

AFOTEC

AIR FORCE OPERATIONAL TEST AND EVALUATION CENTER



PROGRAM MANAGER'S OPERATIONAL TEST TOOLKIT



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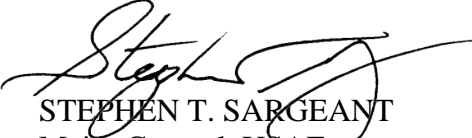
When our combat forces go to war they require unparalleled combat capability to defeat an enemy. We must deliver combat capability to warfighters at the right time and with confidence in its ability to accomplish the mission. The Air Force Operational Test and Evaluation Center (AFOTEC) is responsible for providing balanced and timely evaluations of Air Force warfighting capabilities operational effectiveness, suitability, and mission capability. Continual improvements to the acquisition process and increased complexity in operational testing create new challenges and opportunities.

Early influence is our formalized approach to refine capability requirements and acquisition strategies, as well as to develop early integrated test and evaluation strategies and plans (TES/TEMP). Throughout the acquisition process, program managers and users can expect active AFOTEC participation in the various acquisition phases and products. Early influence is based on the premise that issues discovered early, often before we formally have a program, are more easily resolved and at less cost. We emphasize refining requirements throughout the early stages of the development phase in the acquisition lifecycle. By refining requirements from an operational perspective, we can ensure operationally relevant and testable requirements resulting in fewer changes later in programs. Early influence is the first phase of our multi-phased involvement approach leading to robust test planning and uncompromised execution for accurate and influential reporting.

The *ITEA Journal* recently published three articles (included on the following pages) addressing early operational test influence in the Air Force acquisition process. These articles illustrate the processes and the benefits gained from active, early interaction with the operational tester. These articles form the foundation for AFOTEC's involvement across the spectrum of acquisition programs.

The Program Manager's Operational Test Toolkit provides a roadmap of a system's development through the acquisition cycle correlated with AFOTEC's test planning, execution, and reporting processes. The toolkit also provides insight into insertion points along a system's evolution where a program manager would positively influence the development of a system by coordinating AFOTEC involvement. Finally, the toolkit identifies points of contact to facilitate our involvement.

AFOTEC is fully committed to early and constant communication and coordination in the acquisition process to ensure effective, suitable, and mission capable warfighting capabilities are delivered to our Airmen and often Joint and Coalition partners.


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AFOTEC: Creating Active Involvement and Institutionalizing Early Influence

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The Air Force Operational Test and Evaluation Center (AFOTEC) faces many challenges in an ever evolving acquisition environment. However, these challenges present fresh opportunities for the Air Force's Operational Test Agency to refine its operations and responsiveness in order to enhance our ability to ensure warfighters are delivered the capabilities they need, when they need them, to allow our Airmen, as well as our joint and coalition partners to fight more effectively and with less risk.

As a nation that has been in continuous combat for more than 16 years, longer than World War II, Korea, and Vietnam combined, our Airmen and joint and coalition partners are engaged in the global war on terror and our Air Force is actively searching for ways to rapidly enhance our effectiveness at all levels. The warfighter is demanding the entire acquisition community rapidly develop, test, and field increasingly complex and urgently needed weapon systems despite a reduced force.

Therefore, AFOTEC is focusing our efforts on institutionalizing Early Influence in the air, space, and cyberspace domains; establishing credible AFOTEC liaison officers at the Air Force Materiel Command and Air Force Space Command Product Centers; and aggressively creating the conditions for combined development and operational testing. These initiatives are all aimed at improving our ability to ensure that required warfighting capabilities are delivered within cost and schedule constraints whenever possible. The acquisition community has talked about the *Early Influence* concept for over two decades using many definitions. AFOTEC's goal is to clearly define Early Influence, establish more robust Early Influence activities as soon as possible, and institutionalize Early Influence across all appropriate instructions and regulations.

Early Influence is not a new concept. However, the practical application has proved to be challenging and

inconsistent due to the lack of definition. AFOTEC has engaged in programs across the air, space, and cyberspace domains in an inconsistent manner throughout its history. Even the operational testing community does not share a definition of Early Influence. Therefore, we begin this article by defining what we mean by Early Influence.

Defining early influence

Early Influence is AFOTEC's formalized approach to refine capability requirements and acquisition strategies, and then develop early integrated test and evaluation (T&E) strategies and plans. We don't define requirements, but we can help refine them. If we get involved early, even before Milestone A, we can ensure requirements are testable, measurable, and operationally relevant.

Early influence provides AFOTEC the greatest opportunity to affect emerging capabilities and is based upon the premise that issues discovered early, before we have a formal program, are more easily resolved and often less costly. It costs far less to identify and fix problems while acquisition strategies are still in the planning stage and designs are still in development. The warfighting, acquisition, and T&E communities working together early and throughout a program can enable this Early Influence approach.

We begin applying Early Influence standardized methodologies prior to Milestone A by engaging in the capabilities based assessment process. The best opportunity to influence warfighting capabilities is when solutions are still being analyzed. Through formal reviews of the early Joint Capabilities Integration and Development System (JCIDS), documents such as the Joint Capabilities Document (JCD) and Initial Capabilities Document (ICD) we have opportunity to influence capabilities before a material solution, or mix of solutions, is selected. By joining the operational

T&E (OT&E) professionals with the other players early and often in the acquisition program, we increase communication and coordination enabling increased teamwork, leading to fewer surprises in the later part of the acquisition process.

We recognize there are three areas that can interject change after the inception of a program and before the fielding of the program. These inevitable changes are

- (1) Technology continues to advance;
- (2) User growth through real world experience;
- (3) The nature of combat due to changing threats.

These three factors initiating change in the course of a program must be accounted for in a transparent way if we are to avoid surprises at the end game. They can have an effect on the capabilities of systems and their testing — early and constant communications will ensure that documents and plans can be modified as necessary to keep pace with the changing world. The world does not stop evolving once we publish our requirements or a test plan, and we must remain flexible enough to react.

By institutionalizing the Early Influence approach, we are helping to stress and refine requirements from a testability and measurability standpoint, as well as from an effectiveness and suitability standpoint. I want to emphasize that although AFOTEC does not define requirements for emerging capabilities we can assist in refining requirements. We will work with all stakeholders to ensure requirements are operationally relevant and realistic, and can be tested. Program success is reached when the required capability is delivered into the warfighters' hands, as close to on schedule and budget as possible. Executing Early Influence may seem simple on the surface, however, in order to execute effectively we are revamping our organization and processes to move beyond an era of much discussion and little action.

Managing early influence

AFOTEC has a mature policy that defines Early Influence as a “major operational test and evaluation phase.” Early Influence is the first phase of a multi-phased approach of our involvement that then leads to planning, execution, and finally reporting. However, much of the early interaction with the community was being conducted only by our headquarters personnel and was not very robust.

Additionally, we have developed end-to-end Early Influence processes to ensure consistency and repeatability and we will continue to evolve these processes based on lessons learned. AFOTEC's Early Test Operations Division has traditionally led our Early Influence activities and their primary responsibility included starting the initial test planning processes. We are now refining our initial test planning efforts to

get as much operational testing data as possible during the developmental testing phase wherever possible. And, we are shifting much of the Early Influence responsibility from the headquarters to our detachments where our hands-on testers live, to involve current and future test directors. The headquarters will then support our detachments in this role.

We've also tailored our training to address Early Influence activities, and we now provide formal training for Early Influence with an emphasis on operational suitability. While considering the entire system lifecycle, our primary targets include operational capability requirements, early integrated test planning, and acquisition strategies to support delivery of the capabilities required by the warfighter.

We are also developing metrics to track our early influence efforts. Again, we are moving away from a primarily bureaucratic process to effect early and active involvement. We have in place the essential elements to influence programs. Now we'll take a look at one of the first steps, initiating involvement in an acquisition program.

Involvement determination

A number of considerations go into making an acquisition involvement determination ranging from statutory mandates to multi-service participation. Operational risk is always a consideration. New capabilities that result in “game changing” operations such as new or significantly enhanced mission areas warrant the fidelity and rigor of the testing AFOTEC brings to the program. However, enhancements to existing capabilities to be used under current concepts of employment and support may be more suited for Major Command testing.

AFOTEC has a robust involvement determination process and in the past we've normally identified programs in one of two ways: we would either be asked to become involved or we would identify programs ourselves for involvement. Our involvement threshold has changed and starting now we are not waiting to be asked. If we're being asked, we're late. Self-identification is where AFOTEC is placing additional emphasis and we have several initiatives underway to strategically position AFOTEC liaisons as active conduits between AFOTEC, the Major Commands, and the Product Centers. We want to discover emerging programs as early as possible, make rapid involvement determinations, and then get involved early and often to assist in promoting program success.

Capability requirements

A major element of effective Early Influence focuses on capability requirements development. The external

expectation is for testers to focus on the testability of requirements supporting early milestones or other key decision points. Although they are based on valid warfighter needs, the parameters are often not defined very well and this is where AFOTEC can add value to the process. Testability is not our only focus, as we also look for completeness of requirements such as how well the key system attributes and associated thresholds address the capability gap. The refinement, rigor and fidelity we add to requirements leads to a better product delivered to the warfighter on time and on cost. In addition, while refining the requirements, we are simultaneously looking for ways to save time and money by creating opportunities to gather operational test data during the developmental test phase of testing.

AFOTEC is a core member of the Air Staff's High Performance Team and takes part in the development of initial capabilities documents and capability development documents. The document review process ensures focus on lifecycle management issues such as reliability and maintainability, logistics supportability, and training. While AFOTEC is not a signatory on these documents, we provide face-to-face and written comments and suggestions. These early document reviews help the users refine their capability requirements and lay the foundation for initial test design. AFOTEC is a voting member of the Air Force Requirements Oversight Council where final approval of these documents is achieved.

We are aggressive in our Early Influence role reviewing all of the JCIDS documents. We recently made critical comments on the Joint Heavy Lift ICD. We addressed the lack of logistic focus, and specifically recommended mission and sortie generation, material reliability, training, and other related integrated logistics elements be addressed in the ICD. These areas are significant enabling attributes and capabilities for the eventual Joint Heavy Lift solution, and should be taken into consideration early.

Initial test design

Initial test design is another focus of Early Influence. It is a systematic approach to take the test teams from capability requirements to credible OT&E constructs which, when executed, will yield the final data required by decision-makers to make program decisions.

There is no panacea to how and when testing is done, but there are opportunities where more test data can be pulled from training and actual combat sorties. The CV-22 is going through current testing with operators and the test community working together. When we have reached the level of T&E that the warfighter needs, we can issue reports that are relevant

to pressing needs such as looming deployments. We are flexible enough to schedule the rest of the required testing when the test assets are once again available. So in this case, we can complete the required testing and also support the warfighting customer to fulfill his mission requirements at the same time.

We strive to use Integrated Test Teams (ITTs) to develop test designs, and we execute rigorous design efforts for Test and Evaluation Strategies for Milestone A, and Test and Evaluation Master Plans for Milestone B. In the past, inputs were often based on the experience of a few subject matter experts without using standard processes and that led to OT&E inputs with a significant number of unknowns in early documents.

Initial AFOTEC test designs are based on envisioned concepts of operations and support, designed around the operation the user intends to employ the system. We've created early test designs based on a wide range of operations from combat operations to noncombat information technology systems used for finance, and personnel management. AFOTEC designs test around the operation, but scopes the operational testing to the system.

As we design the test around the operations, high-fidelity system characteristics are not critical at this point. Designing around the operation enables very early test designs and material solutions can evolve from initial expectations. The result of early planning rigor is fewer unknowns, higher fidelity test resource projections, and early identification of test capability shortfalls that will have to be overcome. For example, initial test design was completed on the KC-X and CSAR-X programs before either program had completed the down-select process to a specific platform. We have also proven that the process can be executed on very short timelines. We recently tested the Laser Joint Direct Attack Munition with Air Combat Command on a timeline based on months, not years, as a good example of our rapid test capability and flexibility.

AFOTEC does not accomplish these initial test designs in a vacuum. Much like the Air Staff's High Performance Teams, AFOTEC uses a core team composed of both internal and external participants.

Core team approach

The core team approach invites those with a vested interest to take part in the initial test design process and is consistent with the integrated test team approach. The core team might include lead major commands, other service operational test agencies, as well as other members from the operations, acquisition, and test and evaluation communities. In some cases it

will be the first time all of the integrated test team members come together. Because AFOTEC executes initial designs before material solutions are selected, responsible test organizations or developmental testers may not have been selected yet. In these cases, AFOTEC will now invite the center test authorities to these meetings. Even though operational testing is the final acquisition phase prior to the system's fielding and deployment, involving operational testers early in the entire process can lower risk and increase the chances of successfully conducting the operational test phase of a program.

It is essential for the success of any program that all participants, that include the major command sponsor, product center, program manager, contractor, developmental testers, and operational testers, collaborate early in the program, well before test articles are produced, to ensure the success of the program. Each participant brings relevant information to the table and takes away a better understanding of the projected operational test and evaluation phase. The user communities bring current operational expertise and requirements clarity, while the program offices bring specific acquisition information and clarify questions about acquisition decisions, schedules, and actual capability increments. When developmental testers participate, there is a better chance of seeing operational testing data points in developmental test plans. Developers can provide details on the system under development as well as provide their interpretation of operational requirements.

Initial test design

Early involvement in developing OT&E designs inherently results in timely planning. AFOTEC initial test designs are driven by the need for confidence in our results. By applying rigorous, repeatable processes and gaining community buy-in during initial test designs, decision risk is addressed and credibility is achieved. Instead of looking at the lack of requirements and employment or support concepts as rationale to not become engaged in programs, I've charged my staff to leverage our early influence mindset and use the information gained during our utility assessments to refine the capability requirements, evolve the employment concept of operations, and help develop the support and training concepts. Essentially, our testers will be part of the solution when it comes to supporting rapid transition from technology demonstrations to programs.

Defining the operation and selecting operational test events based on operational factors allows us to design operationally relevant test scenarios. Initial AFOTEC test designs are based on envisioned concepts of operations and support and designed around the

operation the user intends to employ the system. These scenarios are initially developed as end-to-end operational activities and the first choice is always live field testing. When field testing is not practical, we consider other methods like modeling and simulation. The result of early planning is fewer unknowns, higher fidelity test resource projections, and early identification of test capability shortfalls. Operational sufficiency and technical adequacy are achieved by addressing these areas early.

If there will be a multiservice OT&E effort, representatives from our sister-service operational test agencies attend to ensure service-specific interests are addressed during early test designs. We currently have about 45 multiservice OT&E efforts in progress.

Bringing the right people together at the right time is essential toward meeting initial test design expectations. This approach also works in the space program acquisition process. We have several initiatives underway to make OT&E more relevant in the unique acquisition process for space programs. Specifically, we are looking to identify acceptable methods to execute more OT&E in less than completely operational environments — that is, prior to launch. This requires getting involved early, increasing influence on the development testing design to increase the likelihood of acquiring useful OT&E data and a reassessment of risk tolerance. AFOTEC will become much more involved in the development work and testing that goes on in government and corporate labs today to accomplish this revised testing strategy. We are looking at where and how we can have a greater influence on developing operationally sufficient test capabilities in the Space realm. These capabilities should be useful for both development and operational testing efforts. Typically, we have only become involved once systems were on orbit, so it was more or less a stan-eval effort as our reports were not informing acquisition decisions.

Finally, we are establishing a liaison officer position in place at the Space and Missile Systems Center (SMC) at Los Angeles AFB, California, to work the full range of programs as they emerge. Both AFOTEC and the SMC will gain from this, but ultimately, our warfighters will get the greatest benefit. AFOTEC is changing the way we do operational test in space and is working toward partnership and teamwork.

Strategic initiatives

While AFOTEC is actively engaged in Early Influence initiatives at the tactical level, we are also working these initiatives at a strategic level. AFOTEC is heavily involved in the Air Force Smart Operations 21st Century initiative, commonly referred to as AF21. As an organization, we are looking at our

processes from beginning to end. This includes our involvement with the Developing and Sustaining Warfighting Systems process. The author is a cochair with the Air Force Materiel Command on the Test and Evaluation subprocess team. They are collaborating on initiatives approved by the AFMC Commander and the Chief of Staff of the Air Force, to increase confidence in early acquisition efforts by institutionalizing Early Influence across the developmental and operational test communities. AFOTEC already had rudimentary Early Influence policy and processes in place and was organized to specifically address early acquisition efforts. The early preparation allowed them to play an integral role in the Milestone B initiative designed to foster more combined developmental and operational test plans. Importantly, this work has given the AFOTEC the opportunity to hone its processes.

While the Air Force instructions did a reasonable job of addressing most issues associated with acquiring and testing new systems, we worked to strengthen them across the entire test and acquisition community to institutionalize early influence activities supporting Milestone B. AFOTEC recently participated in the annual Test and Evaluation Policy Conference in Washington, D.C., and as a result Early Influence is now more clearly codified and institutionalized in Air Force and AFMC instructions (AFI 99-103, Capabilities Based Test and Evaluation; AFI 63-101, Operations of Capabilities Based Acquisition System; AFMC 99-103, Test Management).

AFOTEC is now an advocate of institutionalizing actionable Early Influence, not just continuing to talk about it. AFOTEC can influence all areas early and consistently throughout the life of a program, to include addressing known life cycle management costs and accounting for changes as a program matures. Through early and continuous communication and coordination, AFOTEC will benefit from high confidence planning and potential schedule and cost savings. AFOTEC's goal is increased teamwork leading to fewer surprises at end of the process.

We are working closely with my detachment commanders to increase their role in developing early partnerships with the warfighting and acquisition communities. We will capitalize on their expertise to further enhance our ability to positively affect programs and early. The need for Early Influence is even greater now because of the long war we are engaged in.

Increased communication and coordination leading to greater team work and fewer surprises is what AFOTEC is striving to achieve, and we are increasing our efforts to work more closely with the acquisition and warfighting communities. AFOTEC's vector is clear. We intend to have a positive influence through early activities, and to that end we will get involved early with clear priorities. Our personnel will make timely involvement determinations and apply appropriate rigor to requirements development and test design. Our test designs will seek opportunities for combined DT and OT testing whenever possible.

Creating active involvement and institutionalizing Early Influence provides better and more capable systems to the acquisition decision makers and the warfighters sooner. The need for Early Influence is even greater now because of the long war we are engaged in. The bottom line is — these efforts will help the acquisition community to provide better, more capable systems to the warfighter ... sooner ... to accomplish their mission more effectively, with less risk to our Airmen and joint and coalition partners! □

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AFOTEC's Space Test Initiative: Transforming Operational Testing and Evaluation of Space System Capabilities

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Historically, the value of the operational test and evaluation (OT&E) data has been limited during the acquisition and deployment of space systems because OT&E occurs late in the process, after the satellite is orbiting in space and the ground stations are fielded, well after key acquisition decisions, investments, and critical launch decisions have already been made. This article presents the U.S. Air Force Operational Test and Evaluation Center's Space Test Initiative. The Space Test Initiative delivers an OT&E model that better fits the National Security Space system's acquisition model outlined in NSS 03-01 and delivers better value to both the acquisition and operational decision makers by moving OT&E well before launch.

Key words: Acquisition strategy; integrated testing; investment; OT&E test anatomy; space acquisition; system of systems evaluation.

The U.S. Air Force Operational Test and Evaluation Center (AFOTEC) is responsible for the operational testing and evaluation (OT&E) of all Acquisition Category I and II weapon system programs as well as those on Director of Operational Test and Evaluation oversight, acquired by the Air Force and often our Joint partners, to determine operational effectiveness, suitability, and degree of mission capability in the system's intended operational environment. Since AFOTEC's inception in 1974 and the creation of Air Force Space Command in 1982, OT&E of space systems has occurred after satellites are on orbit and ground stations are fielded. Therefore, AFOTEC could not fully meet its responsibility to provide independent OT&E data to key decision makers in a timely manner with regard to the acquisition and deployment decisions of space systems because the tests occurred after the decisions were already made.

The need for fully informed decisions regarding these increasingly expensive, yet indispensable capabilities is crucial in today's environment of constrained resources. For more than 20 years, AFOTEC and the other service operational test agencies (OTAs) con-

ducted OT&E of space and other high-tech, limited-quantity systems using a model more appropriate for military systems with large-scale production decisions. Using an OT&E model that does not match the system's acquisition strategy renders the results of OT&E largely irrelevant. AFOTEC's "Space Test Initiative" delivers an OT&E model that better fits the National Security Space (NSS) system's acquisition model outlined in NSS 03-01 (DoD 2004) and provides fact-based decision quality data to decision makers in time to support their key space system acquisition decisions.

Figure 1 further illustrates the issue. In a traditional acquisition program governed by Department of Defense Directive (DoDD) 5000.1 (DoD 2003), expenditures are relatively small in the research and development and investment phases compared to the cost of production and system operation. For these traditional acquisitions, operational testing (OT) occurs just before the major investment or production decision and provides data to inform those decisions adequately.

However, most of the investment for space systems occurs early in the program, most often without a major production decision. In the current space OT&E

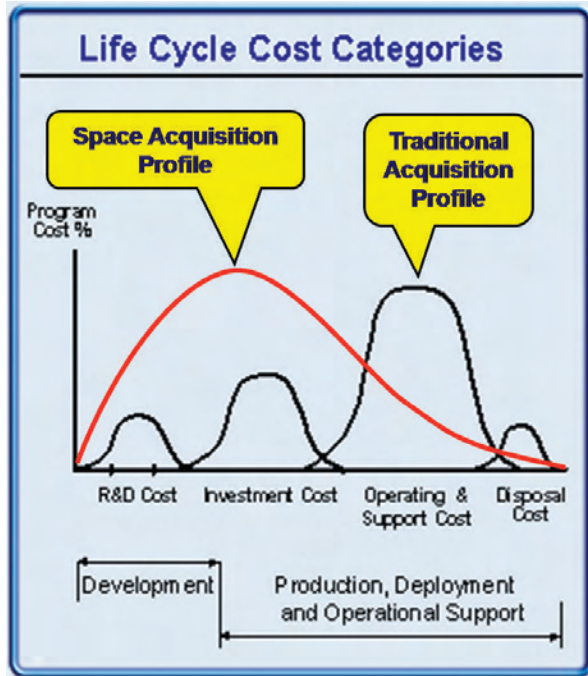


Figure 1. Department of Defense Directive 5000.1 versus National Security Space 03-01 life cycle costs

model, OT&E takes place at the same point in the acquisition cycle as with the DoDD 5000.1 (DoD 2003) programs. However, by this point in NSS 03-01 (DoD 2004) programs, most of the investment has been made, most of the key acquisition decisions have been made, and the critical operational decision to launch the satellite has been made and executed. The ground station and associated software often lag in deployment, making timely post-launch OT&E difficult, if not impossible. Making these key decisions before the execution of OT&E severely limits the value of OT&E.

AFOTEC's Space Test Initiative provides an OT&E model that better fits the space systems acquisition model, delivering better value to both the acquisition and operational decision makers by moving OT&E activity well before launch. The three key tenets of the Space Test Initiative are:

- early and continuous integrated testing involvement throughout the life cycle of the system,
- agile analysis and reporting,
- focus on system-of-system evaluations.

Space test anatomy

AFOTEC's OT&E guide provides an "Anatomy of an OT&E" that describes OT&E activities associated with each phase of a typical acquisition program. The anatomy is built on the DoDD 5000.1 acquisition model, which did not fit well for space system

acquisition. In order to guide the OT activities of space systems, a NSS 03-01-focused OT&E anatomy needed development. In July 2008, AFOTEC hosted an Air Force Space Summit at Kirtland Air Force Base, New Mexico, where space acquisition, operations, and testing experts from across the Air Force gathered to build a new test anatomy. After the summit, event organizers socialized the ideas to the broader space acquisition and testing community both inside and outside the Air Force. This action included the other Service OTAs, the Joint Staff, Undersecretary of Defense (Acquisition, Technology, and Logistics), the national intelligence community, and the Director of OT&E. Comments received during that socialization resulted in slight modifications to the summit's model. In this article, we will walk through the resulting anatomy in a phased approach.

The activities shown in orange at the top of the anatomy (*Figure 2*) are conducted by the acquisition community. Those shown in light blue are conducted by the developmental test (DT) community. The grey region with the activities highlighted in yellow are integrated test activities, conducted by both the DT and OT communities. Finally, the blue boxes near the bottom of the anatomy are activities led by the OT community.

Beginning at the left of the anatomy, early in the acquisition process, the acquisition community receives strategic guidance or a description of the operational mission need. The acquisition community begins development of the initial Functional Solution Analysis or system concepts to address the operational mission need.

During the pre-Key Decision Point (KDP)-A period, the integrated test (IT) community begins development of an early involvement strategy. The early involvement strategy tailors this generic model to the specifics of the program, taking into consideration the required decisions, development, testing activities, etc. In addition, during this early phase the group responsible for building operational requirements forms the Integrated Concept Team. Members of the DT and OT communities also form the Integrated Test Team (ITT) and develop the ITT charter.

As the Integrated Concept Team develops the Functional Solution Analysis and the draft Initial Capabilities Document, the IT community is involved in the early reviews of the proposed concepts to generate a Concept Assessment Report. The report provides input to the concept decision, focused on the degree to which the system concept meets the mission needs stated in the strategic guidance.

While the acquisition community moves into the solution definition phase, the IT community partici-

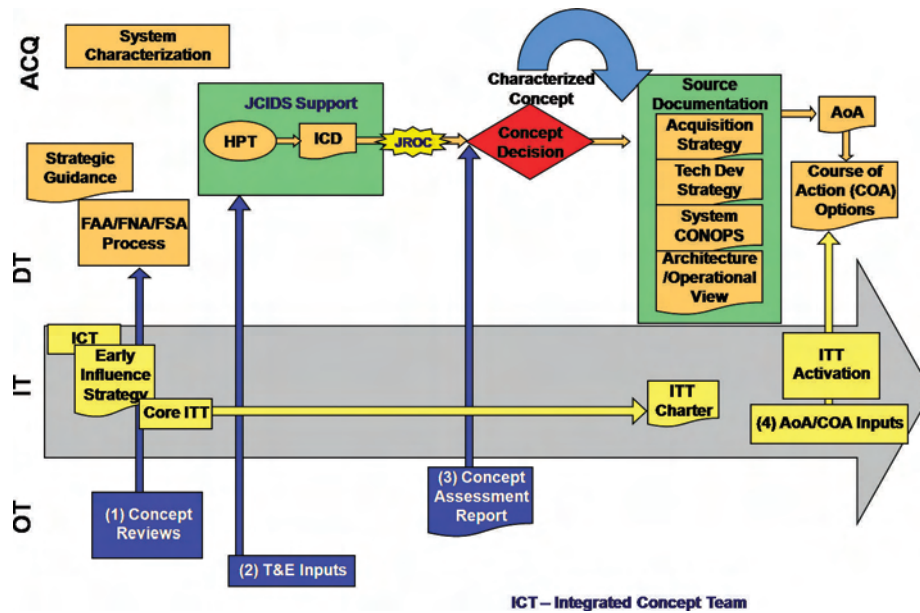


Figure 2. Pre-Key Decision Point-A activities

pates in the analysis of alternatives (AoA) and course of action (COA) development processes. The participation of the ITT in the AoA provides candidate evaluation criteria, potential measures of effectiveness and suitability, and operational scenarios for each alternative being considered. As the acquisition community develops the AoA and COA, the ITT develops the first test and evaluation strategy by melding DT and OT objectives.

The ITT's participation in the AoA/COA culminates in an operational assessment (OA). The resulting OA report informs the KDP-A, Concept Approval, decision. The OA report provides information on the degree of potential operational effectiveness and suitability, highlights any disconnects between the alternatives and the operational mission need, and identifies any potential testing issues of the AoA's alternatives and the COA's acquisition strategies. The OA report does not advocate or recommend an alternative.

Post-KDP-A to KDP-B, concept development phase

Throughout the KDP-A to KDP-B concept development phase (Figure 3), the acquisition community refines the acquisition concept and matures both the technology and functional capabilities of the system. Meanwhile, the ITT continues to refine the test and evaluation strategy and builds the integrated test plan.

During the concept development phase, as the acquisition community translates the operational requirements into a set of technical requirements to

serve as the basis of the Request for Proposals, the ITT evaluates the Capability Development Document/Technical Requirements Document traceability (see Figure 4). The look by the ITT at traceability focuses on the translation of operational requirements into the technical requirements that will ultimately serve as the basis for the system design. Throughout the system requirements review and system design review process, the technical maturation and functional development process generates concepts and prototypes. The ITT conducts OAs on these prototypes to evaluate their potential operational effectiveness, suitability, and degree to which they will meet the operational mission need, and to highlight any other operational issues noted during early testing.

The IT planning process culminates in the publication of the initial version of the Test and Evaluation Master Plan describing the integrated test approach. Finally, the IT community conducts an OA to assess the system's concept just before KDP-B to inform the KDP-B decision with an operationally focused evaluation of the system concept (see Figure 5).

Post-KDP-B to KDP-C, preliminary design phase

In the KDP-B to KDP-C preliminary design phase (Figure 6), the acquisition community refines the system design through a series of design reviews and technology demonstrations. The IT community further refines their IT planning documents, wrapping up the preliminary design phase with a Test and Evaluation Master Plan update and an initial OT&E

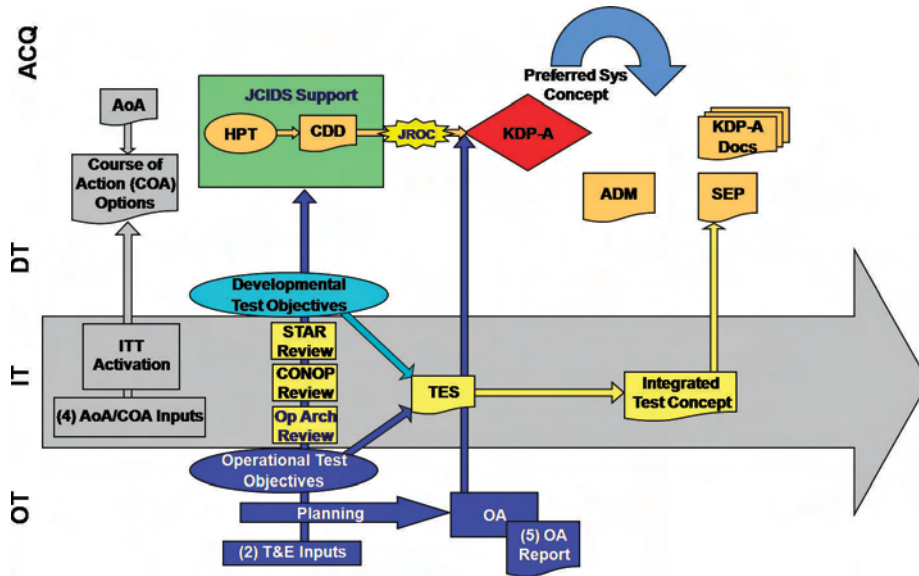


Figure 3. Key Decision Point-A activities

plan that fleshes out the details of how OT objectives will be addressed by traditional dedicated DT testing activities, such as laboratory and chamber testing.

During the preliminary design phase, developers conduct technical demonstrations to evaluate increments or components of the proposed system. The ITT is involved to provide status reports to the system program office on the potential operational effectiveness, suitability, the degree to which they will meet the operational mission need, and any other noted operational issues. In addition, these status reports begin to form an assessment of the system-of-system

interfaces required for the system to operate successfully within its operational architecture.

In conjunction with the preliminary design review, the OTA conducts an OA to aggregate the information gathered through the preliminary design review stage to inform the KDP-C, Final Design Entry, decision on the potential operational effectiveness, suitability, and degree to which they will meet the operational mission need. Additionally, if the acquisition authority decides during this timeframe to allow the contractor to procure long lead items, part of the OA evaluates the operational aspects of those system components.

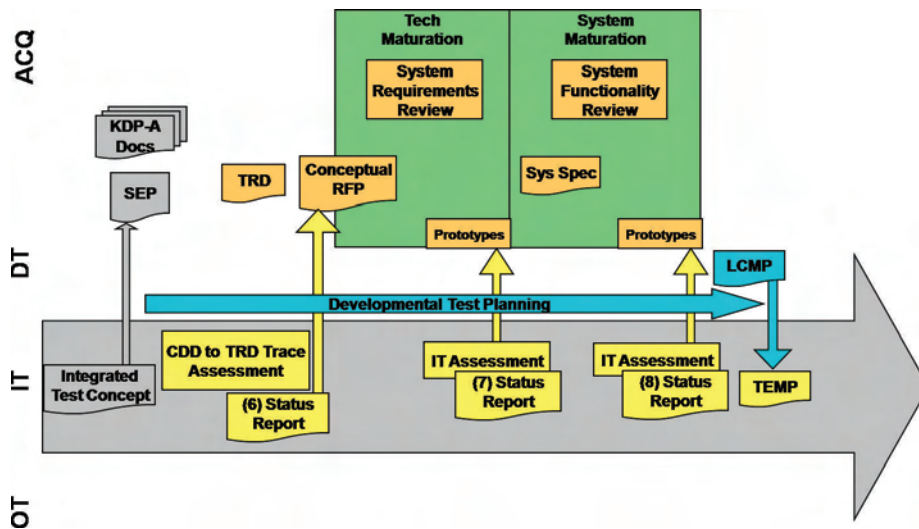


Figure 4. Key Decision Point (KDP)-A to KDP-B activities

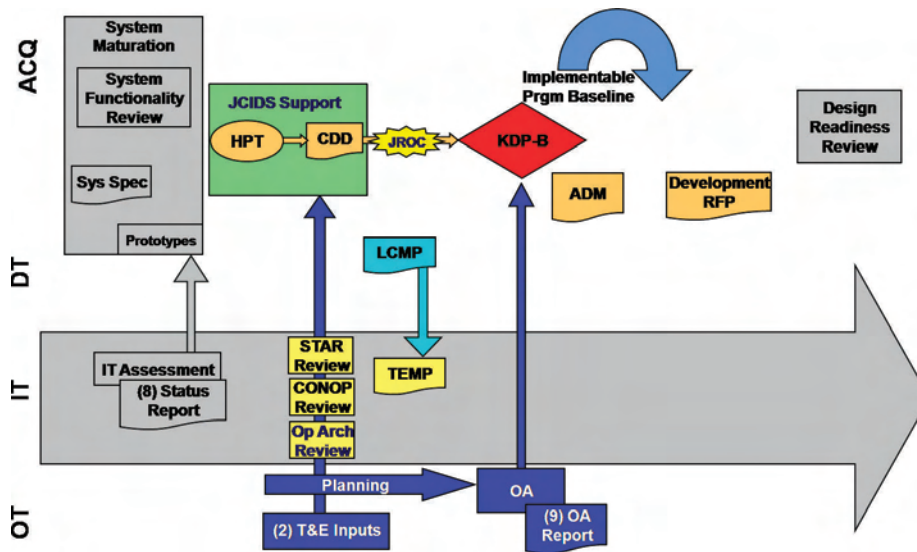


Figure 5. Key Decision Point-B activities

KDP-C to build approval, final design phase

In the final design phase (Figure 7), the acquisition community refines the system design and conducts a series of risk-reduction tests, building up from component tests to subsystems to operational system tests. The IT community is involved with all testing activities. ITT participation is collaborative, and the generated status reports foster open communication between testers and developers as the system design is finalized.

At the conclusion of the critical design review, the OT&E community produces an Operational Assess-

ment Report providing information on the potential operational effectiveness, suitability, and degree to which the proposed design will meet the operational mission need. The critical design review and Design Assessment Report inform the Build Approval decision.

System production to OT&E phase I

After Build Approval, the acquisition community produces the system and conducts a series of test activities, building up from the component to subsystem to full operational system testing. During the system production to OT&E phase I period (Figure 8),

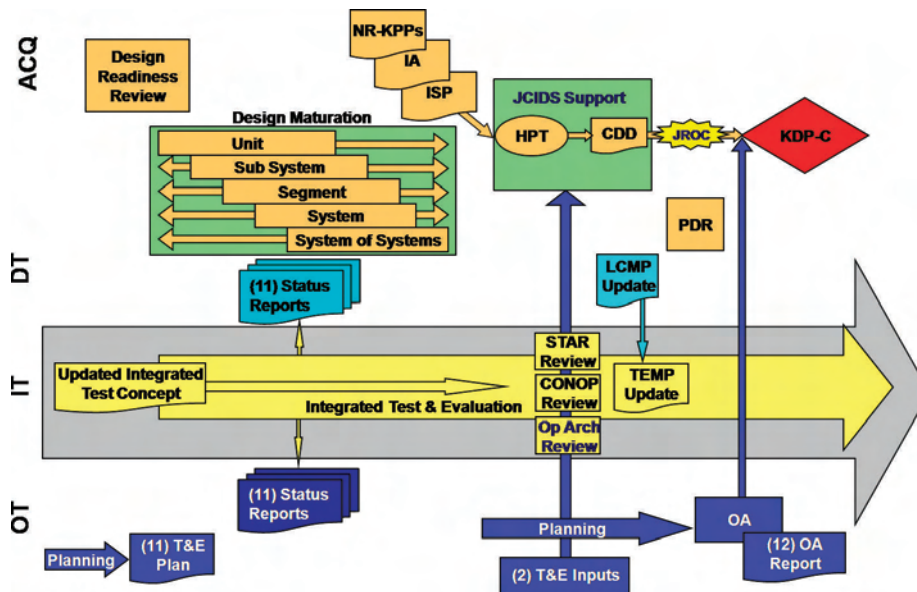


Figure 6. Key Decision Point (KDP)-B to KDP-C activities

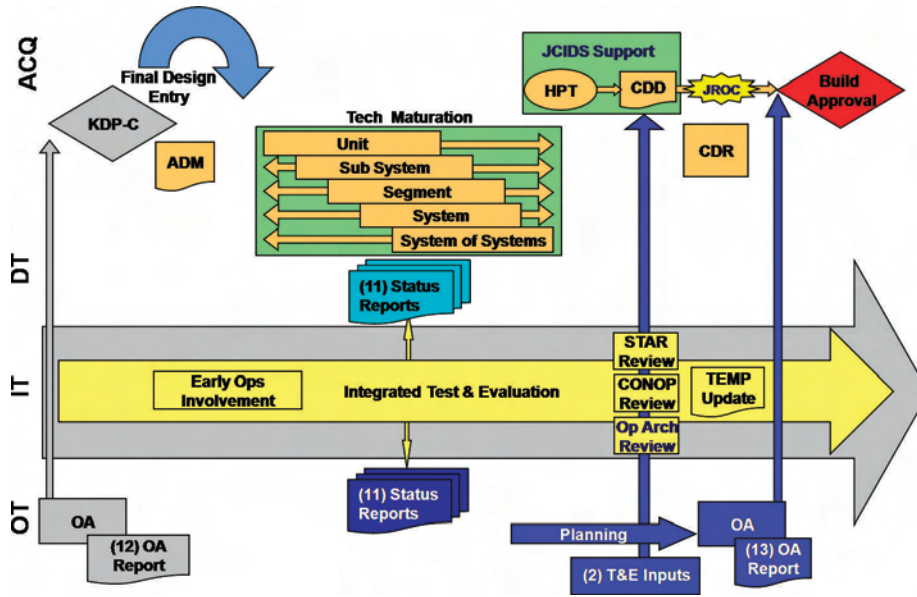


Figure 7. Key Decision Point-C to build approval activities

the ITT participates in the testing, taking full advantage of planned DT events to inject OT test measures and scenarios and gather information to fulfill OT&E test objectives. Status reports informing developers on how the system production is progressing, from both the adherence of the development to specification and the operational community's assessment of meeting operational requirements, keep the lines of communication open between the operational and developmental communities.

The system production period culminates in an OT&E Phase I, with its associated Program Element Officer certification and Test Readiness Review

processes. The OT&E Phase I puts the system in as near an operational environment as can be replicated on the ground to support OT&E to inform the Consent to Ship decision. The Phase I OT&E takes into consideration the results of integrated testing, as well as the status of the system-of-systems required to provide mission capability to the warfighter. For example, this report may highlight that the satellite is ready for launch, but the ground segment will not be completed for another 2 years, enabling a conscious decision to delay satellite preparation for launch until the right time to optimize value to the warfighter.

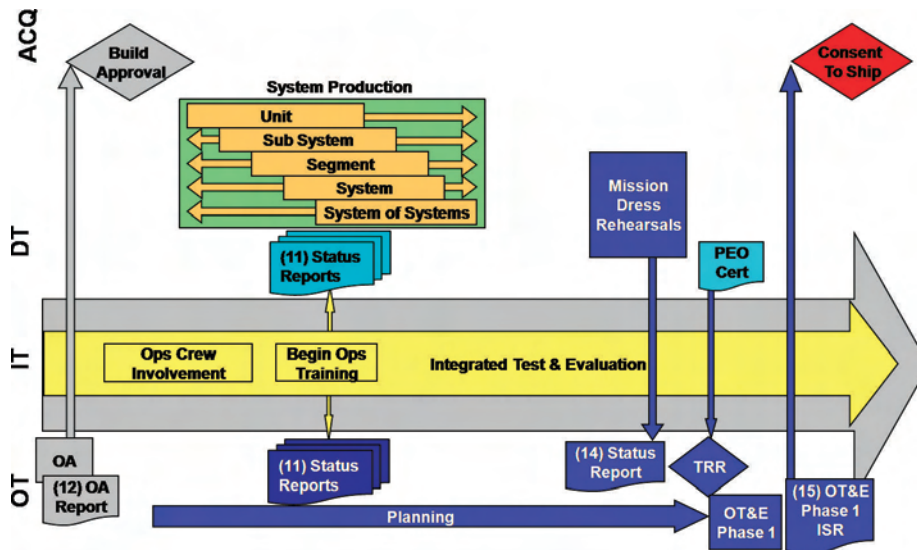


Figure 8. System production to operational test and evaluation Phase 1 activities

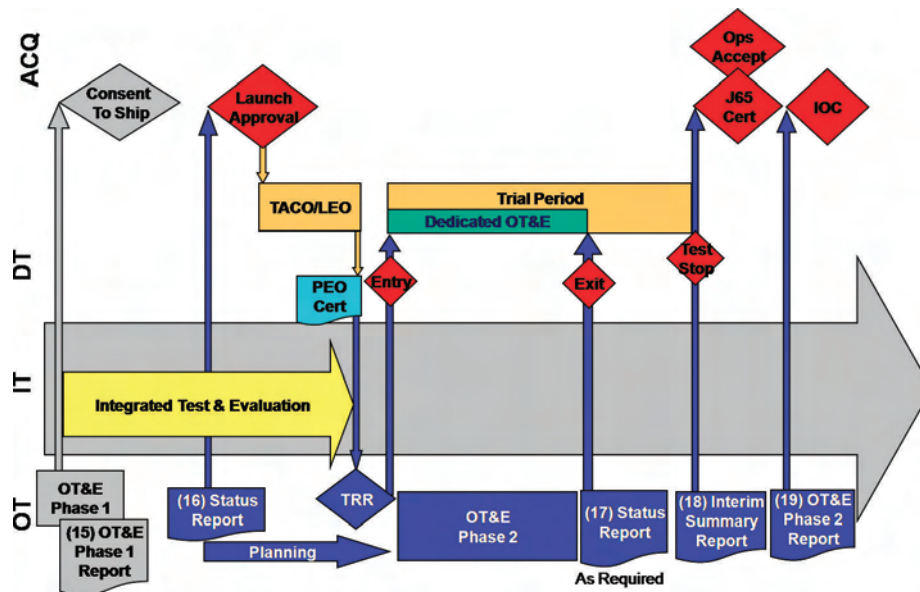


Figure 9. Launch and early orbit operations

Launch range compatibility testing

After deciding to ship the satellite from the manufacturing facility, the system is moved to the launch range, mated with the booster, and final integration and communication testing occurs. Again, integrated testing will inject OT test measures and scenarios into the DT-centric checkout events to provide an operational impact to any technical issues identified during compatibility testing. Integrated testing, documented in a Status Report, informs decision-making at the launch go/no-go decision point.

Launch and early orbit operations, OT&E phase II

After launch and during test and checkout, early orbit operations, and sensor checkout, the operational testing community participates to the greatest extent possible to inject operationally realistic scenarios, backgrounds, and procedures (Figure 9). At the conclusion of the test and checkout period, the Program Element Officer certifies the system is ready to enter OT&E Phase II, the final 10 percent checkout of the operational capability of the system. OT&E Phase II takes a final look at whether the system made its ride to orbit successfully, if the performance reported throughout early integrated testing bears out in the operational environment of space, and that the system-of-system environments represent the true operational architecture and operate as expected.

AFOTEC conducts OT&E Phase II in conjunction with the users' operational trial period to facilitate delivering mission capability to the warfighter. At the

conclusion of the OT&E Phase II and exit from the trial period, AFOTEC generates a status report to identify the hard-hitting, show-stopping issues found during this final stage of operational testing. The status report informs the *Operational Acceptance Decision*.

Depending on the program, the interim summary report, an approximately 20-page document that begins to draw conclusions and ratings, informs decisions such as the USSTRATCOM/J65 certification decision. Finally, AFOTEC publishes the OT&E report to provide full details on the results of the analyses. This report informs the Director of OT&E's Report to Congress, Initial Operational Capability decisions, future system upgrade decisions, etc.

Wayahead

To develop the next level of detail and implement the Space Test Initiative, a number of actions are required and in most cases are already in works. These actions include:

Understand/include detailed DT activities. The developmental test activities associated with the design development and maturation phases and system production cycles need further definition and inclusion in this model.

Define necessary policy. Current DoD, Air Force, Air Force Space Command, and AFOTEC policy does not speak to conducting space operational testing in the manner described in the Space Test Initiative. Therefore, AFOTEC initiated a policy crosswalk to determine what is in existing policy and what must be written to allow and direct the Space T&E Anatomy.

AFOTEC, in conjunction with the Air Staff, will draft the necessary policy documentation for incorporation into the current regulations.

Identify and define underlying test and evaluation processes. AFOTEC will define the processes required to execute this Space T&E Anatomy, include details on organizational roles and responsibilities, and entrance/exit criteria for each phase.

Identify and define test personnel resources. The number of personnel required to execute the Space Test Initiative, along with the required skill sets, will be defined. It is likely that AFOTEC will not have, or be able to increase, their personnel pool to provide the technical expertise necessary to execute the Space Test Initiative, particularly the early engineering-focused activities. Therefore, we must build agreements among the members of the integrated test and development community to share personnel resources.

Define capabilities and gaps in test infrastructure. Execution of the initiative's OT&E Phase I test infrastructure requires improvement in order to emulate an operationally realistic test space environment on the ground. For example, OT&E Phase I will have to use vacuum chambers that provide the capability to connect operational communication and command and control links.

Select a long-term candidate program to define cost/benefit. While AFOTEC Detachment 4 intends to apply this concept to all future space OT&E programs, they will select a pilot program to demonstrate and define the cost and benefits of this new approach. In addition, AFOTEC will use the pilot program to refine the concept, adding lessons learned as we execute these ideas from beginning to end on a space program.

Identify and define required contract changes. Most current space acquisition programs, particularly those initiated during the acquisition reform era, provide limited opportunity for government participation or insight into most development activities, or provide for test community access to developmental testing data. We require future contracts be written to allow the integrated test activities, as the ability to implement the Space Test Initiative depends on access to developmental data for analysis.

Space Test Initiative benefits

AFOTEC's Space Test Initiative provides the basis for knowledge-based acquisition and operational decisions throughout the life cycle of our national security space systems. It provides early operational involvement that will deliver a number of benefits,

including: (a) ensuring the warfighter receives needed mission capabilities, (b) providing early clarity and continued update of operational requirements, (c) influencing early and continual development and refinement of the Concept of Operations, (d) ensuring frequent reviews of threat documents to ensure the system design addresses current threats, (e) highlighting program shortfalls and benefits throughout the development process when they can be addressed most efficiently and inexpensively, (f) enabling the user to understand and accept acquisition risks and adjust their mission requirements and plans accordingly, and (g) addressing and correcting systemic suitability issues early in the program development.

Other applications

Although AFOTEC's initiative focuses on space systems with its satellite-specific activities of Consent to Ship, Launch, and Early Orbit Operations, the model can be applied to other high-tech, small-quantity programs, such as one-of-a-kind command and control and information systems. Information systems can also benefit from the model of early testing since these programs are similarly front-loaded on investment with relatively little expense on production, operations, and maintenance once fielded. Like most space programs, no two information system programs are the same and few follow the DoDD 5000.1 template exactly. Unlike space programs, however, the DoD does not field information systems at one time (launch). Instead, DoD fields information systems in increments of capability. The fielding difference drives a requirement to test sooner and more often than space programs. However, the Space Test Initiative offers a model for information systems because the fundamental principles apply: (a) early and continuous integrated test involvement throughout the system's life cycle, (b) agile analysis and reporting, and (c) focus on system-of-systems evaluations. If a flexible, agile test approach is not used, the warfighter faces the dilemma of fielding capabilities before testing.

Summary

AFOTEC's proposed Space T&E Anatomy provides a model for testing systems governed by NSS 03-01. It identifies early test, evaluation, and reporting activities to inform acquisition and operational decisions, providing a roadmap for early program influence. The anatomy also provides an overarching model for each individual program's tailored implementation, as no two NSS programs (or DoDD 5000.1 programs for that matter) follow the standard NSS 03-01 model.

The benefit of the AFOTEC Space Test Initiative will be better space warfighting systems acquired through early, continuous integrated testing involve-

ment, providing inputs to the requirements processes to ensure the system addresses the mission capability gap and informing early program decisions when changes are less costly. The initiative focuses the majority of the OT&E effort, conceptually 90 percent of the OT&E community's time, on pre-launch to inform the key Consent to Ship decision. With early and continuous involvement, we will ensure that leaders make conscious, fact-based decisions to send satellites into orbit and field new ground stations when the complete system-of-systems required to deliver warfighting capability is in place. □

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Improving AFOTEC's Contribution to the Acquisition Process: Moving Integrated Developmental and Operational Test to the Next Level

Maj. Gen. Stephen T. Sargeant
Air Force Operational Test and Evaluation Center Commander,
Kirtland Air Force Base, New Mexico

The Air Force Operational Test and Evaluation Center (AFOTEC) has aggressively moved forward over the last 12 months, institutionalizing early influence and is now influencing concepts, projects, and programs earlier than ever before. In addition, AFOTEC's Space Test Initiative (STI) has taken hold in space acquisition and is proving to better support the acquisition and operational decision makers for space systems. The STI is now the prescribed method for space operational test and evaluation (OT&E) and has transformed space test policy through collaboration between AFOTEC and the space community.

Most recently, we are working to address the processes to successfully execute integrated developmental and operational testing (IDT/OT) across all programs to take advantage of available efficiencies by sharing operationally relevant data and "buying down" dedicated OT&E time and asset costs when able. Finally, we have launched a new effort aimed at improving how we conduct OT&E for heavily software dependent capabilities. We have called our newest effort the Cyberspace Initiative.

Early influence: 1 year later

AFOTEC defines "early influence" OT&E activities as those occurring prior to milestone A or key decision point A, beginning with high performance teams (HPT). At these points in the acquisition timeline, there is a great opportunity to substantially influence capability requirements and acquisition strategies before they are approved by the *Air Force*

Requirements for Operational Capabilities Council (AFROCC).

Within AFOTEC, we moved leadership of early influence from an exclusively headquarters function to shared execution with the detachments. Program expertise and test execution reside in AFOTEC's detachments, and they now lead OT&E early influence in their respective focus areas with support from the headquarters. We also placed liaison officers (LNOs) in the Air Force Materiel Command product centers and the Pentagon to help identify early influence opportunities. The LNOs identify program managers for emerging programs as they are initiated and connect them with the appropriate test director in our detachments. We will complete our LNO manning by placing



Major General Stephen T. Sargeant, Commander

personnel at the Air Armament Center at Eglin Air Force Base (AFB), Florida, and the Space and Missile Systems Center at Los Angeles AFB, California, in July 2009.

AFOTEC has an early and active role in the Air Force Requirements Policy and Process Division HPTs that develop the capability requirements documents used throughout the life of a program. In fact, we recently helped Air Force Materiel Command make HPT involvement by their developmental testers mandatory to better identify test capability challenges early in a program. AFOTEC also advocated for all Major Commands (MAJCOMs) to invite Air Education and Training Command personnel to all HPTs to facilitate consideration of training issues and capabilities as part of the requirements for all programs.

From Initial Capability Documents (ICD) forward, AFOTEC participates in requirements refinement.

Using the Space Command and Control ICD review by the Integrated Test Team (ITT) as an example, AFOTEC identified 25 substantive comments during ICD preparation. As part of the ITT, our review helped refine requirements, ensuring they were testable, measurable, and operationally relevant. Several of the comments addressed parameters that limited design latitude with little operational foundation. Getting requirements documentation correct early improves the chances of successfully integrating developmental and operational testing to favorably affect the cost, schedule, and performance of a program by ensuring that realistic requirements are established and IDT/OT opportunities are identified. Additionally, early collaboration provides program office and developmental testers a look at the major factors affecting the “open book” test that operational testers will ultimately plan and execute.

In just the last 12 months, AFOTEC formally coordinated over 55 capability requirements documents. Of these documents, 38 were Joint Capabilities Documents (JCDs), ICDs, and capability development documents. JCDs are the earliest of these documents, developed prior to the functional solution analysis. JCDs are also written before experimentation or the selection of a material approach, before an acquisition category is assigned, and before Office of the Secretary of Defense, Director of Operational Test and Evaluation (DOT&E) oversight decisions are made. AFOTEC reviews these early capability documents for operational relevance, measurability, and testability.

We recently worked to ensure early OT&E influence is institutionalized in the Air Force and the Department of Defense (DoD) instructions and guidance. Specifically, we codified early influence concepts in DoD Instruction 5000.02, *Operation of the Defense Acquisition System*, and Air Force Instruction (AFI) 99-103, *Capabilities Based Test and Evaluation*. We are also ensuring that the guidance is contained in the Defense Acquisition Guidebook.

In the last year, AFOTEC executed 20 initial test design efforts using core teams with both internal and external participation. Core team representation includes users, program offices, developers, responsible test organizations, and DOT&E.

AFOTEC also exerts significant early influence in the form of early operational assessments (EOAs) of programs because they are planned and executed prior to milestone B or key decision point B. EOAs address capability and programmatic progress in terms of likely performance shortfalls, programmatic and documentation voids, and readiness for initial operational test and evaluation (IOT&E). EOAs provide invaluable insights to the using MAJCOM and the program office

to use in their trade-off decision process when changes are often less costly and more timely.

The Space Test Initiative

The AFOTEC-led STI is now space test policy. In July 2008, AFOTEC hosted the first Air Force Space Operational Test and Evaluation Summit at Kirtland AFB, New Mexico. Senior leaders from AFOTEC, Under Secretary of the Air Force Directorate of Space Acquisition, National Geospatial and Intelligence Agency, Air Force Space Command (AFSPC), Space and Missile Systems Center, and the Air Force Research Laboratory gathered to discuss STI and focused on creating a new space testing model for OT&E. The summit participants moved away from a process that resembled “standardization and evaluation” after launch or fielding, to a process of early and continuous involvement throughout the development and fielding of a new space-enabled capability. The three key elements of STI are early and continuous involvement and integrated testing, agile analysis and reporting, and system-of-systems evaluation.

Our new space OT&E model is endorsed well beyond the Air Force and provides a space system testing process tailored to the space acquisition model. Importantly, our space OT&E model now provides decision quality data to the space acquisition and operational decision-makers in a timely and accurate manner.

When AFOTEC’s Detachment 4 at Peterson AFB, Colorado, tested the Space-Based Infrared System (SBIRS) Highly Elliptical Orbit payload (HEO-1) and operations center, they combined IDT/OT with agile reporting to accelerate HEO-1 operations by 6 weeks. The key enabler reducing time and cost for the Operational Utility Evaluation (OUE) was Detachment 4’s leveraging of Lockheed Martin’s planned developmental testing period to also achieve operational testing objectives. Detachment 4 also leveraged system trial period operations to further execute and report on the OT&E. Using agile reporting, AFOTEC informed the AFSPC HEO-1 operational acceptance decision and further enabled a U.S. Strategic Command system certification 8 weeks early (*Figure 1*). AFOTEC is preparing to test a second HEO payload simply known as HEO-2. Although the HEO-2 program had not originally planned to conduct operational testing early in the program, AFSPC is capitalizing on the HEO-1 momentum created by AFOTEC’s new space OT&E model and is accelerating HEO-2 transition into the SBIRS constellation. Subsequent operational testing and reporting will further accelerate HEO architecture operational acceptance and employment of warfighting capabilities.

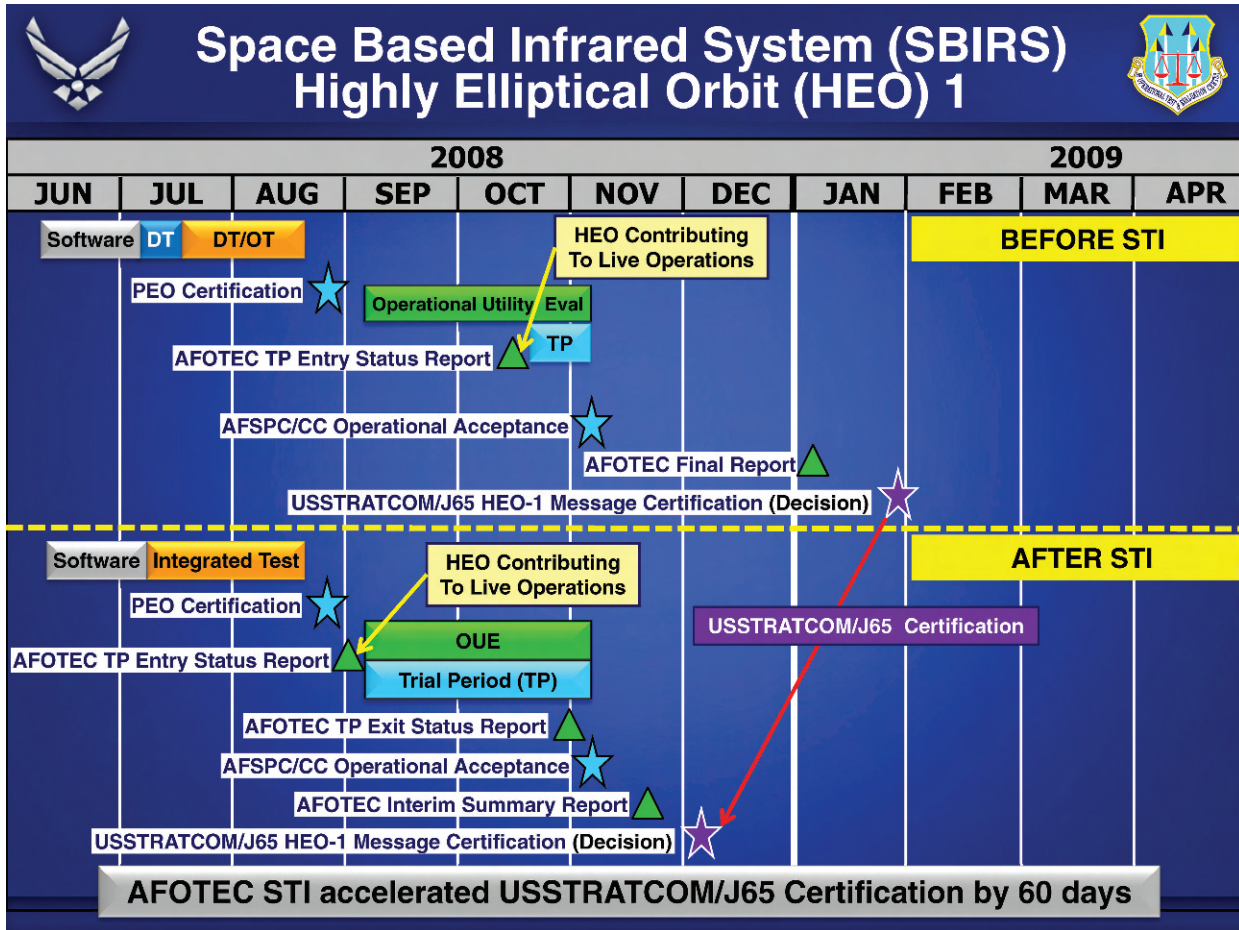


Figure 1. SBIRS space test initiative example.

AFOTEC drafted the new Chapter 8 for AFI 99-103, *Capabilities Based Test and Evaluation*, to reflect the new space OT&E model. Furthermore, AFOTEC hosted a meeting in December 2008 to draft an annex to National Security Space Acquisition Policy 03-01 (NSS 03-01), incorporating the space OT&E model and aligning NSS 03-01 with AFI 99-103. With the cancellation of NSS 03-01, the information in the draft annex will be proposed as an appendix to DoD Instruction 5000.02.

Overall, the new space OT&E model enables better space warfighting capability acquisition through early and continuous integrated testing to ensure that systems address mission capability gaps, and enables early user and program office trade-off decisions when changes are less costly and more timely.

Integrating DT and OT

The test community can often positively affect a program's cost-schedule-performance problems by making better use of limited resources to eliminate unnecessary duplication of test events, better assure systems are ready for operational testing, and reduce the

overall time required for dedicated operational testing. Integration of developmental testing and operational testing improves efficiency and, in many cases, allows us to reduce the cost of dedicated OT&E. Early influence is essential to successful IDT/OT for all programs.

The Air Force is leading the way in IDT/OT planning through participation in HPTs and ITTs. Working with the DT community provides early access to data critical to our operational assessments. Our participation in the HPTs and ITTs is the key to setting the conditions for the most effective IDT/OT. The AFOTEC and program office leaders cochair the ITT and therefore, can ensure the access to data.

At AFOTEC, we are making IDT/OT a requirement for all programs. Successful IDT/OT needs three things: early and continuous collaboration between the warfighter (user), acquisition, and T&E communities; OT&E plans informed by DT execution; and acknowledgment by the Program Element Officer (PEO) and appropriate DT wing commander of the dependency of the OT&E plan on planned DT execution.

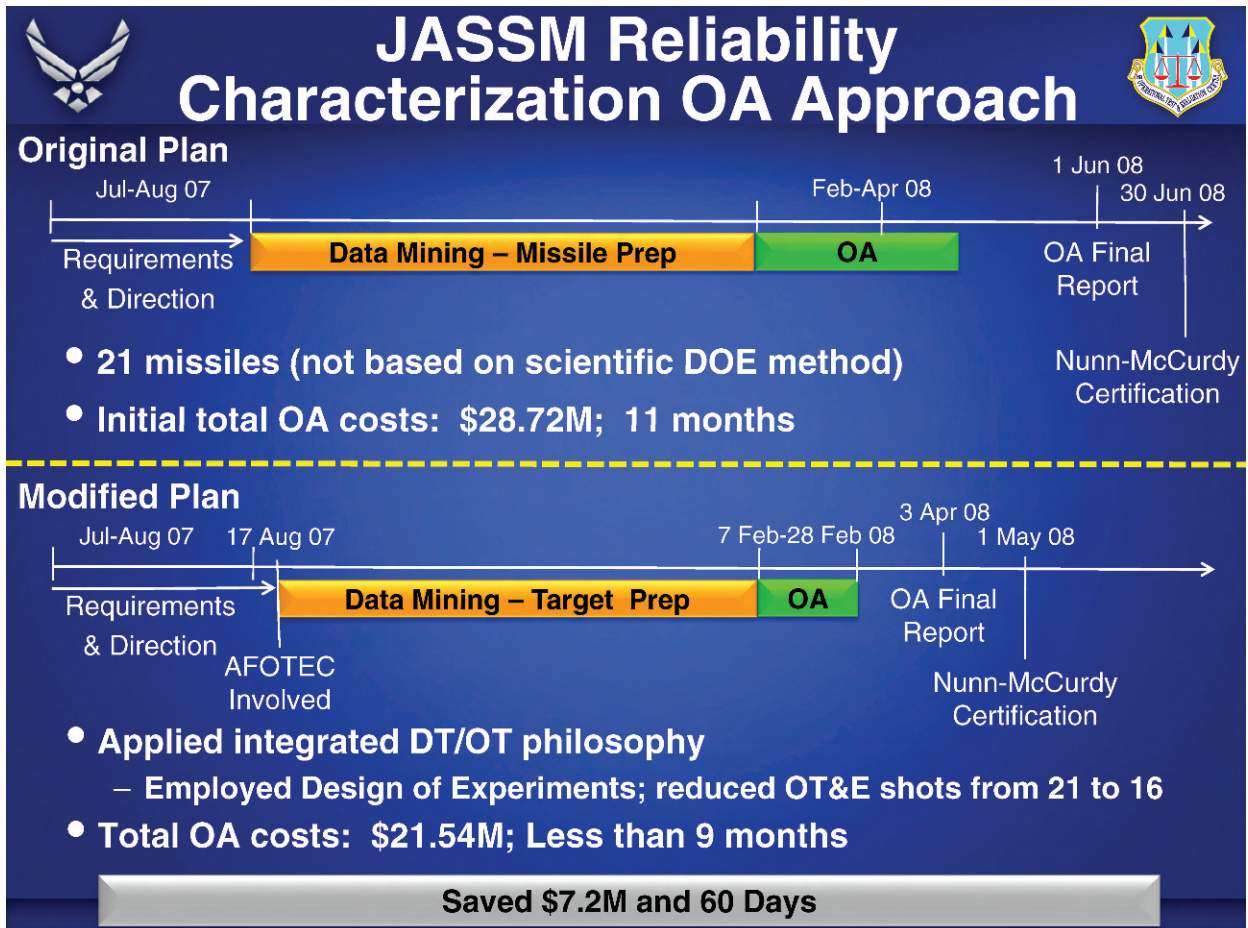


Figure 2. Joint air-to-surface standoff missile integrated DT/OT example.

Integration is where we are going in acquisition and test. It makes sense to use operationally relevant data generated by the developer and the developmental tester to “buy down” OT&E where able. Successful integration requires identifying data requirements for OT&E and providing access to the data in program contracts. Operational testers are now involved in the request for proposal (RFP) development process to help developers understand data sharing requirements early on.

By employing IDT/OT, the operational testers assume greater risk than in the past. Rather than waiting for the PEO to certify a program’s readiness for IOT&E, we now build our plans earlier and work to define the point at which DT systems are “production representative.” We also help identify when to put the system into more operationally realistic scenarios so we can gather operationally relevant data early, allowing us to “buy down” dedicated OT&E in terms of cost and time.

After we have scoured the DT plans to find areas of overlap and duplication, we will build an OT&E plan

that accounts for the operationally relevant DT data. We then send our OT&E plan to the PEO and DT wing commander for acknowledgment that our plan depends on DT execution as planned and the resultant data.

IDT/OT was one of the focus areas of the February 2009 Air Force Test and Evaluation Days we hosted in Albuquerque, New Mexico. The conference panels generated a great deal of discussion on the subject, and the conference working groups further developed their ideas to produce a draft white paper entitled: *Prescribed Process for Integrated DT/OT*. The processes developed in the white paper will also support our work with the entire test community to amend the range of DoD and U.S. Air Force instructions that will enable better integrated test and evaluation.

Early integrated DT/OT success stories

Though work remains to be done to further refine the processes enabling more effective IDT/OT, we demonstrated notable successes in our application of IDT/OT. The following examples illustrate some of

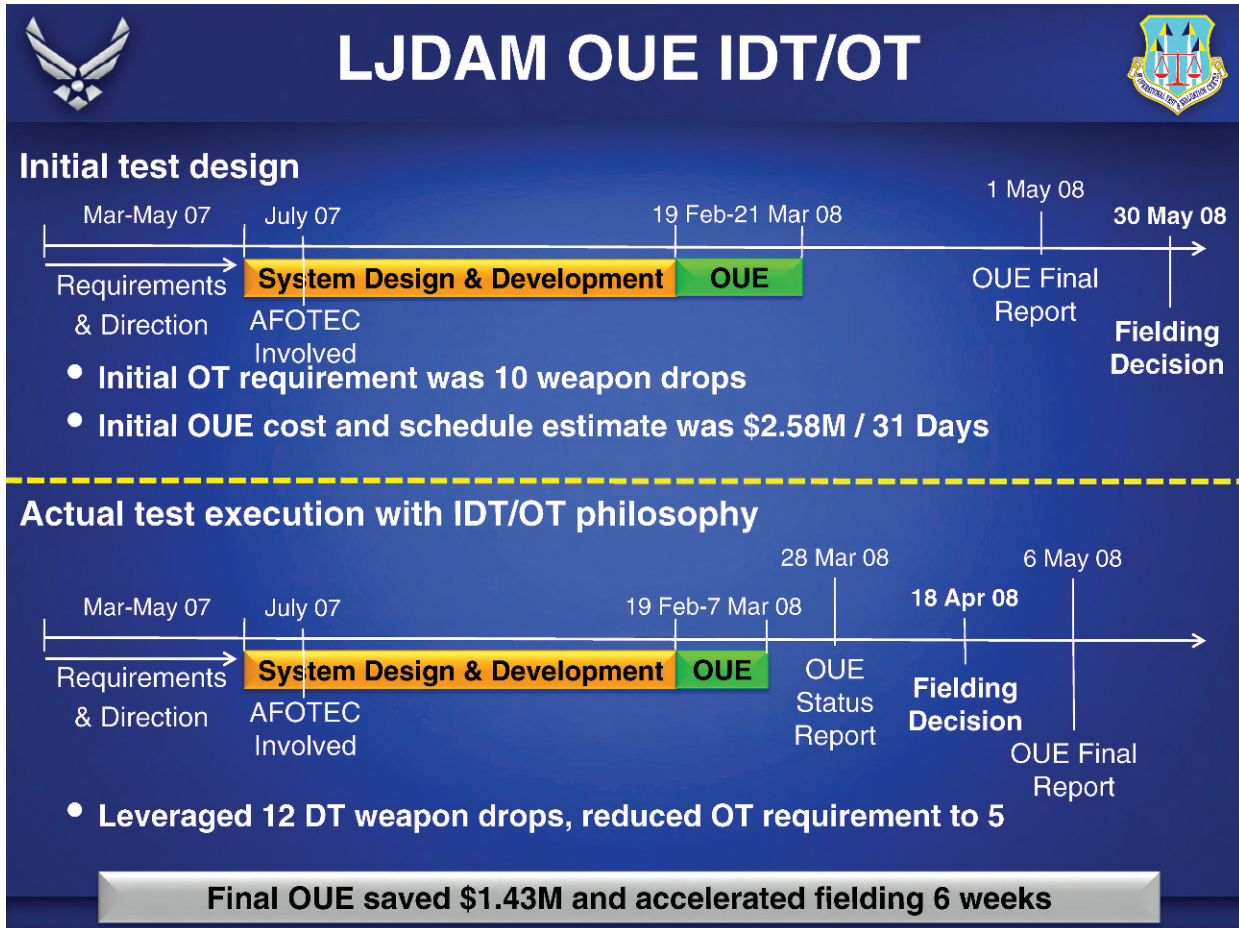


Figure 3. Laser JDAM example.

the efficiencies gained by working closely with the user, developer, and developmental testers. Early efforts ultimately reduce acquisition risk and accelerate warfighting capabilities to the warfighters.

The first example involves AFOTEC’s Detachment 2 at Eglin AFB, Florida. AFOTEC testers worked with the system program office and developer on the Joint Air to Surface Stand-Off Missile reliability characterization operational assessment (OA) (Figure 2). The Undersecretary of Defense (Acquisition, Technology and Logistics) directed the Air Force to conduct a reliability characterization program prior to Nunn-McCurdy certification hearings as a result of several weapon failures during the April 2007 Weapon System Evaluation Program.

The original plan was not based on scientific design of experiments (DOE) methods and called for 21 missiles at a cost of more than \$28 million and required 11 months to complete. We then applied DOE and used the data from several DT delivered weapons under our IDT/OT approach and reduced the number of dedicated OT&E weapons to 16. The IDT/OT

plan reduced the OA costs to approximately \$21.5 million and took less than 9 months to complete. IDT/OT and the use of DOE allowed us to save more than \$7 million and informed the Nunn-McCurdy certification hearing 60 days earlier than originally planned.

Another successful IDT/OT event also involved AFOTEC Detachment 2 testers working with the DT community in a successful Laser Joint Direct Attack Munition (JDAM) Operational Utility Evaluation (OUE) (Figure 3).

The Air Combat Command (ACC) asked AFOTEC to conduct an OUE on the Laser JDAM, an urgent operational need program addressing the capability to engage moving targets with JDAM. The initial test plan was based on DOE and required 31 days and 10 weapons to execute an adequate evaluation. We then applied an IDT/OT approach and leveraged 12 production representative DT weapons employment events. AFOTEC testers were able to augment and complement data from the DT drops using only five dedicated OT&E weapons. The impact of the approach resulted in a savings of five Laser

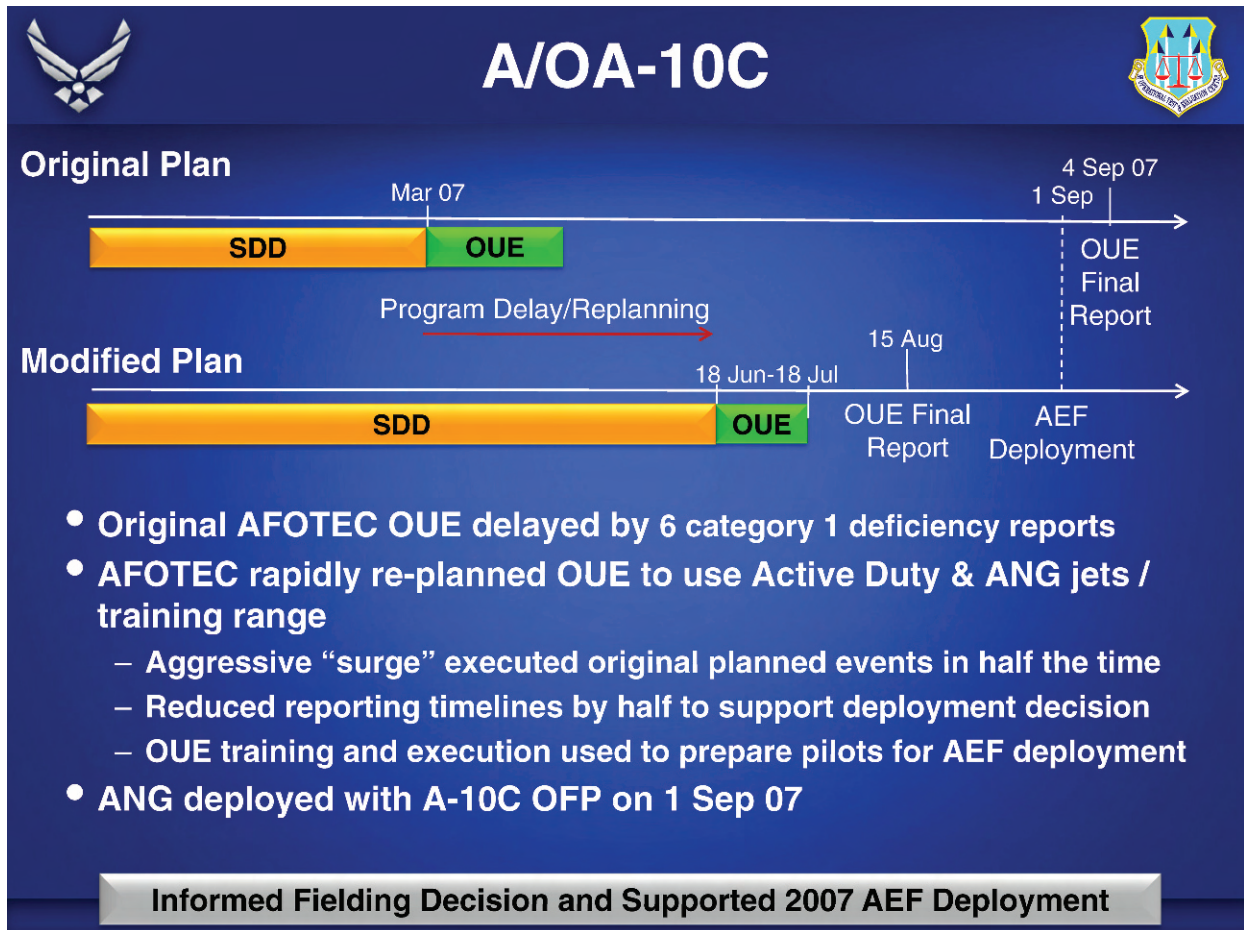


Figure 4. A/OA-10C example.

JDAMs valued at nearly \$300,000 each or \$1.43 million, as well as completing the OUE 14 days ahead of schedule. The accelerated reporting provided early, relevant information to the ACC decision maker and enabled an April 18, 2008, fielding decision. By May 2008, the weapons were being loaded on 332nd Air Expeditionary Wing aircraft at Joint Base Balad, Iraq. Airmen from the 77th Expeditionary Fighter Squadron, flying F-16 Fighting Falcons, successfully employed the first Laser JDAM August 12, 2008, against a moving enemy vehicle in the Diyala province in support of a Combined Iraqi army and U.S. Marine Corps operation.

“This first employment represents a great step in our Air Force’s ability to deliver precise effects across the spectrum of combat,” said Lt. Gen. Gary L. North, the U.S. Air Forces Central commander and U.S. Central Commands Combined Force Air Component commander in an August 2008 interview with Deagel.com. “The first combat employment of this weapon is the validation of the exacting hard work of an entire team of professionals who developed, tested and fielded this weapon on an extremely short timeline, based on an urgent needs request

we established in the combat zone.” The total time from concept to employment was only 17 months.

Another successful IDT/OT event was the A/OA-10C OUE conducted by AFOTEC’s Detachment 6 at Nellis AFB, Nevada. The original plan was to complete the OUE in March 2007 using jets from Davis-Monthan AFB, Arizona, and the Goldwater Range. However, during DT/OT, AFOTEC, ACC, and the System Program Office determined that, with six Category 1 Deficiency Reports, the Operational Flight Program was not ready for the OUE.

AFOTEC stayed engaged and committed to making the original August 1, 2007, fielding decision and subsequent September 2007 Air Expeditionary Force deployment by using a variety of IDT/OT data sharing techniques. AFOTEC’s Detachment 6 testers replanned the OUE to use Nellis active duty and Maryland Air National Guard crews and jets on the Nevada Test and Training Range during the June to July 2007 timeframe. The Maryland ANG also used the spin up for the OUE to train and prepare for their September 2007 deployment (Figure 4).

AFOTEC executed an extremely aggressive test schedule and report process. On August 1, 2007, the ACC commander decided to field the A/OA-10C, and the stage was set for the Maryland ANG to deploy on schedule. The Maryland ANG was the first unit to deploy with the A-10C and engage in combat operations. The first JDAM employed from the A-10C resulted in a direct hit on an insurgent safe house in Iraq.

Way ahead

As we developed the STI, we saw many similarities in the test and evaluation of cyberspace systems where we often conducted OT&E after fielding, providing limited value to acquisition decision makers for software intensive systems. To improve test and evaluation for cyberspace systems, we will stand down our Kirtland-based Detachment 3 and combine our cyberspace system expertise with Detachment 4 (space) and Detachment 2 (command, control, and communications systems).

AFOTEC will lead a cyberspace test working group and a summit to apply the same level of rigor to cyberspace OT&E as we did to space. Our goal is to produce a cyberspace OT&E model that better aligns with the acquisition strategies for these systems. Our cyberspace efforts are directly in line with the Air Force's current integration of cyber and space.

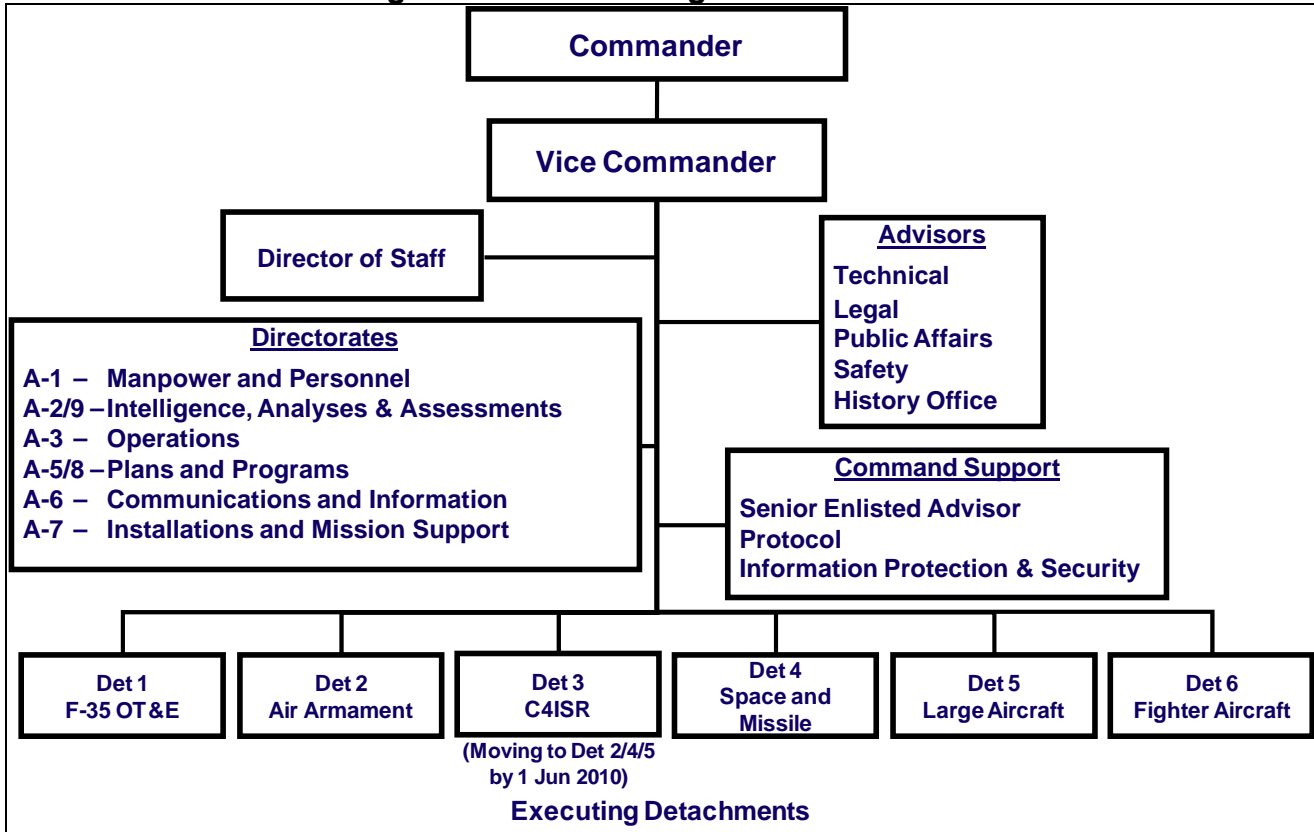
Summary

AFOTEC demonstrated the value of the new space OT&E model, early influence, and IDT/OT over the past year. Most importantly, we successfully codified and institutionalized early influence and IDT/OT as well as our new space OT&E model across the U.S. Air Force and DoD.

New levels of communication and coordination are enabling IDT/OT and resulting in significant cost and time savings for programs. Early and continuous communication between all players on the acquisition team, including the program office, the developer, the user, and the OT&E organization is the key to success. □

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Figure 1. AFOTEC Organizational Chart



NOTE: Det 3 is projected to stand-down effective 1 June 2010.

Table 1. AFOTEC Points of Contact

Office	Function	Contact Information
AFOTEC/CC	Commander	DSN: 246-4533; Comm: 505-846-4533
AFOTEC/A-3	Operations Directorate	DSN: 246-5239; Comm: 505-846-5239
AFOTEC/Det 1	F-35 OT&E	DSN: 525-6729; Comm: 661-275-6729
AFOTEC/Det 2	Electronic Warfare, Air Armament, Special Operations, Mission Planning, & Combat Support OT&E	DSN: 875-1089; Comm: 850-883-1089
AFOTEC/Det 3	C4ISR OT&E (moving to Det 2/4/5 by 1 June 2010)	DSN: 246-5246; Comm: 505-846-5246
AFOTEC/Det 4	Space System OT&E	DSN: 834-5850; Comm: 719-556-5850
AFOTEC/Det 5	Large Aircraft and UAV OT&E	DSN: 527-3666; Comm: 661-277-3666
AFOTEC/Det 6	Fighter Aircraft OT&E	DSN: 682-4325; Comm: 702-652-4325
AFOTEC/OL-WO	AFOTEC Liaison to Aeronautical Systems Center	DSN: 785-7515; Comm: 937-255-7515
AFOTEC/OL-HM	AFOTEC Liaison to Electronic Systems Center	DSN: 478-4638; Comm: 781-377-4638
AFOTEC/OL-LC	AFOTEC Liaison to Space and Missile Systems Center	DSN: 633-1416; Comm: 310 653-1416
AFOTEC/OL-DC	AFOTEC Liaison to HQ USAF	DSN: 227-0199; Comm: 703-697-0199
AFOTEC/OL-EF	AFOTEC Liaison to Air Armament Center	DSN: 872-0076; Comm: 850 882-0076
AFOTEC/OL-NN	AFOTEC Liaison to NTTR	DSN: 682-2916; Comm: 702-652-2916
AFOTEC/A-8X	AFOTEC Policy and Procedures	DSN: 246-9507; Comm: 505-846-9507
AFOTEC/A-5R	AFOTEC Test Infrastructure	DSN: 246-9060; Comm: 505-846-9060

NOTE: Det 3 is projected to stand-down effective 1 June 2010.

The Designated Lead Detachment for Your Program is: _____



Overview

The warfighting, acquisition, and T&E communities working together early and throughout a program's lifecycle can enable early influence. AFOTEC begins applying standardized methodologies for early influence prior to Milestone A by engaging in the Capabilities Based Assessment (CBA) process. The best opportunity to influence warfighting capabilities is when solutions are being analyzed. Through formal reviews of the early Joint Capabilities Integration and Development System (JCIDS) documents, such as the Joint Capabilities Document (JCDs) and Initial Capabilities Document (ICDs), we have the opportunity to influence capabilities before a material solution, or mix of solutions, are selected.

By combining the OT&E professionals with the other players early and often in the acquisition process, we increase communication, coordination and enable increased teamwork. The result is fewer surprises in the later part of the acquisition process. Early and constant communications will ensure that documents and plans can be modified as necessary to keep pace with the changing world. By institutionalizing the early influence approach, we are helping to stress and refine requirements from a testability and measurability standpoint, in order to provide an effective, suitable, and mission capable warfighting capability. AFOTEC does not write the requirements for emerging capabilities, but we do refine them from an operational vantage point.

Executing early influence may seem simple on the surface. However, in order to execute early influence effectively we have revamped our organization and processes to move beyond an era of mostly discussion and little action. Through early and continuous communication and coordination, the Air Force will benefit from high confidence OT&E planning with proven schedule and cost savings. Our goal is increased teamwork and decreased surprises at end game.

Figure 1 on the preceding page provides an overview of the AFOTEC organization. The AFOTEC detachments are specific to different types of weapon systems and capabilities. AFOTEC Detachment 1 at Edwards AFB, CA specializes in the OT&E of the F-35 weapon system. AFOTEC Detachment 2 at Eglin AFB, FL possesses core competencies in air armament systems, agile combat support systems, electronic warfare systems, & mission planning systems. AFOTEC Detachment 3 at Kirtland AFB, NM specializes in strategic & tactical communications systems; command, control, intelligence, surveillance, and reconnaissance systems; and information operations (these missions will move to Detachment 2/4/5 by 1 June 2010). AFOTEC Detachment 4 at Peterson AFB, CO is the AFOTEC center of expertise for space systems and ballistic missile defense systems. AFOTEC Detachment 5 at Edwards AFB, CA is responsible for bomber aircraft, tanker aircraft, airlift aircraft, special operations forces systems, & unmanned aircraft. AFOTEC Detachment 6 at Nellis AFB, NV focuses on other fighter aircraft.

Table 1 provides a concise listing of AFOTEC points of contact. AFOTEC Liaison Offices are co-located with each Air Force product centers as well as with Headquarters, Air Force. If there is a question about which office to contact, AFOTEC/A-3 or A-8X can assist in getting you to the correct office (see table 1).






The information in the following pages provides a snapshot of topics that should be addressed within the first thirty days of being assigned as a program manager (table 2). Following that, several pages walk through the Air Force acquisition process for non-space programs (table 3) and space programs (table 4) and highlight each product produced along with the AFOTEC participation or contribution. Tables 3 and 4 also provide an indication, based on working backwards from each milestone decision or key decision point, of when the particular product is typically completed, as well as a convenient tool to track the status of the product or document. Depending on where an acquisition program is in the overall process, some products may have already been prepared or may be not applicable.

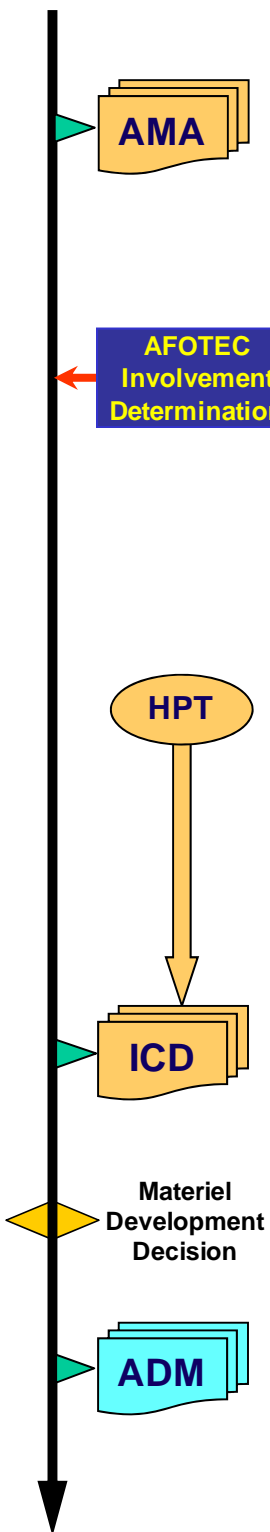
Table 2. First 30 Days Checklist

Topic/Focus Area *	Action	Status
Acquisition Strategy	Understand the acquisition strategy for your program. Specifically: <ul style="list-style-type: none"> • What is the Acquisition Category (I, II, III)? • Is the program an evolutionary acquisition program? • Are there increments or spirals? • What/when is the next milestone decision? • Is the program a multiservice program? 	_____ Not Started _____ In Progress _____ Complete
Funding and Contract Status	Understand the status of the program's funding and development contract status. Specifically: <ul style="list-style-type: none"> • What is the funding status of program; is the funding adequate? • What type of funding is the program using? • Is the development contract awarded? 	_____ Not Started _____ In Progress _____ Complete
Operational Capability Requirements	Understand the status of the operational capability requirements for the program. Specifically: <ul style="list-style-type: none"> • Are the requirements clearly written? • Are the Key Performance Parameters (KPP)/Key System Attributes (KSA) approved by the JROC? • When is the next High Performance Team (HPT)? 	_____ Not Started _____ In Progress _____ Complete
Concept of Operations/ Employment	Understand the status of the concept of operations or the concept of employment for the program.	_____ Not Started _____ In Progress _____ Complete
Acquisition Schedule	Understand the acquisition schedule for the program. Specifically: <ul style="list-style-type: none"> • Does the schedule allow adequate time for integrated (developmental and operational) testing? • Will a production-representative system be available for IOT&E? 	_____ Not Started _____ In Progress _____ Complete
Documentation Status	Understand the status of all required documentation for the program. <ul style="list-style-type: none"> • Many documents are required by regulation, as shown in Table 3 and Table 4. 	_____ Not Started _____ In Progress _____ Complete
Integrated Test Team	Understand the status of the integrated test team. Specifically: <ul style="list-style-type: none"> • Is the ITT charter signed by all required parties? • When is the next ITT meeting? 	_____ Not Started _____ In Progress _____ Complete
OSD T&E Oversight Status	Is the program on OSD T&E Oversight? Plan to make contact with oversight agency (USD/AT&L and DOT&E) action officers early.	_____ Not Started _____ In Progress _____ Complete
Operational Testing Status	Understand what, if any, operational testing has previously been accomplished.	_____ Not Started _____ In Progress _____ Complete

*** NOTE: The AFOTEC point of contact for any of these topics or focus areas is the appropriate lead detachment, the operations directorate (A-3), or the responsible liaison officer. For OT&E policy or infrastructure questions, contact AFOTEC/A-5/8. See table 1 for contact information.**

Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)

Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Analysis of Material Approaches (AMA) (SPO) AFI 63-101 MS A minus 36 mos</p>	<p>AFOTEC learns the results of the operational community's Functional Solution Analysis (FSA) assessment of candidate material solutions as well as understanding the integrated architecture and metrics for the various materiel approaches. AFOTEC reviews for potential operational test strategies/ capabilities for future activities once involved in the program.</p> <p>There is no direct OT&E contribution to this document.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>AFOTEC Involvement Determination Briefing (IDB) (OTA) MS A minus 30 mos</p>	<p>AFOTEC needs sufficient programmatic information to make an involvement determination. This information includes operational capability requirements, concept of operations, and the acquisition strategy.</p> <p>AFOTEC produces this package documenting the decision to be or not to be involved in the acquisition program as the OTA. Initial threat analysis and range requirements are detailed to begin formal internal AFOTEC planning.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Capabilities Document High Performance Teams (HPT) (User) AFI 10-601 MS A minus 30 mos</p>	<p>AFOTEC is invited to participate in the JCD/ICD HPT as a core team member to assist in developing capability requirements for a known mission capability gap.</p> <p>AFOTEC assists in the Joint Capabilities Integration and Development System (JCIDS) process to develop capabilities requirements documented in the JCD/ICD by contributing considerations such as soundness of operational capability requirements, the testability of those requirements, and offering a listing of potential operational capabilities (OC) needed to fill the identified capability gap.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Initial Capability Document (ICD) (User) AFI 10-601 MS A minus 24 mos</p>	<p>AFOTEC is provided the opportunity to review the ICD and provide "operational tester" feedback. AFOTEC gains understanding of: 1) the gap/shortfall requiring a material solution; 2) the operational objectives or critical elements of the operation in the mission level context; and 3) the operational capabilities and key attributes the material solution must possess to satisfy the capability gap.</p> <p>AFOTEC provides feedback to the user to ensure the capability requirements reflect the needed operational capabilities. These capability requirements must be complete, operationally relevant, and testable.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Acquisition Decision Memorandum (ADM) (SPO) AFI 63-101 MS A minus 14 mos</p>	<p>AFOTEC needs to be cognizant of the decisions documented in the ADM, to include official acquisition program start and direction to establish an integrated test team (ITT). Support and implement the OT activities (such as involvement decision, early influence, test planning, co-developing the ITT) required by the ADM directing official acquisition program start.</p> <p>AFOTEC/CC coordinates on the ADM.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>


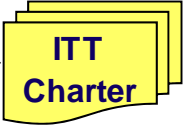

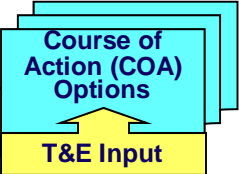




Legend:  = User Product  = SPO Product  = ITT Product  = AFOTEC Product

¹ The AFOTEC point of contact (POC) for any program-specific products is the appropriate lead detachment; the POC for something not specific to a program is either the operations directorate (A-3), or the responsible liaison officer. For OT&E policy or infrastructure questions, contact AFOTEC/A-5/8. See table 1 for contact information.

² The timing listed for each product or document is typical and should be adjusted for the specific program

Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)





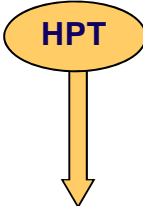
Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 Integrated Test Team (ITT) established/Charter developed (SPO/OTA) AFI 63-101, AFI 99-103 MS A minus 10 mos	The SPO initiates the stand-up of the ITT and associated charter for co-development with the ITT co-chair, AFOTEC. The charter should address required deliverables as well as the Readiness to Test (RTT) approach and review schedule for OT&E readiness certification. As co-chair of the ITT, the operational test organization (AFOTEC if conducting OT&E) co-manages integrated test planning, execution, and reporting with the goal of integrating development testing and operational testing for increased efficiency. AFOTEC provides charter inputs on the OT strategy, OT roles and responsibilities, and integrated DT/OT products.	___ Not Applicable ___ Draft ___ Final, Date: _____
 Analysis of Alternatives (AoA) (User) AFI 10-601 MS A minus 9 mos	AFOTEC is invited to participate on the AoA team providing an OT perspective to the AoA study plan. AFOTEC provides input to the AoA study plan in the form of potential critical operational issues (COI), measures of operational effectiveness/ suitability and associated criteria in support of the material and non-material alternatives being studied, to include the subsequent analysis and reporting. Knowledge gained from the AoA efforts can serve to develop an initial integrated and OT strategy.	___ Not Applicable ___ Draft ___ Final, Date: _____
 Course of Action (COA) (SPO/User) AFI 63-101, AFI 10-601 MS A minus 8 mos T&E Input	AFOTEC needs to understand the program selected from the alternative choices the MAJCOM and the milestone decision authority (MDA) (or designee) have agreed to. AFOTEC, thru the ITT, provides preliminary OT strategy from an initial test design for the MAJCOM selected alternative. This preliminary OT strategy serves as an input to the T&E Strategy required prior to the milestone (MS) A decision.	___ Not Applicable ___ Draft ___ Final, Date: _____
 Technology Development Strategy (TDS) (SPO) AFI 63-101 MS A minus 7 mos	AFOTEC gains insight on the approach to technology development using demonstrations or prototypes so the user and developer can determine if the proposed mature technology solution is affordable and militarily useful. AFOTEC provides early influence input to the proposed demonstrations and prototypes for operational test relevance and possible integrated test events.	___ Not Applicable ___ Draft ___ Final, Date: _____
 Test and Evaluation Strategy (TES) (SPO/RTO/OTA) AFI 99-103 MS A minus 7 mos	The SPO, using the ITT, initiates the description of the overall T&E strategy for the selected solution, providing the developmental test (DT) strategy and the program management concept of an integrated test strategy. AFOTEC develops the OT strategy and reviews the DT strategy to co-develop with the SPO an integrated test strategy, including modeling and simulation. TES inputs provide the first iteration of the test and evaluation master plan (TEMP) for the program.	___ Not Applicable ___ Draft ___ Final, Date: _____
		

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Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)

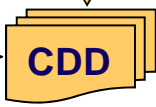

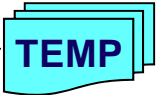
Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Modeling and Simulation (M&S) Support Plan (MSSP) (SPO) AFI 16-1002 MS A minus 7 mos</p>	<p>This document provides AFOTEC: 1) Information on the integrated use of M&S within program planning activities and across functional disciplines, 2) opportunity to review M&S requirements and development (or use) strategy, and 3) opportunity to review and participate in planned M&S verification and validation activities.</p> <p>AFOTEC provides early influence review and input of M&S requirements. Provide M&S resource requirements for OT&E and advise about the development and VV&A of M&S resources.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Life Cycle Management Plan (LCMP) (SPO/OTA) AFI 63-101, AFI 99-103 MS A minus 7 mos</p>	<p>This document provides AFOTEC: 1) information on the integrated acquisition and sustainment strategy for the life of the proposed material solution, and 2) opportunity to review the required T&E summary (or TEMP level of information if TEMP is not expected to be required).</p> <p>AFOTEC provides early influence review and input for operational test relevant considerations. Review required T&E summary information from the OT and integrated perspectives (TEMP-like information if TEMP is not expected to be required).</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Information Support Plan (ISP) (SPO) AFI 63-101 MS A minus 7 mos</p>	<p>AFOTEC gains familiarity with the SPO's identification and documentation of information needs, infrastructure and intelligence support, information technology and National Security Systems interface requirements, and net-centric, interoperability, supportability and sufficiency concerns. Ensure the required net-ready key performance parameter (NR-KPP) and DOT&E special interest items (SII) centered on information assurance, interoperability and electromagnetic environmental effects (E³) are considered by the SPO and included as part of the overall T&E strategy for the proposed material solution.</p> <p>AFOTEC reviews and coordinates the ISP.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
<p>MS A</p>  <p>Acquisition Decision Memorandum (ADM) (SPO) AFI 63-101 MS B minus 20 mos</p>	<p>AFOTEC needs to be cognizant of the decisions documented in the ADM, to include official acquisition program start and direction to establish an integrated test team (ITT). Support and implement the OT activities (such as involvement decision, early influence, test planning, co-developing the ITT) required by the ADM directing official acquisition program start.</p> <p>AFOTEC/CC coordinates on the ADM.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Capabilities Document High Performance Teams (HPT) (User) AFI 10-601 MS B minus 18 mos</p>	<p>AFOTEC is invited to participate in the CDD HPT as a core team member to assist in developing capability requirements for a known mission capability gap.</p> <p>AFOTEC assists in the JCIDS process to develop capabilities requirements documented in the CDD by contributing considerations such as completeness, relevance, soundness of operational capability requirements, and the testability of those requirements.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>

Legend:  = User Product  = SPO Product  = ITT Product  = AFOTEC Product

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Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)






Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Capability Development Document (CDD) (<i>User</i>) AFI 10-601 MS B minus 12 mos</p>	<p>AFOTEC is provided the opportunity to review the CDD and provide “operational tester” feedback. Gain understanding of the required KPPs and key system attributes (KSA) in relation to operational capability critical operational issues, performance operational measures and associated criteria expressed by thresholds and objectives.</p> <p>AFOTEC provides feedback to ensure the capability requirements reflect the needed operational capabilities. These capability requirements must be complete, operationally relevant, and testable. Feedback discovered during early influence activities is provided to the HPT. Initial test design and plans, to include TEMP parts III and IV inputs, are developed using the CDD.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Integrated Test Design (<i>RTO/OTA</i>) AFI 99-103 MS B minus 8 mos</p>	<p>The SPO develops detailed and feasible developmental test design, objectives and known test requirements that can be used by the ITT to develop an integrated DT/OT concept for execution by the developers and OTA, along with populating the TEMP.</p> <p>AFOTEC develops a feasible operational test construct and initial operational test plan consisting of COIs, measures, events, scenarios, scope/ methodology, limitations, test capabilities and test resources that can be implemented by the ITT into an integrated test concept and TEMP.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Test and Evaluation Master Plan (TEMP) (<i>SPO/RTO/OTA</i>) AFI 63-101, AFI 99-103 MS B minus 6 mos</p>	<p>The SPO, using the ITT and starting with the TES, initiates the development of the TEMP by recording: the critical technical parameters; integrated master test schedule (to include but not limited to acquisition milestones, development schedule, integrated DT/OT, and OT activities); T&E management responsibilities; detailed DT strategy and objectives; dedicated OT&E readiness entrance and exit criteria; and final T&E resources. SPO support to the AFOTEC initial test design work is desired by providing system development and developmental testing (DT) expertise.</p> <p>AFOTEC provides input to Part III integrated DT/OT and OT test events. AFOTEC develops OT&E details based on initial test design/planning which include: 1) COIs; 2) TEMP measure summary reflecting the CDD; 3) OT&E events with configuration description, objectives, scenarios, scope, methodology integrated test opportunities, and limitations; and 4) entrance criteria for starting dedicated IOT&E. AFOTEC provides input to Part IV OT&E resources include funding, manpower, and test articles/ capabilities, including modeling and simulation. In order to ensure future testing adequacy, limitations to threat representation must be addressed, as this feeds into the Foreign Materiel Program. The TEMP is one of the formal methods to document threat limitations which are seen by external agencies.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>




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Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)






Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Modeling and Simulation Support Plan (MSSP) (SPO) AFI 16-1002 MS B minus 6 mos</p>	<p>This document provides AFOTEC updated: 1) Information on the integrated use of M&S within program planning activities and across functional disciplines, 2) opportunity to review M&S requirements and development (or use) strategy, and 3) opportunity to review and participate in planned M&S verification and validation activities.</p> <p>AFOTEC provides input of M&S requirements based on initial test design. Provide M&S resource requirements for OT&E and advise about the development and VV&A of M&S resources.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>LCMP Update (SPO) AFI 63-101, AFI 99-103 MS B minus 6 mos</p>	<p>This document provides AFOTEC: 1) updated information on the integrated acquisition and sustainment strategy for the life of the proposed material solution, and 2) opportunity to review the required T&E summary (or TEMP level of information if TEMP is not expected to be required).</p> <p>AFOTEC provides review and input for OT-relevant considerations. Review and input on the required T&E summary information from the OT and integrated test perspectives (TEMP-like information if TEMP is not expected to be required).</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>AoA Update (if applicable) (User) AFI 10-601 MS B minus 6 mos</p>	<p>This document provides AFOTEC updates to the AoA as a result of technology development phase efforts, if applicable.</p> <p>AFOTEC provides input to the updated AoA including updated OT&E construct, which includes COIs, measures of operational effectiveness/ suitability and associated criteria, resulting from early influence and EOA activities.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>ITT Charter Update (ITT) AFI 63-101, AFI 99-103 MS B minus 6 mos</p>	<p>The SPO updates the ITT charter with applicable impacts resulting from the technology development phase efforts. The charter should address required deliverables as well as the Readiness to Test (RTT) approach and review schedule for OT&E readiness certification.</p> <p>As co-chair of the ITT, AFOTEC provides charter updates on the OT strategy, OT roles and responsibilities and integrated DT/OT products resulting from early influence and EOA activities.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>ISP Update (SPO) AFI 63-101 MS B minus 6 mos</p>	<p>AFOTEC gains familiarity with the SPO's identification and documentation of information needs, infrastructure and intelligence support, information technology and National Security Systems interface requirements, and net-centric, interoperability, supportability and sufficiency concerns derived from the technology development phase results. Ensure the required NR-KPP and DOT&E special interest items (SII) centered on information assurance, interoperability and E³ are considered and implemented by the SPO.</p> <p>AFOTEC reviews and coordinates the ISP.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>

Legend:  = User Product  = SPO Product  = ITT Product  = AFOTEC Product

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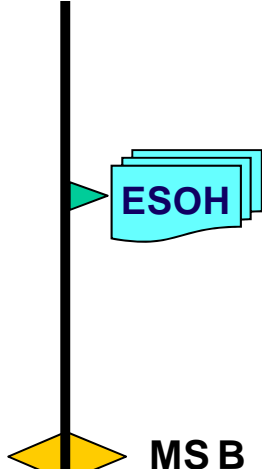
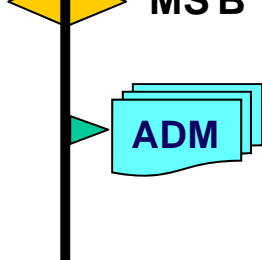
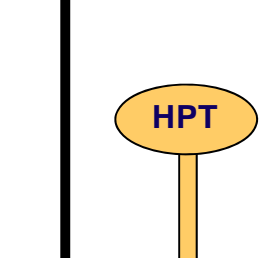
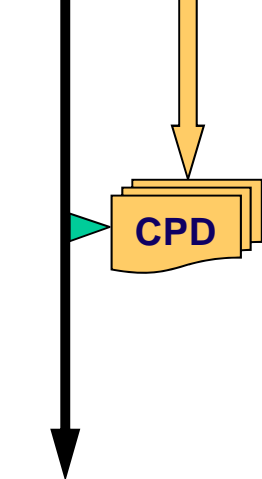
Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Deficiency Reporting (SPO/User) AFI 63-101, AFI 99-103 MS B minus 6 mos</p>	<p>The SPO establishes and administers a deficiency reporting (DR) process according to Technical Order (TO) 00-35D-54, <i>USAF Deficiency Reporting and Investigating System</i> and AFI 63-501, <i>Air Force Acquisition Quality Program</i>.</p> <p>AFOTEC will use and participate in the DR process throughout all phases of OT, early influence, test planning, execution and reporting.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Program Management Directive (PMD) (SAF/AQ PEO) AFI 63-101 MS B minus 6 mos</p>	<p>As co-chair of the ITT, the SPO receives the PMD which provides official HQ USAF documentation and direction for the Air Force program of record determined at the MS B decision, conveys the guidance and direction of the decision authority, identifies the various organizations along with their essential responsibility and provides direction for the associated T&E activities.</p> <p>As the ITT co-chair, AFOTEC provides results from a review of the PMD to ensure government operational test organizations are in compliance and their key responsibilities are correctly identified to ensure fully integrated testing with the development testing community.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>System Threat Assessment (STA) or System Threat Assessment Report (STAR) (SPO) DoDI 5000.02 MS B minus 6 mos</p>	<p>The DIA-validated STA/STAR provides the test/acquisition community with validated, current threat analysis specific to the system under test. In the case where no STA/STAR is available, the appropriate Capstone Threat Assessments (CTA) provides similar information for a broader category of system.</p> <p>AFOTEC uses the STA/STAR/CTA as a guide to develop threat lists, coordinate the expected threat environment with range personnel to plan range costing, and to state limitations to threat testing.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Request for Proposal (RFP) (SPO) AFI 63-101 MS B minus 6 mos</p>	<p>The SPO provides a draft RFP and statement of work (SOW) supporting the TES, contractor support to DT/OT, a common T&E data base and DR system.</p> <p>AFOTEC reviews requirements and provides feedback concerning developing contractor support to such items as the OT strategy and concept, specific integrated logistics support requirements if implemented by the program's concept of operations, the deficiency reporting process, a common T&E data base, and system modeling and simulation requirements.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Security Classification Guide (SCG) (SPO/User) AFMAN 63-119, Defense Acquisition Guidebook MS B minus 6 mos</p>	<p>A SPO-developed guide that informs T&E planners of the proper classification of all data associated with the system under test. Ensure that all aspects of operational and integrated test planning and documentation accurately classify all the appropriate testing data for security of the system.</p> <p>There is no direct OT&E contribution to this document.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>





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Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)






Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Environmental Safety and Occupational Health (ESOH) (SPO) AFI 63-101, AFI 99-103, AFI 63-1201 MS B minus 6 mos</p>	<p>This SPO-developed document provides AFOTEC support strategy containing programmatic, environmental, safety, and health evaluation (PESHE) document summarizing: ESOH risks, strategy for integrating ESOH considerations into systems engineering process; method for tracking progress; completion schedule for National Environmental Policy Act (NEPA); Operational Safety, Suitability, and Effectiveness (OSS&E) strategy.</p> <p>AFOTEC performs an initial evaluation of safety aspects of T&E plans prior to commencement of test activities via Safety Review Board. Ensure strategy is in place to identify/mitigate health and safety hazards. Determine if humans are to be used as test subjects and evaluate anticipated level of risk.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Acquisition Decision Memorandum (ADM) (SPO) AFI 63-101 MS C minus 20 mos</p>	<p>AFOTEC needs to be cognizant of the decisions documented in the ADM, to include official acquisition program start and direction to establish an integrated test team (ITT). Support and implement the OT activities (such as involvement decision, early influence, test planning, co-developing the ITT) required by the ADM directing official acquisition program start.</p> <p>AFOTEC/CC coordinates on the ADM.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Capabilities Document High Performance Teams (HPT) (User) AFI 10-601 MS C minus 18 mos</p>	<p>AFOTEC is invited to participate in the CDD HPT as a core team member to assist in developing capability requirements for a known mission capability gap.</p> <p>AFOTEC assists in the JCIDS process to develop capabilities requirements documented in the CDD by contributing considerations such as completeness, relevance, soundness of operational capability requirements, and the testability of those requirements.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Capabilities Production Document (CPD) (User) AFI 10-601 MS C minus 12 mos</p>	<p>AFOTEC is provided the opportunity to review the CPD and provide "operational tester" feedback. Gain understanding of the finalized required KPPs and KSA in relation to operational capability critical operational issues, performance operational measures and associated criteria expressed by thresholds and objectives.</p> <p>AFOTEC provides feedback to ensure the capability requirements reflect the needed operational capabilities. These capability requirements must be complete, operationally relevant, and testable. Feedback discovered during test planning activities including any conducted OA to determine progress towards capability performance is provided. Initial test design and plans, to include TEMP Part III inputs, are developed using the CPD.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>


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Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)



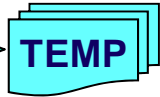

Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Concept of Operations (CONOPS) (User) AFI 63-101, AFI 99-103 MS C minus 12 mos</p>	<p>The user develops a system CONOPS detailing the user/operator's concept for operations, maintenance and training associated with employing the system.</p> <p>AFOTEC ensures the system CONOPS is reflected in the OT&E and integrated test strategies, test design and planning, to include OT&E documents, so that the OT&E of the system is executed as the user/operator plans to employ the system in mission operations. System CONOPS may negate the need for certain threat/range testing previously planned.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>PMD Update (PEO) AFI 63-101 MS C minus 12 mos</p>	<p>As co-chair of the ITT, the SPO receives an updated PMD.</p> <p>As the ITT co-chair, AFOTEC provides results from a review of the PMD to ensure government operational test organizations are in compliance and their key responsibilities are correctly identified to ensure fully integrated testing with the development testing community based on early influence activities.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Integrated Test Concept/ Plan (SPO/RTO/OTA) AFI 99-103 MS C minus 12 mos</p>	<p>The SPO refines the initial developmental test design so it can be used by the ITT to develop an executable integrated test (combined DT/OT) concept and plan for execution by the developers and OTA, along with updating the TEMP.</p> <p>AFOTEC provides an executable OT construct and initial test design consisting of COIs, measures/identified standards with criteria, events, scenarios, scope/methodology, limitations, test capabilities, and test resources that can be implemented by the ITT into an executable integrated test concept and used to update the TEMP.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Modeling and Simulation Support Plan (MSSP) (SPO) AFI 16-1002 MS C minus 6 mos</p>	<p>This document provides AFOTEC updated: 1) Information on the integrated use of M&S within program planning activities and across functional disciplines, 2) opportunity to review M&S requirements and development (or use) strategy, and 3) opportunity to review and participate in planned M&S verification and validation activities.</p> <p>AFOTEC uses the verification and validation plans and resulting information developed for the planned models and simulations to produce an independent accreditation plan and report.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>LCMP Update (SPO) AFI 63-101, AFI 99-103 MS C minus 6 mos</p>	<p>This document provides 1) updated information on the integrated acquisition and sustainment strategy for the life of the proposed material solution, and 2) opportunity to review the required T&E summary (or TEMP level of information if TEMP is not expected to be required).</p> <p>AFOTEC review and provides input for OT-relevant considerations. Review and input on the required T&E summary information from the OT and integrated test perspectives (TEMP like information if TEMP is not expected to be required).</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>

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Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)






Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>OT&E OA Plan (OTA) MS C minus 6 mos</p>	<p>AFOTEC requires sufficient programmatic information to develop the OT&E OA Plan. This information will include: operational capability requirements, acquisition strategy, developmental test activities, and concept of operations.</p> <p>This is an AFOTEC-produced document outlining the OTA's plan for assessing the progress toward the effectiveness and suitability of the system being acquired as well as assessing the readiness of the system for the planned IOT&E.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>AoA Update (if applicable) (User) AFI 10-601 MS C minus 6 mos</p>	<p>Provide AFOTEC updates to the AoA as a result of activities from the system development and demonstration phase, if applicable.</p> <p>AFOTEC provides inputs to the updated AoA, including updated OT&E construct, which includes COIs, measures of operational effectiveness/ suitability and associated criteria, resulting from appropriate early influence and EOA/OA/OUE activities.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>TEMP Update (SPO/RTO/OTA) AFI 63-101, AFI 99-103 MS C minus 6 mos</p>	<p>The SPO, using the ITT and starting with the TES, updates the TEMP by recording: the critical technical parameters; integrated master test schedule (to include but not limited to acquisition milestones, development schedule, integrated DT/OT and OT activities); T&E management responsibilities; detailed DT strategy and objectives; dedicated OT&E readiness entrance and exit criteria; and final T&E resources.</p> <p>AFOTEC provides input to Part III integrated DT/OT and OT test events. AFOTEC develops OT&E details based on initial test design/planning which include: 1) COIs; 2) TEMP measure summary reflecting the CDD; 3) OT&E events with configuration description, objectives, scenarios, scope, methodology integrated test opportunities, and limitations; and 4) entrance criteria for starting dedicated IOT&E. AFOTEC provides input to Part IV OT&E resources include funding, manpower, and test articles/ capabilities, including modeling and simulation. In order to ensure future testing adequacy, limitations to threat representation must be addressed, as this feeds into the Foreign Materiel Program. The TEMP is one of the formal methods to document threat limitations which are seen by external agencies.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>ITT Charter Update (ITT) AFI 63-101, AFI 99-103 MS C minus 6 mos</p>	<p>The SPO updates the ITT charter with applicable impacts resulting from the system development and demonstration phase activities. The charter should address required deliverables as well as the Readiness to Test (RTT) approach and review schedule for OT&E readiness certification.</p> <p>As co-chair of the ITT, AFOTEC provides charter updates on the OT strategy, OT roles and responsibilities and integrated T&E/ OT products resulting from appropriate early influence and EOA/OA/OUE activities.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>

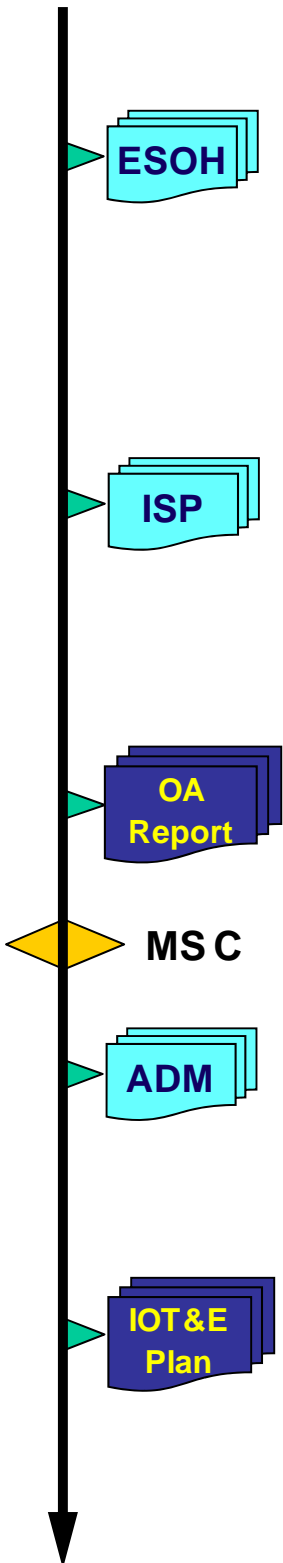
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Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)

Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Environmental Safety and Occupational Health (ESO)H) (SPO) AFI 63-101, AFI 99-103, AFI 63-1201 MS C minus 6 mos</p>	<p>This SPO-developed document provides AFOTEC updated PESHE, ESOH, and OSS&E support strategy with identified health and safety hazards. Documented determination human risk level if humans are used as subjects, and annotated/acted upon appropriately by Institutional Review Board (IRB) if necessary.</p> <p>AFOTEC performs an evaluation of updated safety aspects of T&E plans. Ensure all identified health and safety hazards have mitigation plans in place. If humans are used as test subjects, determine level of risk to the human and document accordingly.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>ISP Update (RTO/OTA) AFI 63-101 MS C minus 6 mos</p>	<p>AFOTEC gains familiarity with the SPO's identification and documentation of information needs, infrastructure and intelligence support, information technology and National Security Systems interface requirements, and net-centric, interoperability, supportability and sufficiency concerns derived from the technology development phase results. Ensure the required NR-KPP and DOT&E special interest items (SII) centered on information assurance, interoperability and E³ are considered and implemented by the SPO.</p> <p>AFOTEC reviews and coordinates the ISP.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>AFOTEC Operational Assessment Report (OTA) AFI 99-103 MS C minus 45 days</p>	<p>AFOTEC expects access to the system and associated documentation in order to execute the OA.</p> <p>The results of the OA are documented in an AFOTEC OA report. This report will assess the progress towards effectiveness and suitability, assessing the COIs, and assessing the system's readiness for dedicated IOT&E. The report is provided in sufficient time to support the milestone decision.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Acquisition Decision Memorandum (ADM) (SPO) AFI 63-101 MS C plus 2 mos</p>	<p>AFOTEC needs to be cognizant of the decisions documented in the ADM, to include official acquisition program start and direction to establish an integrated test team (ITT). Support and implement the OT activities (such as involvement decision, early influence, initial test planning, co-developing the ITT) required by the ADM directing official acquisition program start.</p> <p>AFOTEC/CC coordinates on the ADM.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>OT&E Test Plan (OTA) IOT&E minus 6 mos</p>	<p>AFOTEC requires sufficient programmatic information to develop the OT&E Test Plan. This information will include: operational capability requirements, acquisition strategy, developmental test activities, and concept of operations.</p> <p>This is an AFOTEC-produced document outlining the OTA's plan for determining the effectiveness and suitability of the system being acquired. The plan will contain integrated DT/OT events. The approved IOT&E Plan is sent to the PEO for acknowledgement of OT&E reliance on the IDT/OT events.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>










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Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)

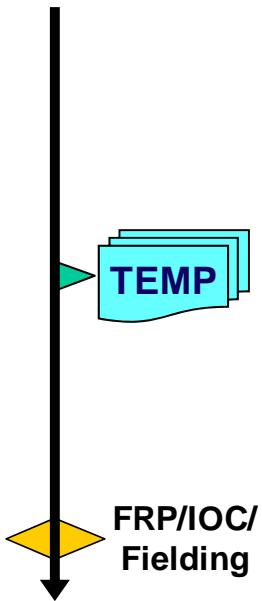
Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Environmental Safety and Occupational Health (ESOH) (SPO) AFI 63-101, AFI 99-103, AFI 63-1201 IOT&E minus 30 days</p>	<p>The SPO provides AFOTEC: 1) Safety Release to testers prior to any test using personnel. 2) Final ESOH evaluations of the system. 3) Human Use Protocol and final human risk level annotated/acted upon appropriately by Institutional Review Board (IRB) if humans are used as subjects.</p> <p>AFOTEC performs a final evaluation of the safety aspects of T&E plans prior to IOT&E. Ensure all identified health and safety hazards have been mitigated and accepted at the appropriate Risk Authority level. If humans are used as test subjects, evaluate validity of IRB protocols for IOT&E.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Operational Test Readiness Certification Letter (following AFMAN 63-119 templates) (PEO) AFI 99-103, AFMAN 63-119 IOT&E start minus 15 days</p>	<p>The SPO provides a certification readiness memo from the system program's PEO (or designated OT&E Certification Official), sent to the AFOTEC commander approximately 15 days prior to start of dedicated IOT&E, or as agreed.</p> <p>The AFOTEC commander will acknowledge the certification before starting dedicated IOT&E and either concur or non-concur with the OT&E Certification Official's assessment, restating any reservations or positions on unresolved issues.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>OT&E Final Report (OTA) AFI 99-103 FRP minus 45 days</p>	<p>AFOTEC expects a fully production representative system to be delivered to execute the dedicated OT&E. Representative system users and maintainers are also required to execute the OT&E.</p> <p>The results of the OT&E are documented in an AFOTEC final report. This report will make a determination of effectiveness and suitability, rate the COIs, and determine the overall mission capability of the system. Any limitations/shortfalls encountered during test are documented, along with any impacts observed/expected in the operational environment.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>

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Table 3. The Air Force Capability-Based Acquisition Process (Non-Space)



Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
<p>TEMP Update (SPO/RTO/OTA/ MAJCOM OT)</p> <p>AFI 63-101, AFI 99-103</p> <p>FRP minus 45 days</p>	<p>The SPO, using the ITT, updates the TEMP by recording: the critical technical parameters; integrated master test schedule (to include but not limited to acquisition milestones, development schedule, integrated DT/OT and OT activities); T&E management responsibilities; detailed DT strategy and objectives; dedicated OT&E readiness entrance and exit criteria; and final T&E resources.</p> <p>AFOTEC provides an updated input, using appropriate IOT&E findings. Part III contains the integrated DT/OT and OT test events. The OT&E details are based on initial test design/planning which include 1) COIs; 2) measures/identified standards and associated criteria reflecting the CPD; 3) OT&E events with configuration description, objectives, scenarios, scope, methodology integrated test opportunities, and limitations; 4) entrance criteria for starting dedicated IOT&E. Part IV OT&E resources include funding, manpower and test articles/capabilities. If there are any changes to threat/range limitations, detail them in the TEMP update.</p>	<p>____ Not Applicable</p> <p>____ Draft</p> <p>____ Final,</p> <p>Date: _____</p>

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Table 4. The Air Force Capability-Based Acquisition Process (Space Systems)







Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
<p>Early Influence Strategy (EIS) (<i>User, SPO, OTA</i>) AFI 99-103 MS A minus 36 mos</p>	<p>Beginning early in the acquisition process, the acquisition community receives strategic guidance, or a description of the operational mission need. The acquisition community begins development of the initial Functional Solution Analysis or system concepts to address the operational mission need. During the pre-MS-A phase, the group responsible for building operational requirements forms the Integrated Concept Team (ICT). During the pre MS-A period, the Integrated Test (IT) community begins development of an Early Influence Strategy (EIS). The EIS tailors the generic space T&E model to the specifics of the program taking into consideration the required decisions, development, and testing activities. The early influence team (EIT) will review and influence early concepts, studies and initial JCIDS documents (i.e., the ICD), etc. for new space systems. AFOTEC will participate as a member of the EIT and will help develop the ITT charter, and serve as a co-chair upon formal stand-up of the ITT.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
<p>Analysis of Material Approaches (AMA) (<i>SPO</i>) AFI 63-101 MS A minus 36 mos</p>	<p>AFOTEC learns the results of the operational community's Functional Solution Analysis (FSA) assessment of candidate material solutions as well as understanding the integrated architecture and metrics for the various materiel approaches. AFOTEC reviews for potential operational test strategies/ capabilities for future activities once involved in the program.</p> <p>There is no direct OT&E contribution to this document.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
<p>AFOTEC Involvement Determination Briefing (IDB) (<i>OTA</i>) MS A minus 30 mos</p>	<p>AFOTEC needs sufficient programmatic information to make an involvement determination. This information includes operational capability requirements, concept of operations, and the acquisition strategy.</p> <p>AFOTEC produces this package documenting the decision to be or not to be involved in the acquisition program as the OTA. Initial threat analysis and range requirements are detailed to begin formal internal AFOTEC planning. At this time, a detachment is assigned responsibility for this program and a Test Director is assigned to manage the program.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
<p>Capabilities Document High Performance Teams (HPT) (<i>User</i>) AFI 10-601 MS A minus 30 mos</p>	<p>AFOTEC is invited to participate in the JCD/ICD HPT as a core team member to assist in developing capability requirements for a known mission capability gap.</p> <p>AFOTEC assists in the Joint Capabilities Integration and Development System (JCIDS) process to develop capabilities requirements documented in the JCD/ICD by contributing considerations such as soundness of operational capability requirements, the testability of those requirements, and offering a listing of potential operational capabilities (OC) needed to fill the identified capability gap.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>

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Table 4. The Air Force Capability-Based Acquisition Process (Space Systems)


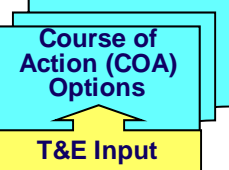



	Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Initial Capability Document (ICD) (User) AFI 10-601 MS A minus 24 mos</p>	<p>Initial Capability Document (ICD) (User) AFI 10-601 MS A minus 24 mos</p>	<p>AFOTEC is provided the opportunity to review the ICD and provide "operational tester" feedback. AFOTEC gains understanding of: 1) the gap/shortfall requiring a material solution; 2) the operational objectives or critical elements of the operation in the mission level context; and 3) the operational capabilities and key attributes the material solution must possess to satisfy the capability gap.</p> <p>AFOTEC provides feedback to the user to ensure the capability requirements reflect the needed operational capabilities. These capability requirements must be complete, operationally relevant, and testable.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Concept Assessment Report (CAR) (OTA) AFI 99-103 MDD minus 1 month</p> <p>Material Development Decision</p>	<p>Concept Assessment Report (CAR) (OTA) AFI 99-103 MDD minus 1 month</p>	<p>As the ICT develops the functional solution analysis and the draft initial capabilities document (ICD), the IT community is involved in the early reviews of the proposed concepts in order to generate a concept assessment report. The report provides input to the concept decision, focused on the degree to which the system concept meets the mission needs stated in the strategic guidance.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Acquisition Decision Memorandum (ADM) (SPO) AFI 63-101 MS A minus 14 mos</p>	<p>Acquisition Decision Memorandum (ADM) (SPO) AFI 63-101 MS A minus 14 mos</p>	<p>AFOTEC needs to be cognizant of the decisions documented in the ADM, to include official acquisition program start and direction to establish an integrated test team (ITT). Support and implement the OT activities (such as involvement decision, early influence, test planning, co-developing the ITT) required by the ADM directing official acquisition program start.</p> <p>AFOTEC/CC coordinates on the ADM.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Integrated Test Team Charter developed (SPO/OTA) AFI 63-101, AFI 99-103 MS A minus 10 mos</p> 	<p>Integrated Test Team (ITT) established/ Charter developed (SPO/OTA) AFI 63-101, AFI 99-103 MS A minus 10 mos</p>	<p>The Early Influence Team, of which AFOTEC is a member, initiates the writing of the charter for the Integrated Test Team. The charter is used as the guideline for establishing the ITT. The charter should address required deliverables as well as the Readiness to Test (RTT) approach and review schedule for OT&E readiness certification.</p> <p>As co-chair of the ITT, the operational test organization (AFOTEC if conducting OT&E) co-manages integrated test planning, execution, and reporting with the goal of integrating development testing and operational testing for increased efficiency. AFOTEC provides charter inputs on the OT strategy, OT roles and responsibilities, and integrated DT/OT products.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Concept of Operations (CONOPS) (User) AFI 63-101, AFI 99-103 MS A minus 10 mos</p>	<p>Concept of Operations (CONOPS) (User) AFI 63-101, AFI 99-103 MS A minus 10 mos</p>	<p>The user develops a system CONOPS detailing the user/operator's concept for operations, maintenance and training associated with employing the system.</p> <p>AFOTEC ensures the system CONOPS is reflected in the OT&E and integrated test strategies, test design and planning, to include OT&E documents, so that the OT&E of the system is executed as the user/operator plans to employ the system in mission operations. System CONOPS may negate the need for certain threat/range testing previously planned.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>




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Table 4. The Air Force Capability-Based Acquisition Process (Space Systems)

Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Analysis of Alternatives (AoA) (User) AFI 10-601 MS A minus 9 mos</p>	<p>AFOTEC is invited to participate on the AoA team providing an OT perspective to the AoA study plan.</p> <p>AFOTEC provides input to the AoA study plan in the form of potential critical operational issues (COI), measures of operational effectiveness/ suitability and associated criteria in support of the material and non-material alternatives being studied, to include the subsequent analysis and reporting. Knowledge gained from the AoA efforts can serve to develop an initial integrated and OT strategy.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Course of Action (COA) (SPO/User) AFI 63-101, AFI 10-601 MS A minus 8 mos</p>	<p>AFOTEC needs to understand the program selected from the alternative choices the MAJCOM and the milestone decision authority (MDA) (or designee) have agreed to.</p> <p>AFOTEC, thru the ITT, provides preliminary OT strategy from an initial test design for the MAJCOM selected alternative. This preliminary OT strategy serves as an input to the T&E Strategy required prior to the milestone A decision.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Capabilities Document High Performance Teams (HPT) (User) AFI 10-601 MS A minus 8 mos</p>	<p>AFOTEC is invited to participate in the initial CDD HPT as a core team member to assist in developing capability requirements for a known mission capability gap.</p> <p>AFOTEC assists in the Joint Capabilities Integration and Development System (JCIDS) process to develop capability requirements documented in the initial CDD by contributing considerations such as soundness of operational capability requirements, the testability of those requirements, and offering a listing of potential operational capabilities (OC) needed to fill the identified capability gap.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Initial Capabilities Development Document (iCDD) (User) Space Acquisition Interim Guidance MS A minus 8 mos</p>	<p>AFOTEC is provided the opportunity to review the initial CDD and provide “operational tester” feedback. AFOTEC gains understanding of: 1) the gap/shortfall requiring a material solution; 2) the operational objectives or critical elements of the operation in the mission level context; and 3) the operational capabilities and key attributes the material solution must possess to satisfy the capability gap.</p> <p>AFOTEC provides feedback to the user to ensure the capability requirements reflect the needed operational capabilities. These capability requirements must be complete, operationally relevant, and testable.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Technology Development Strategy (TDS) (SPO) AFI 63-101 MS A minus 7 mos</p>	<p>AFOTEC gains insight on the approach to technology development using demonstrations or prototypes so the user and developer can determine if the proposed mature technology solution is affordable and militarily useful.</p> <p>AFOTEC provides early influence input to the proposed demonstrations and prototypes for operational test relevance and possible integrated test events.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>

Legend:  = User Product  = SPO Product  = ITT Product  = AFOTEC Product

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² The timing listed for each product or document is typical and should be adjusted for the specific program

Table 4. The Air Force Capability-Based Acquisition Process (Space Systems)





Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
<p>Early Operational Assessment (EOA) Plan (OTA)</p> <p>MS A minus 7 mos</p>	<p>AFOTEC requires sufficient programmatic information to develop the OT&E EOA Plan. This information will include: operational capability requirements, acquisition strategy, developmental test activities, and concept of operations.</p> <p>This is an AFOTEC-produced document outlining the OTA's plan for assessing the progress toward the effectiveness and suitability of the system being acquired as well as assessing the readiness of the system for the planned IOT&E.</p>	<p>___ Not Applicable</p> <p>___ Draft</p> <p>___ Final,</p> <p>Date: _____</p>
<p>Test and Evaluation Strategy (TES) (SPO/RTO/OTA)</p> <p>AFI 99-103</p> <p>MS A minus 7 mos</p>	<p>The SPO, using the ITT, initiates the description of the overall T&E strategy for the selected solution, providing the developmental test (DT) strategy and the program management concept of an integrated test strategy.</p> <p>AFOTEC develops the OT strategy and reviews the DT strategy to co-develop with the SPO an integrated test strategy, including modeling and simulation. TES inputs provide the first iteration of the test and evaluation master plan (TEMP) for the program.</p>	<p>___ Not Applicable</p> <p>___ Draft</p> <p>___ Final,</p> <p>Date: _____</p>
<p>Modeling and Simulation (M&S) Support Plan (MSSP) (SPO)</p> <p>AFI 16-1002</p> <p>MS A minus 7 mos</p>	<p>This document provides AFOTEC: 1) Information on the integrated use of M&S within program planning activities and across functional disciplines, 2) opportunity to review M&S requirements and development (or use) strategy, and 3) opportunity to review and participate in planned M&S verification and validation activities.</p> <p>AFOTEC provides early influence review and input of M&S requirements. Provide M&S resource requirements for OT&E and advise about the development and VV&A of M&S resources.</p>	<p>___ Not Applicable</p> <p>___ Draft</p> <p>___ Final,</p> <p>Date: _____</p>
<p>Life Cycle Management Plan (LCMP) (SPO/OTA)</p> <p>AFI 63-101, AFI 99-103</p> <p>MS A minus 7 mos</p>	<p>This document provides AFOTEC: 1) information on the integrated acquisition and sustainment strategy for the life of the proposed material solution, and 2) opportunity to review the required T&E summary (or TEMP level of information if TEMP is not expected to be required).</p> <p>AFOTEC provides early influence review and input for operational test relevant considerations. Review required T&E summary information from the OT and integrated perspectives (TEMP-like information if TEMP is not expected to be required).</p>	<p>___ Not Applicable</p> <p>___ Draft</p> <p>___ Final,</p> <p>Date: _____</p>

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Table 4. The Air Force Capability-Based Acquisition Process (Space Systems)

Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Information Support Plan (ISP) (SPO) AFI 63-101 MS A minus 7 mos</p>	<p>AFOTEC gains familiarity with the SPO's identification and documentation of information needs, infrastructure and intelligence support, information technology and National Security Systems interface requirements, and net-centric, interoperability, supportability and sufficiency concerns. Ensure the required net-ready key performance parameter (NR-KPP) and DOT&E special interest items (SII) centered on information assurance, interoperability and electromagnetic environmental effects (E³) are considered by the SPO and included as part of the overall T&E strategy for the proposed material solution.</p> <p>AFOTEC reviews and coordinates the ISP.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Early Operational Assessment (EOA) Report (OTA) AFI 99-103 MS A minus 45 days (or as negotiated)</p>	<p>AFOTEC expects access to the system and associated documentation in order to execute the EOA.</p> <p>The results of the EOA are documented in an AFOTEC EOA report. This report will assess the progress towards effectiveness and suitability, assessing the COIs, and assessing the system's readiness for dedicated IOT&E. The report is provided in sufficient time to support the milestone decision.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Integrated Program Summary (IPS) (SPO) Space Acquisition Interim Guidance MS A minus 30 days</p>	<p>Prior to each DSAB, the DoD Space MDA will convene an Independent Program Assessment Team (IPAT) to advise him on a program's readiness to advance into the next acquisition phase. The IPAT's findings and recommendations are presented to the DoD Space MDA at the DSAB and the Build Approval. In preparation for the IPA, the SPD/PM produces a consolidated set of program documentation, known as an Integrated Program Summary (IPS), to facilitate the IPAT review. Prior to each DSAB, the DoD Space MDA will convene an Independent Program Assessment Team (IPAT) to advise him on a program's readiness to advance into the next acquisition phase. The IPAT's findings and recommendations are presented to the DoD Space MDA at the DSAB and the Build Approval. In preparation for the IPA, the SPD/PM produces a consolidated set of program documentation, known as an Integrated Program Summary (IPS), to facilitate the IPAT review.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Acquisition Decision Memorandum (ADM) (SPO) AFI 63-101 MS B minus 20 mos</p>	<p>AFOTEC needs to be cognizant of the decisions documented in the ADM, to include official acquisition program start and direction to establish an integrated test team (ITT). Support and implement the OT activities (such as involvement decision, early influence, test planning, co-developing the ITT) required by the ADM directing official acquisition program start.</p> <p>AFOTEC/CC coordinates on the ADM.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>

 **MS A**

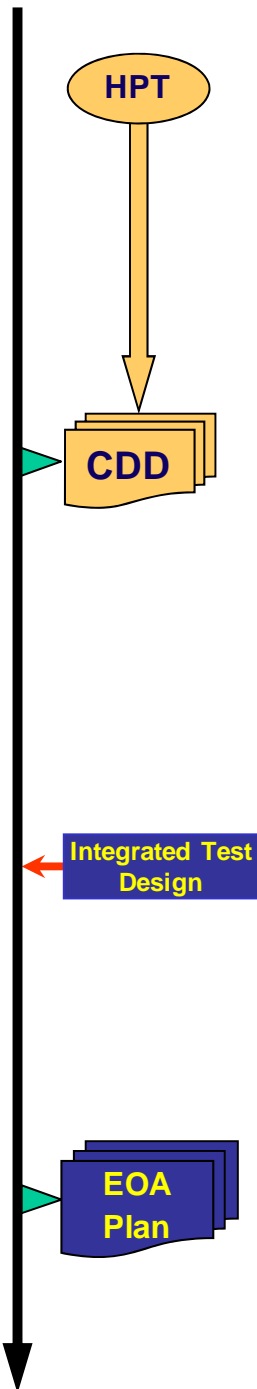
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Table 4. The Air Force Capability-Based Acquisition Process (Space Systems)

Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
<p>Capabilities Document High Performance Teams (HPT) (User)</p> <p>AFI 10-601</p> <p>MS B minus 18 mos</p>	<p>AFOTEC is invited to participate in the CDD HPT as a core team member to assist in developing capability requirements for a known mission capability gap.</p> <p>AFOTEC assists in the JCIDS process to develop capabilities requirements documented in the CDD by contributing considerations such as completeness, relevance, soundness of operational capability requirements, and the testability of those requirements.</p>	<p>___ Not Applicable</p> <p>___ Draft</p> <p>___ Final,</p> <p>Date: _____</p>
<p>Capability Development Document (CDD) (User)</p> <p>AFI 10-601</p> <p>MS B minus 12 mos</p>	<p>AFOTEC is provided the opportunity to review the CDD and provide "operational tester" feedback. Gain understanding of the required KPPs and key system attributes (KSA) in relation to operational capability critical operational issues, performance operational measures and associated criteria expressed by thresholds and objectives.</p> <p>AFOTEC provides feedback to ensure the capability requirements reflect the needed operational capabilities. These capability requirements must be complete, operationally relevant, and testable. Feedback discovered during early influence activities is provided to the HPT. Initial test design and plans, to include TEMP parts III and IV inputs, are developed using the CDD.</p>	<p>___ Not Applicable</p> <p>___ Draft</p> <p>___ Final,</p> <p>Date: _____</p>
<p>Integrated Test Design (RTO/OTA)</p> <p>AFI 99-103</p> <p>MS B minus 8 mos</p>	<p>The program office (RTO if designated) develops detailed and feasible developmental test design, objectives and known test requirements that can be used by the ITT to develop an integrated DT/OT concept for execution by the developmental tester and OTA, along with populating the TEMP.</p> <p>AFOTEC develops a feasible operational test construct and initial operational test plan consisting of COIs, measures, events, scenarios, scope/ methodology, limitations, test capabilities and test resources that can be implemented by the ITT into an integrated test concept and TEMP.</p>	<p>___ Not Applicable</p> <p>___ Draft</p> <p>___ Final,</p> <p>Date: _____</p>
<p>Early Operational Assessment (EOA) Plan (OTA)</p> <p>MS B minus 7 mos</p>	<p>AFOTEC requires sufficient programmatic information to develop the OT&E EOA Plan. This information will include: operational capability requirements, acquisition strategy, developmental test activities, and concept of operations.</p> <p>This is an AFOTEC-produced document outlining the OTA's plan for assessing the progress toward the effectiveness and suitability of the system being acquired as well as assessing the readiness of the system for the planned IOT&E.</p>	<p>___ Not Applicable</p> <p>___ Draft</p> <p>___ Final,</p> <p>Date: _____</p>

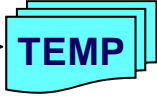




Legend: ● = User Product ● = SPO Product ● = ITT Product ● = AFOTEC Product

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Table 4. The Air Force Capability-Based Acquisition Process (Space Systems)






Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>Test and Evaluation Master Plan (TEMP) (SPO/RTO/OTA) AFI 63-101, AFI 99-103 MS B minus 6 mos</p>	<p>The SPO, using the ITT and starting with the TES, initiates the development of the TEMP by recording: the critical technical parameters; integrated master test schedule (to include but not limited to acquisition milestones, development schedule, integrated DT/OT and OT activities); T&E management responsibilities; detailed DT strategy and objectives; dedicated OT&E readiness entrance and exit criteria; and final T&E resources. SPO support to the AFOTEC initial test design work is desired by providing system development and developmental testing (DT) expertise.</p> <p>AFOTEC provides input to Part III integrated DT/OT and OT test events. AFOTEC develops OT&E details based on initial test design/planning which include: 1) COIs; 2) TEMP measure summary reflecting the CDD; 3) OT&E events with configuration description, objectives, scenarios, scope, methodology integrated test opportunities, and limitations; and 4) entrance criteria for starting dedicated IOT&E. AFOTEC provides input to Part IV OT&E resources include funding, manpower, and test articles/ capabilities, including modeling and simulation. In order to ensure future testing adequacy, limitations to threat representation must be addressed, as this feeds into the Foreign Materiel Program. The TEMP is one of the formal methods to document threat limitations which are seen by external agencies.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Modeling and Simulation Support Plan (MSSP) (SPO) AFI 16-1002 MS B minus 6 mos</p>	<p>This document provides AFOTEC updated: 1) Information on the integrated use of M&S within program planning activities and across functional disciplines, 2) opportunity to review M&S requirements and development (or use) strategy, and 3) opportunity to review and participate in planned M&S verification and validation activities.</p> <p>AFOTEC provides input of M&S requirements based on initial test design. Provide M&S resource requirements for OT&E and advise about the development and VV&A of M&S resources.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>LCMP Update (SPO) AFI 63-101, AFI 99-103 MS B minus 6 mos</p>	<p>This document provides AFOTEC: 1) updated information on the integrated acquisition and sustainment strategy for the life of the proposed material solution, and 2) opportunity to review the required T&E summary (or TEMP level of information if TEMP is not expected to be required).</p> <p>AFOTEC provides review and input for OT-relevant considerations. Review and input on the required T&E summary information from the OT and integrated test perspectives (TEMP-like information if TEMP is not expected to be required).</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>

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Table 4. The Air Force Capability-Based Acquisition Process (Space Systems)






Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>AoA Update (if applicable) (<i>User</i>) AFI 10-601 MS B minus 6 mos</p>	<p>This document provides AFOTEC updates to the AoA as a result of technology development phase efforts, if applicable.</p> <p>AFOTEC provides input to the updated AoA including updated OT&E construct, which includes COIs, measures of operational effectiveness/ suitability and associated criteria, resulting from early influence and EOA activities.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>ITT Charter Update (<i>ITT</i>) AFI 63-101, AFI 99-103 MS B minus 6 mos</p>	<p>The SPO updates the ITT charter with applicable impacts resulting from the technology development phase efforts. The charter should address required deliverables as well as the Readiness to Test (RTT) approach and review schedule for OT&E readiness certification.</p> <p>As co-chair of the ITT, AFOTEC provides charter updates on the OT strategy, OT roles and responsibilities and integrated DT/OT products resulting from early influence and EOA activities.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>ISP Update (<i>SPO</i>) AFI 63-101 MS B minus 6 mos</p>	<p>AFOTEC gains familiarity with the SPO's identification and documentation of information needs, infrastructure and intelligence support, information technology and National Security Systems interface requirements, and net-centric, interoperability, supportability and sufficiency concerns derived from the technology development phase results. Ensure the required NR-KPP and DOT&E special interest items (SII) centered on information assurance, interoperability and E³ are considered and implemented by the SPO.</p> <p>AFOTEC reviews and coordinates the ISP.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Deficiency Reporting (<i>SPO/User</i>) AFI 63-101, AFI 99-103 MS B minus 6 mos</p>	<p>The SPO establishes and administers a deficiency reporting (DR) process according to Technical Order (TO) 00-35D-54, <i>USAF Deficiency Reporting and Investigating System</i> and AFI 63-501, <i>Air Force Acquisition Quality Program</i>.</p> <p>AFOTEC will participate in the DR process throughout all phases of system development, DT, integrated testing, OT, early influence, test planning, execution and reporting.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Program Management Directive (PMD) (<i>SAF/AQ PEO</i>) AFI 63-101 MS B minus 6 mos</p>	<p>As co-chair of the ITT, the SPO receives the PMD which provides official HQ USAF documentation and direction for the Air Force program of record determined at the MS B decision, conveys the guidance and direction of the decision authority, identifies the various organizations along with their essential responsibility and provides direction for the associated T&E activities.</p> <p>As the ITT co-chair, AFOTEC reviews the PMD to ensure government operational test organizations are in compliance and their key responsibilities are correctly identified to ensure fully integrated testing with the development testing community.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>

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Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>System Threat Assessment (STA) or System Threat Assessment Report (STAR) (SPO) DoDI 5000.02 MS B minus 6 mos</p>	<p>The DIA-validated STA/STAR provides the test/acquisition community with validated, current threat analysis specific to the system under test. In the case where no STA/STAR is available, the appropriate Capstone Threat Assessments (CTA) provides similar information for a broader category of system.</p> <p>AFOTEC uses the STA/STAR/CTA as a guide to develop threat lists, coordinate the expected threat environment with range personnel to plan range costing, and to state limitations to threat testing.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Request for Proposal (RFP) (SPO) AFI 63-101 MS B minus 6 mos</p>	<p>The SPO provides a draft RFP and statement of work (SOW) supporting the TES, contractor support to DT/OT, a common T&E data base and DR system.</p> <p>AFOTEC reviews requirements and provides feedback concerning developing contractor support to such items as the OT strategy and concept, specific integrated logistics support requirements if implemented by the program's concept of operations, the deficiency reporting process, a common T&E data base, and system modeling and simulation requirements.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Security Classification Guide (SCG) (SPO/User) Defense Acquisition Guide, AFMAN 63-119 MS B minus 6 mos</p>	<p>A SPO-developed guide that informs T&E planners of the proper classification of all data associated with the system under test. Ensure that all aspects of operational and integrated test planning and documentation accurately classify all the appropriate testing data for security of the system.</p> <p>There is no direct OT&E contribution to this document.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Environmental Safety and Occupational Health (ESOH) (SPO) AFI 63-101, AFI 99-103, AFI 63-1201 MS B minus 6 mos</p>	<p>This SPO-developed document provides AFOTEC support strategy containing programmatic, environmental, safety, and health evaluation (PESHE) document summarizing: ESOH risks, strategy for integrating ESOH considerations into systems engineering process; method for tracking progress; completion schedule for National Environmental Policy Act (NEPA); Operational Safety, Suitability, and Effectiveness (OSS&E) strategy.</p> <p>AFOTEC performs an initial evaluation of safety aspects of T&E plans prior to commencement of test activities via Safety Review Board. Ensure strategy is in place to identify/mitigate health and safety hazards. Determine if humans are to be used as test subjects and evaluate anticipated level of risk.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Early Operational Assessment (EOA) Report (OTA) AFI 99-103 MS B minus 45 days (or as negotiated)</p>	<p>AFOTEC expects access to the system and associated documentation in order to execute the EOA.</p> <p>The results of the EOA are documented in an AFOTEC EOA report. This report will assess the progress towards effectiveness and suitability, assessing the COIs, and assessing the system's readiness for dedicated IOT&E. The report is provided in sufficient time to support the milestone decision.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>

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Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
Integrated Program Summary (IPS) (SPO) Space Acquisition Interim Guidance MS B minus 30 days	Prior to each DSAB, the DoD Space MDA will convene an Independent Program Assessment Team (IPAT) to advise him on a program's readiness to advance into the next acquisition phase. The IPAT's findings and recommendations are presented to the DoD Space MDA at the DSAB and the Build Approval. In preparation for the IPA, the SPD/PM produces a consolidated set of program documentation, known as an Integrated Program Summary (IPS), to facilitate the IPAT review. Prior to each DSAB, the DoD Space MDA will convene an Independent Program Assessment Team (IPAT) to advise him on a program's readiness to advance into the next acquisition phase. The IPAT's findings and recommendations are presented to the DoD Space MDA at the DSAB and the Build Approval. In preparation for the IPA, the SPD/PM produces a consolidated set of program documentation, known as an Integrated Program Summary (IPS), to facilitate the IPAT review.	___ Not Applicable ___ Draft ___ Final, Date: _____
Acquisition Decision Memorandum (ADM) (SPO) AFI 63-101 MS C minus 20 mos	AFOTEC needs to be cognizant of the decisions documented in the ADM, to include official acquisition program start and direction to establish an integrated test team (ITT). Support and implement the OT activities (such as involvement decision, early influence, test planning, co-developing the ITT) required by the ADM directing official acquisition program start. AFOTEC/CC coordinates on the ADM.	___ Not Applicable ___ Draft ___ Final, Date: _____
Capabilities Document High Performance Teams (HPT) (User) AFI 10-601 MS C minus 18 mos	AFOTEC is invited to participate in the CDD HPT as a core team member to assist in developing capability requirements for a known mission capability gap. AFOTEC assists in the JCIDS process to develop capabilities requirements documented in the CDD by contributing considerations such as completeness, relevance, soundness of operational capability requirements, and the testability of those requirements.	___ Not Applicable ___ Draft ___ Final, Date: _____
Capabilities Development Document (CDD) (User) AFI 10-601 MS C minus 12 mos	AFOTEC is provided the opportunity to review the CDD and provide "operational tester" feedback. Gain understanding of the finalized required KPPs and KSA in relation to operational capability critical operational issues, performance operational measures and associated criteria expressed by thresholds and objectives. AFOTEC provides feedback to ensure the capability requirements reflect the needed operational capabilities. These capability requirements must be complete, operationally relevant, and testable. Feedback discovered during test planning activities including any conducted OA to determine progress towards capability performance is provided. Initial test design and plans, to include TEMP Part III inputs, are developed using the CDD.	___ Not Applicable ___ Draft ___ Final, Date: _____


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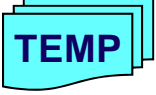


Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>PMD Update (<i>PEO</i>) AFI 63-101 MS C minus 12 mos</p>	<p>As co-chair of the ITT, the SPO receives an updated PMD.</p> <p>As the ITT co-chair, AFOTEC reviews the PMD to ensure government operational test organizations are in compliance and their key responsibilities are correctly identified to ensure fully integrated testing with the development testing community.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Integrated Test Concept/ Plan (<i>SPO/RTO/OTA</i>) AFI 99-103 MS C minus 12 mos</p>	<p>The SPO refines the initial developmental test design so it can be used by the ITT to develop an executable integrated test (combined DT/OT) concept and plan for execution by the developers and OTA, along with updating the TEMP.</p> <p>AFOTEC provides an executable OT construct and initial test design consisting of COIs, measures/identified standards with criteria, events, scenarios, scope/methodology, limitations, test capabilities, and test resources that can be implemented by the ITT into an executable integrated test concept and used to update the TEMP.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Modeling and Simulation Support Plan (MSSP) (SPO) AFI 16-1002 MS C minus 6 mos</p>	<p>This document provides AFOTEC updated: 1) Information on the integrated use of M&S within program planning activities and across functional disciplines, 2) opportunity to review M&S requirements and development (or use) strategy, and 3) opportunity to review and participate in planned M&S verification and validation activities.</p> <p>AFOTEC uses the verification and validation plans and resulting information developed for the planned models and simulations to produce an independent accreditation plan and report.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>LCMP Update (<i>SPO</i>) AFI 63-101, AFI 99-103 MS C minus 6 mos</p>	<p>This document provides 1) updated information on the integrated acquisition and sustainment strategy for the life of the proposed material solution, and 2) opportunity to review the required T&E summary (or TEMP level of information if TEMP is not expected to be required).</p> <p>AFOTEC review and provides input for OT-relevant considerations. Review and input on the required T&E summary information from the OT and integrated test perspectives (TEMP like information if TEMP is not expected to be required).</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>OT&E OA Plan (<i>OTA</i>) MS C minus 6 mos</p>	<p>AFOTEC requires sufficient programmatic information to develop the OT&E OA Plan. This information will include: operational capability requirements, acquisition strategy, developmental test activities, and concept of operations.</p> <p>This is an AFOTEC-produced document outlining the OTA's plan for assessing the progress toward the effectiveness and suitability of the system being acquired as well as assessing the readiness of the system for the planned IOT&E.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>

Legend:  = User Product  = SPO Product  = ITT Product  = AFOTEC Product

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² The timing listed for each product or document is typical and should be adjusted for the specific program

Table 4. The Air Force Capability-Based Acquisition Process (Space Systems)





Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>AoA Update (if applicable) (<i>User</i>) AFI 10-601 MS C minus 6 mos</p>	<p>Provide AFOTEC updates to the AoA as a result of activities from the system development and demonstration phase, if applicable.</p> <p>AFOTEC provides inputs to the updated AoA, including updated OT&E construct, which includes COIs, measures of operational effectiveness/ suitability and associated criteria, resulting from appropriate early influence and EOA/OA/OUE activities.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>TEMP Update (<i>SPO/RTO/OTA</i>) AFI 63-101, AFI 99-103 MS C minus 6 mos</p>	<p>The SPO, using the ITT and starting with the TES, updates the TEMP by recording: the critical technical parameters; integrated master test schedule (to include but not limited to acquisition milestones, development schedule, integrated DT/OT and OT activities); T&E management responsibilities; detailed DT strategy and objectives; dedicated OT&E readiness entrance and exit criteria; and final T&E resources.</p> <p>AFOTEC provides input to Part III integrated DT/OT and OT test events. AFOTEC develops OT&E details based on initial test design/planning which include: 1) COIs; 2) TEMP measure summary reflecting the CDD; 3) OT&E events with configuration description, objectives, scenarios, scope, methodology integrated test opportunities, and limitations; and 4) entrance criteria for starting dedicated IOT&E. AFOTEC provides input to Part IV OT&E resources include funding, manpower, and test articles/ capabilities, including modeling and simulation. In order to ensure future testing adequacy, limitations to threat representation must be addressed, as this feeds into the Foreign Materiel Program. The TEMP is one of the formal methods to document threat limitations which are seen by external agencies.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>ITT Charter Update (<i>ITT</i>) AFI 63-101, AFI 99-103 MS C minus 6 mos</p>	<p>The SPO updates the ITT charter with applicable impacts resulting from the system development and demonstration phase activities. The charter should address required deliverables as well as the Readiness to Test (RTT) approach and review schedule for OT&E readiness certification.</p> <p>As co-chair of the ITT, AFOTEC provides charter updates on the OT strategy, OT roles and responsibilities and integrated T&E/ OT products resulting from appropriate early influence and EOA/OA/OUE activities.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Environmental Safety and Occupational Health (ESOH) (<i>SPO</i>) AFI 63-101, AFI 99-103, AFI 63-1201 MS C minus 6 mos</p>	<p>This SPO-developed document provides AFOTEC updated PESHE, ESOH, and OSS&E support strategy with identified health and safety hazards. Documented determination human risk level if humans are used as subjects, and annotated/acted upon appropriately by Institutional Review Board (IRB) if necessary.</p> <p>AFOTEC performs an evaluation of updated safety aspects of T&E plans. Ensure all identified health and safety hazards have mitigation plans in place. If humans are used as test subjects, determine level of risk to the human and document accordingly.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>

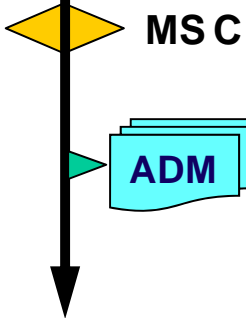
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Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>ISP Update (RTO/OTA) AFI 63-101 MS C minus 6 mos</p>	<p>AFOTEC gains familiarity with the SPO's identification and documentation of information needs, infrastructure and intelligence support, information technology and National Security Systems interface requirements, and net-centric, interoperability, supportability and sufficiency concerns derived from the technology development phase results. Ensure the required NR-KPP and DOT&E special interest items (SII) centered on information assurance, interoperability and E³ are considered and implemented by the SPO.</p> <p>AFOTEC reviews and coordinates the ISP.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>AFOTEC Operational Assessment Report (OTA) AFI 99-103 MS C minus 45 days (or as negotiated)</p>	<p>AFOTEC expects access to the system and associated documentation in order to execute the OA.</p> <p>The results of the OA are documented in an AFOTEC OA report. This report will assess the progress towards effectiveness and suitability, assessing the COIs, and assessing the system's readiness for dedicated IOT&E. The report is provided in sufficient time to support the milestone decision.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Integrated Program Summary (IPS) (SPO) Space Acquisition Interim Guidance MS C minus 30 days</p>	<p>Prior to each DSAB, the DoD Space MDA will convene an Independent Program Assessment Team (IPAT) to advise him on a program's readiness to advance into the next acquisition phase. The IPAT's findings and recommendations are presented to the DoD Space MDA at the DSAB and the Build Approval. In preparation for the IPA, the SPD/PM produces a consolidated set of program documentation, known as an Integrated Program Summary (IPS), to facilitate the IPAT review. Prior to each DSAB, the DoD Space MDA will convene an Independent Program Assessment Team (IPAT) to advise him on a program's readiness to advance into the next acquisition phase. The IPAT's findings and recommendations are presented to the DoD Space MDA at the DSAB and the Build Approval. In preparation for the IPA, the SPD/PM produces a consolidated set of program documentation, known as an Integrated Program Summary (IPS), to facilitate the IPAT review.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Acquisition Decision Memorandum (ADM) (SPO) AFI 63-101 MS C plus 2 mos</p>	<p>AFOTEC needs to be cognizant of the decisions documented in the ADM, to include official acquisition program start and direction to establish an integrated test team (ITT). Support and implement the OT activities (such as involvement decision, early influence, test planning, co-developing the ITT) required by the ADM directing official acquisition program start.</p> <p>AFOTEC/CC coordinates on the ADM.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>



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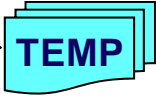


Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
Capabilities Document High Performance Teams (HPT) (User) AFI 10-601 Build Approval minus 18 mos	AFOTEC is invited to participate in the CPD HPT as a core team member to assist in developing capability requirements for a known mission capability gap. AFOTEC assists in the JCIDS process to develop capabilities requirements documented in the CPD by contributing considerations such as completeness, relevance, soundness of operational capability requirements, and the testability of those requirements.	___ Not Applicable ___ Draft ___ Final, Date: _____
Capabilities Production Document (CPD) (User) AFI 10-601 Build Approval minus 12 mos	AFOTEC is provided the opportunity to review the CPD and provide “operational tester” feedback. Gain understanding of the finalized required KPPs and KSA in relation to operational capability critical operational issues, performance operational measures and associated criteria expressed by thresholds and objectives. AFOTEC provides feedback to ensure the capability requirements reflect the needed operational capabilities. These capability requirements must be complete, operationally relevant, and testable. Feedback discovered during test planning activities including any conducted OA to determine progress towards capability performance is provided. Initial test design and plans, to include TEMP Part III inputs, are developed using the CPD.	___ Not Applicable ___ Draft ___ Final, Date: _____
OT&E OA Plan (OTA) Build Approval minus 6 mos	AFOTEC requires sufficient programmatic information to develop the OT&E OA Plan in support of the Build Approval decision. This information will include: operational capability requirements, acquisition strategy, developmental test activities, and concept of operations. This is an AFOTEC-produced document outlining the OTA’s plan for assessing the progress toward the effectiveness and suitability of the system being acquired as well as assessing the readiness of the system for the planned IOT&E.	___ Not Applicable ___ Draft ___ Final, Date: _____

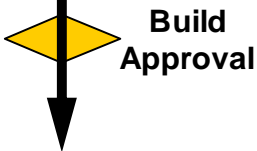
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Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>TEMP Update (SPO/RTO/OTA) AFI 63-101, AFI 99-103 Build Approval minus 6 mos</p>	<p>The SPO, using the ITT and starting with the TES, updates the TEMP by recording: the critical technical parameters; integrated master test schedule (to include but not limited to acquisition milestones, development schedule, integrated DT/OT and OT activities); T&E management responsibilities; detailed DT strategy and objectives; dedicated OT&E readiness entrance and exit criteria; and final T&E resources.</p> <p>AFOTEC provides input to Part III integrated DT/OT and OT test events. AFOTEC develops OT&E details based on initial test design/planning which include: 1) COIs; 2) TEMP measure summary reflecting the CDD; 3) OT&E events with configuration description, objectives, scenarios, scope, methodology integrated test opportunities, and limitations; and 4) entrance criteria for starting dedicated IOT&E. AFOTEC provides input to Part IV OT&E resources include funding, manpower, and test articles/ capabilities, including modeling and simulation. In order to ensure future testing adequacy, limitations to threat representation must be addressed, as this feeds into the Foreign Materiel Program. The TEMP is one of the formal methods to document threat limitations which are seen by external agencies.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>AFOTEC Operational Assessment Report (OTA) AFI 99-103 Build Approval minus 45 days (or as negotiated)</p>	<p>AFOTEC expects access to the system and associated documentation in order to execute the OA.</p> <p>The results of the OA are documented in an AFOTEC OA report. This report will assess the progress towards effectiveness and suitability, assessing the COIs, and assessing the system's readiness for dedicated IOT&E. The report is provided in sufficient time to support the milestone decision.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>
 <p>Integrated Program Summary (IPS) (SPO) Space Acquisition Interim Guidance Build Approval minus 30 days</p>	<p>Prior to each DSAB, the DoD Space MDA will convene an Independent Program Assessment Team (IPAT) to advise him on a program's readiness to advance into the next acquisition phase. The IPAT's findings and recommendations are presented to the DoD Space MDA at the DSAB and the Build Approval. In preparation for the IPA, the SPD/PM produces a consolidated set of program documentation, known as an Integrated Program Summary (IPS), to facilitate the IPAT review. Prior to each DSAB, the DoD Space MDA will convene an Independent Program Assessment Team (IPAT) to advise him on a program's readiness to advance into the next acquisition phase. The IPAT's findings and recommendations are presented to the DoD Space MDA at the DSAB and the Build Approval. In preparation for the IPA, the SPD/PM produces a consolidated set of program documentation, known as an Integrated Program Summary (IPS), to facilitate the IPAT review.</p>	<p>____ Not Applicable ____ Draft ____ Final, Date: _____</p>







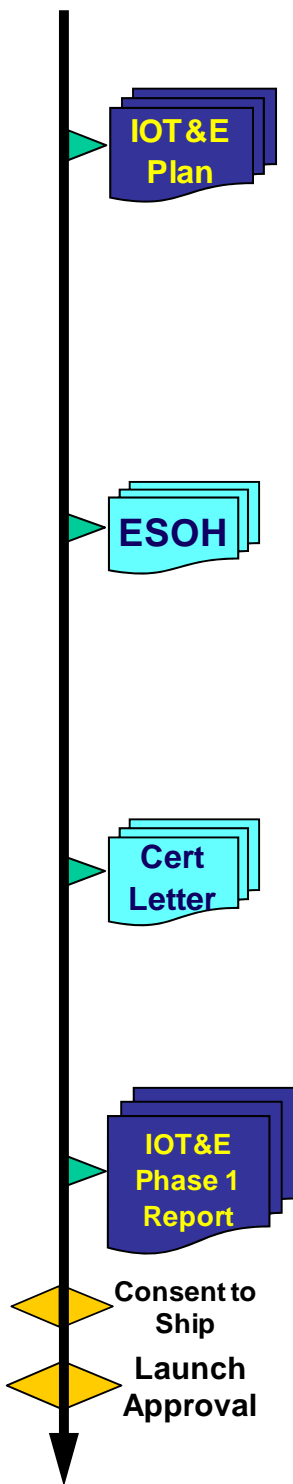
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Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
 <p>OT&E Test Plan (OTA) IOT&E minus 6 mos</p>	<p>AFOTEC requires sufficient programmatic information to develop the OT&E Test Plan. This information will include: operational capability requirements, acquisition strategy, developmental test activities, and concept of operations.</p> <p>This is an AFOTEC-produced document outlining the OTA's plan for determining the effectiveness and suitability of the system being acquired. The plan will contain integrated DT/OT events. The approved IOT&E Plan is sent to the PEO for acknowledgement of OT&E reliance on the IDT/OT events.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Environmental Safety and Occupational Health (ESOH) (SPO) AFI 63-101, AFI 99-103, AFI 63-1201 IOT&E Phase 1 start minus 30 days</p>	<p>The SPO provides AFOTEC: 1) Safety Release to testers prior to any test using personnel. 2) Final ESOH evaluations of the system. 3) Human Use Protocol and final human risk level annotated/acted upon appropriately by Institutional Review Board (IRB) if humans are used as subjects.</p> <p>AFOTEC performs a final evaluation of the safety aspects of T&E plans prior to IOT&E. Ensure all identified health and safety hazards have been mitigated and accepted at the appropriate Risk Authority level. If humans are used as test subjects, evaluate validity of IRB protocols for IOT&E.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>Operational Test Readiness Certification Letter (following AFMAN 63-119 templates) (PEO) AFI 99-103, AFMAN 63-119 IOT&E Phase 1 start minus 15 days</p>	<p>The SPO provides a certification readiness memo from the system program's PEO (or designated OT&E Certification Official) for the system configuration at the time, sent to the AFOTEC commander approximately 15 days prior to start of dedicated IOT&E, or as agreed.</p> <p>The AFOTEC commander will acknowledge the certification before starting dedicated IOT&E and either concur or non-concur with the OT&E. Certification Official's assessment, restating any reservations or positions on unresolved issues.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>
 <p>OT&E Phase 1 Final Report (OTA) AFI 99-103 Consent to Ship minus 45 days</p>	<p>AFOTEC expects a fully production representative system (for the part of the system being tested) to be delivered to execute the dedicated OT&E. Representative system users and maintainers are also required to execute the OT&E.</p> <p>The results of the OT&E are documented in an AFOTEC final report. This report will make a determination of effectiveness and suitability, rate the COIs, and determine the overall mission capability of the system. Any limitations/shortfalls encountered during test are documented, along with any impacts observed/expected in the operational environment.</p>	<p>___ Not Applicable ___ Draft ___ Final, Date: _____</p>



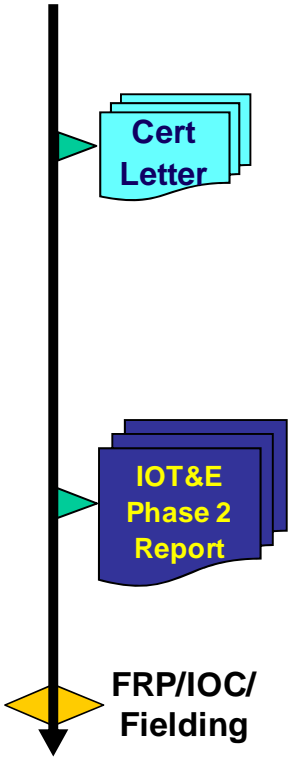
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Product/Document ^{1,2}	AFOTEC Participation/Contribution	Status
<p>Operational Test Readiness Certification Letter (following AFMAN 63-119 templates) (PEO)</p> <p>AFI 99-103, AFMAN 63-119</p> <p>IOT&E Phase 2 start minus 15 days</p>	<p>The SPO provides a certification readiness memo from the system program's PEO (or designated OT&E Certification Official) for the full system configuration, sent to the AFOTEC commander approximately 15 days prior to start of dedicated IOT&E, or as agreed.</p> <p>The AFOTEC commander will acknowledge the certification before starting dedicated IOT&E and either concur or non-concur with the OT&E Certification Official's assessment, restating any reservations or positions on unresolved issues.</p>	<p>____ Not Applicable</p> <p>____ Draft</p> <p>____ Final,</p> <p>Date: _____</p>
<p>OT&E Phase 2 Final Report (OTA)</p> <p>AFI 99-103</p> <p>IOC minus 45 days</p>	<p>AFOTEC expects a fully production representative system to be delivered to execute the dedicated OT&E. Representative system users and maintainers are also required to execute the OT&E.</p> <p>The results of the OT&E are documented in an AFOTEC final report. This report will make a determination of effectiveness and suitability, rate the COIs, and determine the overall mission capability of the system. Any limitations/shortfalls encountered during test are documented, along with any impacts observed/expected in the operational environment. A "decision-quality" interim summary report may be produced, if necessary (and approved by AFOTEC/CC), to provide an early look at IOT&E results to inform the J65 certification decision.</p>	<p>____ Not Applicable</p> <p>____ Draft</p> <p>____ Final,</p> <p>Date: _____</p>



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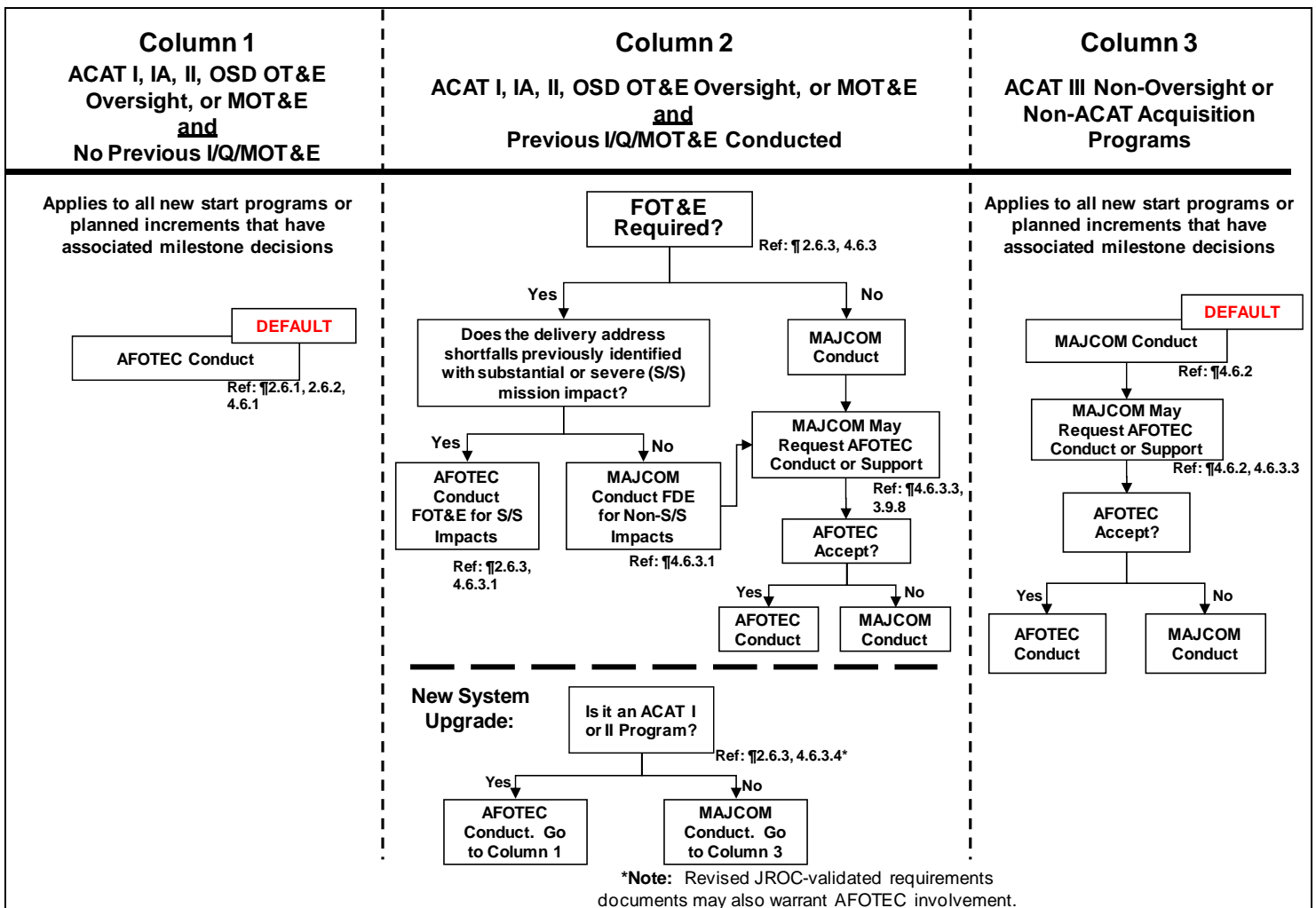
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Summary

Integration of the acquisition, requirements, and test process is essential. Without an integrated DT/OT approach the potential exists for wasted time, money, and expertise. An acquisition program needs to involve both the developmental and operational testers from the outset. Figure 2 will help a program manager determine who the lead operational test organization is for the program. The process shown in this figure is dependent on knowing the acquisition category for the program, the oversight status of the program, whether or not the program is a multiservice program, as well as if IOT&E has previously been conducted.

Figure 2. Determining the Operational Test Organization



* References in this figure refer to AFI 99-103, *Capabilities-Based Test and Evaluation*, 12 May 2008



AIR FORCE OPERATIONAL TEST AND EVALUATION CENTER