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Test and Evaluation

OPERATIONAL TEST PROGRAM MANAGEMENT

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This Air Force Operational Test and Evaluation Center (AFOTEC) instruction provides the AFOTEC Commander's minimum mandatory policies and procedures for planning and executing test projects within AFOTEC using Operational Test Program Management (OTPM) and supports AFOTEC Instruction (AFOTECI) 99-103, *Conduct of Operational Test and Evaluation*, 14 May 2004 This document will be supplemented by AFOTEC Pamphlet (AFOTECPAM) 99-105*, AFOTEC Project Management Advisor's Guide,* which provides details on requirements defined in this instruction, as well as other tips and techniques for successful management of projects using AFOTEC's Operational Test Program Management.

1. Operational Test Program Management Overview:

1.1. **Operational Test Program Management (OTPM).** OTPM is an AFOTEC-wide implementation of standardized project management best practices. It is designed to enhance mission accomplishment by applying proven methodologies to the execution of operational test projects. OTPM is also designed to support the information needs of stakeholders across AFOTEC by providing information that can assist in communicating with stakeholders throughout the acquisition community. OTPM provides a standardized management methodology to support the needs of the test director (TD) in the planning, execution and control of AFOTEC projects, effectively manage organizational resources, and improve processes across AFOTEC. In order to best support AFOTEC's efforts, the OTPM network development process should begin as early as practical in an overall program effort.

1.2. **Theory of Constraints (TOC) Project Management.** Theory of Constraints (TOC) Project Management (PM) is the specific methodology that AFOTEC has adopted for project management. It serves to aid planning and execution of realistic and achievable projects and to help decision makers apply limited resources in the most effective way to achieve success across all AFOTEC projects. TOC PM is a structured and disciplined approach to business management, product delivery, and supports product evaluation in AFOTEC. The theory recognizes that the most constrained (limited) resource will set the pace or schedule for a test program or functional process. The constrained

resource for AFOTEC may be a person, a special skill, range availability, etc. TOC provides tools that support decision-making and include test program or functional process networks, strategic planning, and logical analysis. Each tool considers the realities of constrained resources and their impact in the decision-making process.

1.3. **Project vs. Program.** For the purposes of this instruction, a project and a program are defined in the standardized project management terminology. A project is defined as a temporary endeavor designed to create a unique product or service and a program is defined as a group of projects focused on addressing a common need or effort.

2. OTPM in support of AFOTEC's Business Management Process (BMP) and Product Delivery Process (PDP).

2.1. Project Initiation - Discovery and Scope/Cost:

2.1.1. OTPM includes a number of processes used for planning and executing projects. The network development process is the foundation for these efforts and needs to begin as early as practical in a program to ensure the greatest impact on the quality of the final product. During AFOTEC's Discovery and Scope/Cost process, the AS Program Manager (PM), the TD and the core team will begin developing project networks to support the overall test program. An OTPM network for the test project should be developed as soon as the PM determines enough information is available to provide value. This will help ensure that early on in the program the PM and TD have the ability to support the established acquisition program timeframe, assist in identifying the IO and TO need dates, and facilitate the allocation of resources to tasks occurring in discovery prior to IO issuance. The number of project networks developed will be customized to reflect the number of major decisions supported and the complexity of the AFOTEC effort. The IO to TO network will normally be the first project network to be developed. It will serve to guide the PM from the IO through the required actions necessary to develop and coordinate the TO. The key delivery date driving this network will normally be the TO need date. Since the TO need date is an estimate, developed early in a program's inception, the TO need date may shift as more refined project information comes available or as the acquisition baseline is solidified.

2.1.2. Following issuance of the IO, the PM forms a core team to conduct initial planning for the test program using the scope/cost process. The test program's OTPM networks will, at the latest, be developed during this phase and prior to the initial test design (ITD) briefing. This network will cover the planning, execution, and reporting phases of the program and may be broken down into smaller test project networks if needed to address the specific program's needs. The process of developing these networks will normally be led by the detachment test director and will be facilitated by the AFOTEC/XOP Project Management Advisor (PMA) assigned to that detachment. The development of this network will assist the core team in establishing baseline requirements for the project's cost, skill requirements, content, and schedule. Resource estimates documented in an initial Test Resource Plan (TRP) are also formed during this phase through development of the initial test project network and are based on an early determination of major products and phases required to meet the project goals. Project network variants may be developed to explore numerous cost – scope – schedule trade offs based on different test designs.

2.2. Project Planning – Test Concept to Test Readiness Review:

2.2.1. This phase is preceded by the transfer of a project to a detachment via the TO. The test team will continue detailed planning, execution, and control of the project activities. Development of a more detailed test project network is an essential part of this process and should be ongoing during this phase. The test project network is required to support day-to-day program management decisions and becomes the basis of more refined resource and schedule estimates.

2.2.2. As planning proceeds, the test plan and the test project's OTPM network must be updated/ revised to reflect the test team's increased understanding of the test program. Standardized reports have been designed to assist the TD by providing project resource and schedule information needed to effectively identify and justify resources.

2.2.3. OTPM tools can also be used to view and analyze multiple projects in various stages of planning and execution. Detachment or directorate level analysis across project portfolios can provide leadership insight into potential resource or timeline constraints.

2.3. **Project Execution – Test Execution and Test Reporting Phases.** Successful project execution requires the right resources be applied to the right tasks at the right time. The networks provide project information to the TD, test team, and leadership through concise and standardized reports that allow proactive and informed decision-making. The TD will use this information to inform management of project status and to secure buy-in and support of required resources through their leadership as changes occur. The project network is a powerful tool during this phase for assessing and communicating impacts of change to the project. To enable these tools to provide an accurate assessment of the test programs risk and to provide the TD with usable program analysis information, the TD will use the network to track task accomplishment and to assign resources needed to accomplish the tasks. This normally requires the TD to update the network at least once a week. In addition, the TD should use the project network to support execution year budget planning, TRP updates, and spend plan development.

2.4. **Project Closeout - Test Closeout Phase.** This phase includes all activities required to complete the project with an orderly closeout process. During this process the TD is responsible for capturing schedule and resource performance data. The test project network can be used to capture portions of this information as the project proceeds through each phase and at final project closeout**.** By archiving this information, AFOTEC, the Detachments, and the Directorates will have needed baseline information for future metric development and assessment.

3. Roles and Responsibilities:

3.1. **AS Program Manager (PM).** The AS PM builds the IO to TO project network with the assistance of the core team. In addition, the PM facilitates the core team and TD's efforts to build the initial test project network covering the projects planning, execution, reporting, and closeout phases. The AS PM ensures that this initial test project network development process is completed in time to support the ITD briefing.

3.2. **Test Director (TD).** The TD is the key to the successful implementation of AFOTEC's OTPM processes. The TD must monitor and control project schedule, cost, scope, and quality. Effective control of a project depends on measurement of performance data against an approved baseline. One of the primary tools available to measure and communicate this information is the test project network. Facilitated by a Project Management Advisor and assisted by core team members, the TD will develop an OTPM network that reflects both AFOTEC processes and the customized needs of the spe-

cific project. Once the test project network is developed, adjustments can be made (when necessary) to keep the project on course towards achieving the project objectives within the approved baseline. The TD measures project parameters such as actual cost, schedule, and work progress to identify and evaluate any risks or deviations from the project plan. Funding expenditures are tracked against the approved budget plan and overall schedule performance is tracked through evaluation of the project buffers. Required adjustments may be applied at the project level within the approved baseline. The TD can use the test project network to conduct a "what-if" analysis to support the decision-making process whenever changes to the approved plan may be required.

3.3. **Test Team/Core Team.** The OTPM network serves as a communication tool between the test team and core team members. Involvement of the entire core team in building the OTPM network facilitates a common understanding of the test program objectives and the detailed tasks, sequence of tasks, and resources required to execute the program. During the actual execution of tasks, the network ensures all team members know who should be working on what tasks. Core team members can use the OTPM network as a tool to keep up to date with program status and activities.

3.4. **Detachment/Directorate Leadership.** Detachment/Directorate leadership will use the project networks to facilitate program reviews. In addition, it is essential that they participate in the OTPM process by guiding and supporting the test team's efforts. This helps ensure that all projects are planned in accordance with the standardized AFOTEC OTPM processes and reflect those tasks distinctive to the Detachment or Directorate. Detachment/Directorate leadership can use the OTPM networks for multiple purposes. The OTPM network provides an effective communication tool to facilitate understanding of the program and it's overall status. The OTPM network can serve as a key tool in an organization's program review process. The networks also document resource requirements enabling leadership to support their programs with the appropriate personnel and funds. The network further serves as an agreement between the TD and key leaders responsible for managing their personnel on the duration of the program, the timeline for required resource support, and the specifics of individual activities required to ensure completion of the project based on program constraints. Leadership must proactively review the resource requirements across their organization to ensure sufficient resources are available and trained to support their test programs. Where resources will not be available, the networks serve as an advance warning highlighting where leadership action may be required.

3.5. **Headquarters Management/Leadership.** The primary use of the networks at the headquarters' level is to help obtain key event projections and overall program status. Headquarters management/leadership will normally use the project networks to access high level project information. The TD, however, may use the project network to explain to leadership the causes of increased risk and their proposed solutions. This should reduce the information request load on the individual test directors.

3.6. **AFOTEC/XO.** AFOTEC/XO is the AFOTEC Executive Council's agent for OTPM. XO has assigned responsibility for implementing OTPM AFOTEC-wide to the AFOTEC Project Management Office (XOP). XO is the waiver authority for deviations from the standardized methodologies and processes developed to ensure a consistent application of disciplined project management across the center.

3.7. **AFOTEC Project Management Office (XOP).** The AFOTEC Project Management Office is tasked to aid AFOTEC in efficiently and effectively executing its mission by using disciplined project management principles and methodologies. To accomplish this, XOP will provide standardization and oversight for policies, procedures, standards, templates, and software that will be used by project managers across AFOTEC. Specifically, XOP focuses on two primary areas, project team support and

organizational support. Project focused responsibilities include: providing advice/guidance to test teams and leaders, mentoring correct project management practices, and facilitating project plan development, execution, and control. Organizationally focused responsibilities include efforts to promote best practices, establish standardized procedures, develop and provide training, and measure and improve processes. XOP is organized to provide this support by having a centralized project management office with a pool of individual Project Management Advisors assigned across the center based on the organizational project management workload.

3.8. **Project Management Advisors (PMA).** A PMA will be available to support each detachment and directorate executing test programs. The PMAs are tasked to provide the TDs and staff with a source of project management expertise, software expertise, OTPM continuity, and test team training and assistance.

Table 1. PMA Support Functions

1	Assisting TD with the construction, resource assignment, and analysis of project networks.
2	Providing requested project management reports and information to TDs and leadership.
3	Providing OTPM related project management and project management software training.
4	Assisting PMs, TDs, and leadership in using project management software.
5	Assisting the staff with analysis of project portfolios.
6	Maintaining and distributing the software tools, Master Resource List, and configuration files.
7	Providing standardization of AFOTEC-wide OTPM methodologies and tools.
8	Supporting Resource Management efforts.

4. OTPM Network Development Process.

4.1. The OTPM network is a critical aspect in the implementation of project management in AFOTEC. It provides one key source of information supporting both AFOTEC's BMP and PDP providing both project management and resource management tools and decision support. In order to ensure that the information from across AFOTEC is usable in making AFOTEC-wide decisions, a standardized, disciplined, project management methodology has been established. The foundation of this methodology is the OTPM network development process. The PMAs will facilitate network development for all AFOTEC projects using the 12-Step OTPM Network Development Process.

Table 2. The 12-Step OTPM Network Development Process

1.	Clearly identify the target/objective of the project.
2.	Clarify the deliverables.
3.	Define the constraints and success criteria.
4.	Determine a starting point for the network build that is near the end of the project and build the network backwards from that point to today using necessity logic (i.e. In order to, I must…).
5.	Once complete, check the network forward in time for additional tasks and other integration points between paths by checking: "is this really needed only for that".
6.	Identify the applicable resource skills needed to accomplish each task using the AFOTEC Master Resource List.
7.	Bring in representatives from the various skill areas to check the applicable parts of the network and revise the network as needed.
8.	Obtain an aggressive but possible and a highly probable time estimate from applicable resources/resource managers for all tasks.
9.	Deconflict resources.
10.	Identify the Critical Chain.
11.	Insert Buffers using TOC PM methodology (50% of safety removed) and deconflict resources again if required.
12.	Review and customize the network in accordance with TD and program requirements and establish the project baseline (IAW TOC PM). Deleting or reducing the buffers is not an acceptable methodology to use when trying to get a project to fit within timeline constraints.

4.2. It is critical that the final product of this process reflects reality. In order to do this, the networks need to be customized based on the specific program environment and the programmatic constraints. Attempting to balance schedule, cost, and content in an environment where external constraints are a driving force may require leadership action to reduce project scope, provide additional resources, or to influence the acquisition timeline. This customization is the key to providing a useful, quality product that the test teams and leadership can effectively use. As project management matures in AFOTEC, templates will be developed that can reduce the time needed to build an OTPM network. However, the 12-step process will still be followed to ensure a quality initial project network is produced. Once the OTPM network is developed and customized to meet the needs of the specific program it is supporting, the detachment leadership should review the project network prior to the TD executing the plan as delineated in the OTPM network.

5. OTPM Training. AFOTEC/XOP is responsible for providing project management training for key test team members, leadership and personnel resource managers across AFOTEC. XOP administers this effort in accordance with the guidance provided by the AFOTEC Executive Council. To support this effort, XOP will develop the project management curriculum to provide three levels of project management training: introductory, intermediate scenario based, and continuation training.

6. Staff Assistance Visit (SAV) Program. To promote standardization of the OTPM processes across AFOTEC and to provide a vehicle that facilitates OTPM process improvement, XOP will periodically conduct staff assistance visits at each Detachment, AS, and ST. In this capacity, XOP will be promoting the incorporation of best practices developed at local organizations across AFOTEC, ensuring standardized processes are being used appropriately, and measuring organizational project management maturity. These visits are an opportunity for units to gain assistance from XOP in addressing organization specific challenges and provide leadership with an unbiased review of their unit's progress in implementing appropriate project management best practices. Normally these visits will be conducted annually, but any commander/director can request an out of cycle visit based on their perceptions of the level of project management success they are achieving in their organization. The SAV program goals will be based upon specific areas of emphasis highlighted by the AFOTEC Executive Council (EC), CV, and XO. While the SAV program is not a "compliance evaluation", the SAV will look at how the units are implementing the policies delineated in this instruction, and the project management policies developed by the AFOTEC EC, CV, and XO. The specific areas of emphasis and the supporting SAV criteria will be transmitted across AFOTEC prior to each SAV cycle. XOP will provide a SAV out-brief to the unit leadership and to XO following each SAV.

7. Project Management Advisory Group (PMAG). The PMAG is one of the tools XOP uses to communicate, coordinate, and provide direction to AFOTEC-wide OTPM implementation efforts. The PMAG is made up of the Chief of the AFOTEC Project Management Office, the Deputy Chief of the AFOTEC Project Management Office, and all assigned unit PMAs. Periodically, an expanded PMAG will be convened to address organizational project management implementation issues. The membership of the expanded PMAG will vary depending upon the specific issue being addressed. As a minimum, the expanded PMAG will include the Chief of the AFOTEC Project Management Office, the Deputy Chief of the AFOTEC Project Management Office, all assigned unit PMAs, and leadership representatives from each organization implementing OTPM.

8. Configuration Standardization. Configuration standardization and control is a critical part of implementing project management in AFOTEC. XOP will ensure that information required by AFOTEC-wide leaders is provided in a universally understood manner using compatible practices and procedures. These standardized tools and practices include: a common software package, an AFOTEC-wide master configuration, an AFOTEC-wide master resource listing and skills definitions, a common project network development process, and a common training program which establishes minimum project management training requirements.

9. Deviations from this Policy. Prior to deviating from this instruction, approval must be granted from AFOTEC/XO. To obtain a waiver, please provide XOP with information explaining the rationale for the requested deviation, specifics detailing the requested deviation, and the projects that will fall under the requested deviation. Recognizing the short timeline a number of our projects are subject to, AFOTEC/XOP will make every effort to expedite the approval process. Recommendations for improvements and changes to AFOTEC's project management implementation can be made through the unit PMA, XOP, the

AFOTEC Executive Council, or by using the AFOTEC Product Evaluation Process (input available under Plans and Policy on the Management Information Network).

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