don't know what results you have. If tests indicate that the system meets specifications, but you can't get the results in a retest, you don't know whether specifications were indeed met or whether external influences produced the results.

How much testing should you do? A tough question. The operational aircrew, your ultimate customer, may hold two separate and conflicting perceptions of you. While you're testing and retesting, the aircrew in the field (who desperately needs the system), thinks of you as Nero, fiddling while Rome burns. The same individual (seeing himself on the firing line doing his duty for God and Country), who receives a system that doesn't work as advertised, thinks of you as another Washington bumbler who keeps sending him pieces of junk. You will find yourself under conflicting pressures:

- (1) to get the system developed and deployed;

- (2) to ensure that the system will do its intended mission; and
- (3) to maintain credibility with the user.

The adequate level of testing is a judgement call. You must weigh the various factors that are involved in making this determination. Some of the primary factors involved are test results to date, technological risk involved, and the urgency of the requirement. The more testing you do (not necessarily the more data you generate), the more confidence you have that you will deploy a good system. The less testing you do, the greater the risk that you'll deploy a system that won't work as well as it should. The happy medium is hard to find.

Testing is very expensive in both time and dollars. Anything that is expensive can be wasteful if not used properly. Program decisions depend heavily upon test RESULTS. Note the word RESULTS. The number and duration of tests, the test procedures, and the test environment are all important in establishing the validity and confidence level of the results.

In writing a test plan don't get so involved with the trees that you lose sight of the forest. The first critical step in test planning is to clearly identify the questions that must be answered and the results that the test should produce. The PID and TEMP should identify critical issues. You must clearly identify these issues and questions if you're going to structure a test that will provide the answers. Otherwise you're groping through the trees toward Pitfall Number 2: test completed, masses of data in hand, and no questions answered.

If you are getting the impression that backwards test planning is recommended, you are right. If you have the questions and issues the test must address clearly in mind, then and only then will you be in a position to make realistic assessments of the data needed to answer the questions and resolve the issues. Raw data will frequently require data reduction and the application of analytical or statistical techniques. We want to produce results that are clear and meaningful in ordinary language. We also want to produce sufficient data to provide a realistic confidence level that the results reflect the true system performance. We are dealing with three interrelated questions:

- (1) how many raw data points do we need?
- (2) how are we going to reduce the raw data? and
- (3) what analytical method will we use?

Determining the answers to these questions is an interactive process. Good answers to these questions are important. They help avoid Pitfall Number 2 and also permit efficient test planning. Ideally, we'll test enough to collect just the data we need. In real life, we'll probably throw in a pad to ensure having sufficient data, while avoiding the expensive collection of extraneous data.

Now, with a handle on the raw data we need, we can take another step backwards and determine how we'll collect the data. The nature and quantity of the data should lead us naturally to the most reasonable collection method. We will want hard copy of some nature. Data acquisition methods vary in capacity, cost, and quality from high-speed, multichannel magnetic tape to a stubby pencil. Quality, in this context, means resolution. Required test results, test/detection equipment, and the recording medium should all be consistent. If the test results are meaningful only to the nearest 0.5 volt, it's wasteful to measure and record to a 0.001 volt. On the other hand, it should be obvious that if fine resolution is required, both measurement and recording devices must provide it.

Our next backward step is to determine data points and recording times. We may require data from a given point only during portions of the test. We may need continuous data. In determining data points, watch out for Pitfall Number 3: test/recording equipment or procedures contaminating test results. Measuring the parameters of an electronic circuit is fairly straightforward. Be careful that you don't become complacent. You can tap into a data collection point (both physically and electrically) and introduce unknown and undesired influences on system performance.

Stepping another pace to the rear, we can now determine the necessary test procedures. Knowing the data required and how to collect it, we can formulate a scenario that will produce the necessary data.

Procedures boil down to what, when, where, and how. In developing step-by-step test procedures, we must also identify who. Some procedures must run in sequence; others can be run simultaneously. People are a major expense in any test, so we want to make best use of this resource. We can keep the number of people to a minimum by careful planning.

A mental walk-through (a deliberate step-by-step examination of each sequence in the test in the test scenario) also enables us to identify, one at a time, any special test equipment that we might need. This mental walk-through also gives us a clear idea of how the test

item(s), test equipment, and recording equipment all fit together. Most important, it provides us the information needed for the final step backward to site selection and test setup. With an image of how everything fits and operates together, the design of the test setup is simple and straightforward. With the entire test in focus, we can identify site requirements including physical parameters and required support facilities. Selection then becomes a simple matter of identifying (and scheduling) the most convenient site which meets all requirements.

The above sequence of backward planning steps is summarized as follows:

- (1) Identify questions to be answered or critical issues to be addressed.
- (2) Envision the test results needed to answer/resolve the questions and issues.
- (3) Determine the raw data requirements and the data reduction and analytic methods to be used in producing the required results.
- (4) Determine what resolution is required.
- (5) Identify data points, data collection, and data capture methods.
- (6) Determine the test procedures.
- (7) Determine personnel requirements; how many people at what points doing what things.
- (8) Mentally walk through the test.
- (9) Design the test setup and make a site selection.
- (10) Write the test plan.

A final note on test planning -- avoid Pitfall Number 4: undue optimism. Undue optimism, particularly with respect to test scheduling, can create a lot of problems. Allow sufficient time. Anticipate, particularly in the early development cycle, that testing will identify problems. Problems normally mean delay. If you're lucky, the delay may be short. On the other hand, the time to find and fix a fault could take several days (or weeks) which would require a suspension of the test. In any case, the fix may invalidate portions of the testing completed, which would require some amount of retesting. Don't plan on failure, but don't schedule on a nothing-can-go-wrong basis either. Remember Murphy's Law.

One final noteworthy pitfall has to do not only with the planning of a test, but also with its conduct and reporting. Pitfall Number 5: voluminous charts, graphs and endless tables of data can be used to clearly demonstrate the authenticity of a bunch of nonsense.

2.5 TEST MANAGEMENT PROJECTS

Your test management project is the "graduation exercise." The key word is management. Within the constraints of school capabilities, the project requirements for planning, documentation, conduct, and reporting will closely mirror the real world. Since AFFTC is the closest world, its procedures will dominate. They are, however, typical of other centers.

The project begins when the TPS Test Management Branch (USAFTPS/STT) receives a Program Introduction Document (PID) from the customer through the staff project monitor. The staff project monitor is used at TPS to fill in for positions not covered and to assist the test team in managing their project. In real world test units there will not be a staff monitor to assist, but there probably will be a consultant of some type. A Program Introduction letter accompanying the PID will be forwarded to the student Project Manager (PM) along with the Request For Test Concept. The PID should contain objectives for your test. If it doesn't, contact your staff monitor immediately, as you need to know where you are going if you expect to make progress towards it. You will need to refine the objectives.

Next the PM and student test team prepare a Test Concept. It is prepared in accordance with appendix A of this text and AFFTCR 27-4. It consists of a cover letter with two attachments. The first attachment is an AFSC Form 5341 and the second attachment is a milestone chart (AFSC Form 103, which may be modified as necessary). The Test Concept is forwarded to USAFTPS Program Analyst in the Resources Branch (USAFTPS/CCR) and serves to identify resources required to obtain the test results required to answer the critical questions identified in the PID. The Test Management Branch (USAFTPS/STT) may ask you to route your Test Concept through your Staff Monitor and/or STT. For major projects, AFFTC Program Office may serve in this capacity. The Program Analyst will solicit Statements of Capability from each agency you have requested support from in your Test Concept, and coordinate the development of a Project Directive. You should have contacted each of these support agencies already. USAFTPS/CCR determines the cost (in dollars and cents) of the required support. If the cost is within the school's (and/or customer's) budget, the concept will be approved. Otherwise, the concept will have to be revised and the Project Directive will be delayed.

By now, a project folder should have been developed. Appendix B contains cover pages for each of the six sections. Use these or make copies then all you have to do is fill up the folder as you collect documents. The project folder is very valuable so don't lose it.

The student PM then schedules a TPWG meeting. The PM should invite representatives from all agencies from which he/she anticipates support, plus any other individuals he/she deems necessary. Before your TPWG, you should have available a fairly complete test plan draft. The experts are at the TPWG to assist in finalizing your plan, not to write it for you.

The next step is to write the final draft of the test plan. It should be easy. At this point, you already know your specific test objectives, how you plan to conduct the test, what support is needed, and who will provide it. You could not have prepared a realistic Test Concept without this information. It now becomes a matter of writing it all down in the proper format. The TPS format is contained in Appendix C. It closely matches the AFFTC format. Remember, a test plan should be comprehensive enough to allow flight test personnel, previously unfamiliar with the test, to conduct the test and safely satisfy all objectives. You need to be familiar with the following references:

a. USAFTPS Operating Instruction (OI) 51-10, Curriculum Flight Test Plans. This regulation specifies the general content of student test plans and specifies review and approval actions. In general, if your test program is judged to be low risk, the approval authority rests with the TPS Commandant. Otherwise, the plan must be approved by the AFFTC/CC, after approval by the USAFTPS/CC and 6510 TESTW/CC.

b. AFFTCR 127-3, Safety Planning for AFFTC Tests. Every test plan must include and AFSC Form 5028 (and AFSC Form 5028a if required) as the last appendix.

c. AFFTCR 80-1, Test Plans. Every test plan must include a comment concerning OPSEC and COMSEC. These statements should be among the items included in the Introduction Section.

d. AFSCP 127-2, Flight Safety Planning Guide for Flight Testing.

Next, you will present your plan to a combined technical and safety review board to ensure that adequate planning and preparation have been accomplished prior to submitting the plan to USAFTPS/CC (or AFFTC/CC, if required) for final approval.

The technical review board (TRB) starts with a briefing from the student test team. The briefing should include a summary of general and specific test objectives, rationale for the

plan, and proposed test conduct. USAFTPS OI 51-10 contains valuable information on the conduct of the SRB and should be consulted. Following the briefing, an informal discussion / question and answer period is conducted addressing the test objectives, status of preparations and planning, predicted test results, action taken to minimize risks, emergency procedures, go and no-go criteria, alternative courses of action, and other items important to test planning. Obviously, the test team that has already thought through these questions and included the answers in the test plan and briefing will be better prepared for the technical review. The test plan may be approved as presented, or the TRB president may dictate modifications. After making any required modifications, the test plan is submitted for final coordination and approval. To expedite approval, you should outline required modifications on the coordination page.

The safety review board (SRB) will normally start immediately following the TRB. The board is chaired by a member of the AFFTC safety office (AFFTC/SE). The purpose of the safety review is to identify hazards generated by the test and to ensure that adequate action is taken to eliminate or control these hazards to an acceptable level of risk. The board will also advise the Commandant and other supervisors of the degree of risk that the planned test will present. MIL STD 822A defines a mishap as an unplanned event or series of events that result in death, injury, occupational illness, or damage to or loss of equipment or property. Loss or damage to equipment that results from intended functioning is not considered. A hazard is defined as an existing or potential condition that can result in a mishap. The hazard may be a result of personnel error, environment, design characteristics, procedural deficiencies, or system or component failure or malfunction. MIL STD 822A provides the following definitions as a qualitative measure of hazards.

Category I (Catastrophic) - May cause death or system loss.

Category II (Critical) - May cause severe injury, severe occupational illness, or major system damage; or requires immediate action to prevent a Category I hazard.

Category III (Marginal) - May cause minor injury, minor occupational illness, or minor system damage; or requires action to prevent a Category II hazard.

Category IV (Negligible) - Will not result in injury, occupational illness or system damage.

The PM is responsible for ensuring that the AFSC Form 5028 (and 5028a if necessary) is prepared for presentation to the safety review board. The SRB will discuss the hazards and minimizing procedures that are on the AFSC Form 5028a, Test Hazard Analysis (THA). The board can make changes, deletions or additions to the THA. A review of AFFTCR 127-3 and USAFTPS OI 51-10 will save you a lot of hassle at the board, and prevent a lot of repeat paperwork. Once the SRB has made changes (if any) to the THA, an overall risk assessment will be made. Then the board will adjourn. During the SRB it is important that someone from the test team be appointed to take notes. After any required changes are made and the remarks section is filled in, all members of the SRB must sign the Form 5028. You are cleared to begin flight testing when USAFTPS/CC (or AFFTC/CC) signs the Form 5028 (assuming the test plan is signed). Since any changes to the test plan require a repeat of this entire process, it is worth your while to do it right the first time.

A statement concerning scheduling is now warranted. Just because you don't have a signed test plan and/or Form 5028 doesn't mean you can't SCHEDULE flights. AFFTC (as most other centers) requires lead time. You need to have your requests for airplanes and any other resources into USAFTPS scheduling at least TWO WEEKS in advance. Always remember that it is very easy to cancel at the last minute, but almost impossible to add-on at the last minute. Keep in mind that Senior Management's ultimate STOP to prevent flying a test they haven't approved is the flying schedule, so it is in your best interests to be open and up-front about your scheduling needs and your intentions. Your project start time will be fixed by the curriculum integrated schedule. Do not wait until after your TRB/SRB to schedule missions.

During the active testing phase of any project, briefings will have to be given in order to "keep the boss informed." At AFFTC these are called Program Assessment Reviews (PARs). You will be required to brief the status of your project to the Commandant at approximately the 25% and 75% completion points of the active test phase. These briefings are normally held at the weekly ops meetings. Appendix D contains detailed instructions. The slide formats in Appendix D are intended for reproduction.

Also, during the active testing phase of any project you will have to "keep the customer satisfied." Your staff project monitor will play the role of SPO director. Keep your staff project monitor informed throughout the course of the project, but it is especially

critical during the periods leading up to the TPWG and after active testing but before the final report.

The final products of your efforts will be an oral and a written report. The report formats will be specified in the Phase Planning Guide. The written report format may vary, depending upon the needs of the test requestor ("customer"). The intent of the oral report is to simulate briefing a general officer on the RESULTS of your test as concisely and clearly as possible.

2.6 TEST MANAGEMENT PROJECT SUMMARY

Outlined below is a one page summary (checklist) of what happens and what you need to accomplish for your test management project.

1. Varied and extensive coordination will occur to identify a project for the Test Management Phase.
2. A TPS staff monitor will be assigned by Director of Student Training.
3. You should receive a PI, PID, and Request for Test Concept.
4. You will formalize objectives and prepare a Test Concept with attachments.
5. You will contact support agencies and determine their capabilities related to your test.
6. You will coordinate Test Concept package and forward to Program Analyst.
7. You will start test plan draft.
8. PA should solicit Statements of Capability based on your Test Concept and prepare project directive.
9. You will schedule a TPWG and invite experts.
10. You should receive a Project Directive authorizing you to expend funds against your project.
11. You will complete your test plan draft and distribute copies to TPWG members.
12. You will conduct your TPWG.
13. You will revise your test plan draft, submit it for grading, and distribute copies to TRB/SRB members.
14. You will conduct a TRB and SRB.
15. You will make required corrections to your test plan and coordinate the test plan for test plan approval.
16. You will prepare a Safety Review approval package and coordinate it for approval.
17. After your test plan and safety package are approved you may conduct your tests.
18. You will conduct two PAR briefings for the Commandant.
19. You will coordinate any test plan and safety paperwork changes IAW existing procedures.
20. After you have finished testing, you will close out your safety paperwork.
21. You will schedule and attend a report pre-writers meeting with 6510 TW/DOE.
22. You will prepare a draft final written report.
23. You will schedule a Technical Coordination Meeting (TCM) with 6510 TW/DOE and distribute draft copies of your report to participants one week prior.
24. You will conduct a formal oral presentation of your results.
25. You will hold a TCM to assist in preparation of your final written report.
26. You will submit a final written report that you are proud of.
27. You will say "Whew!, I'm glad that's over."

GOOD LUCK!!!! ENJOY YOUR PROJECT.

REFERENCES

1. St Louis, Terence R., A Concept for Air Force Testing from Background to Development 1934-1975, Air Force Test and Evaluation Center, Kirtland AFB NM, April 1976.
2. Acquisition Program Management, AFR 800-2, Department of Defense Directive 5000.1 - Major Systems Acquisition and Department of Defense Instruction 5000.2 - Major Systems Acquisition Procedures.
3. Test and Evaluation, Department of Defense Directive 5000.3 - TEST AND EVALUATION (includes AFSC Sup 1 and AFFTC Sup 1).
4. Lewellyn, Edwin D., USAF Test and Evaluation Policy, Air Force Institute of Technology, Wright-Patterson AFB OH, November 1977.
5. Reynolds, Matthew T., The Identity of T&E, in ITEA Newsletter, October 1981.
6. Research and Development Test Plans, AFFTCR 80-1.
7. Flight Safety Planning Guide for Flight Testing, AFSCP 127-2, Safety Planning for AFFTC Tests AFFTCR 127-3.
8. Curriculum Flight Test Plans, USAFTPS OI 51-10.
9. Processing Test and Test Support Requests, AFFTCR 27-4.
10. AFFTC Program Assessment Review, AFFTCR 800-23.

APPENDIX A

TEST CONCEPT
INSTRUCTIONS AND SAMPLES

USAF TEST PILOT SCHOOL

TEST CONCEPT

For a given test project, you, as project manager, will receive a Program Introduction letter. Attached to it will be a Request For Test Concept and Program Introduction Document. Your tasking will be to prepare a Test Concept Letter with appropriate attachments. The attachments are:

1. TEST CONCEPT/TEST RESOURCE REQUIREMENTS - AFSC Form 5341
2. Notes to AFSC Form 5341
3. PROGRAM SCHEDULE - AFSC Form 103 (May be modified)

After you submit your Test Concept to your Program Analyst, you should receive Statements Of Capability (commitments in writing) from each organization you requested support for in your Test Concept. After all Statements of Capability have been reviewed, Management will issue a Project Directive authorizing support for your project. This Project Directive is your authority to expend funds against your project (start your test). However, this is not authorization to start flying.

NOTE: A blank modified AFSC Form 103 is included to simplify your work!



DEPARTMENT OF THE AIR FORCE
USAF TEST PILOT SCHOOL
EDWARDS AIR FORCE BASE, CALIFORNIA 93523

174

REPLY TO
ATTN OF:

USAFTPS/ STA (Capt Shelley, 7-3691)

2 Sep 87

SUBJECT:

RF-4C/F-16 Agility Metrics Test Concept

TO:

USAFTPS/ CCR

1. The test concept for the USAFTPS Class 87A RF-4C/F-16 Agility Metrics Evaluation is attached.
2. The general objective of this evaluation is to identify flight test maneuvers, data measurement and analysis techniques, and data presentation formats to quantify aircraft agility.
3. The requesting organization is USAFTPS/ STT Major Steven J. Pitotti, USAF, is the user project officer. The RF-4C/F-16 test team is the responsible test organization for this limited test program.
4. The following members of USAFTPS Class 87A have been assigned to the test team:
 - a. Test Team Director - Captain Shelley (USAF)
 - b. Project Safety Officer - Captain Jimenez (USAF)
 - c. Project Pilot - Captain Cantoni (IAF)
 - d. Project Engineer - Captain Cate (USAF)
 - e. Project WSO - Captain Buechter (USAF)
 - f. Project Engineer - Captain Zanatta (IAF)
5. A total of 20 RF-4C and 10 F-16 sorties are planned. 14 RF-4C sorties will initially be used to develop and validate flight test and data reduction techniques. The remaining six RF-4C sorties will be used to qualitatively verify previous results and to assess the correlation of agility metrics with pilot ratings of closed loop operational handling tasks. The F-16 sorties will be flown last, and will be used to demonstrate and validate the universality of the results.

Ran Shelley

RAN E. SHELLEY, Capt, USAF
Project Manager

2 Atch

1. AFCS Form 5341
2. AFSC Form 103

TEST CONCEPT/TEST RESOURCE REQUIREMENTS

TITLE		RF-4C/F-16 Agility Metrics Evaluation (Agile Thunder)		JON 996TPS	
PREPARED BY (Name, organization symbol, extension)		Capt Ran Shelley USAFPTS/TENX 7-3691		DATE	
SUPPLEMENT (Origin symbol, if applicable)				87/88	
REVISION				2 Sep 87	

PI BOX	AIRCRAFT	NUMBER	Week Starting:													
			Sep 14	21	28	Oct 5	12	19	26	NOV 2	9	16	23	30		
1100	RF-4C (Note 1)	FLIGHTS			10	4	4	2								
1400		FLYING HOURS			10.0	4.0	4.0	2.0								
6000	F-4 (Note 2)	FLIGHTS	2	1	2											
		FLYING HOURS	2.4	1.2	2.4											
3400	T-38 (Note 3)	FLIGHTS				5	4	1								
		FLYING HOURS				5.0	4.0	1.0								
1100	F-16B (Note 4)	FLIGHTS				1	3	3	1	2						
		FLYING HOURS				1.0	3.0	3.0	1.0	2.0						
		FLIGHTS														
		FLYING HOURS														

OTHER REQUIREMENTS																
2600	SPORT/DARC Radar (Note 5)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2400	Discrete UHF/TM Freq (Note 6)			X	X	X	X	X	X	X	X	X	X	X	X	X
6000	Genisco DAS Tapes (Note 7)			X	X	X	X	X	X	X	X	X	X	X	X	X
6000	Simulation Time (Note 8)	X														
2100	SPORT Positioning (Note 9)			X	X	X	X	X	X	X	X	X	X	X	X	X
2200	TPS Telemetry Rooms (Note 10)			X	X	X	X	X	X	X	X	X	X	X	X	X

AFSC 5341
Notes for AFPTC Form 402:

1. RF-4C flights will be used for FTT validation and primary data acquisition. Telemetry aircraft required (Tail # 850, 744, 941). SI preflight required.
2. Two F-4 sorties (CF-4/CF-5) are needed to complete aircraft checkout for one of the project pilots. Three F-4 sorties will be flown with an IP to certify test team pilots for FTT's.
3. T-38 sorties will be used for targets during closed loop tracking tasks for four of the F-16 sorties and six of the RF-4 sorties.
4. F-16B sorties will be used for FTT verification and data collection in an airplane other than the primary test aircraft. F-16 must be instrumented for quantitative results. Must have access to F-16 instrumentation data reduction facilities.
5. SPORT/DARC needed for traffic advisories and deconfliction.
6. Discrete frequencies needed for a 2 hour block during TM operations.
7. Two Genisco magnetic tapes needed to replace two cassettes that are broken.
8. Six one hour simulation periods in the NASA F-18 simulator to practice FTT's. Point of contact: Maj Harry Walker, TEXR, 7-3457.
9. SPORT positioning information may be required for incremental pitch angle FTT.
10. TPS telemetry room required for all RF-4 test sorties.
11. F-4 IP required for aircrew check out and clearing test team pilots to fly new FTT's.
12. T-38 IP required for formation flight lead.
13. F-16 IP required for F-16 sorties.

PROGRAM SCHEDULE		SYSTEM NO. (PROJ)	SUBSYSTEM	TYPE	AS OF	FINISH DATE
L I N E	PROGRAM MILESTONES	START DATE	MONTH		WEEK	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						

AFSC - ANDREWS AFB MD 1977

AFSC FORM NOV 77 103 PREVIOUS EDITIONS ARE OBSOLETE. Overprinted for USAFPTS training purposes

APPENDIX B
PROJECT FOLDER
INSTRUCTIONS AND COVER PAGES

USAF TEST PILOT SCHOOL

PROJECT FOLDER

You will be required to maintain a project folder which must be available to any staff supervisor at all times. Since these may be real world projects and, in all cases, are projects of interest to supervisors outside the School, questions get asked and must be answered. Use a brown, six-divider folder. Cover pages for each of the six sections are included here.

Your project folder is not to be confused with a Safety Review approval package. These are two separate items. Do not send your project folder with your safety paperwork for senior management approval, as you will probably never see your other project material again. See the Unit Test Safety Officer for more guidance.

BACKGROUND

SUPPORTING DOCUMENTS

RECEIPTS

NOTES

TELECONS

MEMOS FOR RECORD

MEETING ATTENDENCE / MINUTES

CORRESPONDENCE

MANAGEMENT INFORMATION

PROJECT DIRECTIVE

STATEMENTS OF CAPABILITY

TEST CONCEPT (LTR WITH AFSC Forms 5341 & 103)

PROGRAM INTRODUCTION LETTER

REQUEST FOR TEST CONCEPT

PROGRAM INTRODUCTION DOCUMENT

PROJECT ASSIGNMENT LETTER

SAFETY REVIEW

AFSC FORMS 5028b

AFSC FORMS 5028a

AFSC FORM 5028

SAFETY REVIEW STAFF SUMMARY SHEET

SRB MEETING MINUTES / ATTENDANCE

TEST PLANNING

TEST PLAN AMENDMENTS

TEST CARDS

TEST PLAN

AFSC FORMS 5232b (Drafts, final, and amendments)

TRB MEETING ATTENDANCE / MINUTES

TPWG MEETING ATTENDANCE / MINUTES

BRIEFING SLIDES

FINAL ORAL PRESENTATION

PAR

SRB

TRB

TPWG

FINAL REPORT

Appendix C

Expanded USAFTPS Test Plan Format
(Instructional Version)

AFFTC TEST INFORMATION SHEET (TIS) (Qual TEST PROGRAM)		DATE 29 Jan 92	PAGE 1 OF PAGES
F-15E Qualitative Evaluation		VEHICLE TYPE F-15E	TIS NUMBER
		EFFECTIVITY N/A	REVISION Basic
TIS TYPE <input checked="" type="checkbox"/> PLAN <input type="checkbox"/> PROCEDURAL	LOCATION OF TEST Luke AFB	TESTING ACTIVITY USAFTPS / STB	HAZARDOUS/UNUSUAL TEST No / No

This USAFTPS curriculum test plan was reviewed in accordance with the procedures outlined in USAFTPS OI 51-10 and not specifically in accordance with the instructions contained in AFFTCR 80-1.

(This page is a sample of AFSC Form 5232b, reduced size. The above statement is mandatory for TPS curriculum test plans. The form's actual uses vary from unit to unit and base to base, but for detailed test plans it serves as an overall cover and coordination page. Think of it as a Staff Summary Sheet. "The form should contain background and authority information and should lead the reader to a better understanding of the test." Continue on the back side if necessary. If you have TRB directed changes to your test plan, please outline them here, for the reviewers' and approvers' ease. If you amend your test plan, use another of this same form, annotate the "REVISION" block above accordingly, and write out the changes. In this case, you only need signatures of the affected reviewers and the approver. If the form has insufficient signature blocks for all your reviewers, make additional signature blocks above the pre-printed ones. Please use some discretion. For Qual test plans, overtype the bottom REVIEW block as APPROVE for the second approver.)

PREPARING/COORDINATING OFFICIALS			DATE	CONCUR		COMMENTS ADDED	
ACTION	OFFICE SYMBOL	SIGNATURE		YES	NO	YES	NO
PREPARE	STB						
REVIEW	(Staff Monitor)						
REVIEW	STT						
APPROVE REVIEW	ST						
APPROVE	DO						

(Sample)

TABLE OF CONTENTS

SECTION	PAGE
LIST OF ABBREVIATIONS	3
LIST OF FIGURES	
LIST OF TABLES	
1.0 GENERAL	
2.0 OBJECTIVES	
3.0 ORGANIZATION	
4.0 RESPONSIBILITIES AND SPECIAL SUPPORT	
5.0 SCHEDULE	
6.0 TEST ITEM DESCRIPTION	
7.0 INSTRUMENTATION	
8.0 TEST CONDITIONS, PROCEDURES, METHODS, AND TECHNIQUES ...	
9.0 DATA PROCESSING, REDUCTION, AND ANALYSIS	
REFERENCES	
APPENDIX A (TITLE)	A-1
A-1.0 (TITLE)	A-2
APPENDIX X TEST SAFETY REVIEW AND DOCUMENTATION	X-1
X-1.0 SAFETY CONSIDERATIONS AND PLANNING	X-2
X-2.0 TEST PROJECT SAFETY REVIEW (AFSC Form 5028)	
X-3.0 TEST HAZARD ANALYSIS (AFSC Forms 5028a)	

(NOTE: Safety paperwork is always last appendix)

USAFTPS TEST PLAN FORMAT - Start to Finish!

REMINDER: "Test plans contain sufficient information to directly develop flight test cards and for management to discern the overall technical approach being taken. Therefore, test plans are the key documents that describe the specific tests to be accomplished and how they will be accomplished." AFFTCR 80-1

AFSC Form 5232b

(Used somewhat like a Staff Summary Sheet; to explain the gist of the Test Plan and for coordination. The title should be a thorough representation of the entire test effort. Once a TIS # is assigned the plan is a fixed document and subsequent changes are numbered as revisions. It is common to go to a TRB with REVISION Three in hand.)

TABLE OF CONTENTS

(see attached)

LIST OF ABBREVIATIONS

(These three lists may be on same page, if short)

LIST OF FIGURES

"

LIST OF TABLES

"

1.0 GENERAL

1.1 INTRODUCTION:

(Who, what, when, where, and why)

1.1 BACKGROUND:

(What makes this test worth doing? Mention critical technical issues here or refer to an appendix.)

1.3 RELATED TESTS:

(Past, present, and future)

1.4 SCOPE:

(Simple test or are many organizations involved? What will it take to get the needed data? Mention maximum number of sorties, if appropriate)

1.5 LOCATION(S):

1.6 CRITICAL DATES AND SUSPENSES:

(What are your external time constraints? What does the boss need advance warning for?)

1.7 AUTHORITY:

(Usually Commandant; Also reference JON, PID, and priority)

1.8 SAFETY:

(Short discussion; What rules; Refer reader to last appendix)

1.9 SECURITY: (Look at required regulations and reference them. Partially classified tests need detailed attention here.)

1.10 REPORTING: (To whom? Will it answer objectives?)

2.0 OBJECTIVES (Clearly defined? "Success" criteria outlined for each?)

2.1 GENERAL: (Overall objective for whole program)

2.2 SPECIFIC: (As separate and unique as possible; Quantifiable and answerable; Put some effort here)

2.2.1 -----

3.0 ORGANIZATION (Layout for this section will vary but should cover the listed items in a hierarchical fashion. Including a wiring diagram showing who is making inputs to whom is often helpful.)

3.1 The Requesting Agency is (Customer)

3.2 The Program Office is

3.3 The Responsible Test Organization is (You)

3.3.1 The Project Manager is

3.3.2 The Project Safety Officer is

3.3.3 -----

3.4 The Participating Test Organizations are

3.5 The Support Agencies are

3.6 -----

(WIRING DIAGRAM ??)

4.0 RESPONSIBILITIES AND SPECIAL SUPPORT

(This section is, in some ways, like a contract. Get commitments from outside agencies before listing their responsibilities here.)

4.1 The Project Manager will:

4.1.1 -----

4.X The Project Safety Officer will:

4.X.1 -----

4.X The Participating Test Organization will:

4.X ----- Support aircraft, Simulation, Range, Facilities, Equipment, Photos, Special data handling, etc. are reasonable subjects for the Responsibilities and Special Support section.

5.0 SCHEDULE

(Tables and/or diagrams are helpful)

5.1 GENERAL

5.X ----- Phases, Training, Critical Sorties, Priorities, Built-in Stops, Decision Points, etc. are reasonable subheadings for the Schedule section.

(MILESTONE CHART ??)

6.0 TEST ITEM DESCRIPTION

(Refer detailed descriptions to an appendix)

6.1 PRIMARY TEST ITEM: Production relevance, Software version

6.X Modifications needed to anything, Compromises, Configuration Control

6.X Supporting items, aircraft, or systems

7.0 INSTRUMENTATION

(Refer detailed parameter lists to an appendix)

7.1 GENERAL: Description, Type, Accuracy, Sensitivity, Calibration, Go-no go
(Are instrumentation requirements different for each specific objective?)

7.2 AIRBORNE:

7.3 GROUND:

8.0 TEST CONDITIONS, PROCEDURES, METHODS, AND TECHNIQUES

(This is the heart of the test plan and should directly relate to the objectives. Write out as much as possible, please!)

8.1 GENERAL:

8.1.1 ----- (However you need to start this section)

8.1.X TRAINING: (This is your responsibility! Do some!)

8.1.X SIMULATION: (Everything can and should be simulated to some degree)

8.1.X LIMITATIONS: (Also mention risk of exceeding. Safety hazard minimizing
procedures belong in Safety Appendix)

8.1.X TEST ENVELOPE: (A picture of test and aircraft envelopes is required)

8.1.X TEST POINTS: (Long lists belong in an appendix; need to specify altitudes,
airspeeds, g loads, configuration , etc.)

8.1.X Build-up approach, Priorities, Repeats vs. statistical significance,
Test point abort procedures

8.1.X Process of review before proceeding with subsequent sorties

8.1.X Alternate missions, Back-up options, Weather criteria

8.2 SPECIFIC: Spell these out step-by-step: Conditions, Data band, Procedures, Methods, Techniques, Data collection, Repeatability, In-flight clearance, etc.

(Consider matching to each specific objective)

8.2.1 -----

9.0 DATA PROCESSING, REDUCTION, AND ANALYSIS

9.1 GENERAL: Hand, Recorded, Computer, Format, Data review and turn around, Real time, Data tolerance, Data management

9.2 SPECIFIC: (Consider matching to each specific objective)

REFERENCES AFSCP 127-2, AFFTCR 127-3, USAFTPS OI 51-10, plus many others; Be thorough!

APPENDIX A (Titled to be informative)

APPENDIX X TEST SAFETY REVIEW AND DOCUMENTATION (Always last append.)

X-1.0 SAFETY CONSIDERATIONS AND PLANNING ACCOMPLISHED

X-2.0 TEST PROJECT SAFETY REVIEW (AFSC Form 5028)

X-3.0 TEST HAZARD ANALYSIS (AFSC Forms 5028a)

X-3.1 -----

AFSC Form 5028,
NOTE: A GENERAL section (1.1 - 1.10), OBJECTIVES section (2.1 & 2.2), sections 3.0, 4.0, 5.0, 6.0, 6.1, 7.0, 8.0, 8.1, 8.2, a depiction of the test envelope, and section 9.0 are always required. For other than a Qual test plan IAW TPS OI 51-9, REFERENCES and Safety Paperwork (Appendix X) are always required. TABLE OF CONTENTS is only required if it aids reviewing the test plan. Remaining subheadings and other items are flexible depending on your test, but the material should be present in some form.

APPENDIX D

PROGRAM ASSESSMENT REVIEW
INSTRUCTIONS AND SLIDES

USAF TEST PILOT SCHOOL

PROGRAM ASSESSMENT REVIEW

The purpose of Program Assessment Reviews at the USAF Test Pilot School is to inform the Commandant and selected staff of the status of Test Management projects. You will normally be scheduled to give detailed PAR briefings at approximately the 25% and 75% completion points of the active testing phase, during the weekly Ops Meeting. However, be prepared each week to present your Program Assessment Review or as a minimum quickly discuss program status. PAR briefings should be approximately five minutes long using the following chart/slide formats:

1. Test Objectives. The test objectives should be summarized on the slide shown in Attachment 1 for those persons not familiar with the project.
2. Program Schedule Status. The Standard Program Schedule Status format is shown in Attachment 2. Milestones should be essentially the same as those in the Test Concept. Symbology will be in accordance with Attachment 3.
3. Flying Schedule Status. Flight hour progress should be discussed using the slide format shown in Attachment 4.
4. Management Emphasis. Use the Management Emphasis chart (Attachment 5) when ever a program issue is other than satisfactory. Use more than one chart if required to clarify the situation(s) which has made the program issue marginal or unsatisfactory.

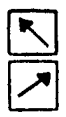
PROGRAM ASSESSMENT REVIEW

OBJECTIVES

PROGRAM SCHEDULE STATUS

PAR

PROGRAM SCHEDULE STATUS PROJECT IDENTIFICATION



DOTTED LINE
INDICATES AS OF DATE

MILESTONES	1979	1980	1981													
	O	M	D	J	F	M	A	M	J	J	A	S	FY BI			
													1	2	3	4
													FY BI			
													1980			
													1979			
CURRENT TASK - ON SCHEDULE	[Gantt chart showing a task bar from Oct 1979 to Oct 1980]															
CURRENT TASK - STARTED LATE, BEHIND SCHEDULE, ANTICIPATED COMPLETION ON SCHEDULE	[Gantt chart showing a task bar starting in Nov 1979 and ending in Nov 1980]															
CURRENT TASK - STARTED ON TIME, AHEAD OF SCHEDULE, ANTICIPATE COMPLETION AHEAD OF ORIG. SCHEDULE	[Gantt chart showing a task bar starting in Oct 1979 and ending in Oct 1979]															
CURRENT TASK - EARLY START, AHEAD OF SCHEDULE, COMPLETION STILL PLANNED ON ORIG. SCHEDULE	[Gantt chart showing a task bar starting in Sep 1979 and ending in Oct 1980]															
CURRENT TASK - EARLY START, COMPLETION PLANNED AHEAD OF ORIGINAL SCHEDULE	[Gantt chart showing a task bar starting in Sep 1979 and ending in Sep 1979]															
CURRENT TASK - STARTED ON TIME, NO PRODUCTIVE RESULTS TO DATE, PLAN TO MEET ORIG. COMP. DATE	[Gantt chart showing a task bar starting in Oct 1979 and ending in Oct 1979]															
FUTURE TASK - STILL ON ORIGINAL SCHEDULE	[Gantt chart showing a task bar starting in Nov 1980 and ending in Nov 1980]															
FUTURE TASK - RESCHEDULED (ORIGINAL SCHEDULE SHOW BY DIAMONDS)	[Gantt chart showing a task bar starting in Nov 1980 and ending in Nov 1980]															
FUTURE TASK - RESCHEDULED (ORIG END/NEW START DATES ARE IDENTICAL)	[Gantt chart showing a task bar starting in Nov 1980 and ending in Nov 1980]															
MILESTONE SCHEDULE - MISSED FIRST TWO SCHEDULES, WILL ALSO MISS THIRD	[Gantt chart showing a task bar starting in Oct 1979 and ending in Oct 1979]															
CURRENT TASK - STARTED IN PRIOR FISCAL YEAR, ANTICIPATE COMP ON TIME	[Gantt chart showing a task bar starting in Oct 1979 and ending in Oct 1979]															
COMPLETED TASK - STARTED IN PRIOR FISCAL YEAR	[Gantt chart showing a task bar starting in Oct 1979 and ending in Oct 1979]															

PAR MANAGEMENT EMPHASIS

DATE _____

PROBLEM

IMPACT

SOLUTION

ACTION TO DATE

GET WELL DATE

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