DEPARTMENT OF THE NAVY
COMMANDER OPERATIONAL TEST AND EVALUATION FORCE
7970 DIVEN STREET
NORFOLK, VIRGINIA 23505-1498

COMOPTEVFORINST 3980.2G
Code 01A
26 Jul 16

COMOPTEVFOR INSTRUCTION 3980.2G

Subj: OPERATIONAL TEST DIRECTOR'S MANUAL

Encl: (1) Operational Test Director's (OTD) Manual

1. Purpose. Establish policy and guidance on all aspects of Operational Test and Evaluation (OT&E) for the OTD.

2. Cancellation. COMOPTEVFORINST 3980.2F of 26 January 2016.

3. Discussion. This revision includes numerous minor changes, the most significant of which are:

a. Incorporation of Best Practice 18 (Training and Logistics Measures),

b. Reorganization of Chapter 4, Integrated Evaluation Framework (IEF),

c. New information about the IEF Checklist,

d. New guidance regarding limitations to test and climatology,

e. New verbiage for Suitability Critical Operational Issues (COI),

f. Introduction of test cards for test operations, and

g. Revised appendix F for VX/HMX Coordination.

4. Action

a. This manual is published for use by Operational Test and Evaluation Force (OPTEVFOR) OTDs, Operational Test Coordinators (OTC), and their chains of command.

b. Personnel noting required or desired changes to this instruction or the enclosed OTD Manual should provide recommended changes via the "Recommend an OTD Manual Change" link on the Knowledge Management System (KMS) home page.

5. Distribution. This manual is not distributed in paper form. It is available electronically in Adobe Acrobat on the command's Local Area Network (LAN) in the OT&E Reference Library and on the command's Web site.

J. R. PENFIELD

Distribution: (COMOPTEVFORINST 5216.2R)
Lists I, II & III

OPERATIONAL TEST DIRECTOR'S MANUAL

Enclosure (1)

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CHAPTER 1 - INTRODUCTION

(Rev 4, Jul 2016)

1-1 ADMIRAL'S MESSAGE

The OPTEVFOR's mission is to independently and objectively evaluate the operational effectiveness and suitability of new and improved warfighting capabilities. The Chief of Naval Operations (CNO) has tasked OPTEVFOR with ensuring that new capabilities developed for the Fleet undergo a disciplined and rigorous OT&E before introduction. In delivering this service, we maintain the highest standards of integrity and objectivity.

In January 2016, the CNO challenged the entire Navy acquisition enterprise to accelerate its processes such that the Fleet receives new capability faster. Commander, Operational Test and Evaluation Force (COMOPTEVFOR) fully supports this directive and will make every effort to accelerate all facets of Operational Testing (OT), as well.

The internal processes we apply to the design of every OT we conduct is the foundation of our credibility. Our collaborative approach in all we do is critical to ensure that all stakeholders understand where programs stand in regard to operational effectiveness and suitability. We will be more consistent with our conclusions as we embrace the rigor of our processes – which all totaled, will yield relevant conclusions for the warfighter and for the decision maker.

- Be Credible through our processes.
- Be Collaborative in dealing with all stakeholders.
- Be Consistent with our Behavior.
- Provide Relevant Conclusions.

1-2 PURPOSE

The purpose of this manual is to familiarize the reader with the role of OT&E conducted in connection with the acquisition and procurement of naval weapons and warfare support systems, and to prescribe policies and procedures for the planning, conduct, and reporting of OT&E of new and improved systems. Throughout all processes and in the application of all guidance, you are required to use critical thinking and maintain a questioning frame of mind.

1-3 BACKGROUND

By direction of the CNO, (COMOPTEVFOR) is chartered to conduct OT&E of systems in Acquisition Category (ACAT) I, II, III, and IVT procurement programs. OT&E is conducted in as near a realistic operational environment as possible with Fleet personnel operating and maintaining the System Under Test (SUT). Wherever possible, simulated hostile threat action is employed to stress the system. Although the operational experience and judgment of the naval personnel conducting OT&E is not specifically addressed in this guide, it is of utmost importance to the validity of OT&E

results, conclusions, and recommendations. To that end, meticulous planning, preparation, conduct, and reporting of OT&E are mandatory. It is also important to note that although COMOPTEVFOR works very closely with the acquisition process, the command is operational and works for the CNO, and can represent the equities of the warfighter to the acquisition community.

1-4 MISSION STATEMENT

Test and evaluate warfighting capabilities under realistic operational conditions, determine their effectiveness, suitability, and impact on mission accomplishment.

1-5 STRATEGIC VISION

Deliver capability-focused and -aligned operational assessments, procedures, and tactics for new warfighting capabilities to ensure our Sailors, Marines, Coast Guardsmen, Airman, and Soldiers are successful in combat.

1-5.1 GUIDING PRINCIPLES

We will:

- Treat each other with respect, dignity, and take care of our shipmates and families.
- Work as an enterprise team to solve problems and celebrate success.
- Use Operational Risk Management in test design and execution, and strive to prevent mishaps at work and in our personal lives.
- Initiate and foster open communication to create transparency and trust among Program Managers, Developmental Testers, and Operational Testers to achieve common understanding of the SUT and how those capabilities impact warfighting effects.
- Use Mission-Based Test Design (MBTD), integrated test techniques, and best evaluation practices to develop and deliver test objectives, Integrated Evaluation Frameworks, and assessments.
- Make every decision defendable, repeatable, and robust.
- Be our own toughest critic to continuously improve our processes.
- Be good stewards of taxpayer dollars and even better stewards of warfighting capabilities.
- Collaborate with stakeholders early and continuously throughout acquisition and fielding processes, and achieve agreement on what is in scope of test.
- Fully understand the SUT and the warfighting effects (joint mission threads) that SUT impacts.
- Share data, test procedures, and analysis techniques early.
- Turn data into information and information into knowledge.
- Resolve all issues promptly using respectful, constructive conflict techniques.
- Maintain operational independence when making conclusions.

- Make Initial Operational Test and Evaluation (IOT&E) a period of confirmation vice a period of discovery.
- Lead the Navy's effort to develop independent assessments of Warfare Capability Baselines that address Fleet Commander priorities.

1-6 THE ROLE OF THE OPTEVFOR

It is important to put the role of OT&E in context to best understand the responsibilities of the OTD and other members of the Force [OPTEVFOR]. In addition to the statutory missions assigned by law, COMOPTEVFOR has additional responsibilities assigned by the CNO to assist the Service Acquisition Executive by providing early assessments of the operational effectiveness and operational suitability of major acquisition programs being developed by the Department of the Navy (DON). These early assessments are intended to help senior leaders identify risks and benefits of systems under development so that the best acquisition decisions can be made.

During program development, OPTEVFOR will typically provide a series of one or more operational assessments to help inform the Service Acquisition Executive and the Resource Sponsor on the progress being made with particular focus on the risks that are likely to be observed at IOT&E.

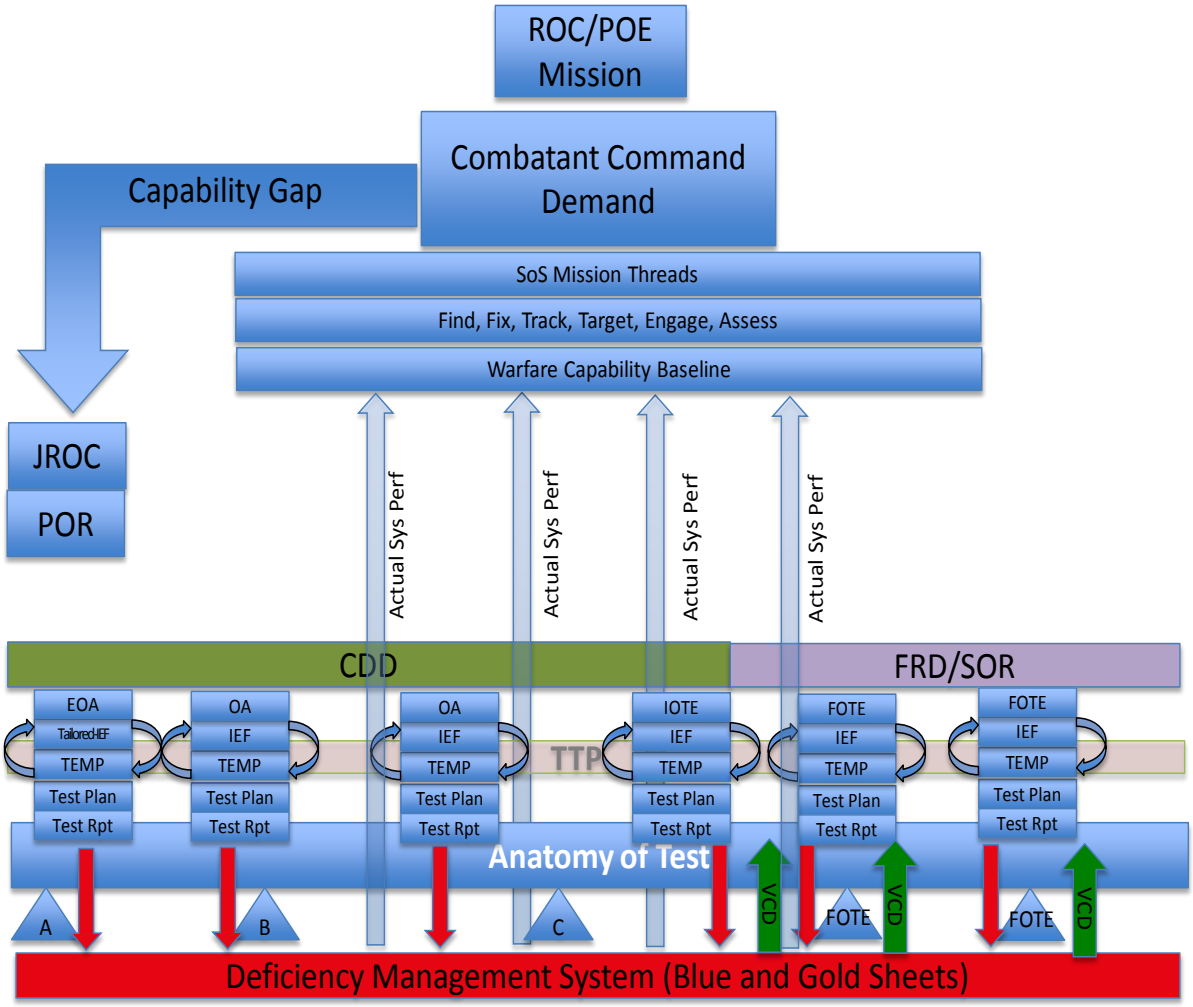
During IOT&E, OPTEVFOR exercises its statutory responsibility to make an assessment of the operational effectiveness and the operational suitability of the SUT. In addition, the Commander makes an assessment of the operational effectiveness and the operational suitability of the SUT's performance as part of the overall System of Systems (SoS). As will be discussed later, it is not uncommon to find a SUT that performs exactly as desired within a larger SoS, but that the SoS does not accomplish the intended mission.

Depending on the structure of the program, there will likely be additional phases of test designed to support the Verification of the Correction of Deficiencies (VCD) found in IOT&E or to assess delivery of additional capability. Depending on the success of the IOT&E and/or the scope of future changes, these additional test periods will vary significantly in size and scope.

In parallel with the acquisition process, COMOPTEVFOR supports the CNO and the Fleet Commanders with Warfare Capability Baseline assessments. Those assessments examine specific "kill or effects chains" identified by the Fleet Commanders and reports on the Navy's capability across all platforms, networks, weapons, or sensors. The Warfare Capability Baseline assessment report distills the large volume of OT data into clear, concise annotated charts that assist senior leaders in quickly identifying critical issues. Warfare Capability Baseline assessments are inextricably related to every SUT because each system must work within a SoS to create warfighting capability.

The foundation of these reports is laid out in the OT&E process described in the following section. Figure 1-1 depicts the interrelationship of these processes.

Figure 1-1. Interrelationship of OT&E to Navy Mission Capabilities



CDD - Capability Development Document
EOA – Early Operational Assessment
FRD – Functional Requirements Document
JROC – Joint Required Operational Capability
FOT&E – Follow-on Operational Test and Evaluation
OA – Operational Assessment
POE – Projected Operational Environment
POR – Program of Record
ROC – Required Operational Capability
SOR – System Operating Requirement
TEMP – Test and Evaluation Master Plan
TTP – Tactics, Techniques, and Procedures

1-7 THE OT&E PROCESS

1-7.1 MBTD

Once a program is assigned to OPTEVFOR, the first step is to employ a process known as MBTD to develop an evaluation strategy. Chapter 4 provides a detailed discussion of the MBTD process. In basic terms, MBTD begins with the Navy ROC/POE mission areas and then examines the specific mission contributions ascribed to the system. To accomplish this, the standard mission threads (first-level subtasks) are decomposed (as needed) into second-, and third-level subtasks. Conditions, measures, and Data Requirements (DR) are identified and traced to subtasks. The process of associating the conditions and measures described in the requirements documentation (and elsewhere) with the actual subtasks and suitability issues necessary for mission success ties the system with the broader SoS performance necessary to deliver a warfighting capability. MBTD also incorporates Design of Experiments (DOE) to create defendable, minimum-adequate test designs for key SUT concerns. The product of this effort is a document known as the Integrated Evaluation Framework (IEF). The IEF provides the foundation for the input of the Operational Test Agency (OTA) to the TEMP. It also enables the OT community to become a full-fledged partner in Integrated Testing (IT) with members of the Contractor Test (CT) and Developmental Test (DT) communities. Beyond its evident support of the acquisition process, the mission-task breakdown developed in the IEF process serves as the foundation for the creation of the effects chains used in the development of Warfare Capability Baseline (WCB) assessments.

1-7.2 TEMP

The TEMP is the overall, controlling directive for the management of an acquisition program's test and evaluation program. It is directive in nature, and defines and integrates test objectives, Critical Operational Issues (COI), test responsibilities, resource requirements, and test schedules. While the Program Manager (PM) is responsible for the development and submission of the TEMP, COMOPTEVFOR is responsible for the development of those portions dealing with OT. COMOPTEVFOR is a signatory on all TEMPs developed in the DON, as well as those for joint/multiservice programs that have Navy equities. OPTEVFOR's input to the TEMP process is based on the IEF. In short, the TEMP is a formal commitment between stakeholders on the IT strategy for a program to include resources, planning, and methodology.

1-7.3

The OT process should be seen as a continuum that supports all phases of program development. Using the IT construct, operational testers may participate in CT and government DT, in addition to stand-alone OT. The intent is to use every opportunity to gather relevant data in the most efficient and economical manner. All test communities (CT, DT, and OT) have unique roles and responsibilities; however, there is generally a significant intersection of the data sets necessary to inform their respective evaluations. OPTEVFOR's commitment is to use all qualified data, regardless of source, to make the best, informed evaluation.

1-7.4

Formal, stand-alone OT periods are generally called out in support of a program's acquisition milestones. These test periods are conducted per an approved OT plan. For programs that fall under the oversight of the Director, Operational Test and Evaluation (DOT&E), the law (10 USC 2399) requires that the adequacy of the test plan (including the projected level of funding) be approved in writing by the Director prior to commencing OT. For all other programs, the Commander is the approval authority. The OT plan builds on the IEF. Depending on the stage of program development, the test plan may only involve a subset of the capability described in the IEF. The OT plan expands upon the IEF with an additional level of detail on the execution of the specific vignettes and the details associated with specific test configurations, range instrumentation, and Fleet participants.

1-7.5

There are five general types of dedicated OT periods in a typical major acquisition program:

1-7.5.1

The first formal assessment is often an Early Operational Assessment or EOA. This assessment occurs before the start of the Engineering and Manufacturing Development phase (formerly known as the System Design and Development phase) of the acquisition program. Due to its timing, most programs will have only a single EOA. Generally, this is limited to a review of the design documentation, preliminary manning and training plans, and, potentially, a demonstration of technology. The goal of the EOA is to identify system enhancements, as well as risks towards the successful completion of IOT&E. Each risk identified is categorized and documented with a "Blue" or "Gold" sheet. Blue sheets refer to the SUT issues, while Gold sheets address issues outside the SUT that impact mission accomplishment. These issue sheets are tracked through the life of the system until they are verified as corrected.

1-7.5.2

The second formal assessment period is generally an Operational Assessment or OA. This assessment occurs post-milestone B, during the Engineering and Manufacturing Development phase. The scope of the OA is most often determined by the maturity of the development program. As with EOAs, OAs identify system enhancements, as well as risks towards the successful completion of the IOT&E. Each identified risk is categorized and documented with a Blue or Gold Sheet. Large complex programs will often have multiple OAs during the Engineering and Manufacturing Development phase. Major Defense Acquisition Programs typically require the results of an OA to support milestone decisions and other program reviews.

1-7.5.3

The third type of OT period is the IOT&E. This is the statutorily required, independent evaluation of the operational effectiveness and operational suitability of the SUT. This test is conducted on production-representative test articles during the Production and Deployment phase of an acquisition program. Specific deficiencies identified during test

are documented as individual Blue or Gold sheets. Based on the results of IOT&E, COMOPTEVFOR makes a determination of the operational effectiveness and operational suitability of the SUT (the POR), as well as the operational effectiveness and suitability of the SUT within the overall context of the SoS in which it functions. The Commander makes a recommendation to the CNO on the Fleet introduction (or full fielding in the case of joint/multiservice programs). The results of IOT&E are a prerequisite for the Full-Rate Production (FRP) Decision (FRPD) Review.

1-7.5.4

The fourth type of OT period is the VCD. Typically, this is not a preplanned phase of testing, but is inserted into the test program after a formal phase of OT to verify that certain deficiencies have been corrected. This provides the Milestone Decision Authority (MDA) with the independent assurance the deficiencies cited as corrected by the PM from a previous phase of OT have actually been corrected. When deficiencies are verified as corrected, the corresponding Blue or Gold sheet is closed. If the deficiency is not fully corrected, the results are reviewed to determine if the mitigation warrants a change in the deficiency categorization.

1-7.5.5

The final category of OT period is FOT&E. Because it nominally encompasses all OT conducted after IOT&E, it can take many different forms. In its original construct, FOT&E included completion of deferred or incomplete testing from IOT&E, as well as validation of the operational effectiveness and suitability of the actual production systems. In practice, FOT&E is often used to support the development of incremental improvements to systems that are in production. These improvements can range from minor hardware changes to periodic software system updates to major engineering changes that require extensive development in their own right. Given the variations in scope, FOT&E may be structured to resemble a subset of IOT&E, confirming production performance, or it may take the form of an OA, identifying risks to successful implementation of a major engineering change. Based on the focus of the test, Blue and Gold sheets may be closed as fixes are incorporated into the production articles or new Blue and Gold sheets may be created to document risks associated with the new development.

1-7.6

In addition to providing specific reports on individual PORs to the CNO to support the acquisition process, COMOPTEVFOR also produces Warfare Capability Baseline assessments that address Fleet Commander selected high priority warfighting effects chains in an integrated horizontal SoS context. These baseline assessments integrate the results of OT across a host of systems and platforms with current Fleet TTP to provide warfighting commanders with a cogent description of the capabilities, limitations, and areas of uncertainty associated with systems that support current operational plans. The common threads through these processes are the missions, tasks, and conditions defined in the IEFs, which define how the warfighting tasks are accomplished, and the Blue and Gold sheets that identify the deficiencies of the individual constituent systems and the overarching SoS.

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CHAPTER 2 - ORGANIZATIONAL RELATIONSHIPS

(Rev 6, Jan 2016)

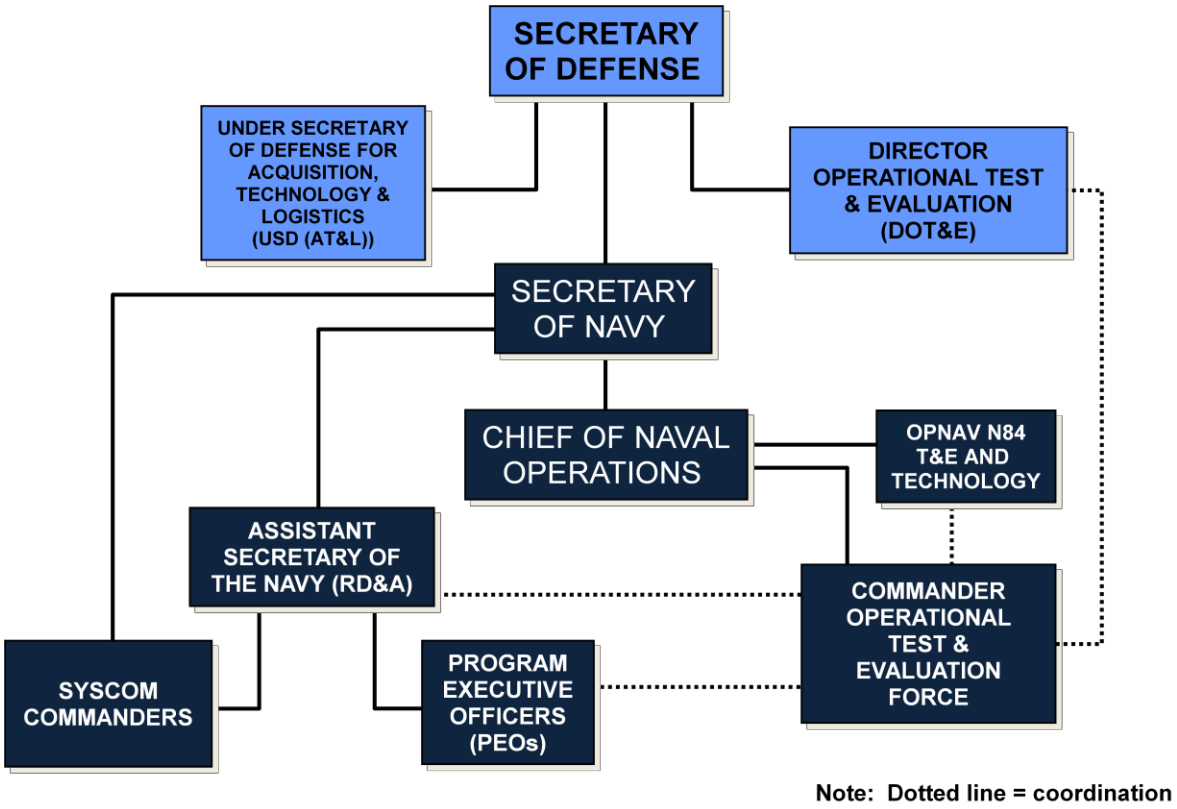
2-1 INTRODUCTION

The COMOPTEVFOR is an Echelon 2 Commander under the CNO reporting directly to the Vice Chief of Naval Operations. The missions, functions, and tasks of OPTEVFOR are delineated in OPNAVINST 5450.332. OPTEVFOR serves as the Service Operational Test Agency for the Navy, as well as Marine Corps Aviation. In addition to the headquarters element, OPTEVFOR includes a Fleet-scheduling detachment in San Diego, a detachment supporting the Joint Strike Fighter, Joint Operational Test Team at Edwards, Air Force Base (AFB), CA, and a Surface Warfare Division detachment at Dahlgren, VA. There are four Navy and Marine Corps Squadrons that conduct OT&E under the direction of the Commander. Air Test and Evaluation Squadron ONE (VX-1), located at Patuxent River, MD, is under the administrative control of Commander, Naval Air Forces, Atlantic. Air Test and Evaluation Squadron NINE (VX-9), located at China Lake, CA, is under the administrative control of Commander, Naval Air Forces, Pacific. Marine Operational Test and Evaluation Squadron ONE (VMX-1), located at Yuma, AZ is administratively aligned under the Deputy Commandant for Aviation. Marine Helicopter Squadron ONE (HMX-1), located at Quantico, VA, was historically assigned responsibility for United States Marine Corps (USMC) rotary wing OT. Due to the growth of its principal responsibilities for Presidential transport, most OT&E responsibilities have been realigned to other organizations; however, HMX-1 retains responsibility for OT of aircraft assigned for Presidential transport.

2-2 EXTERNAL ALIGNMENT

Figure 2-1 depicts the command's principal external relationships.

Figure 2-1. COMOPTEVFOR External Relationships



It is important to note that while OPTEVFOR provides reports to the Navy's Acquisition Executive (the Assistant Secretary of the Navy (Research, Development, and Acquisition)), the Commander is aligned under the CNO. The dotted line from the Office of the Chief of Naval Operations (OPNAV) N84 reflects that OPTEVFOR's mission funding is provided through the Office of Chief of Naval Research and the Navy Test and Evaluation Executive. The Test and Evaluation (T&E) Executive also provides policy guidance on T&E within the Department of the Navy (DON).

The DOT&E has statutory responsibility for the oversight of all OT&E carried out in the Department of Defense (DoD). The DOT&E statutory responsibilities include the approval of the adequacy of all OT plans that support programs designated for DOT&E oversight. By regulation, the DOT&E is the approval authority for TEMPs for programs designated for DOT&E oversight. While the DOT&E has no responsibility for the execution of T&E, the Director is required to provide a variety of reports on the results of testing to the Congress. Based upon this, he may designate observers for Service testing and has access to all data collected during OT.

There are three basic reports produced by the DOT&E. For Major Defense Acquisition Programs, the Director must submit a report to the Congress on the results of OT prior to the approval to proceed beyond Low-Rate Initial Production (LRIP). These are typically referred to as "BLRIP" reports. In cases where the Secretary of Defense determines that it is necessary to field a system before the completion of an IOT&E, the

Director is required to submit a report to the Congress based on the available test results with an assessment of the risk being incurred by the early fielding. These are often referred to as "Section 231" reports. Finally, the DOT&E produces an annual report to the Congress with an overview of the testing accomplished on each of the programs under DOT&E oversight (including live-fire testing activities). This report also includes recommendations for the Services and Defense Agencies. While there are other reports called out in various National Defense Authorization Acts, these three are the ones that impact most OPTEVFOR personnel. See appendix D for additional information on the role and staffing of the DOT&E.

2-3 INTERNAL ALIGNMENT

2-3.1 Top Leadership

Top leadership below the Commander includes the Deputy (00D) and the Chief of Staff (CoS) (01). Their broad areas of responsibility are as follows:

2-3.1.1 Deputy (00D)

The Deputy reports directly to the Commander. He, with the CoS, ensures the mission of the command is carried out in conformance with the policies, plans, and intentions of the Commander. He acts for and in the name of the Commander when the Commander is temporarily absent. He actively participates in final reviews and presentations of test documents arriving for the Commander's approval, and represents the Commander in the coordination of Navy OT&E policy. He recommends potential improvements in test and evaluation methodology, and develops OT&E policy. He represents COMOPTEVFOR at high-level meetings involving the DoD and the DON. He develops and revises the command's business plans and the biannual update to the strategic plan.

2-3.1.2 CoS (01)

The CoS is the executor for and principal assistant and advisor to the Commander and the Deputy. He ensures the administration, training, and operations of the command are carried out per the Commander's intentions. He is responsible for daily command operations and the use of command resources. He directs activities of Human Resources and is the final approval for government civilian hires. He also is the command point of contact with the CNO and other offices which interface with OT&E.

2-3.2 Competency- and Warfare-Aligned Organization

OPTEVFOR is a competency- and warfare-aligned organization. This is significantly different from the Fleet organizations with which most OTDs are familiar. Rather than a strict Fleet military structure, OPTEVFOR has Warfare Division Directors who are fully responsible for delivering test documents ready for the Commander's signature; they are supported by competency division owners, whose job is to ensure the product meets technical requirements and the Commander's standards.

There are seven warfare divisions and a Joint Strike fighter (JSF) Detachment at Edwards AFB that are supported by competency divisions. The warfare divisions

include Undersea Warfare (40), Air Warfare (50), Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) (60), Surface Warfare (70), Expeditionary Warfare (80), Advanced Programs (90) and Littoral Combat Ship (LCS) Division. Each warfare division has a Navy Captain as the division Director with a senior civil servant as the Deputy or a senior civil servant as the division Director and a Navy Commander as the Deputy. The JSF Detachment manages Navy requirements in testing and evaluation of the F-35 and is a member of the Joint Operational Test Team.

The warfare divisions represent the traditional core of the OPTEVFOR organization. This is where the Fleet operators reside. It is their perspective that allows OPTEVFOR to bridge the technical to the tactical, successfully.

There are five competency divisions: Policy and Operations (01A), Test Design (01B), Test Planning and Analysis (01C), Cybersecurity Testing (01D) and Warfare Capability Baseline (01X). In addition, the Technical Director (00TD) supports all divisions on technical aspects of the test products. Other support divisions include the Staff Commanding Officer and Administration (10), Chief Information Officer (CIO) (20), Contracts (14), and the Comptroller (30). The organizational relationships are depicted in figure 2-2.

The members of the competency divisions generally work within the test team to ensure that the Commander's policies are adhered to and that best practices are applied; however, if the team comes to an impasse, the issue is raised to the warfare division director or Deputy and the cognizant process owner. Generally, issues can be resolved at this level; however, if there is still disagreement, the matter is raised to the Deputy and, if necessary, the Commander, for resolution. The warfare division directors and the competency division directors have the right and the duty to raise an issue for Flag-level adjudication if they believe that the proposed outcome is not in the best interests of the Force or the Service.

For a competency- and warfare-aligned organization to succeed, issues must be addressed in a professional manner. There is no room for personality or ego. As always, the keys are early engagement; clear, unemotional dialogue; and an understanding that any conflicts are not win/lose situations - but rather, matters that must be resolved in the best interest of the Service.

2-3.2.1 Process Owners

The broad areas of responsibility for the process owners are as follows:

2-3.2.1.1 Technical Director (00TD)

The Technical Director (00TD) reports directly to the CoS and is the principal advisor to the Commander and staff on technical aspects of T&E products. He is responsible for review of all T&E products, to include: TES, TEMPs, IEFs, Test Plans, Test Reports, and M&S accreditations, with a particular focus on technical aspects of the products. The TD supports all divisions and coordinates with 01A, 01B, 01C, and 01D to improve

COMOPTEVFOR T&E processes, and is the principal liaison with the DOT&E Science Advisor.

2-3.2.1.2 01A Policy and Operations

01A Policy and Operations is responsible for representing the Commander to external organizations in the development of T&E policy. It is responsible for ensuring compliance with governing directives, specifically Secretary of the Navy (SECNAV) Instructions and DoD Directives. As the Operations Director, 01A tracks the status of ongoing testing and reporting, as well as managing the response to external requests for document coordination and review. The management of the editorial staff, the training staff, and the Fleet Resource Coordinators falls under the Policy and Operations Director.

2-3.2.1.3 01B Test Design

01B Test Design is responsible for the implementation of MBTD across the Force. It oversees the development of all IEFs and subsequent revisions and updates. It is responsible for managing the authoritative database of mission threads, subtasks, conditions, measures, and DRs. The management of the Core Team Facilitators (CTF), who co-chair the test design teams, and the statistical staff falls under the Test Design Director. As the senior expert in MBTD, the Test Design Director is responsible for the development of the associated training curriculum.

2-3.2.1.4 01C Test Planning and Analysis

01C Test Planning and Analysis is responsible for the analytical rigor applied to all test planning documents and reports across the Force. It oversees the development of all test plans, reports, and supporting M&S documents. 01C Division is comprised of the Director, a Deputy Director, and Assistant Directors assigned as process owners. The management and professional development of all LTEs, Center for Naval Analysis (CNA) representatives, and division analysts, whether assigned directly to 01C staff or the warfare divisions/squadrons (01C forward), falls under Test Planning and Analysis Director. As the Subject Matter Expert (SME) in test planning, execution, and report writing, the Test Planning and Analysis Director is responsible for the development of the related training curricula.

2-3.2.1.5 01D Cybersecurity and Interoperability Assessment

01D Cybersecurity Test and Evaluation Division is responsible for all aspects of cybersecurity test and evaluation during OT&E and cybersecurity assessments during Combatant Commander and Fleet exercises. 01D Division is divided internally into two separate functions, Cybersecurity OT&E and Cybersecurity Assessment Program (CAP). 01D is comprised of the Director, Deputy Director, Test Operations Director, and a Cybersecurity Assessments Program Director.

Cybersecurity OT&E. Cybersecurity OT&E integrates critical cybersecurity testing into the acquisition lifecycle and tests the SUT per DoDI 5000.02 and DOT&E memo of 01 August 2014. Cybersecurity OT&E group provides support in cybersecurity acquisition test design, planning, execution and reporting across all COTF warfare divisions,

including VXs and VMX. Cybersecurity OT&E group plans, executes, conducts post-test analysis and drafts appropriate documentation to be included in the warfare divisions' final reports.

Through a rigorous and iterative test process, Cybersecurity OT&E assists in the development and fielding of more secure and resilient Information Technology (IT) systems supporting the warfighters. 01D Cybersecurity OT&E group includes the following support positions: CNA representative, Future capabilities lead, training and lab manager, test team leads and certified ethical hackers.

Cybersecurity Assessment Program (CAP). CAP is a DOT&E managed, congressionally funded program mandated as part of the National Defense Authorization Act of 2002. Each service OTA has a CAP team. CAP monitors and reports on the DoD's ongoing efforts to improve cybersecurity and cyber functionality. It has four primary objectives in support of this mission:

1. Conduct operationally relevant assessments of Combatant Command and Service cybersecurity featuring representative cyberthreats to evaluate how realistic cyber conditions affect their ability to execute their assigned missions.

2. Provide timely feedback to Combatant Command, Service, and Department of Defense leadership on identified problems, associated mission effects, and successful defensive strategies.

3. Share relevant information with and support those organizations authorized and able to provide remediation and mitigation assistance and to verify that remediation and mitigation activities are effective.

4. Report overarching cybersecurity observations and trends in the DOT&E Annual Report to Congress.

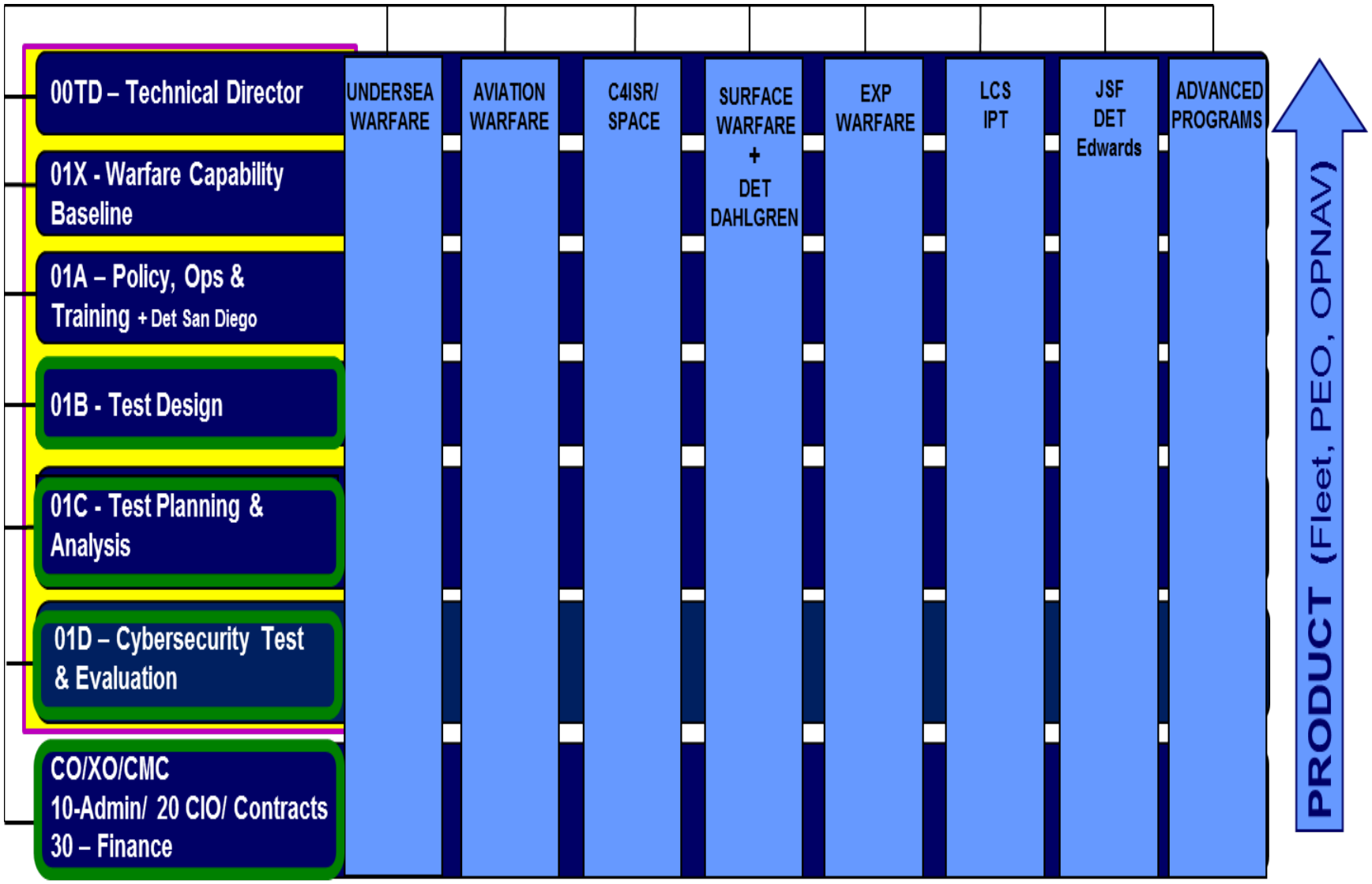
Attaining the Assessment Program's mission and objectives requires support from all stakeholders in the planning, conduct, and reporting of assessment activities. This effort requires operationally realistic assessments that use representative threats to create realistic cyberspace conditions and focus on the conduct of critical operational missions.

2-3.2.1.6 01X WCB and Integration and Interoperability (I&I)

01X leads the WCB project and is responsible for leading OPTEVFOR's participation in the larger Navy I&I effort. The WCB assesses the technical feasibility of completing high-priority kill/effects chains nominated by the numbered Fleets and prioritized by U.S. Fleet Forces Command, Commander Pacific Fleet, and OPNAV Deputy Director, Warfare Integration (N9I). 01X is responsible for reporting the results of WCB assessments via a database or other means, as required, to inform senior Navy leaders and the development of solution sets for Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF). 01X participates in

other I&I efforts, such as aligning System of Systems test methodology (e.g., Naval Integrated Fire Control – Counterair), as bandwidth and expertise allow.

Figure 2-2. COMOPTEVFOR Internal Relationships



2-3.3 Roles and Responsibilities – Primary Duties

The warfare divisions described above are composed of a team of active-duty military personnel (officer and enlisted), government civilian, and contract support personnel. The various positions they hold and the associated responsibilities are listed below.

2-3.3.1 Division Director or Assistant Chief of Staff (ACOS)

The Division ACOS is responsible for being the primary interface with 0-6 PMs and DOT&E Deputy Directors and Action Officers (AO). The ACOS is to ensure that all Division products are ready for Flag-level review. The ACOS represents COMOPTEVFOR at high-visibility test events and at all Operational Test Readiness Reviews (OTRR)/mission control panels, Working Integrated Product Team (WIPT) executive level meetings, and DOT&E Concept of Test (COT) briefs.

2-3.3.2 Division Deputy Director or Deputy Assistant Chief of Staff (DACOS)

The Division DACOS is responsible to the ACOS to ensure that all products are ready for Flag-level review. The DACOS provides the long-term continuity for the Division and is the key interface with 01A, B, and C. The DACOS is responsible for the timely scheduling and execution of internal test product reviews; and monitoring and timely scheduling and execution of external test functions, such as OTRR and briefs to DOT&E.

2-3.3.3 Section Head

The Section Head is primarily responsible for ensuring that the required internal coordination within the division and command occurs. The Section Head is a facilitator and acts as the liaison with 01A, B, and C. The Section Head is responsible to the ACOS for all assigned military personnel meeting military requirements. The Section Head is accountable to the DACOS for the timeliness, accuracy, and format of all frameworks, TEMP recommendations, test plans, test reports, and other test products assigned to them. The Section Head ensures the timely scheduling and execution of internal test product reviews and the timely scheduling and execution of external test functions, such as OTRR and briefs to DOT&E. The Section Head is responsible for communications with program offices and other external organizations (DOT&E, OPNAV, etc.), as appropriate.

2-3.3.4 OTD

The OTD provides military leadership and tactical acumen to OT&E. The OTD is assigned to one or more programs, each in a phase of test. The OTD is ultimately responsible for ensuring that the requisite phase of test is conducted properly and that associated documentation is “Flag-signature ready” and in compliance with current policies and procedures. COTF is a matrix-based organization; work is done in a collaborative manner, supported by the various competency-based divisions. This deliberative process ensures all necessary OT&E expertise is engaged and that sufficient analytical rigor is employed to conduct a thorough test and produce a clear and accurate test report. The OTD is responsible for the proper management of all program funds in support of the assigned programs. He or she is accountable for communicating with the program offices and other external organizations (DOT&E,

OPNAV, etc.), as appropriate. OTDs may be assigned a variety of support staff, including military or government civilian Assistant Operational Test Directors (AOTD) or contracted support, as needed.

2-3.3.5 AOTD

The AOTD represents the OTD when requested to do so. The AOTD possesses many of the same skill sets as the OTD and in the performance of his or her duties is training to be an OTD. The AOTD works for the OTD.

2-3.3.6 Lead Test Engineer (LTE)

LTEs are assigned to sections within the warfare divisions and are mentored and trained by the Test Planning and Analysis Division (01C) on test planning, test execution, and post-test analysis and reporting processes. Once assigned to a warfare division, LTEs are responsible to the warfare division Deputy Director for the execution of their responsibilities. LTEs support test teams throughout OT, including MBTD and the preparation and development of TEMPs, test plans, COT briefs, pre-test briefs, post-test iterative process Plan of Action and Milestones (POA&M), data appendixes, Blue/Gold sheets, and final reports. LTEs also maintain oversight of all testing to ensure the test is executed and data are collected per the test plan.

2-3.3.7 Test Engineer

The Test Engineer is capable of determining how to create a process that would test a particular SUT, or vignette or mission set associated with a SUT, to ensure it meets the requirements specified or derived. The Test Engineer has a broad base of knowledge and understanding of historical test techniques and procedures used within his or her area of expertise (electro-optical/infrared; reliability, maintainability, and availability; electronic warfare; missile systems; radars/radio frequency propagation; Cybersecurity, etc.). Test Engineers are expected to be well-connected to other centers of excellence containing greater expertise within their domain/areas of interest. Test Engineers assist the OTD in test design and execution.

2-3.3.8 Analyst

The Analyst provides detailed analytical support to the OTDs/Operational Test Coordinators (OTC) in their preparation of TEMPs, test plans, and final reports. The Analyst provides detailed analytical support to the OTDs/OTCs in their review of management-level program documentation, especially Initial Capabilities Documents (ICD), CDDs, and Capabilities Production Documents (CPD). The Analyst applies statistical analysis techniques in examining test data and determining sample size for test matrices. The Analyst assists OTDs/OTCs in establishing COIs and measures of effectiveness/performance. The Analyst ensures the appropriateness of test scenarios and adequacy of requested resources to resolve COIs.

2-3.3.9 OTC

OTC positions are used in Air Warfare Division and, to a lesser extent, in other warfare divisions. The OTC coordinates the efforts between the OTD, who often is located in a VX/VMX squadron, and the division Section Head, DACOS, and ACOS.

CHAPTER 3 - GENERAL ADMINISTRATIVE PROCESSES

(Rev 7, Jul 2016)

3-1 INTRODUCTION

This chapter will provide general guidance that pertains to the development of all briefings and correspondence associated with OT&E. The principal output of OPTEVFOR is information for decision makers within the Navy, the Marine Corps, and the DoD, as well as, ultimately, Congressional decision makers. Given this audience, it is essential that all communications on behalf of the command reflect the highest standards of professionalism. The impact of the command's work is directly tied to the credibility of its products.

3-2 GENERAL

As members of the headquarters staff and supporting squadrons, individuals must understand that their actions and demeanor will reflect directly on the entire Force. All communications, whether formal or informal, should be conducted in a professional manner. No conversation or e-mail can be assumed private or "off-the-record." OPTEVFOR personnel will deal with a broad variety of stakeholders with differing views on many issues. Whether or not there is agreement, individuals should be treated with appropriate respect. Each stakeholder is trying to do what is perceived as best from their respective vantage point. There is no room for denigrating or personal attacks on the character or intelligence of any stakeholder regardless of what one may observe amongst others. OTDs and OTCs are likely to find themselves briefing Flag and General Officers and members of the Senior Executive Service, as well as, from time to time, Presidential Appointees. These briefings should be conducted with the decorum and respect they deserve. Briefers must avoid hyperbole, sarcasm, and flippant remarks. By the same token, the briefer must ensure that the salient points of the brief are clearly presented on behalf of the Commander. The briefer should not try and "game" an audience by over- or understating an issue. The briefer should clearly state the facts, present a well-reasoned analysis that ties the results clearly to the mission, and draw conclusions.

3-3 COLLABORATION

OPTEVFOR personnel must collaborate early and often with internal and external stakeholders. The best results are generally attained when all perspectives are considered. If an OTD is having difficulty bringing key stakeholders together, it is essential that the matter be brought to the attention of the warfare division leadership. Failure to engage early often leads to unnecessary rework or a less-than-optimal product. As discussed in chapter 4, key stakeholders in the test design phase include the program manager's staff, the resource sponsor's representative, the developmental test community, and for programs under the Office of the Secretary of Defense (OSD) oversight representatives from DOT&E and the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation, as well as the supporting analysts from various Federally Funded Research and Development Centers (such as the Institute for

Defense Analyses). Internal collaboration will involve the various process owners as outlined in chapters 4, 5, 6, 7, and 8. Regardless of whether the collaboration is internal or external, healthy collaboration involves constructive conflict, not “groupthink”. The goal is to challenge all assumptions and thoroughly consider the second- and third-order effects of the actions being taken. The goal is to resolve issues at the lowest level empowered to do so. When disagreements cannot be resolved, it is incumbent upon the participants to raise the issue up the chain of command. If after discussion between the warfare division leadership and the internal process owner or external stakeholder, there is still disagreement, the issue needs to be raised in a factual, unemotional manner. When either party writes up the issues and recommendations, one should not be able to tell who authored the document. If one cannot clearly, objectively state the other person's views, the mature dialogue that needs to occur before elevating the issue to the Flag level has not yet occurred.

3-4 TRAINING FOR NEW TESTERS

New OTDs typically arrive at COMOPTEVFOR with a wealth of Fleet and leadership experience, which is crucial to successful performance. However, they rarely have a background in T&E. Therefore, training is required. COMOPTEVFOR instruction 3500.1 specifies the training required for any new tester at COMOPTEVFOR. Training starts with the 4-day OTD Course, and continues with KMS training, the Cybersecurity Workshop, and IEF Course. The Test Planning course is provided to testers who are about to write a test plan. All testers are also required to take some number of Defense Acquisition University (DAU) courses for T&E. At a minimum, all will take the online level-1 courses. Officers and civilians in certain billets must proceed to level-2 courses, and some billets require level-3.

COMOPTEVFOR does not expect the OTD to know everything; that is not possible, especially during a 2- to 3-year assignment. The support Codes, 01A, 01B, 01C and 01D were established to provide technical support and assist the OTDs in developing test products. They are the “standing army” that assists the OTD in accomplishing the job. In the future, some courses will be offered just-in-time, focused on the “how-to,” to support particular events, such as test plan production.

3-5 POLICY AND REFERENCES

Policy at COMOPTEVFOR is officially promulgated by 01A (Policy, Operations, and Training). Official policy is found in COMOPTEVFOR instructions, including the OTD Manual, Standard Operating Procedures (SOP), and in the various document templates. Guidance, falling short of policy, includes best practices and checklists. After a trial period, some best practices will be incorporated into the OTD Manual as policy.

Testers and others need access to a wide variety of references in the course of their work. At COMOPTEVFOR Headquarters, references can be found on the Y-drive of the LAN within the OT&E Reference Library. Templates and checklists are found in the OT&E Production Library within the folder for the specific type of document or product involved. When a process division document (template or checklist) is updated, the

respective process division (01A/B/C/D) will hold an OTD call to review the changes and provide training on new policy/procedures included in those documents. Additionally, warfare divisions may request that documents already in development be "grandfathered" under the previous guidance. 01A will approve and maintain a copy of the "grandfathered" programs list.

This manual refers to numbered "best practices" in many places. These are procedures or guidelines that help complete a particular task. The best practices are found in the Best Practices folder of the Reference Library on the shared Y-drive at COTF HQ, and also in the Production Library as applicable. Table 3-1 lists the current best practices:

Table 3-1. Best Practices

1	Component Reliability
2	Reporting Confidence Intervals in Reports
3	Data Point Selection and Modeling and Simulation
4	OA Likelihood Determination
5	Hypothesis Test: Rejection and Acceptance
8	Verification of Correction of Deficiencies
8a	IT and VCD TEMP Input Examples
11	Post-Test Iterative Review Process
12	Statistical Analysis
13	Displaying Major Test Results
14	Use and Design of Surveys
15	Sample Suitability Scoring Board Charter for VX Squadrons
16	Sharing Report Information
19	Analysis Working Group
20	Evaluating Suitability
21	CONOPs in TEMPs
22	The Rules for Best Practices
23	Analysis of Qualified and Scored Response Variables
24	Guidelines for SUT and SoS Determination

3-6 REQUIREMENTS

The unique responsibilities and substantial influence of COMOPTEVFOR will sometimes lead PMs, developers, and even contractors to solicit the opinions of individual OTDs as to system enhancements that are desired or required. Requirements may be found in formal requirements documents, such as the CDD or the CPD, or they may be derived from DoD, SECNAV, or OPNAV Instructions, or published TTPs. The subject of requirements is problematic. Everyone wants full capability in all areas. Unfortunately, that is neither practical nor affordable. The CNO must make a difficult set of choices, reflected in the approved requirements documents such as the CDD and CPD. These documents reflect the CNO's unique perspective across all programs and his statutory responsibility to provide the best possible manned, trained, and equipped forces to the Combatant Commanders. It is not the role of COMOPTEVFOR or any associated personnel to make recommendations as to how to correct deficiencies or enhance system performance. The Commander limits recommendations to the timeframe for correction of deficiencies, and whether to

continue program development or introduce a system to the Fleet or not. There are two major concerns with any requirements recommendations: first, if given in front of a contractor, they could be misinterpreted as tacit contractual direction; second, even if shared exclusively with the government program office, any recommendation may be considered to taint the objectivity of future evaluations.

3-7 GENERAL WRITING STYLE

As noted above, the principal audience for OPTEVFOR is senior civilian and military leaders with broad responsibilities. In addition to being factual and unemotional, ensure that the product is readable. That is to say, grammatically correct without spelling errors. Some specifics:

- In general, avoid the use of acronyms except where they are in broad general use (e.g., NATO for the North Atlantic Treaty Organization) or where they are commonly accepted on a particular platform, such as AESA (Advanced Electronically Scanned Array) for the AN/APG-79 series radars on the F/A-18 E/F and EA-18G. Surprisingly, many acronyms are used for different terms at different classification levels across the Services and defense agencies. For example, the acquisition community uses “DA” to refer to the Developing Agency. Joint Publication 1-02 defines it as “data adapter aerospace drift; data administrator; Department of the Army; Development Assistance; direct action; Directorate for Mission Services (DIA); double agent.”
- Use the active voice and simple declarative sentences where possible. Strive for brevity. The goal is to maximize communication in the minimum amount of time. Use data tables and figures to provide large volumes of data in a cogent manner.
- Remember, words have specific meanings. Precise is not the same as accurate. As any weapons tester will affirm, a weapon may be very precise but woefully inaccurate. Likewise “electrical” is not a synonym for “electronic.” As a writer, one must choose one’s words carefully.
- All OPTEVFOR reports are built around the Blue and Gold sheet construct. As discussed in chapter 8, the Blue and Gold sheets employ a formalized structure that presents complex information in a logical, usable format. Blue sheets describe issues or deficiencies with the SUT, while the Gold sheets describe issues or deficiencies that are outside the purview of the program of record undergoing test (the SUT), but are nevertheless essential to the accomplishment of the required warfighting effect.

OPTEVFOR employs an editing staff (01AE) to assist the OTD with format, grammar, spelling, and other editorial issues encountered in the writing process. While the editing staff is part of the review chain, early interaction and liaison with 01AE is recommended when issues occur.

3-8 BRIEFINGS

3-8.1 General Briefing Information

OT&E briefings are similar to other Navy briefings. They cover the facts in a logical, concise fashion. Guidance on OPTEVFOR OT&E briefs, including their content and format, and information on briefs in the Washington, DC area or to decision makers, are also discussed in this chapter. The general brief template can be found on the LAN in the folder: Y:\OT&E Reference Library. Specifics for IEFs, TEMPs, test plans, and final reports are found in chapters 4, 5, 6, and 8, respectively.

3-8.1.1 Briefing Preparation Tips

The following tips for briefs are provided to assist in the preparation of electronic presentations or hard-copy handouts:

- Ensure the presentation slides are of professional quality (i.e., correct spelling; proper English; all text print the same size and font (Arial Unicode MS)) and are consistent in format and appearance (header and footer print, slides are all portrait or all landscape, and page numbers included for each slide).

- As a general rule, do not use copies of pages from documents. Extract the needed information and form bullets for the slide. If necessary, attach an electronic copy of the document to the read-ahead package.

- Avoid placing too much information on one slide; limit data to no more than 12 lines. This may require spreading the message over several slides, but that is much better than using small print and making the slides difficult to read.

- Briefers should include their first name or nickname on their introductory briefing slide.

- Ensure the slides are in the correct order and matched to the presentation. The order of presentation is very important when it comes to keeping the audience's attention and getting the message across. Be very careful with the use of hyperlinks since various editions of PowerPoint may not be fully compatible. (Many senior individuals will save annotated hard copies of presentations. Hyperlinks are problematic in those cases. The briefer must learn the recipient's preferences and respect them.)

- Bring all cited references to the brief.

- Keep the brief in operational terms. Use only the minimum required technical terms to convey the meaning accurately.

- The OTD may be asked to revise one or more briefing slides for the Commander. Typically, only the corrected slides should be resubmitted; concentrate on the directed changes. Provide a script with the new hard copy of the slides if necessary.

Highlight the areas modified or changed by placing the old slides to the left of the folder. Mark modified areas of the document with a bar on the right-hand side.

- The OTD may be asked to rebrief the material. Again, present only the material that has been changed.

- If a typographical error or similar mistake is found in the slide, ignore it. The corrections should have been made before the briefing.

- Comment on the content of each slide, emphasizing key points. Do not just present the slide and let the audience read it. The OTD is there as the OT&E expert to provide answers and discuss the issues, not to hand out paper. Since the slides are all bulleted, the OTD cannot just read the slide to the audience. Instead, as each slide is presented, describe the important points. Avoid statements such as "This slide is …" or "This slide contains …." Instead, introduce the slide in a sentence, such as: "We defined the limitations as …" or "Based on this testing, we concluded that …."

- Ensure the discussion follows the same order as the slide. If an item is not important enough to mention or discuss, do not list it on the slide. Prepare backup slides on material that may interest the Commander or items that may need more information. Present them only if the need arises.

- Limit your use of acronyms, and never use an acronym or abbreviation without first defining it (e.g., Automatic Battery Monitoring System).

- Avoid the use of trade jargon; speak plain English. Be clear and concise in your delivery, and remember that you are the expert on your subject.

3-8.2 Preparing Washington Briefs (Navy Gate Reviews, OSD Overarching Integrated Product Team (OIPT) Briefs, etc.)

The cognizant division director must provide the following information to the Commander upon learning of a decision meeting involving a CNO project for which OPTEVFOR conducted OT&E. Note: Specific guidance for COT briefings to the DOT&E is provided in chapter 6.

- Type of decision forum
- Date, time, and place
- Purpose of the decision forum (Milestone (MS) and production level)
- Schedule of preliminary briefs
- Whether a formal presentation is required
- Recommended OPTEVFOR briefer and other attendees
- Whether attendance by the Commander or Deputy is recommended.

3-8.2.1 Presenting Washington Briefs (Gate Reviews, OIPTs, etc.)

3-8.2.1.1.1 Format

OPTEVFOR is typically limited in the number of slides that can be presented at a Gate Review or OIPT; the number varies with the scope and complexity of test. As a general rule, plan for three or fewer slides. A suggested outline is provided below.

- Introductory slide (your name, etc.) –Often not required as the OPTEVFOR brief will be included in an overall slide deck. The briefer then simply introduces him or herself.
- Test summary
- Major conclusions
- OPTEVFOR or COMOPTEVFOR (if required) recommendations.

3-8.2.1.2 Results

If the results are based on too small a sample size (e.g., insufficient database), the OTD should clearly state in the oral presentation that an outcome is being reported. Avoid using words such as inadequate test time, etc. in the presentation or on any slides. Limit the contents of the slide to the parameter, result, and threshold. If remarks are included, avoid making statements that others may perceive as being unsupported by fact or the results.

3-8.2.1.3 Correction of Deficiencies

If the PM reports they have corrected some of the deficiencies listed, the OTD must be aware of this. This requires close liaison with the developer prior to the decision meeting. In the package to the Commander, inform the Commander that outstanding deficiencies are being reported as corrected by the PM. The OTD should request direction on whether to explain these results in the briefing.

3-8.2.1.4 Negative Conclusions

If OPTEVFOR recommends against Fleet introduction of the system, the briefing must fully substantiate negative conclusions and recommendations.

3-8.2.1.5 COMOPTEVFOR's Position

The OTD must ensure that the Commander's position is accurately conveyed at the proper time (i.e., during the brief and any discussions that may follow). If the OTD is unsure about the Commander’s position, raise the question for the Commander's review. The OTD is expected to propose a COMOPTEVFOR position, provided it can be supported.

3-9 T&E DOCUMENT SIGNATURE AUTHORITY

3-9.1 Preparing

Table 3-3 identifies OPTEVFOR signature authority for the various OT&E documents. The smooth documents for the VXs, and rough and smooth for VMX-1, are to be provided to OPTEVFOR Codes 50 or 01A, as appropriate, via e-mail.

3-9.2 Routing

All test documents in routing are tracked via the OPTEVFOR T&E Document Routing application. The Document Routing application is linked to the Test and Evaluation Program System (TEPS) application, and both are accessible from the OPTEVFOR KMS Web page (https://kms.cotf.navy.mil/home_auth/home.home_mis.home_main). The Document Routing application includes detailed instructions for how to use the document router for tracking test documents during routing. Because there are many variations in approved routes, depending on the document type, its oversight status, and the final approver, table 3-2 shows some representative documents and their routing chains. The route chain for your specific document is generated by the T&E Document Routing application. When ready to enter a document into route, the OTD creates the document routing file in the T&E Document Routing application. Test documents move between reviewers electronically. Reviewer comments will be made to a Comment Resolution Matrix (CRM) file associated to the routed document.

Table 3-2. Sample Routing Chains

Reviewers	Framework	Oversight TEMP for O-6 Review	Oversight Test Plan	Final Report
OTD	X	X	X	X
OTC	X	X	X	X
Section Head	X	X	X	X
01B	X	X	X	
01C			X	X
Div B-Code	X	X	X	X
Editors	X	X	X	X
Div A-Code	X	X	X	X
01B again	X	X		
01C again			X	X
01A		X		
00TD	X	X	X	X
00D	X	X	X	X
01	X	X	X	X
00	X		X	X

3-9.3 Final Report E-Mails

The cognizant warfare division director drafts the final report e-mail(s) to be used by the Commander for electronically forwarding the final report (EOA/OA or IOT&E/FOT&E). For classified reports, a Nonsecure Internet Protocol Router Network (NIPRNET) and Secret Internet Protocol Router Network (SIPRNET) e-mail must be provided. The formats for these report e-mails are located on the public folders section of Microsoft Outlook under Public Folders\All Public Folders\Report E-mails. A list of required e-mail addresses is also located under Public Folders\All Public Folders\Report E-mail

Addresses. This list of addresses is maintained and updated by the front office staff. The final report e-mail(s) should be prepared and routed through the division director and deputy director prior to briefing the Commander for report approval. Once the report is approved by the Commander, the responsible OTD should ensure that a .pdf copy of the signed report is expeditiously produced by either the OPTEVFOR editors (unclassified reports) or secret vault (classified reports) and attached to the final report e-mail, then forwarded to the CoS for final front office routing.

Table 3-3. Signature Authority

T&E Document	Response Time	Brief Required	Signature Authority		
			00	01	Division Director
TEMP and T&E Strategy	15 working days (Note 1)	No (Note 1)	X		
Oversight test plans (Note 2) (Includes IOT&E, FOT&E, OA, EOA, and Multiservice Operational Test and Evaluation (MOT&E) oversight test plans)	60 days prior to test	COT Brief only	X		
All evaluation reports (Includes MOT&E Final Reports)	60-90 days after test (Note 3)	No. Covered by ESERB	X		
Interim Reports	As required	Yes	X		
VCD messages/reports	35 days after test	Covered by ESERB	X		
Quick Reaction Assessment (QRA) messages/reports	60 days after test	Covered by ESERB	X		
All OT&E support letters (OTD & division director responsible for drafting)	30 days prior to test	No	X		
Deficiency report messages	As directed	Yes	X		
Modeling and Simulation (M&S) Accreditation Plan	ASAP after need identified in E-IPR, NLT 1 year prior to test	Yes	X		
All M&S Accreditation Letters	NLT 90 days prior to test	Yes (for oversight programs)	X		
IEF/Tailored IEF (TIEF)/IEF Revision	(Note 4)	No. Covered by E-IPR	X		

00

Table 3-3. Signature Authority

T&E Document	Response Time	Brief Required	Signature Authority		
			00	01	Division Director
IA/Interoperability Assessment Reports	NLT 90 days post-test	Yes	X		
Integrated Assessment Plan (IAP)	60 days after program initiation	Yes	X		
Operational Utility Assessment (OUA), Military Utility Assessment (MUA), and Limited Military Utility Assessment (LMUA) reports	60 days after demonstration unless specified otherwise	Yes	X		
Risk Assessment Level of Test (RALOT) Report		Yes (for oversight programs)	X		
Capabilities Documents, Initial Capabilities Document (ICD)/CDD/CPD Clarification Letter	As required	(Note 5)		X	
TEMP comment letters (for O-6 level reviews)	30 days from receipt	Yes (Note 6)		X	
O-6 level reviews of MOT&E Test Plans and Final Reports	14 days from receipt	Yes		X	
Nonoversight test plans (Note 2) (includes IOT&E, FOT&E, OA, EOA, and MOT&E nonoversight test plans)	30 days prior to test	(Note 7)			X
Oversight and nonoversight QRA and VCD test plans, and IT data collection plans	30 days prior to test	Yes			X
Joint Capabilities Technology Demonstation (JCTD) Demonstration Execution Document (DED)	30 days prior to demonstration	(Note 7)			X
Anomaly report messages		(Note 8)			X
TEMP input letters	90 days after program initiation	No (for oversight programs)			X (Note 9)
Standard/Combined DT/OT Memorandums of Agreement (MOA)	30 days prior to test (at test plan signing)	No			X

01

Table 3-3. Signature Authority

T&E Document	Response Time	Brief Required	Signature Authority		
			00	01	Division Director
IEF Change Letter	(Note 4)				X
Support documentation (Integrated Logistic Support Plan (ILSP), Navy Training Plan (NTP), etc.)	15 days from receipt	No (Note 8)			X
M&S Operational Requirement Input Letter	During IEF development, as soon as need is identified	No			X
Letters of Instruction (LOI) (Note 10)	30 days prior to test	No			X
Adjunct tester forms	30 days prior to test	No			X
DT assist MOA-(if used)	30 days prior to test	No			division director/ VX CO
IT MOAs and Charters	As required	No			division director/ VX CO
DT Assist Letter of Observation (LOO) (Including JCTD DT Assist LOO)	30 days after test/ demonstration	As required			X
OT commencement messages or e-mails		No			X
OT completion messages or e-mails	End of test as determined by division director	No			X
ACAT IVM & Abbreviated Acquisition Program (AAP) concurrence letters					X (Note 10)
Operational Tactics Guides (OTG)	120 days after evaluation report	As required			VX CO (Note 11)

DIVISION DIRECTOR

Table 3-3. Signature Authority

T&E Document	Response Time	Brief Required	Signature Authority		
			00	01	Division Director

Notes:

1. Assumes a formal O-6 TEMP review has been completed and that all critical OPTEVFOR comments were satisfactorily resolved. If not, a brief to the Commander is required.

2. Commander signs all ACAT I, DOT&E oversight, and controversial test plans. Additionally, the Commander may sign all standard test plans, *when desired,* 30 days prior to testing.

3. Ninety days for ACAT I/IA and MOT&E; 60 days for all others.

4. For new programs, coordinate IEF completion to support initial TEMP development (MS-B). For existing programs, IEF must be approved in time to support next phase of test or MS.

IEFs for oversight programs are forwarded to the DOT&E to support TEMP approval.

5. Briefs are on a case-by-case basis. The Commander may elect to sign comment letters with contentious issues.

6. Commander or Deputy will be briefed on all oversight TEMPS and any other TEMPS with critical OPTEVFOR comments

7. Division director signs (provides a copy to Commander/Deputy for review; briefs on a case-by-case basis) standard ACAT II, III, and IVT test plans. Staff through 01A/C prior to division director signature.

8. Brief the Commander (or Deputy in his absence) prior to release.

9. Sign “By Direction.”

10. LOIs prepared at VX/VMX may be released by the squadron Commanding Officer (CO).

11. VX COs authorized to sign “By direction.” The Commander will sign controversial and special interest OTGs and all Naval Warfare Publications (NWP). Briefing requirements will be determined on a case-by-case basis.

3-10 STAFF SUMMARY SHEET

When a document is routed for the Commander’s signature, the originating division should provide a staff summary sheet that identifies the following:

- Action requested of the Commander (e.g., approval, concurrence with comments, concurrence with critical comments, or nonconcurrence).
- Whether or not there is concurrence by all internal stakeholders.
- For programs under OSD oversight, anticipated OSD position and any issues that remain unresolved.
- For multiservice documents, are all external stakeholders in agreement?

- For final reports with significant negative findings, a statement as to whether the program manager and program executive officer are aware of the pending results. Is a heads-up phone call or e-mail recommended?
- Is there any reason to expect particular Congressional interest in the report?

The bottom line is to ensure that documents submitted for signature are properly coordinated and to avoid surprises after the document is signed.

3-11 ADDRESSING THE THREAT IN OT&E

SECNAVINST 5000.2E and OPNAVINST 3811.1E require that OT&E be conducted in a realistic, threat-representative environment using applicable threat systems or simulated systems and actual threat tactics. SECNAVINST 5000.2E requires that a Threat Assessment (TA) be prepared to support program initiation at MS-A and maintained in a current and approved or validated status throughout the acquisition process. The Office of Naval Intelligence (ONI) produces Capstone TAs that serve as the basic authoritative TA for acquisition programs. The OTD must be aware of the ONI TAs that define and discuss the threats affecting assigned programs. The intelligence staff at headquarters and squadrons can assist the OTD in finding the most current threat documentation. The OTD must also ensure consideration is given to the threat throughout the OT&E process, and that the threat is properly addressed in the IEF (chapter 4), TEMPs (chapter 5), test plans (chapter 6), and evaluation reports (chapter 8). The threat is likely to evolve in a manner that was unanticipated at program initiation. DODINST 5000.02 requires that the program adjust the requirements as necessary to counter the evolving threat. Therefore, the OTD must also be cognizant of the currently recognized operational threat and adjust the OT&E to ensure we conduct OT against that evolved threat.

3-11.1 Types of Intelligence Available

There are two categories of intelligence data that are of interest to the OTD: finished intelligence products and operational intelligence.

3-11.1.1

Finished intelligence includes validated Scientific and Technological (S&T) data on the current and projected characteristics and capabilities of foreign weapon systems, platforms, etc. Validated data on enemy tactics and strategy for the employment of their forces and weapon systems are also of interest.

3-11.1.1.1

ONI produces S&T intelligence to support Navy development and acquisition programs. The ONI products of greatest interest to the OTD are the Capstone TAs that represent the official Service and DoD position regarding the known and projected threat. The OTD must understand the threat the system is designed to counter and incorporate threat intelligence into the OT&E process to ensure effective OT&E.

3-11.1.1.2

ONI produces finished intelligence on enemy tactics, strategy, and employment of forces, and produces the NWP 2-01, Intelligence Support to Operations Afloat and

related analytical studies and assessments. NWP 2-01 and United States Air Force (USAF) Air Force Tactics Techniques, and Procedures Manual 3-1, Volume II (Threat Reference Guide and Countertactics) publications should be referenced for test scenario development.

3-11.1.2

Operational intelligence in the OT&E environment concerns primarily routine reporting of perishable data on foreign ship or aircraft locations, and reporting on foreign surveillance and collection activities directed against friendly forces or at-sea testing. Request operational intelligence support to minimize Operations Security (OPSEC) vulnerabilities and reduce the threat from hostile intelligence-collection efforts.

3-11.2 When to Use Intelligence

The OTD will find threat support intelligence particularly important in developing the TEMP and constructing test plans. By using validated S&T and tactical intelligence products, the OTD can develop a thorough understanding of the threat to the system that will help:

- Develop realistic test scenarios.
- Determine required OT resources (e.g., numbers and types of targets and simulators).
- Articulate threat-related test limitations.

The OTD is encouraged to coordinate closely with assigned intelligence personnel to obtain the threat support needed for effective OT.

3-12 M&S IN OT&E

DoD directives encourage the use of M&S to assist in projecting operational effectiveness and operational suitability prior to MS-B, but limit its use in subsequent OT&E to that of supplementing OT&E data. Because of the increased emphasis on the use of simulation in early OT&E, the OTD must carefully consider requirements for the use of threat simulation. Critical to the success of M&S is the early inclusion of adequate funding requirements in the Part IV of the TEMP. The OTD must also ensure that the program's test team has a clear understanding of the documentation necessary to get COMOPTEVFOR's accreditation for the intended application of M&S in OT&E. COMOPTEVFORINST 5000.1B, Use of Modeling and Simulation (M&S) in Operational Test (OT) provides detailed guidelines for the use of simulation in OT.

3-13 LAND-BASED TEST SITES (LBTS)

A LBTS is a facility that duplicates, simulates, or stimulates the employment of a system's planned operational installation and used for conducting DT. Intent to use an LBTS in lieu of the actual host platform for OT will be included in the TEMP Part III. See Chapter 6, Test Planning, for additional details.

3-14 OT&E IN SELF-DEFENSE TEST SHIPS (SDTS)

Realistic OT for soft-kill and short-range, hard-kill self-defense weapon systems is often restricted by safety considerations that prohibit threat-representative target presentations for manned ships.

- SDTS testing will normally be conducted as a combined DT/OT phase with an accompanying MOA.
- SDTS firings may be used to resolve effectiveness COIs, if appropriate.
- SDTS system data may be used to aid in resolution of some suitability COIs.

SDTS testing alone will not replace IOT&E. Fleet-representative installations operated and maintained by Fleet-representative personnel will be required to resolve suitability COIs. Accordingly, an independent phase of OT, including complete detect-to-engage scenarios with live weapons-firing events, as appropriate, must be conducted in Fleet units with systems operated by Fleet personnel to verify effectiveness COIs and resolve suitability COIs.

3-15 CONFLICT OF INTEREST IN CONTRACTOR SUPPORT

The specialized nature of weapon systems development leads to an inherent risk of conflict of interest on the part of contractors involved in project development and those supporting OPTEVFOR's test and evaluation. The OTD is responsible for reviewing the level of contractor involvement in project development, including DT.

3-15.1 Title 10, U.S. Code Section 2399 states:

"A contractor that has participated in (or is participating in) the development, production, or testing of a system for a military department or Defense Agency (or for another contractor of the DoD) may not be involved (in any way) in the establishment of criteria for data collection, performance assessment, or evaluation activities for the OT&E."

3-15.2

The OTD should request a list of contractors and their level of support from the DA prior to submitting a requirement for contract analysis support. This information is included in the contract profile sheet.

3-15.3

COMOPTEVFOR’s intent is to avoid all conflict of interest situations and any appearance of a conflict of interest. In the case where a mitigation plan is submitted by a potential bidder, it will be evaluated during the contract selection process. If a mitigation plan is endorsed by COMOPTEVFOR for a program under DOT&E oversight, a waiver is required from DOT&E prior to contract award. (For additional information, see appendix B.)

3-15.4

If a potential conflict of interest arises after contract award, immediately contact the Contracting Officer's Representative (COR) for review and submission to the Contracting Officer for resolution.

3-15.5

JCTDs and Advanced concept Technology Demonstrations (ACTD) are not subject to the rules of formal acquisition, and Title 10 U.S. Code Section 2399 does not apply; therefore, contractors can be expected to participate in JCTD/ACTDs. If, and when, the JCTD/ACTD transitions to formal acquisition, we will ensure the independence of our IOT&E.

3-16 SELECTED EXERCISE (SELEX) OBSERVATION

Section Heads (SH), OTCs, and OTDs will not act as exercise observers during any phase of OT&E. This is to avoid any distraction with the primary responsibility of executing the test. If the warfare division director believes there is good reason for an exception to be granted (e.g., the graded event will occur after the completion of testing during a return transit to port) he may request a waiver from the Commander.

3-17 SIGNIFICANT ALTERATIONS

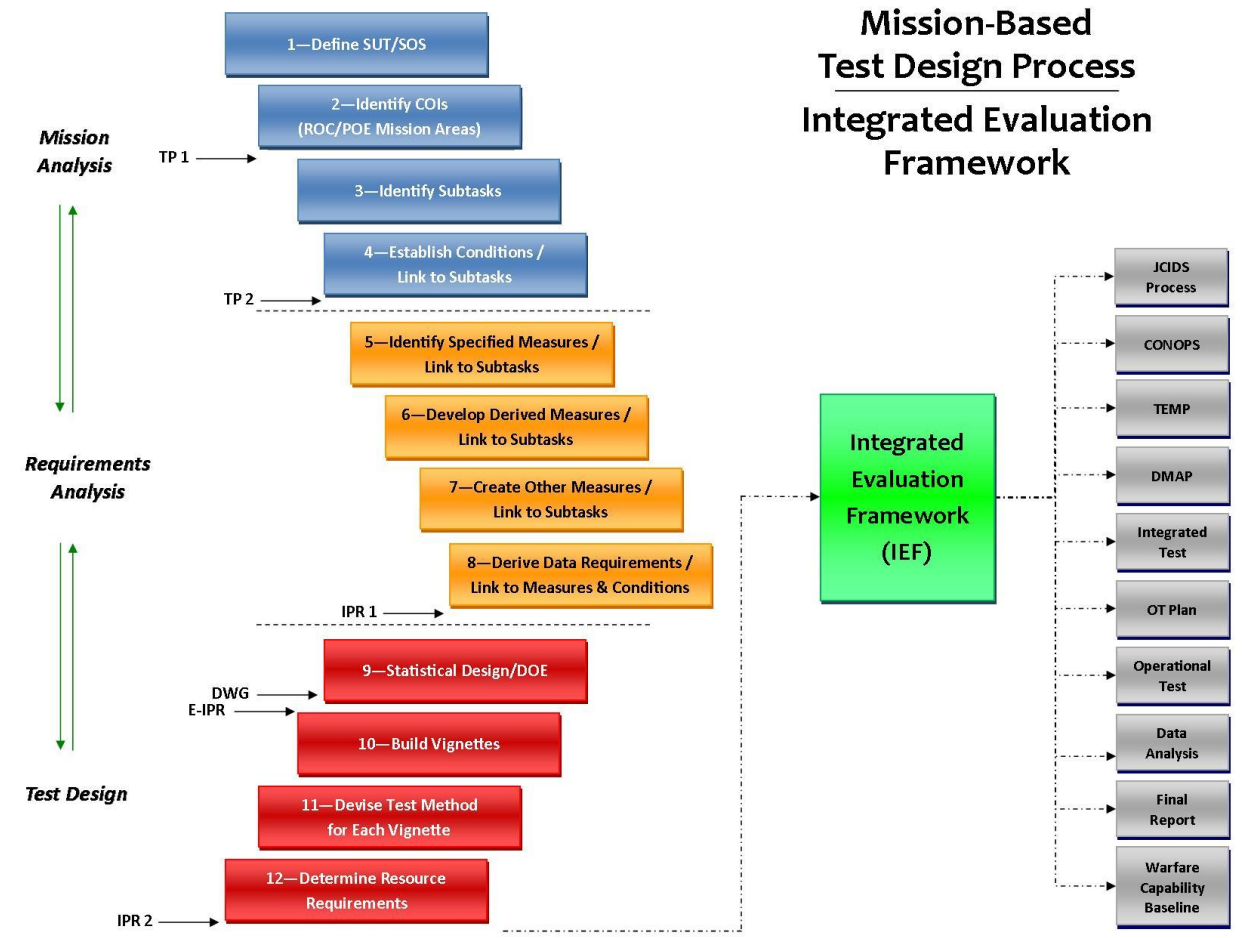
It is not possible to provide an explicit definition of a significant alteration, which is handled much like a new system for system acquisition purposes. The decision to classify a modification, Engineering Change Proposal (ECP), ordnance alteration, block upgrade, product improvement, etc., as a significant alteration is based on the scope of the change, the funding level, the importance of the system, the numbers to be produced, etc. CNO (N84) will consider factors such as these in making the decision. In general, where an alteration is intended to improve a warfighting capability vice suitability, the alteration would require some measure of OT&E prior to Fleet introduction. The judgment of COMOPTEVFOR, the Developing Agency (DA), the CNO Resource and Program Sponsor, and (where applicable) the Naval Board of Inspection and Survey (INSURV) will be major factors considered by N84 in determining the applicability and scope of testing significant alterations. In the case of a significant alteration, the OTD will apply the risk assessment and level of test methodology as described in chapter 6 to define the appropriate scope of test.

CHAPTER 4 - INTEGRATED EVALUATION FRAMEWORK

(Rev 8, Jul 2016)

4-1 INTRODUCTION

Figure 4-1. MBTD Process Flow Chart



4-1.1 MBTD

This chapter discusses developing an IEF, which is the product of the MBTD process shown in figure 4-1. The MBTD process is divided into three major phases, with formal reviews inserted at key points in the process:

- All of MBTD requires a thorough understanding of the SUT and SoS.
- The mission-analysis phase focuses on the identification of Navy mission areas that are applicable to the SUT, a hierarchical decomposition of the operator tasks needed to accomplish those missions, and association of conditions (environmental, etc.) that affect the performance of those tasks.

- The requirements analysis phase identifies required system capabilities and establishes criteria to define successful subtask performance. Individual SUT and SoS requirements (measures) are mapped to the subtasks for each mission area to show how OT will evaluate the SUT as operators perform those tasks. DRs for each measure and condition are also identified.
- The test design phase takes this linkage and, using statistical methods as appropriate, determines the amount of data required to assess the system. The methods used to collect these data may vary from a rigorous statistical design under controlled conditions to demonstrations for problem identification. Vignettes are then built and used to describe how OT will collect the required data, summarize the test methods used, and support the identification of test resource requirements.
- Although described as a series of sequential steps, MBTD is an iterative process where individual phases and associated steps are conducted together and may be repeated several times. It is common to go back a few steps in the process to improve products already created based on considerations discovered in later steps.

The IEF documents the results of this process, serves as the foundational document for subsequent OT planning, and defines the minimum adequate DRs. IEFs are required for all programs requiring an operational test plan in support of an OA, IOT&E, VCD, or FOT&E. For programs in early development, e.g., prior to development of an ICD, development of a full IEF may not be practicable. In those cases, a TIEF (described in section 4-8) will be developed with a level of detail sufficient to support the Milestone A TEMP. A TIEF can also be used to support preparation for a Quick-Reaction Assessment (QRA).

4-1.2 Affected Processes

Multiple acquisition processes may be influenced by MBTD products.

- Requirements developed in the Joint Capabilities Integration Development System (JCIDS) process are examined through MBTD. OT feedback on requirements can help ensure testability and relevance.
- Mission execution codified in the Concept of Operations (CONOPS) can be improved in a similar manner.
- MBTD supports the integration of CT, DT, OT, and Live-Fire Test and Evaluation (LFT&E) through early identification of OT DRs that can support both CT/DT/LFT&E and OT data needs.
- OT TEMP inputs are drawn from the IEF.
- IEFs are vital for creating test plans and IT data collection plans.
- The test strategies first developed in the IEF influence execution of IT and OT.
- Data identified in the IEF are used for analysis and reporting.
- OT conclusions provide the basis for updates to the WCB process.

4-1.3 Principles Affecting MBTD

4-1.3.1 Designing Test

Measures of SUT performance may be characterized as deterministic or stochastic.

- "Deterministic" implies that system performance, as measured, is nearly 100-percent predictable, understood, repeatable, and essentially nonvariable over multiple measurement trials. These are also called "diagnostic measures."
- "Stochastic" implies that measurements of SUT performance vary as a function of known and unknown conditions, and are not predictable, understood, and repeatable. Measurements are expected to vary from one measurement trial to the next. These are also called "response variables."

Tests that employ stochastic measures require multiple measurements under varying conditions to characterize the real performance of the SUT effectively. For stochastic measures, this may include the application of statistical methods, such as DOE, or simply a demonstration (DOT&E calls this "problem identification") of the SUT under varying conditions that are operationally relevant. If applicable, DOE will help the OTD craft the proper test design to characterize SUT performance within the broader SoS across the range of operational environment conditions.

4-1.3.2 Operational Relevance

OT, as designed through MBTD, seeks to provide data on SUT performance (where performance includes all the elements of operational effectiveness and operational suitability) in the operational environment and the SUT's capability to contribute to the SoS in which it is employed. Data identified in the IEF for collection during test must be relevant to Fleet SUT employment. Operational realism in OT&E and the operational environment encompasses many things including:

- People (operators, maintainers, etc.)
- Other systems that will also be consuming power, radiating, etc., in the same ship or aircraft
- Units (ships, subs, aircraft, etc.) in the vicinity that are employing their own systems
- Established behavioral constraints or rules of engagement
- Natural environmental factors (visibility, sea state, ambient noise, etc.)
- Simulated enemy forces (including their systems, weapons, tactics, countermeasures, etc.)
- Many other items depending on the type of system/program.

4-1.3.3 Data Adequacy

Minimum adequate data is defined as the minimum required data to evaluate the SUT effectiveness and suitability across the operational environment, identify any problem that impacts mission performance (not necessarily enough data to drill down into the root cause of problems identified), and where practical characterize significant factors that affect SUT performance (e.g., hot/cold, fast/slow, etc.). Recognize also that

sometimes we must accept less data based on affordability or physical constraints (i.e., safety limitations, limited Fleet/threat assets, or immature M&S). As a result, instead of assessments through the evaluation of stochastic measures, OTDs may determine an assessment can be made using deterministic measures and demonstrations. The minimum adequate data identified are collected through a combination of CT, DT, IT, M&S, and dedicated OT. If the data are not collected via CT/DT/IT or M&S, they must be collected during the dedicated OT. Regardless of when the data are collected, all data used in OT's independent evaluation must be qualified for use as OT data by COMOPTEVFOR.

NOTE

Contractors are not permitted to operate or maintain the SUT during IOT&E and FOT&E, unless the Service's maintenance plan states a continuing role for contractor personnel in operation and organizational level maintenance. When testing a system with an approved maintenance plan of this kind, contractor personnel participation is permitted exactly as specified, and their performance is subject to review and analysis just as if they were operational forces. For systems where there is no plan to use contractor operators, data collected from contractor operations for all OT phases prior to IOT&E may be used for risk assessments based on the OTD's determination of OT qualifying data.

Test data qualified for use in IOT&E or FOT&E should have the following distinguishing characteristics:

- Representative forces (friendly and opposing) will be used whenever possible, and employ realistic tactics and targets.
- Typical users (Fleet personnel) are required to operate and maintain the SUT for OT under conditions simulating combat stress and peacetime conditions.
- Hardware and software configurations must be production representative.

4-1.4 Responsibilities

The OTD is primarily responsible for ensuring adequate test designs and developing the program IEF. 01B CTFs are chartered with guiding the OTD through the entire MBTD process. The OTD, with the assistance of the CTF and DOE practitioners, must ensure the proper conditions and measures are selected when creating test designs/vignettes to adequately evaluate operational/mission performance. CTFs, assisted by division analysts and other knowledgeable personnel are charged with ensuring proper implementation of DOE processes. The OTD, CTF, and other members of the MBTD "core team" (division analyst, contractor, etc.) must work closely to achieve an adequate test that balances mathematical rigor and a scientific approach to testing, with a focus on providing timely and relevant information to the warfighter. External stakeholders, including the resource sponsor, program office representatives, and other subject matter experts, are important members of the core team and are critical to successful development of the IEF. The warfare division A-Code invites his/her O-6 counterparts

(RS, PM, Fleet SME, Naval Warfare Center (NWC)) to participate in the MBTD process as members of the core team.

4-1.5 Updating IEFs

As a program evolves, new capabilities may be added, measures may be developed or changed for existing capabilities, lessons from testing may change the DOE for future test, and more. The IEF or TIEF must reflect/incorporate these changes. The options for updating an approved IEF are to complete an IEF revision, or to issue an IEF change letter. Consult with your CTF prior to making changes to an approved IEF.

4-1.5.1 IEF Revision

A revised IEF leverages much of an existing IEF, but incorporates significant MBTD changes (addition or removal of capabilities, addition or removal of resources, and/or changes to test execution). The full MBTD process is executed to create revised IEFs. A full IEF document (per IEF template or TIEF template) is routed for approval signature. Examples of when to complete a revised IEF include:

- Supporting the next program increment.
- Supporting a TEMP revision for the current increment (if the original IEF will not support).
- Incorporating capability improvements added to the SUT or capability definitions changed for the SUT (new CPD).

4-1.5.2 IEF Change Letter

An IEF change letter reflects small changes to the existing IEF content (tasks, measures, data requirements, etc.) and has no impact on required resources. Typically these changes reflect additional details identified during the test planning process for a SUT whose capabilities have not changed. Complete only those MBTD steps and reviews applicable to the change. The updated IEF sections are written per those sections in the IEF or TIEF template and attached to the change letter, using change format instructions in the Navy Correspondence Manual. There is a letter template located in Y:\OT&E Production Library\IEF\IEF or TIEF. The letter and the changed IEF sections are routed for Warfare Division ACOS approval signature. Signature authority for the IEF Change Letter can be elevated if the update includes high-visibility or controversial material. Copy 01B, 01C, and 01A on the signed letter. This ensures the support divisions are aware of the change approval and enables 01A to post the update to the eKM system. Examples of when to publish IEF updates using a change letter include:

- Modification of a yes/no measure to a quantifiable measure, with no impact to the operational assessment of a required task;
- Updated DOE based on lessons learned during test, or new statistical practices;
- Addition of Data Requirements (DR) to an existing or modified measure;
- The addition of lower level tasks.

4-1.6 IEF Development Resources

To support the MBTD process and the generation of an IEF, the following resources are available:

4-1.6.1 01B CTFs and Statisticians

The Test Development and Design (01B) support division is comprised of multiple CTFs who are responsible for supporting OTDs as they build an IEF. Each SUT will be assigned a primary CTF, but all CTFs are available for OTD support. Although building the IEF is the responsibility of the OTD, CTFs have broad experience supporting the development of numerous IEFs and should be the first point of contact. 01B statisticians consult on DOE and test design to aid OTDs and CTFs in correct use of statistical processes.

4-1.6.2 OTD IEF Checklist

The OTD IEF checklist provides a detailed, step-by-step description of what the OTD needs to accomplish to build an IEF. The material in the checklists expands on the content of this chapter, giving the OTD nuanced direction and advice relevant to each stage of the process. A bound checklist will be provided by 01B for each SUT, to the OTD. The checklist is also available on TEPS, allowing the OTD to track completion of MBTD electronically. Progress through the checklist should be documented regularly. The checklist serves not only as guidance for the OTD, but also as a journal for the life of that specific SUT IEF, and will be reviewed at all In-Process Reviews (IPR). It ensures that the OTD and CTF work closely together developing the IEF using a standardized approach supporting early identification and resolution of IEF development issues. The checklist also provides a data collection mechanism for 01B to support IEF production process improvements across the command. The latest revision of the OTD checklist is located in Y:\OT&E Production Library\IEF.

4-1.6.3 Templates

The IEF template can be found on the COMOPTEVFOR Y drive (Y:\OT&E Production Library/IEF/IEF or TIEF). The templates include guidance and samples for IEF paragraph and table construction. Briefing templates for the IPRs can also be found in the same folder.

4-1.6.4 Best Practices

The Best Practices are continuously updated with lessons learned that apply to most programs. They are developed as needed, apply to specific topics, and should not be overlooked as a resource. All OTDs are expected to be familiar with the current best practices and must consider them, if applicable. Best Practices are found in Y:\OT&E Production Library, under the product folder to which they apply.

4-1.6.5 Previously Signed IEFs

All signed IEFs are available for review and may serve as useful examples for an OTD developing an IEF. See Y:\00 Signed Test Documents. However, to create an IEF, start with the correct IEF template.

4-1.6.6 T&E WIPT

T&E WIPT members include the sponsor (OPNAV or joint Service sponsors), CNO N842 representative (and/or equivalent Service T&E representatives), DOT&E representatives (for oversight programs), other Service OTAs (as needed), Fleet operators, and CT, DT, and LFT&E representatives. The products generated through the MBTD process should be shared with the T&E WIPT and other external stakeholders. Adjudication of stakeholder comments is vital to ensuring IEF contents are correct, and will be agreed to in the TEMP. The T&E WIPT also serves as a valuable resource for the clarification of ambiguous or undocumented SUT requirements. OTDs should include the T&E WIPT as required throughout the development of an IEF.

4-1.6.7 The Analyst Handbook

The Analyst Handbook provides guidance primarily for T&E analysts, but also contains useful information for OTDs relevant to test planning. At a minimum, this handbook should be consulted to understand the SUT suitability requirements and the associated data to be collected. It can be found under Y:\OT&E Reference Library.

4-1.6.8 The IEF Database Tool

The IEF database tool generates the tables used in an IEF. It maintains linkages and traceability throughout the MBTD process for each program. It contains standardized first-, second-, and third-level subtasks by mission area, as well as a consolidated conditions list by framework, both of which are updated with every N00 signed framework. The IEF database is maintained by 01B. Use of the IEF database is mandatory – OTDs should not attempt to build the required tables outside the IEF database. Each test program will have one master database on either NIPRNET or SIPRNET. Within that master database, multiple databases may exist for a single program, allowing customization of MBTD products for various documents (test plans). Programs with only a small amount of classified content in the IEF can use a NIPR database, and request to have a SIPR database for just that classified content. Database access and creation is granted in coordination with the CTFs.

4-2 MISSION ANALYSIS PHASE

4-2.1 Review Reference Documentation

The mission analysis is conducted by the team to identify the mission areas and derive the operator tasks applicable to the system to be tested using the following documents:

- Capabilities Documents (CD) (ICD, Joint Capabilities Document (JCD), CDD, CPD) or Operational Requirements Documents (ORD) for legacy programs;

- U.S. Navy ROC/POE;
- Platform-specific ROC/POEs (where they exist), Acquisition CONOPS (or existing CONOPS), concepts of employment, and published TTPs;
- Analysis of Alternatives (AOA), Functional Area Analyses, Functional Needs Analysis;
- Universal Navy Task List (UNTL) (OPNAVINST 3500.38B);
- Universal Joint Task List (UJTL), (CJCSM 3500.04F);
- Navy (or Marine) Mission Essential Task Lists (NMETL);
- Information Support Plan;
- DoD Architecture Framework Products (OV-1, OV-5/6, etc.);
- MBTD products from earlier increments and/or similar systems or systems with similar mission types (e.g., Antisubmarine Warfare (ASW) is largely the same regardless of platform types employed from a task and condition perspective.);
- OPTEVFOR IEF database standardized task and conditions lists;
- Other appropriate documents, including CDD references (System Threat Assessment Report (STAR), Systems Engineering Plan (SEP), Target Threat Validation Report (TTVR), etc.);
- Functional Requirements Document (FRD);
- WCB Weapon/Target Pairs;
- Tactical Situation (TACSIT), Mission Technical Baseline (MTB), and Integrated Capability Technical Baseline (ICTB) – consult with 01X to obtain documents applicable to your SUT;
- Security Classification Guide.

Some of these documents may not exist or may only exist in draft form. This should not deter the mission-analysis effort. In fact, the requirement to complete the mission analysis as part of MBTD can be used as an incentive to push the development of these documents or to help identify shortfalls and deficiencies in the draft documents. Often MBTD commences with only limited formal requirements documentation. It is important for the test team to combine the best available information with operational and SME knowledge to continue forward with the MBTD effort. As additional information becomes available, it can be added to the evolving IEF and modifications can be made as necessary.

4-2.2 Step 1: Define the SUT/SoS

The test design process and the resulting IEF must produce a clear description of the SUT that articulates how the SUT is integrated into the SoS within which it will operate. The SUT should be clearly defined in the system CD. The SoS may be defined in

requirements documents as a Family of Systems (FoS).[1] Defining a clear boundary between the SUT and SoS is essential to all future MBTD steps, and for the reporting process (e.g., Blue or Gold sheets). The ultimate intent is to evaluate how a SUT impacts a SoS to create the desired warfighting effect. The CONOPS is a key reference here.

4-2.2.1 SUT

The SUT is the hardware and/or software being delivered/developed to meet the requirements set by the resource sponsor and provide the capabilities needed by the Fleet. The SUT description must make it clear why the system is being acquired. Describe the capabilities the SUT will provide, the capability gaps it will address, and the desired effects of the system. Identify the final/fielding configuration of the SUT, to include major hardware and software components. If there are multiple test phases with different configurations covered by the IEF, explain that in the SUT definition. As the SUT is upgraded, testing must focus on the impact of those upgrades. After IOT&E (FOT&E, follow-on increment, VCD, etc.), the SUT may therefore be further divided between In-Scope and Out-of-Scope SUT.

4-2.2.1.1 In-Scope SUT

For FOT&E (and the like), the fielding configuration discussion focuses on the new/upgraded/changed hardware and/or software. Also, the capability discussion focuses on new capabilities, capability enhancements and regression confirmation.

4-2.2.1.2 Out-of-Scope SUT

The Out-of-Scope SUT includes hardware/software not included in the In-Scope SUT that is responsible for legacy functions/capabilities not impacted by the upgrade. These legacy components and functions are not specifically intended as the focus of test, but are considered a part of the SUT for reporting purposes. Tasks, measures, and data requirements supporting performance of the Out-of-Scope SUT may be included in the test but will not drive scope of test.

4-2.2.2 SoS

The SoS is the existing infrastructure not procured with the SUT, but within which the SUT will function to support mission accomplishment. Determine with which other systems the SUT will interface and interact that are outside the scope of the program. Identify how the SUT impacts other systems.

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[1]Although sometimes used interchangeably, as the Defense Acquisition Guidebook points out, a FoS is not the same as a SoS. A FoS is not to be considered a system per se. It does not create capability beyond the additive sum of individual capabilities of its member systems. Basically, it is a grouping of systems having common characteristics (such as a common product line). A FoS lacks the synergy of a SoS.

NOTE

The SUT bounds the scope of test, but OTDs must be cognizant of the impact SUT deficiencies have on the SoS. These will be captured as SoS Gold sheets in the OT report.

4-2.3 Step 2: Identify COIs (ROC/POE Mission Areas)

COIs are key operational effectiveness or suitability issues that must be examined in OT&E to determine the system's capability to perform its mission(s). They include mission-based COIs, other effectiveness areas, and suitability issues. A COI is phrased as a question.

4-2.3.1 Mission-Based COIs

Begin with identification of mission-based COIs. OTDs should review the operational capabilities of the 22 mission areas in the United States Navy (USN) ROC/POE and identify the mission areas that apply to the SUT and are candidate COIs. For USMC and United States Coast Guard (USCG) programs, the primary mission-area COIs and default mission threads (first-level subtasks) are found in the COMOPTEVFOR Y:\T&E\Mission Thread Repository (Mission Summary and COI Standardization.doc) folder. While there is overlap between these mission areas and the USN ROC/POE mission areas, USMC and USCG programs will continue to follow their respective Service-specific guidance as it applies to COI naming and first-level subtask structure as they implement the COMOPTEVFOR MBTD process. USN default mission threads are also described in this folder.

4-2.3.1.1 Standard ROC/POE Missions

Mission-area COIs used for assessment of effectiveness should be aligned with the following standard Navy mission areas as defined in OPNAVINST C3501.2K CH-1, USN ROC/POE, which can be found on the classified COMOPTEVFOR Y: drive in the Y:\OT&E Reference Library. To better align OT design and reporting with parallel efforts to define and assess the Navy's ability to effectively accomplish its primary mission areas from a SoS perspective, COMOPTEVFOR has chosen the Navy ROC/POE as the common reference. Aligning COI selection to mission areas of the ROC/POE provides greater standardization across all Navy platforms, and supports the broader assessment of the integration and interoperability of multiple systems towards the accomplishment of the same mission areas.

- AMW - Amphibious Warfare
- ASW - Antisubmarine Warfare
- AW - Air Warfare
- BMD - Ballistic Missile Defense
- C3 - Command, Control, and Communications
- CON - Construction
- EW - Electronic Warfare

- EXW - Expeditionary Warfare
- FHP - Force Health Protection
- FSO - Fleet Support Operations
- INT - Intelligence Operations
- IO - Information Operations
- IW - Irregular Warfare
- LOG - Logistics
- MIW - Mine Warfare
- MOB - Mobility
- MOS - Missions of State
- NCO - Noncombat Operations
- NSW - Naval Special Warfare
- STS - Strategic Sealift
- STW - Strike Warfare
- SUW - Surface Warfare

4-2.3.1.2 Review Platform-Specific Documentation

In addition to reviewing the USN ROC/POE, OTDs should examine any existing platform-specific ROC/POEs to ensure all applicable mission areas are aligned to the selected COIs. To identify the appropriate Navy mission areas to use as COIs, OTDs should review the operational capabilities associated with each area and identify those affected by the SUT. The program CD and CONOPs should also be consulted to understand SUT operational capabilities for this step.

4-2.3.1.3 Selecting Mission-Based COIs

Selection of SUT missions does not automatically define the COIs. If the tasks covered by one mission area are also covered by other mission areas and there is no difference in how they are conducted, select the most strenuous mission area as the COI. Combining mission-based COIs requires that the subtasks, measures, and conditions applicable to each mission are equivalent.

NOTE

Mission-based COIs are written in the following format: **"Will the [SUT] support the [COI] mission?**" or **"Will the [SUT] [primary operational capability] support the [COI] mission?"**

4-2.3.2 Other Effectiveness Testing Areas

Other effectiveness COIs that may apply to the SUT are listed below.

- The most common non-mission-based effectiveness COI is Cybersecurity. If the SUT is net-enabled, a cybersecurity COI is required. It may also be needed for a

Platform Information Technology (PIT) with Interconnection (PITI) system, or even a PIT system. Consult 01D personnel to verify proper use of this COI. The Cybersecurity COI is commonly written: Do [SUT] cybersecurity protect, detect, react, and restore capabilities protect mission-critical data, prevent adversary access, and support mission completion in a cyber-contested environment?

- If the SUT has significant survivability characteristics, OTDs may propose the use of a dedicated Survivability COI for approval by the Commander. However, these items are better captured under the "Defend" task of the mission-area threads.

4-2.3.3 Suitability COIs

The standard suitability COIs of Reliability, Maintainability, Logistic Supportability, and Availability (RML&A) are used for evaluating almost all programs. If one of these COIs does not apply, it can be excluded. The common wording of each is:

- Reliability: Will [SUT] reliability support mission accomplishment?
- Maintainability: Will the [SUT] be maintainable by Fleet personnel?
- Logistic Supportability: Will the [SUT] be logistically supportable?
- Availability: Will [SUT] availability support mission accomplishment?

Other suitability COIs, which may be applicable to the SUT, are listed below. The determination to use one or more of these additional COIs must be made during the MBTD development process and approved by the Commander.

- Training: For SUTs that have a significant training component (i.e., simulators, part task trainers, standing up a schoolhouse, etc.) consideration should be given to using the Fleet Support Operations mission COI, which captures a large number of training operational capabilities per the ROC/POE, as an effectiveness COI, or adding Training as an additional Suitability COI.
- Personnel Support: Platform SUTs support the berthing, feeding, health, and administrative support of the personnel onboard. The FSO COI may also apply in this case. If not, personnel support should be added for any SUT with robust capabilities in this area.
- Additional suitability COIs can be created/approved if applicable.

4-2.3.3.1 Past Suitability COIs

In the past, suitability COIs always included compatibility, interoperability, human factors, safety, and documentation. The OTD must ensure that these characteristics are included as measures, and traced under the appropriate effectiveness or suitability COI. Past optional suitability COIs such as transportability, manning, and habitability can also be addressed in this manner.

4-2.3.4 Joint COIs

Joint programs led by another OTA often use COIs that do not follow the conventions established above. In developing the IEF (or TIEF) for such programs, the process above will be followed to create Navy COIs. An additional section (section 1.6) will be

added documenting the Joint COIs, and how resolution of each is supported by the MBTD products created under the Navy COIs. The TEMP will use the Joint COIs, and the COMOPTEVFOR report will resolve those COIs, as appropriate. Using Navy COIs in the IEF enables execution of the MBTD process under standard structure to identify the data required by COMOPTEVFOR to complete SUT evaluation.

4-2.4 Step 3: Identify Subtasks

This step involves developing the subtask hierarchy (decomposing the operator actions that make up a mission). All effectiveness and suitability COIs will be addressed, creating detailed task execution needed to understand SUT mission support. Tasks are only created for the SUT, never the SoS. Tasks are accomplished by operators using the SUT. System tasks are very rare. All subtask are written as verb statements.

4-2.4.1 Standard Mission Threads

In addition to aligning COIs with the ROC/POE mission areas, COMOPTEVFOR has established a standard task architecture (mission thread) for each mission-based COI. The intent is to standardize the methodology used to evaluate systems that affect the same mission area. The first-level subtasks that make up the mission thread must be used (in order) when a mission COI is selected in the IEF database. First-level subtasks that are not affected by the SUT should be maintained in the task breakdown structure, but identified as not used (i.e., grayed out) in the IEF database. OTDs shall consider each of the operational capabilities the SUT supports since they will impact the applicability of the standard first-level subtasks. Cybersecurity also has standard first-level subtasks.

NOTE

Graying out is an important concept in MBTD. The IEF can cover many concepts, including past or future capabilities. Graying out allows the OTD to recognize a subtask or measure that applies to the SUT, but does not apply right now (to the phase of test supported by the current IEF revision). By graying out a first-level subtasks that does not apply, the OTD recognizes it as belonging in the mission thread, but not being supported by the SUT at this time.

4-2.4.2 Complete the Task Hierarchy

Each COI should be broken down into its component subtasks. Review the common second- and third-level subtasks associated with each COI contained in the IEF database. Using these is not required. Delete any that do not apply. Re-organize and add new subtasks, as needed, to complete the subtask hierarchy. Compare with subtask hierarchies created for related programs. The correct level of subtask breakdown for all tasks will require SME and CTF input, and should consider the following:

- Facilitate complete task execution. Failure to sufficiently decompose a task could result in critical components of the task accomplishment being overlooked during execution. For example, consider the task "Conduct Mission Planning." This task

could be decomposed into four useful subtasks: (1) collect mission intelligence, (2) develop a communications plan, (3) create a navigation route, followed by (4) download mission data. Decomposing the task hierarchy below a third level should be done with caution. For example, using the mission-planning example above, the subtask breakdown would not need to include subtasks, such as "Turn on the Mission Planning Computer" or "Enter user password".

- Account for all conditional variations. The subtask breakdown must be completed to a level low enough to enable the test team to identify all conditions for the subtask. "Collection of Mission Intelligence" might include collection method (e.g., via secure network, via modem, etc.), which could impact intelligence latency and accuracy. These conditional variations might not be apparent if "Conduct Mission Planning" was not further broken down to include this subtask.
- Account for all measures. Much like conditional variations, failure to break down subtasks to the appropriate level makes it difficult to associate system measures with subtasks (described in detail in steps 5 through 7).
- Enable testing to be conducted in manageable "chunks" rather than requiring complete end-to-end testing to collect data. Task decomposition should not be so low as to state the obvious, which overly complicates the development of test vignettes. Historically, OT&E has relied primarily on data generated during end-to-end test scenarios. Because end-to-end testing may not be possible early in the Engineering and Manufacturing Development (EMD) phase, early system testing may require data collection in a piecemeal fashion. The decomposition of mission and support tasks into component subtasks is designed to facilitate the development of test vignettes (described later in the process), which can be used to collect relevant data from subsets of the overall task (i.e., pieces of a mission vice an entire end-to-end mission). End-to-end testing will still be required as part of formal OT&E phases. Use of early data will enable the test team to identify risks/deficiencies early in the IT process.

NOTE

In cases where a COI has been developed based on combined tasks (e.g., for a platform SUT), the decomposed task might be "Engage target" with one subtask being "Engage target with gun" and another subtask being "Engage target with missile." The breakdowns for each task are essentially identical. In this case, the test team could consider a subtask breakdown at the higher task level with conditional variations to account for the functional differences in the otherwise common subtasks, so one breakdown for "Engage target" is used with a conditional variation for weapon choice.

NOTE

In addition to explicit text, CDs and other foundational documents typically include DoD Architecture Framework products called Operational Views (OV) and Systems Views (SV) for the system. These graphical and tabular depictions of the missions supported by the SUT may also provide valuable insight into the tasks to be

supported by the system. In particular, the OV-1 operational summary and OV-5/6 operational activity models may be of use.

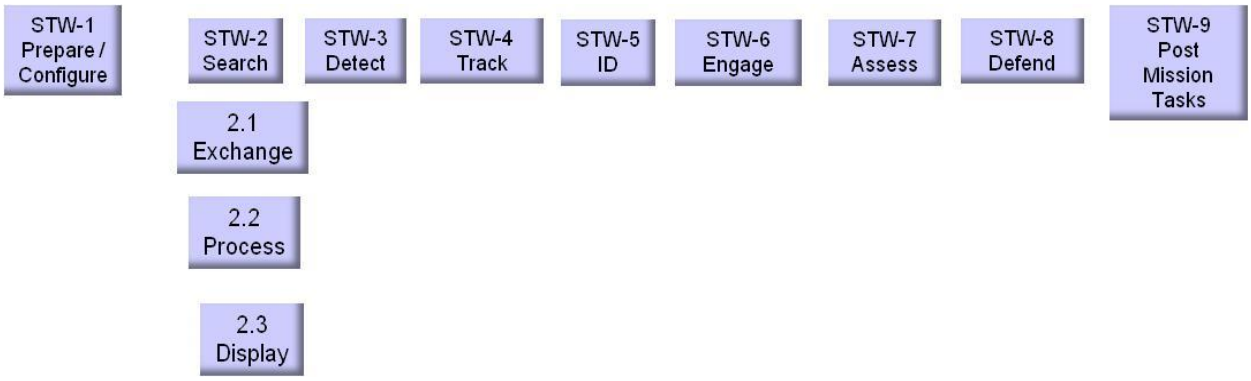
4-2.4.3 Supporting COIs/Tasks

Many of the default first-level subtask structures depict an overarching supporting task. This reflects the fact that the primary mission area/COI may be a straightforward warfighting area, but elements of other mission area(s) may be required to complete the evaluation of the SUT capability. Examples include, but are not limited to, elements of the C3, MOB, or INT mission threads. As part of the mission analysis, test planners need to decompose these mission areas independently to identify the tasks that apply towards their primary mission areas. The intent is to provide the OTD with the flexibility to modify their COI selection and/or task breakdown as appropriate, while maintaining the focus on the primary warfighting mission areas. Choosing which option is the most appropriate depends on the definition of the SUT and the scope of the test (i.e., an entire platform, a subsystem, or a component of a subsystem). For purposes of the following example, the STW mission area will be considered a primary COI with C3 as the other mission area in question.

4-2.4.3.1 Supporting Lower-Level Subtasks

Applicable elements of the default C3 first-level subtasks may be incorporated as lower-level subtasks under the first-level STW subtasks. For example, the decomposition of the STW Search task may include C3 elements such as process, display, or exchange that address the C3 tasks associated with the SUT as it performs the STW mission. This would be appropriate if the C3 tasks uniquely impact the different STW first-level subtasks (i.e., the C3 tasks that applied to STW Search were different from the C3 tasks that applied to STW Engage), and is depicted in figure 4-2.

Figure 4-2. C3 Tasks Incorporation as Second-Level Subtasks

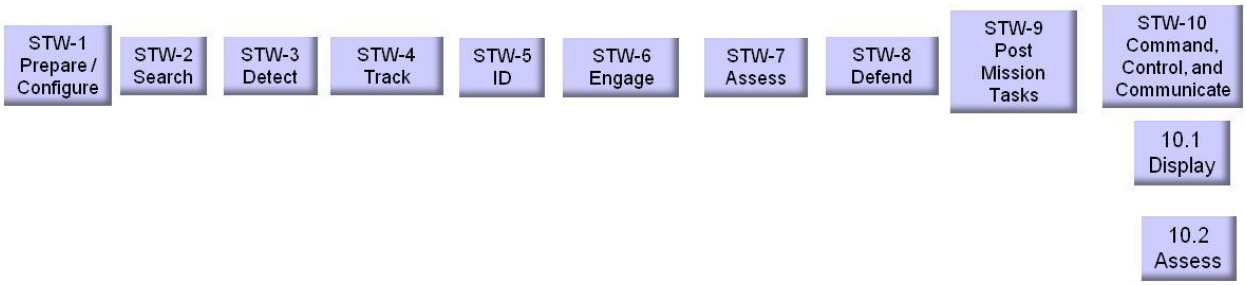


4-2.4.3.2 Supporting First-Level Subtask

Incorporate elements of the C3 mission thread into the STW mission thread, but separate them as an additional first-level subtask within the STW first-level subtask architecture. For example, if C3 elements, such as display and assess, applied equally to multiple STW first-level subtasks with the same measures and conditions, rather than merging them into each STW first-level subtask and repeating them throughout the

STW task decomposition, identify C3 as another first-level subtask under STW on the same level as the default first-level subtasks and decompose them once. This option is shown in figure 4-3.

Figure 4-3. C3 Task Incorporation as a First-Level Subtask



4-2.4.3.3 Stand-Alone COI

If the majority of the C3 mission thread applies and affects many of the first-level STW subtasks differently, this may warrant the use of C3 as a stand-alone COI.

4-2.4.4 Suitability Tasks

Fleet personnel are tasked with completing maintenance and logistic support. Aboard platforms, members of the crew are billeted for personnel support and logistics. At school-houses and in the Fleet, personnel are tasked with training and qualifying new operators/maintainers. Therefore, the Maintainability, Logistic Supportability, Training, and Personnel Support COIs often have associated tasks. The IEF database contains proposed subtasks for these COIs that can be used, deleted, or edited as appropriate. There should be no duplication between effectiveness and suitability tasks. Create the suitability subtask only if that is the primary COI for test results regarding that subtask. Availability and Reliability do not have tasks.

4-2.5 Step 4: Establish Conditions/Link to Subtasks

This step consists of identifying and documenting the conditions associated with each subtask. Consult the CD, which may define the SUT's operating envelope. Also reference appropriate WCB weapon/target pairings.

NOTE

Conditions are characteristics of the operating environment or SUT that affect the performance of the subtask. Conditions describe the physical (littoral, open ocean, calm seas, low visibility, etc.), military (single unit/task force/joint operations, aircraft division, etc.), and civil (population density, civil unrest, etc.) variations that impact subtask performance and form the operational context for selected subtasks.

4-2.5.1 Identify Conditions for Each Subtask

Working within the IEF database, identify all conditions that could affect performance of each subtask. Review the common conditions in the IEF database, which contains the

conditions and descriptors provided in the UNTL, as well as custom conditions and descriptors used by previous programs. Create additional custom conditions from SME experience and knowledge. Examine the TACSITs, MTBs, and ICTBs applicable to the SUT as part of this effort. Custom conditions may include weapons modes, target situation, special employment considerations, or any other variability of the operational environment that are specific to the SUT and must be considered during test. Conditions are only linked to the lowest subtask. Conditions are not required for every subtask.

4-2.5.2 Establish Descriptors (also known as levels) for Each Condition

These descriptors distinguish the levels of variability for the condition and are based, whenever possible, on objective, quantitative criteria. The IEF database is populated with the levels and their definitions used by other programs. The descriptors for existing (UNTL) conditions can be modified and new levels can be added as required. Be clear on the type of scale for parameters, often environmental parameters (e.g., sea state is described in NATO, Douglas Scale, and Beaufort Force Scale, with a level 3 not presenting the same types of sea conditions as another scale).

EXAMPLE

Consider a subtask, such as "Transit to mission area." One possible condition is "altitude." The UNTL descriptors for altitude are "Low (sea level to 500 ft); Moderately low (500 to 10k ft); Moderately high (10 to 25k ft); High (25 to 45k ft); Very high (>45k ft)". The test team may decide, based on the operational context for the SUT, that they only need descriptors of Low (below 500 ft), Medium (500 to 10k ft), and High (>10k ft).

EXAMPLE

Acoustic science describes the various aspects of the ocean environment that affect sound propagation and could impact sonar detection of a threat submarine. However, testing will likely need to capture these in a broad category of good, moderate, and/or poor acoustic conditions since individually splitting out depth, salinity, precipitation, temperature gradients, bottom composition, bottom contours, ambient noise (biologics and shipping), and other factors is not feasible. If this approach is taken, there must be clear, traceable documentation of how the broad categories (descriptors) were developed and what they represent.

4-2.5.3 Suitability Conditions

Suitability subtasks are similar to effectiveness subtasks, in that they are completed by operators in the operational environment. Conditions can be traced to suitability subtasks. Conditions may also be applied to suitability COIs with no subtasks, though this is very rare.

4-2.5.4 DOE Implications

Conditions are the most critical output of the mission analysis when DOE is employed since a prioritized and refined list of conditions to be controlled during the test will directly drive the size and scope of a given test. The intent in this step is to not perform the prioritization and selection of factors, but to define the "operational environment" context for the tasks in as much as those conditions may affect the task performance and/or outcome. Although conditions should not be added unnecessarily, it is important to know that contrary to what many believe, the number of conditions does not necessarily imply an unmanageable sample size when the factors are selected in step 9. Ensure conditions selected are expected to influence the outcome. Also, the levels must be described adequately so the DOE can be implemented properly and test execution meets the intent of the design.

4-3 REQUIREMENT/CAPABILITY ANALYSIS PHASE

4-3.1 Developing the Measures Matrix

During this phase of MBTD, the core team will develop a matrix of measures that will be associated with subtasks and COIs. While the requirement/capability analysis occurs as steps 5 through 7, the preliminary work associated with these steps should be conducted in parallel with steps 1 through 4. The OTD, AOTD, or other team member should begin the process of identifying all of the “must,” “will,” and “shall” statements in the draft CDD or other requirements document as soon as the project is initiated.

NOTE

SUT documents provide requirements and/or attributes. Not all requirements are measures. Not all measures are requirements. Measures are the specific metrics used to assess performance of capabilities the SUT is supposed to provide. The criterion for each measure is the performance level that must be achieved. Qualitative measures are expressed in terms of a nonnumeric action or outcome required from the system. Quantitative measures are expressed in terms of a numeric outcome (often a threshold; never an objective). As an example, a CD statement: "capable of operation from -20 to 150 °F" denotes a measure. This measure could be “ambient temperature operating range” with a criterion of “-20 to 150 °F”.

4-3.1.1 Measure Categories

There are three categories: Measure of Effectiveness (MOE), Measure of Suitability (MOS), and SoS. MOEs trace to effectiveness tasks. MOSs trace to suitability. SoS measures are not directly applicable to the SUT, but will be tested to address SUT contribution to mission success in the SoS context. There should be no duplication of measures between the three categories. Measures are linked to effectiveness or suitability based on the primary COI for which measure results will be reported.

4-3.1.2 Measure Types

There are three types: “specified”, “derived”, and “other”. “Specified” measures are those clearly documented in the system’s CD. “Derived” measures are not clearly stated in the system’s CD but are drawn from other applicable sources. “Other” measures are created from SME expertise in the core team, and have no written source.

4-3.1.3 DT-Only Measures

“DT-only” measures are operationally relevant, but are best addressed by DT in a DT environment. These measures will trace to subtasks and be included in the OT report, potentially influencing OT conclusions regarding task success. Data collection is purely DT. The conclusions made by DT will be leveraged by OT for task analysis.

4-3.2 Step 5: Identify Specified Measures/Link to Subtasks

To complete step 5, the CD (ORD, CDD/CPD, etc.) must be reviewed and all operationally relevant measures must be documented in the IEF database.

- Most measures may be explicitly called out as such (Key Performance Parameters (KPP), Key System Attributes (KSA), MOEs, and MOSs) in the CD. Additional measures may be described in terms of key phrases like "the system shall…" or "the system must be capable of…," or may be identified from other indications that a characteristic cited in the document is required or expected of the system.
- In some cases, multiple measures may be identified from a single statement. For example, a statement such as "capable of operation from sea level to 10k ft with an accuracy of ±5 feet" really describes two measures (operating altitude range and altitude accuracy). A statement such as "capable of operation from -20 to 150 °F" describes a single measure (operating temperature range).
- In other cases, the measure may not have an associated criterion. These measures can be documented as “unthresholded”.
- If the CD states “the SUT shall comply with all standards or other requirements as documented in XYZ document” (i.e., STAR), treat the requirements from those referenced documents as derived.

4-3.2.1 KPPs

KPPs are set during the Joint Capabilities Integration and Development System (JCIDS) process, and approved by high-ranking stakeholders for the program. As a result, the treatment of KPPs using the IEF process must receive the proper emphasis. Determine if each KPP is operationally relevant and measurable. If not, the KPP becomes an orphaned measure (just like any specified system requirement). Analyze the conditions and assumptions associated with the KPP, as documented in the CD. Determine if all aspects of the KPP are clear. If not, request clarification from the resource sponsor prior to IPR-1. KPPs are not automatically deemed critical measures, nor are they automatically treated as response variables if they are critical. The status of each KPP within the IEF must be discussed at IPR-1. Further, the plan for addressing each KPP

(to include operational relevance, assumptions, conditions, and any sponsor clarifications) is briefed at the Executive IPR (E-IPR) and COT Brief. The associated brief templates for all three of these meetings reflect the emphasis required.

4-3.2.2 Orphaned Measures

Orphaned measures are those specified measures that will not be reported on by OT personnel. In a typical CD, there may be some technical measures that do not tie directly to subtasks or COIs. These technical measures (e.g., transmission line loss for a radar system), while important to the program, provide little operational insight into task accomplishment or system suitability and are often not operationally measureable. As such, the data collection, measurement, and analysis for these measures will likely be accomplished as part of the CT or DT objectives. The test team should come to an agreement regarding these measures and may elect to exclude them by designating them as orphaned (not operationally relevant and/or not measurable). Identification of orphan measures can be made in the IEF database and will be reflected appropriately in the exported tables.

4-3.2.3 Defining Measures Properly

Measures are written as statements, not questions. KPPs are documented verbatim as measures. Otherwise, measures are not required to exactly match the wording in the CD or other source document. Specified measures whose wording does not significantly diverge from the CD wording are still considered specified. In those instances where a CD standard has not been provided, one must be defined. For example, consider the acquisition of a new software system designed to track shipboard maintenance actions and feed a centralized database ashore. The CDD for this particular system states: "Input of maintenance information into the system shall be easily accomplished by junior maintenance personnel." This statement could yield multiple measures, including “Maintenance data entry is intuitive." The criterion would be “Yes”. In such a case, data might be gained from a simple useability survey question asking the operator whether the data entry was intuitive. Alternatively, the core team could consider using a quantitative measure, such as “time to enter data” and state “unthresholded” as the criterion. This measure assumes the qualitative nature of the CDD requirement can be addressed using time.

4-3.2.4 Validate Incomplete/Conflicting/Ambiguous Measures

Often information sources used in the MBTD process will conflict with one another or will provide inadequately defined measures. As these issues are uncovered, the core team should seek clarification or additional information from the appropriate stakeholder (e.g., requirements officer, PM, etc.) to resolve the issue before proceeding into the test-design phase of MBTD (steps 9 through 12).

4-3.2.5 SoS Measures

In some cases, CDs identify a specific capability that does not apply to the SUT, but is applicable to the overarching SoS. Since the measures do not apply to the SUT, they are not MOEs or MOSs, but are characterized as SoS. Although data may be collected

during OT to support reporting these measures, they should not drive the scope of test or affect the determination of minimum and adequate DRs for evaluation of the SUT. Specified SoS measures must be included.

4-3.2.6 Linking Measures to Subtasks and COIs

Successful subtask accomplishment and, by extension, mission accomplishment, can be tied to system requirements (measures). The favorable resolution of suitability COIs can also be tied to system capabilities. Through the IEF database, link measures to relevant subtasks. Most of these linkages will be determined based on the operational experience of the OTD. These linkages are essential to the direct traceability between system performance and COI resolution. Only link measures to the lowest-level subtasks. For suitability COIs with no subtasks, measures are linked to the COI.

4-3.2.6.1 Orphaning Measures

Unless designated as "orphaned", each measure must link to at least one subtask or COI. If it is determined that a measure cannot reasonably be associated to a COI or subtask, it should be designated as an orphan measure (specified measures) or removed (derived/other measures). The resulting matrix should be shared with external stakeholders prior to making a final decision on removing a measure from the list.

4-3.2.6.2 Linking Measures to Multiple Subtasks

Measures can be linked to multiple subtasks. A single measure may help define success for several operator actions using the SUT. However, multiple linking should be minimized. It is better to document measures so that they apply to only one task, as this will impact future MBTD steps. Training MOEs could be linked to every effectiveness subtask. But in the interest of clarity, only link them to the subtasks for which training is the most vital. A training measure should not be used as both an MOE and an MOS. In this case, split the requirement into two measures (operator training and maintainer training).

4-3.2.6.3 Assess Coverage of Subtasks/COIs

Linking multiple measures to a subtask does not guarantee that successful performance of that subtask is fully defined. The core team should review each subtask/COI and its associated measures and verify that appropriate and sufficient measures have been associated. Should the traced measures fall short of covering subtask/COI accomplishment, the OTD must derive measures for that subtask or COI by which successful accomplishment can be gauged.

4-3.2.6.4 Orphaned Subtasks

For those subtasks without associated measures, a decision is made as to whether the subtask is properly associated with the SUT. If it is not, the subtask will be deleted (grayed out if first-level subtask).

4-3.3 Step 6: Develop Derived Measures/Link to Subtasks

Evaluation of operator tasks may require using additional measures drawn from other applicable source documents, such as OPNAV Instructions, Military Standards, CONOPS, or TTPs. The OTD intent/need to use derived measures should be coordinated with the sponsor and program office. Document derived measures in the IEF database.

4-3.3.1 Cybersecurity Measures

If cybersecurity is relevant to the SUT, check 01D Best Practices for suggested cybersecurity metrics.

4-3.3.2 Survivability

Some programs have survivability concerns (measure and/or COI). As discussed in appendix C, the Navy has assigned the responsibility for LFT&E to the DT community. Since the Deputy for LFT&E is assigned to the DOT&E, there is sometimes a misalignment of expectations. The below definitions are intended to aid the OTD in understanding survivability and to aid in drafting IEFs for SUTs where survivability is a key effectiveness concern. Measures, criterion, and DRs associated with survivability can be created from the definitions below. It may also be necessary to expand the subtask hierarchy to cover actions taken to survive.

4-3.3.2.1 Survivability Definition and Components

The definition of survivability for OT&E purposes is: The capability of a system and its crew to avoid or withstand a man-made, hostile environment without suffering an abortive impairment of its capability to accomplish its designated mission. There are three components of survivability:

- Susceptibility: The degree to which a device, equipment, or weapon system is open to effective attack due to one or more inherent weaknesses (while susceptibility is most frequently a function of design, it can also be a function of operational tactics, countermeasures, probability of the enemy fielding a threat, etc.). In other words "How likely is the system to be hit?" OT&E can make substantial contributions to the understanding of the latter.
- Vulnerability: The characteristics of a system that cause it to suffer a degradation (loss or reduction of capability to perform the designated mission) as a result of having been subjected to a certain (defined) level of effects in a man-made, hostile environment. It is generally tested by firing munitions likely to be encountered in combat (or munitions with a capability similar to such munitions) at the system configured for combat, with the primary emphasis on testing vulnerability with respect to potential user casualties. In other words "Will the system still work if hit?" Vulnerability is normally assessed during dedicated LFT&E.
- Recoverability: The ability to assess battle damage and restore systems to a mission-capable condition (e.g., firefighting and damage control, backup and restoration, casualty control procedures, etc.). Recoverability is normally assessed during LFT&E, although there are elements that may be partially evaluated in OT&E.

4-3.3.2.2 Survivability Testing

Though most, if not all survivability data can be collected during DT, these data are relevant to OT COI resolution. The measures and DRs needed to assess SUT survivability will be included in the IEF.

4-3.3.3 Lethality Testing

LFT&E consists of two parts: 1) Survivability testing noted above and 2) Lethality testing. Lethality testing consists of firing the munition or missile concerned at appropriate targets configured for combat. A quantitative estimate of enemy survivability, or a subset of survivability, may be possible if the system can be tested against a realistic threat. This testing usually includes destructive testing of the test article, ballistic penetrator analysis, etc., to study system operation after impact. This is part of LFT&E, not an OPTEVFOR function and, as such, should be assigned to the DA in program documentation and throughout the program. Lethality testing deals with the offensive capability of the weapon or the destructive power and effects of the weapon's warhead. The results of LFT&E, when available, may be used by the OTD to supplement OT findings. Frequently, lethality data are used in conjunction with OT tracking and guidance data to allow the reuse of targets without their destruction, thereby reducing the number of targets required for the test. In either case, most of the data required to support LFT&E generally falls within the responsibilities of the DA or PM and are collected as part of a dedicated LFT&E or DT. These data are relevant to OT COI resolution. The measures and DRs needed to assess lethality will be included in the IEF.

4-3.3.4 Link Measures to Subtasks/COIs and Assess Subtask/COI Coverage

Derived measures are linked to subtasks/COIs just like specified measures. Traceability is again assessed for comprehensive definition of task success by the associated measures. Should the traced measures still fall short of covering subtask/COI accomplishment, the OTD must create measures for that subtask or COI by which successful accomplishment can be gauged.

4-3.4 Step 7: Create Other Measures/Link to Subtasks

If required, measures may be created based on subject matter expertise and practical execution of the relevant missions. Requirement statements from the CD that are significantly rewritten in the measure are no longer specified. The same is true for significantly rewritten derived measures. Both are now type "other." These other measures are given the source "OTA Created." They account for all remaining aspects of successful subtask/COI accomplishment and are added to the measures matrix. Other measures are linked to the subtasks/COIs for which they were created. The intent/need to use other measures should be coordinated with the sponsor and the program office, briefed at the E-IPR, and requires approval from COMOPTEVFOR. Document other measures in the IEF database.

4-3.5 Sponsor Feedback on Derived and Other Measures

The OTD must inform and seek sponsor and program office feedback on all derived and other measures. If any of these measures have an associated criterion other than "unthresholded", the sponsor must approve this criterion. The status of sponsor-stakeholder feedback on derived and other measures will be briefed at IPR-1. At the E-IPR, the core team should be prepared to discuss feedback from all stakeholders (typically, the sponsor and program manager) with these measures or, if there is a disagreement, the OTD should be prepared to articulate the stakeholder's concerns along with the rationale for proceeding as recommended. Should the stakeholders not concur, the measures will be retained and the criterion will be changed to unthresholded.

4-3.6 Program Office Concurrence on DT Only Measures, and all DT Data Requirements

The OTD must inform and seek program office concurrence on all DT only measures, and on all the DT DRs called out in the IEF. The status of program manager feedback will be briefed at IPR-1. At the E-IPR, the core team should be prepared to discuss program manager feedback. If there is a disagreement, the OTD should be prepared to articulate the concerns along with the rationale for proceeding as recommended.

4-3.7 Critical Tasks and Measures

All tasks/measures considered critical to COI resolution must be identified (these will be briefed at IPR-1 and E-IPR and form the basis for DOE in step 9). There are typically three to five critical tasks per COI (rule of thumb only). Critical tasks are those tasks that drive COI resolution. A critical task that cannot be successfully accomplished using the SUT could result in evaluating the COI as "Unsatisfactory". At least one critical measure must trace to every task considered critical. COIs are, by definition, critical. COIs with no subtasks should still have at least one associated critical measure. A measure is critical if it defines the most important success criteria for a critical task. Failure to meet the critieria of the critical measure almost certainly means the task is unsuccessful. In the tool, first designate critical tasks. Then, criticality of measures is set task by task. A measure can be marked critical for one tasks, but not critical for another task. Measures and tasks selected as critical in the IEF database will be red/bolded throughout all IEF tables. Every critical measure must be discussed in section 2 of the IEF. At minimum, justify the choice of the measure as critical.

4-3.8 Step 8: Define Data Requirements/Link to Measures and Conditions

Determine the data necessary to assess each measure and populate the DR fields in the IEF database. These data are used to assess the capability of the SUT to support the successful accomplishment of the associated task. OTDs need to consider whether the measures are stochastic or deterministic as they define the DRs. Stochastic measures will typically require a larger sample size of data to arrive at an accurate estimate of performance. The use of deterministic measures may reduce the amount and type of data required to assess those measures/tasks and may be evaluated through demonstrations. DRs must include the data element, units of measure, and

source of the data. DRs may be both quantitative and qualitative. Reference IEF best practices, located in Y:\OT&E Production Library, for common DRs applicable to most programs.

4-3.8.1 Quantitative DRs

Specifically define the numbers that will be gathered during test. A measure such as Operational Availability (A_O) is very complex. Data collected throughout test will contribute to the examination of this one measure. It is not enough to simply create a DR for "uptime" and a DR for "downtime", and expect to have sufficient data at the conclusion of test. At one moment in test, uptime cannot be recorded. The DRs must represent what can be written moment-to-moment so that post-test analysis can be done with full understanding of what occurred. Break each measure down to its most basic data elements (start time, failure time, maintenance start time, maintenance completion time, restoration time, shutdown time, logistic delay start time, logistic delay stop time, Preventive Maintenance System (PMS) start time, PMS stop time, etc.).

EXAMPLES

a. Temperature (°C) from Handheld Thermometer. *(This DR includes the data element (Temperature), the units of measure (°C), and a source (handheld thermometer). The accuracy can be specified if necessary (e.g., 10ths of a degree) or implied based on the data source (i.e., a handheld thermometer has a basic scale in increments of 1°).)*

b. Latitude/Longitude (degrees/minutes/seconds (to tenths of a second)) from Bridge-Mounted Global Positioning System (GPS). *(This DR includes the data element (latitude/longitude), the units of measure (d/m/s) and accuracy (i.e., 10ths of a second), and a source (bridge-mounted GPS receiver).)*

c. Adequacy of Training (Likert Scale - see Glossary) from Post-Test Survey. *(This DR includes the data element (adequacy of training), the units of measure (Likert scale), and a source (post-test survey).)*

4-3.8.1.1 Data Frequency and Accuracy

Often, completely defining quantitative data includes stating how often the data must be collected and tolerances for its collection. The frequency of data collection (if required) should be stated as part of the data element. The accuracy of data collection (if required) should be stated as part of the unit of measure. It should never be assumed that accuracy is implied by the data source. A stopwatch measuring to hundredths-of-a-second will not automatically lead the data recorder to write down the hundredths digit. And just because the watch shows hundredths does not mean the start/stop button can be pressed with hundredths-level accuracy.

4-3.8.1.2 Surveys

Surveys provide mostly quantitative data in the form of Likert Scale responses. DRs written with surveys as the data source should only be used if there is a credible

intention to complete post-test analysis of the quantitative results and make conclusions based on that analysis. The creation and use of surveys is governed by standards. Verify that all surveys are written and administered per 01C Best Practice 14 and DOT&E guidance on use and design of surveys. DRs that do not meet the proper standards cannot be collected through survey. They must be written as interview questions or come from some other source.

4-3.8.2 Qualitative DRs

For qualitative data, "conduct interview" is not sufficient detail. While interviews may provide the source of the data, the core team must first define what specific qualitative information is needed from that source to support the resolution of COIs and standards before relevant, useful interviews can be constructed. Qualitative DRs must be comprehensive, covering all questions the OTD hopes to have answered and all observations the OTD needs to make. Note that “OTD Log” is not a data source. “OTD Observation” or “OTD Review” is the source, while the OTD Log is simply the location where the data are written.

EXAMPLES

a. Ease of operation (Qualitative Comments) from Post-Test Interview. *(This qualitative data element "ease of operation" will come from comments based on the post-test interview. When constructing the interview, a specific question addressing ease of operation should be asked to draw out this required data element.)*

b. Significant anomalies impacting detection time (Qualitative Comments) from OTD Observation. *(This qualitative data element will be assessed by the OTD during the detection task and likely recorded in the OTD log. Qualitative data often accompanies quantitative data to explain outliers or significant results. Context is important to quantitative analysis, and often comes from qualitative observations.)*

4-3.8.3 Conditions Data

Just as DRs are applied to measures, they must also be created for conditions. Each subtask is affected by the associated conditions, so the conditions during test must be understood to properly analyze subtask results. The process for creating the conditions-to-data requirements matrix is the same process used to create the measures-to-data requirements matrix. DRs written for measures cannot be applied to conditions. New DRs (element, unit-of-measure, and source) must be created. These new DRs cannot be applied to measures.

4-3.8.4 Categorizing DRs

DRs are grouped into categories to simplify collection during test. Categorization of DRs must be completed in the tool before they can be applied to vignettes. Common DR categories include Automated Data, Manual Data, Survey Data, Reliability, Maintainability, Logistic Supportability and Availability (RML&A) Data, DT Data, and

Conditions Data. The OTD is free to create additional categories that best organize data for collection. For example, a great amount of data could be collected manually during test from various sources, but recorded on a single SUT operator data sheet. It is logical to make “Operator Data Sheet” one of the categories. Then, creation of the data sheet is made easier by simply seeing all the DRs listed in that category. The conditions data category is only used for DRs that apply to conditions, and DRs that apply to conditions should only be placed in this category.

4-4 TEST DESIGN PHASE

4-4.1 Step 9: Statistical Design/DOE

Test design begins with objectives. Consider the objectives for testing the SUT, especially with regards to the performance of critical tasks. The test objectives for critical tasks are supported by evaluating the associated critical measures. Thus, critical measures are the basis of statistical and non-statistical test design. Each test design must yield the required data to evaluate task performance based on critical measure results. Stochastic quantitative critical measures must have a statistical test design. Deterministic quantitative and qualitative critical measures do not rely on statistics, but may still need a designed analysis, examination, or demonstration.

4-4.1.1 Statistical Approaches

To conduct efficient OTs and to support the identification of data and resource requirements, statistical methods are used to identify the minimum and adequate DRs needed to assess the effectiveness and suitability of a SUT and the resources required to ensure that data are collected. These methods support a stochastic analysis and include DOE, confidence intervals, simple hypothesis tests, and others. The primary reason for use of DOE methods is to design tests that efficiently explore the operational environment conditions and support an analysis of the impact of those conditions on performance. When exploration of performance variation is not required, confidence intervals are the most common statistical method for ensuring and adequate test size/design.

4-4.1.2 Other Approaches

It is important to recognize that while DOE is a primary method, not everything lends itself to statistical analyses. In OT, a multivariate demonstration may be preferable to a powerful test of a small area of the battle space. Demonstration under deliberately varied and controlled conditions may not yield statistically significant data, but still provides necessary opportunities for identification of issues.

4-4.1.3 Run Matrix

The CTF will assist the test team in applying the tenets of DOE to the conditional variations, through an iterative process, to produce a run matrix for each response variable. For detailed test planning, this matrix provides a comprehensive look at the number of test items required and the number of iterations needed to execute a vignette. This information should translate directly into the resource tables developed in

step 12 for the SUT. Many of the design approaches above, not just DOE, will require production of a run matrix.

4-4.1.4 DOT&E Participation

For oversight programs, DOT&E representatives should be involved throughout the process. Regardless of the previous level of participation, it is important to include them in this step. Any disagreement on the critical measures selected as response variables, the design selected, and associated statistical confidence, power, and effect size needs to be identified and understood at this time. In general, confidence should be set at 80 percent. Test designs should generally attempt to achieve 80 percent power. Effect size should be operationally significant and consistent with expected test results (sensitivity of the test).

4-4.1.5 DOE Process

DOE is used when the test objective is characterizing performance across the operational environment (main effects and interactions). The use of DOE ensures OTDs identify the conditional variations and required sample size needed to evaluate critical measures chosen as response variables. The end goal is to ensure that statistical analysis of test results can detect whether the SUT's performance is or is not degraded in an operational environment and how the conditions affect any variation in the results. A summary of the DOE process is presented below. Close consultation with the 01B team is essential.

4-4.1.5.1 Define Response Variable

Response variables will be used to determine the size of the test and number of data points that need to be collected. They should be continuous variables (vice binomial) if possible, as continuous variables provide more useful information about system performance across an operating environment. In many cases, the KPPs or critical measures specified in the CD are binomial metrics; the OTD may elect to create a continuous measure from those binomials to use for DOE. Selection of response variables should be done jointly with the 01B team. Examples of response variables include miss distance for a new air-to-ground weapon, detection ranges for sensors, or message throughput/error rates for communications systems. Ideally, response variables would be directly specified in the CDs, but in some cases, SUT performance may be better described by derived or OTA created measures. Implications of the type of variable and distribution should be considered (discrete/continuous, normal/log-normal distribution, etc.). Consult the Analyst Handbook for additional information on variable types.

4-4.1.5.2 Prioritizing Conditions

A focus of DOE is to reduce the large set of unconstrained conditions developed in prior steps to a manageable set of conditions that will significantly affect the response variable and the tasks to which it is associated. The OTD brings operational experience and judgment to help pare down the conditions to important ones. The numbers of conditions and levels directly influence the design selected, the resulting run matrix, and

the OT resource requirements. Review the conditions that have been associated with the critical task. All conditions fall into three categories: controlled (referred to as factors), constant, or recordable. Conditions and their associated levels should be prioritized by expected impact on system performance and the likelihood operators will encounter them in the intended operating environment. Those that are not controlled or held constant should be identified as recordable. The levels for each controlled condition should then be varied in a test design (run matrix). The affect that controlled conditions (especially hard-to-change factors) have on randomization must be considered. Use figure 4-4 as a guide for prioritizing conditions and determining which factors will be tested.

Figure 4-4. Factor Prioritization Matrix

		Likelihood of Encountering Level During Operations		
		Multiple levels occur at balanced frequencies (e.g., 1/3, 1/3, 1/3)	Some levels are balanced, others are infrequent (e.g., 5/10, 4/10, 1/10)	One level dominates (e.g., 4/5, 1/10, 1/10)
Effect of Changing Level on Performance		**Balanced**	**Mixed**	**Dominant**
Significant Effect on Performance	**High**	Vary all	Vary balanced levels, Demonstrate infrequent levels	Fix dominant level, Demonstrate others
Moderate Effect on Performance	**Medium**	Vary all	Vary balanced levels, Demonstrate others	Fix dominant level, Demonstrate others
Low Effect on Performance	**Low**	Fix levels or record level used	Fix levels or record level used	Fix dominant level

4-4.1.5.3 Distribution and Effect Size

Using historical data (if available) or subject matter expertise, determine the anticipated distribution and standard deviation (variability) of the response variable, as these are essential to the definition of effect size and the statistical calculations. The effect size chosen by the OTD must be explained in terms of operational relevance. Different effect sizes may be chosen for the effects and interactions to be investigated. The 01B team and divisional analysts will use these aspects of the response variable, along with the proposed factors, to recommend a statistical test/analysis method, and will generate an initial run matrix with the appropriate power for each effect.

4-4.1.5.4 Verify the Design

This is an iterative process. While this step is primarily performed by the CTF or analyst, the OTD has a key role in defining constraints on the design and what represents operationally meaningful results. The OTD must apply his or her operational expertise and knowledge of the system and any previous test results when evaluating the practical meaning of a targeted effect size, power, and confidence. The OTD must also ensure that every planned run is viable; not incorporating disallowed combinations of conditions (conditions that cannot occur in the real world). Likewise, the analyst must ensure that the choices made reflect a sound understanding of the relevant engineering and physical processes. The resulting run matrix provides the OTD with a plan to assess the response variable (how many times a vignette will be run, under what conditions, etc.). It should not be perceived as a sequential schedule of events.

4-4.1.6 Confidence Intervals

Confidence intervals are another method for sizing test. They are not an inferior statistical method to DOE. They simply satisfy a different test objective: examination of stochastic results where there are no factor effects. Understanding of the critical measure distribution and standard deviation are necessary. Desired sensitivity of test must be operationally relevant and consistent with expected test results. Work with the 01B team to choose the correct type of confidence interval based on the objectives for the measure.

4-4.2 Step 10: Build Vignettes

The information developed in previous steps is used to build test "vignettes." A vignette is definined as a logical grouping of subtasks and/or COIs that serves to organize MBTD products for test design and data collection. These vignettes are designed to ensure the thorough testing of all tasks/subtasks, obtaining results for all measures through collection of DRs. The development of vignettes is more art than science. The process is subjective and iterative, based on the complexity of the SUT and the test team’s operational experience. Complex SoS and platform programs will require a mix of smaller vignettes, as well as end-to-end vignettes to capture all tasks, conditions, and measures in detail.

4-4.2.1 Reassess Tasks, Conditions, and Measures

Before building vignettes, a review of the task breakdown, conditional variations, and measure linkages may result in finding similarities or differences that may require an adjustment to the mission-based subtask hierarchy. Construction of vignettes for the execution of test offers a new perspective. In some instances, as vignette development progresses, the test team may elect to go back to earlier steps and combine two subtasks into a single subtask, or deconstruct a single subtask into multiple subtasks.

4-4.2.2 Parse Subtasks into Logical Execution Groups

Construct vignettes from logical groupings of individual subtasks under individual or multiple missions. Every subtask must be associated with at least one vignette. At the

simplest level, a vignette can be made up of a single subtask. At the most complex level (typically suitable for execution during independent OT phases), a vignette can include all the subtasks under a given mission task. Most vignettes will be somewhere in the middle of these two extremes, based on a variety of elements including:

4-4.2.2.1 Logical Subtask Flow

When building vignettes, the test team must consider the subtask-to-subtask flow. Vignettes should be constructed around connected subtasks. This ensures that the vignette can be executed as a single unit rather than merely a group of individual disparate subtasks.

EXAMPLE

Consider a mission with the following first-level subtasks:

1.1 Conduct Mission Planning
1.2 Conduct Pre-Mission Checks
1.3 Transit to Operational Mission Area
1.4 Conduct Mission Activity
1.5 Transit from Operational Mission Area
1.6 Conduct Post-Mission Analysis.

One possible vignette would be a combination of subtasks 1.1 and 1.2. Such a vignette might be described as "Mission preparation." Executing these two subtasks together in a vignette could provide data that flows from subtask to subtask. Conversely, attempting to combine the disconnected subtasks 1.1 and 1.5 into a single vignette would be difficult given the fact that the logical subtask flow is broken (i.e., essential subtasks 1.2, 1.3, and 1.4) are not included. In execution, such a vignette would be more like the execution of two individual vignettes rather than a single, consolidated vignette.

While vignettes constructed of connecting subtasks are the norm, there may be circumstances where two disconnected subtasks could be executed as a single unit without disrupting a logical operational flow. For example, subtasks 1.3 and 1.5 could be combined into a single vignette since these two subtasks might not require that subtask 1.4 be accomplished. The vignette could include transiting to the mission area and then immediately transiting from the mission area without executing the actual mission. Such a vignette (described as "Mission transit"), although missing mission accomplishment (subtask 1.4), might still be considered to flow operationally and provide useful OT data during a DT event.

4-4.2.2.2 Operational Relevance and Executability

In some cases, operationally relatable accomplishment of "downstream" subtasks under a mission will require the execution of many or all the subtasks prior to it. In such a case, constructing a vignette without including the "upstream" subtasks would make the execution of the vignette difficult or would provide little meaningful data.

EXAMPLE

Applying the example above to this element, it would make little sense to execute 1.5 and 1.6 as a single vignette since subtask 1.6 is post-mission related. If the mission had not been conducted, post-mission analysis would not likely be operationally representative. As such, the vignette would have to include subtask 1.4 (as a minimum) to provide useful data.

4-4.2.2.3 Planned DT and IT

Vignettes facilitate data collection. Consider building vignettes that can be executed in concert with scheduled DT, thus creating opportunities for IT. DT vignettes constructed solely for the collection of DT data do not exist. If IT is already planned, ensure vignettes are created to cover the gathering of OT data during these test periods.

NOTE

The intent of the IT process is to reduce testing costs and shorten development timelines by increasing overall test efficiency. To meet this goal, operational testers must capitalize on all available test and data collection opportunities as early as possible in the EMD phase. While end-to-end testing may be the ideal OT approach, it is generally not possible during EMD or an OA. The execution of testing by means of specific vignettes supports the identification of test events (and the collection of OT data) that are potential IT events. All data drawn from IT must be qualified for use in OT. For data to be qualified for OT, the data must have been collected using production-representative equipment, with representative operational users, employing operational TTPs against a realistic threat simulation.

NOTE

The IEF database facilitates adjustment of MBTD products for multiple test plans and IEFs. It is not necessary to construct a vignette to fit every possible nuance of test from Milestone A through full-rate production. Tailoring of vignettes within the various test plans will handle this.

4-4.2.2.4 Expected System Maturity Throughout EMD

Theoretically, as EMD progresses, more subsystems, functionality, and/or test assets/ranges will be available for testing. When designing vignettes, the planned maturity path should be considered. Developing vignettes built around subtasks linked to functional capabilities, which may be available for test early in the EMD phase, will enable the team to start the data collection process sooner. If vignettes are built around subtasks linked to functional capabilities, which may not be available until later in EMD, the test team may be unable to collect OT-relatable data until much later in the process. System maturity should not be an impediment to vignette execution. OT participation may provide insight to areas that could be major deficiencies during later OT, thus allowing solutions to be identified early in the process.

EXAMPLE

The development of an Unmanned Underwater Vehicle (UUV) is planned to occur in stages throughout EMD. The plan includes early development of a mission planning station, ongoing development of the basic vehicle and associated navigation system, and late-stage development and integration of the sensors to be included. When building vignettes for such a system, vignettes constructed from subtasks related to the use of the mission planning station could be constructed to provide insight into its operational characteristics even before the vehicle is ready for testing. Likewise, vignettes constructed from subtasks related to the basic vehicle operation and navigation could be executed earlier in the program than those requiring use of the sensor. If all the vignettes included subtasks associated with sensor use, then they would likely not be executable until later in EMD. As a result, the collection of valuable, early data from the basic vehicle and mission planning station operation might be held up waiting on sensor development.

4-4.2.2.5 Availability of Surrogate Test Methods

While subtask performance using operationally representative, fully integrated platforms is preferred, valuable information can be gained by developing and conducting operationally representative vignettes at a subsystem level. Depending on the availability of laboratories, test benches, and other M&S tools, vignettes can be constructed that take advantage of these tools. Use of surrogate test methods may assist in the early identification of deficiencies and aid in the development of easily incorporated OT solutions.

4-4.2.2.6 Specified Operational Profiles

Often the CD or CONOPS for a system will specify operational profiles for that system. If so, these profiles can be crafted into vignettes (usually for dedicated OT periods) based around the specific conditions and/or task-execution profiles required.

4-4.2.2.7 DOE Considerations

Experimental design discussed above in step 9 and vignette CON in this step must be consistent. DOEs written for RVs will call for a specific run matrix. A vignette must incorporate the necessary subtasks and conditions to provide such a run matrix. Vignettes must account for demonstrations planned in step 9 for critical measures not treated as RVs.

4-4.2.3 Vignette Numbering

Each vignette will have a unique identifier prefaced by either "IT" or "OT." IT vignettes are those vignettes that are candidates to be conducted in conjunction with CT or DT events during the IT phase. IT vignettes can also be completed during OT. OT vignettes are those that are only appropriate for independent OT&E. The number identifier for the basic vignette will be based on COI number and a sequential

numbering of vignettes under that COI. The second vignette associated with the third COI, assuming it can be executed during IT, would be numbered IT 3-2.

4-4.2.4 Vignette Naming

Each vignette will have a unique name. The name should be short, and convey the task execution to be tested. The name can also allude to test method, perhaps labeling the M&S vignette as such to distinguish it from the real-world execution vignette containing the same subtasks.

4-4.2.5 Suitability in Vignettes

Following the process described above, develop vignettes for the suitability COIs and/or ensure suitability is covered by vignette execution. In many cases, suitability vignettes may be executed in conjunction with a mission vignette. They may also be executed in a stand-alone fashion to answer the COI question posed under all related conditions (i.e., a Maintenance Demonstration (M-DEMO) vignette).

4-4.2.5.1 Reliability and Availability

Reliability and availability vignettes do not exist. Data for these COIs is collected in all vignettes where the system is stressed in an operationally representative manner. Thus, the reliability and availability COIs are traced to every such vignette just like the subtasks of those vignettes.

4-4.2.5.2 Maintainability

Corrective maintenance tasks fall outside the normal execution of mission vignettes, as do the vast majority of preventive maintenance tasks. A “maintenance action” vignette can be created to support data collection any time maintenance is performed by the Fleet. M-DEMO is a different vignette, as it is executed under controlled conditions for which the test methods differ from those for Fleet maintenance.

4-4.2.5.3 Logistic Supportability

Logistic supportability is often best included in the maintenance action vignette discussed above. Logistics is usually witnessed when parts/supplies are needed for corrective or preventive maintenance. Logistics can also trace to M-DEMO or effectiveness vignettes with logistics implications. Larger systems may require a Logistics Demonstration (LOG-DEMO) vignette, or may have logistics subtasks suggesting several logistics vignettes (fueling, weapons load, etc.).

4-4.2.5.4 Other Suitability Vignettes

IEFs are not limited to the suitability vignettes suggested above. Any suitability COI with associated subtasks can have vignettes specific to that COI. Suitability COIs and/or tasks can be linked to vignettes as needed for data collection. However, there are no so-called “data collection” vignettes with no task execution. Every vignette must include at least one subtask (a COI does not qualify).

4-4.2.6 Complete Vignette Specifics

Association of subtasks and/or COIs to individual vignettes in the IEF database, does not complete vignette CON. Measures, conditions, runs, and DRs must be customized to reflect actual test execution for that vignette.

4-4.2.6.1 Set Vignette Measures to Test/Non-test

The IEF database automatically creates a list of all the measures linked to the subtasks of a vignette. But just because a subtask is included in a vignette does not mean every measure associated with that subtask is being tested in that vignette. Each listed measure must be set to test or non-test. Carefully consider whether the vignette is intended to provide data for a specific measure. If so, set it to test. If not, set it to non-test. Every subtask within a vignette must have a measure traced to that subtask set to test. Otherwise, there is no reason for the subtask to be included in the vignette. Every measure (excluding orphaned measures) must be set to test in at least one vignette. This includes DT Only measures, which are set to test so that the data collection requirements appear in the IEF.

4-4.2.6.2 Set Vignette Conditions to Controlled, Recordable, or Neither

The IEF database automatically creates a list of all the conditions linked to the subtasks of a vignette. But just because a subtask is included in a vignette does not mean every condition associated with that subtask is applies to that vignette. For example, an M&S or laboratory vignette may not cover all the conditions that will be seen during real-world test. Listed conditions are set to controlled or recordable, or neither if they do not apply. Carefully consider each condition as this will impact run matrix CON and data collection.

4-4.2.6.3 Populate Run Matrices

The conditions set as controlled in the IEF database form the column headers of the run matrix. Individual runs are populated by selecting the levels of each condition for that run. Be certain that the run matrix created is consistent with the DOE, if applicable. The run matrix can be produced outside the IEF database and imported if so desired.

4-4.2.6.4 Populate DOE Notes

Every vignette needs DOE notes. Briefly explain the statistical test (or lack thereof). Be certain it is consistent with the DOE in section 2 of the IEF, if applicable.

4-4.2.6.5 Customize Vignette Data Requirements

The DRs for all measures set to test will autopopulate based on their categorization. But just because a DR is associated with a measure being tested does not mean it will be collected in that vignette. For example, a data element may be planned to come from multiple sources. If one of those sources is not available during a vignette, the DRs listing this source are not applicable. Examine all DRs listed for the vignette. Remove any that do not apply. This customized list of DRs will populate the Data Requirement field of the Vignette-to-Data Requirements-to-Test Method Matrix. The

DRs for all controlled and recordable conditions are customized just like the DRs for measures. Every DR must be included in at least one vignette.

4-4.2.7 Develop a Vignette Execution Schedule

Using the program office's Integrated Master Schedule and planned test periods (IT, OT, IOT&E, etc.) determine the formal test periods the vignettes can support. This schedule will be used later to identify OT resource requirements throughout the development of the SUT. The proposed vignette execution schedule must be shared with external stakeholders and the T&E WIPT to clearly communicate the plan for OT data collection. This schedule will be included in the IEF.

4-4.3 Step 11: Devise Test Methods for Each Vignette

Develop test methods for each vignette that will enable the test team to execute the vignette in an operationally representative manner while collecting the test data (from step 10). Input these test methods into the IEF database.

4-4.3.1 Develop Vignette Test Methods

Test methods provide an overview of the procedures to be used to execute the vignette, to gauge the capability of the operational user to accomplish the associated subtasks, and to collect the required data. Because the development of test methods assumes appropriately trained operational users will execute the vignette, test methods do not need to provide elaborate details with regard to the operational execution of each individual subtask. It is not a detailed test plan. Rather, they should focus primarily on the data to be collected, as well as things that may detract from operational realism (i.e., range safety considerations, threat surrogates, or simulated emitters) but that may be necessary to execute the vignette or collect the data.

4-4.3.2 Test Method Categories

The test method descriptions are broken up into Introduction, Pre-Test, Test Execution, Post-Test, and Summary headings. Pre-test, test execution, and post-test methods are required. For larger vignettes, further categorize/group the Test Execution method as required.

4-4.3.3 Test Methods are Sometimes Optional

For the IEF, test methods are sometimes optional. Their creation can be delayed until the test planning process detailed method of test. This is the case for IEFs written very early before test, or when test methods are not yet fully understood. IEFs completed close to test should include test methods. In either case, the core team should document good test methods if they have them. Do not leave out known and accepted test methods for a vignette simply because the content is optional.

4-4.4 Step 12: Determine Resource Requirements

Determine the resources necessary to accomplish individual vignettes and roll up these requirements into a table suitable for use in the TEMP. Mapping the resources required

to the requirements placed in the TEMP is the single most important contribution to long-term project success.

4-4.4.1 Determine Vignette Resource Requirements

Having identified the DRs and test methods for each vignette, the test team should determine the resources required to accomplish each vignette. Input these into the IEF database. These resources should include:

- Test articles - Number of test articles (full or partial systems) with any specific configuration and/or timing requirements
- Test sites and instrumentation - Specific range, test site, special instrumentation, or data collection requirements
- Test support equipment - Special support equipment requirements
- Threat representation - Threat type, number, availability, and fidelity requirements
- Test targets and expendables - Type, number, and availability requirements for all targets, weapons, flares, chaff, sonobouys, etc. required for testing
- Operational force test support - Specific aircraft, ship, submarine, unit, or exercise support requirements including flight hours, at-sea time, or system operating time; includes the OTD, analyst, and any additional required contractor support
- Simulations, models, and test beds - Any M&S requirements, including labs, applications, prefaulted modules for M-DEMO
- Manpower/personnel training - Specific operator or maintainer training requirements
- Special requirements - Specific noninstrumentation capabilities, such as special data processing, databases, unique charting, extreme or restricted environmental conditions.

4-4.4.2 Roll up Resources by Test Period

Once resources have been identified by vignette and using the proposed vignette execution schedule, roll up the resources to determine the overall stand-alone OT&E requirements by individual test phase. These rolled-up requirements will form the basis for the OT input to the TEMP. Provide enough detail in the vignette resource requirements to support the generation of an OT cost estimate.

4-5 OTHER IEF SECTIONS

4-5.1 Limitations to Test

The core team should identify any potential limitations to test for inclusion in the IEF and TEMP. These might include threat replication, maturity of system being tested, safety constraints, inability to test the system specific/significant conditions, or nonavailability of key test resources or instrumentation. Limitations should be categorized as severe, major, or minor (see paragraph 5-5.3.9). Clearly describe the limitation, its impact on resolving the COI(s), and the steps that will be taken to mitigate the limitation.

Do not use the previously common, generic, and almost meaningless, limitation that the SUT will not be tested in all environmental conditions. If environmental limitations are significant, be specific as to how. Use the Fleet Numerical Meterology and Oceanographic Center (FNMOC) web site (https://portal.fnmoc.navy.mil/climoportal/index.htm) to focus on particular meteorological parameters of interest and their specific differences between the anticipated test range and the anticipated operational area.

4-5.2 M&S

Describe all models and simulations to be used to support or provide OT data collection in the IEF. Clearly articulate the requirement to use a model, simulation, or System Integration Laboratory (SIL) for data collection. All models used by the core team must be verified and validated by the appropriate external agency and accredited by COMOPTEVFOR. This section of the IEF should identify the models to be used, plans to verify, validate, and accredit those models, data that will be collected from them, and the COIs that will be affected. Additional guidance on the use of M&S in support of OT can be found in COMOPTEVFORINST 5000.1B, Modeling and Simulation. Note that in some cases, accreditation plans need to be submitted by the OTD as much as a year in advance.

4-6 REVIEWS

4-6.1 Touchpoints

Touchpoints are informal reviews of MBTD products conducted with the warfare division A/B code and 01B A/B code. Touchpoints can be done at any point in the process to ensure products meet leadership expectations. Usually, touchpoint 1 is a review of COIs and the SUT/SoS definitions. Touchpoint 2 reviews subtasks and conditions, as well as the critical subsystems table and mission essention functions table that will support suitability calculations.

4-6.2 In-Process Reviews

As OTDs complete the MBTD process, several IPRs are conducted with the warfare division and 01B leadership, as well as with 00/00D.

4-6.2.1 IPR-1

The first IPR is cochaired by the warfare division A/B code and 01B A/B code and is conducted after mission and requirements analysis phases of MBTD are complete (through step 8). All products developed to that point are reviewed. Additional guidance and formatting is available in the OTD IEF checklist and the IPR-1 brief template.

4-6.2.2 Design Working Group (DWG)

The DWG is a OPTEVFOR peer review of test planning and DOE that will be used to support evaluation of effectiveness and suitability COIs and/or VCD. The DWG focus is on the measures identified as critical, as well as the conditional variations associated

with those variables and the statistics used to arrive at the data sample size and subsequent resource requirements. The DWG provides a repeatable process for validation of the OT DOE process. All programs developing a test strategy in support of an IEF, TEMP, test plan, or VCD shall conduct a DWG prior to the conduct of an E-IPR/TEMP/test plan/VCD brief. Once the test design has been briefed and received approval from 00/00D, any changes to the DOE will require another DWG.

4-6.2.2.1 DWG Membership

The DWG membership is as follows:

- 01B, Director and/or Deputy Director – required;
- 01C, Director, Deputy Director, or representative – required;
- 01B, CTF – required;
- CNA Representative – invite;
- Division Director or Deputy Director – required;
- Division Section Head – required;
- Division OTD (OTD and OTC for 50) – required;
- Division Analyst – required;
- Visiting/guest Analyst – recommended;
- Division Contractor Support – invite;
- DOT&E – recommended;
- Program Manager representative – invite;
- Data Collection/Analysis SME (i.e., Corona) – invite;
- Resource Sponsor – invite.

4-6.2.2.2 Convening a DWG

The responsible OTD coordinates with the 01B CTF and schedules a DWG prior to the Command E-IPR, TEMP, test plan, or VCD brief. Conduct the DWG as soon as the division is ready to support, but no later than 5 days prior to, the command brief, to allow for resolution of DWG issues. Two weeks notice of DWG scheduling to DOT&E is required to ensure ample opportunity for them to attend. The first set of read-aheads must be provided to all stakeholders 2 weeks ahead. The OTD should provide final read-ahead materials to all DWG members no later than 2 working days prior to the scheduled DWG, to include calculations, the full write-up of IEF section 2, and all previously approved MBTD products (appendix A , IEF section 1, table B-1, table B-2). Run matrices are not required for the DWG, but can aid in understanding test design should they be available.

4-6.2.2.3 Conduct of a DWG

The DWG focus is on the process used to generate the DOE. No formal brief is required. All participants should understand MBTD products up through IPR-1. The DWG starts with a brief overview/description of the SUT and pertinent SoS to aid

reviewing members in understanding system operation and relevance of the DOE to be reviewed. Following completion of the SUT overview, the OTD/OTC will lead the DWG review. The draft IEF/test plan will be reviewed to ensure all relevant test design sections for each COI are complete and acceptable. Every DWG will cover the following items:

- Review (by COI) of the critical measures and critical tasks (very brief, as these items were previously approved at IPR-1).
- Selection of Response Variables (RV) for the SUT from the measures matrix (RVs are preferably continuous variables vice binomial).
  - Traceability of selected RVs to SUT requirements documentation (source of measure). RV definition and threshold, as well as the expected distribution (including standard deviation for continuous measures) and the sources of such expectations (historical data, developer and/or SME approximations) are explained.
  - Conditions identified that affect the selected RVs. Conditions need to be identified as controlled (factors), constant, or recordable. The definition of descriptors (levels) associated with controlled and constant conditions are explained. The prioritization of controlled conditions or particular descriptors will also be reviewed.
  - Resulting test design (factorial, D-optimal, etc.), including disallowed combinations of factors that are either not possible to realistically achieve or test.
  - Discuss plans for randomization, to include any hard-to-change factors.
  - Type of test applied to each RV (i.e., ANOVA, Logistic Regression, etc.).
  - Chosen confidence level.
  - Most important or limiting factor, and why.
  - Effect sizes used to calculate power, with an emphasis on the operational relevance of the chosen effect size.
  - Power associated with each main effect and interaction.
  - Resulting design replications and overall sample size.
- Critical measures that are not examined as response variables, but require further explanation and/or statistical analysis outside of the MBTD appendices.
  - Measure definition, threshold, and expected behavior.
  - Confidence level and confidence interval type/size.
  - Resulting sample size.

4-6.2.2.4 Roles and Responsibilities

4-6.2.2.4.1 01B CTF will:

- Coordinate with OTD/OTCs as appropriate and schedule DWG meetings.

- Conduct an initial meeting with OTD/OTC prior to scheduling the DWG to determine the scope of test design and determine if any special analytical support is needed for the particular system.
- Determine required participants.
- Verify section 2 is completed with the proposed power and confidence of DOE results (as calculated by divisional analysts or 01B DOE support staff).
- Support OTD development of the Experimental/Statistical Design section of the IEF.
- Review/obtain 01B statistician support for statistical calculations.

4-6.2.2.4.2 OTD (OTC for 50) will:

- Coordinate with 01B CTF and schedule a DWG for IEFs at least 5 working days prior to the E-IPR (use telecoms or video teleconference to include Air Test and Evaluation Squadron Commanding Officer/Chief Operational Test Director (COTD)).
- Prepare and send read-aheads to DWG participants at least 2 days prior to the DWG meeting.
- Provide subject matter expertise to the divisional analyst's development of the statistical design section of the IEF.
- Lead the DWG.

4-6.2.2.4.3 Divisional Analyst will:

- With 01B support, develop DOE data required to support conduct of DWG review (as described above).
- Draft the Experimental/Statistical Design section of the IEF.

4-6.2.2.4.4 Section Head will:

- Monitor and assist the OTD in the above responsibilities.
- Ensure the resulting test design is minimum and adequate, as well as operationally relevant.
- Review the DWG read-aheads for accuracy prior to the DWG meeting.

4-6.2.2.4.5 Warfare Division Director/Deputy will:

- Oversee the execution of OTD IEF and DOE checklists.
- Review status of changes from IPR-1 prior to the DWG meeting.
- Review draft Experimental/Statistical Design section of the IEF.
- Oversee execution of divisional test development and design reviews.

4-6.2.2.4.6 Squadron Commanding Officer will:

- Participate in IEF development through the IPR and E-IPR process to ensure that the developed test design is executable.

- Raise any unresolved concerns emerging from IPR-2 to the Commander/Deputy through the Air Warfare Division Director.

4-6.2.2.4.7 01B Division Director/Deputy will:

- Review draft Experimental/Statistical Design section of the IEF.
- Support OTD and 01B CTF in the selection of appropriate statistical tests.
- Collect DWG-review lessons learned and disseminate as best practices and OTD Manual changes, as needed.
- Provide recommended templates for the presentation of data in IEFs or test plans.

4-6.2.3 E-IPR

The E-IPR is chaired by the Commander or Deputy. It is a review of the work done and the products generated through step 9 (Statistical Design) of the MBTD process. Additional guidance and formatting is available in the OTD IEF checklist and the E-IPR brief template.

4-6.2.4 IPR-2

The second IPR is cochaired by the warfare division A/B code and the 01B Division Director/Deputy, and conducted after the test design phase is complete. The IEF document should be drafted and available for review. This IPR focuses on reviewing the vignettes, their associated DRs, and test methods, as well as the OT resource requirements. Additional guidance and formatting is available in the OTD IEF checklist.

4-7 TAILORED IEF

The principal difference between a TIEF and a full IEF is that the TIEF may not execute all 12 steps of the normal MBTD process. This TIEF uses a template similar to a full IEF, but may not contain the same level of detail and may be abbreviated, as required. 01B and Warfare Division Directors will agree on how far in the MBTD process the TIEF should go. At a minimum, the first 8 MBTD steps will be completed. The details provided in this manual and the OTD IEF checklist for those steps apply, including conduct of IPR-1 and E-IPR. Creation and use of an IEF database is required. The TIEF uses some of the same products (appendix A) as the IEF.

4-7.1 Milestone A TEMPs

For those major programs that seek OT involvement prior to Milestone B, it is generally appropriate to develop an IEF. In these cases, the requirements documents are likely not finalized and major decisions with respect to capability may not yet be made. To avoid unnecessary churn, the TIEF focuses on the essential information needed to support the development of the Milestone A TEMP. As with any IEF, the process begins with the selection of COIs. At this point, it is possible that even major questions, such as whether a strategic deterrent submarine should have a Surface Warfare capability, may remain unresolved. Nevertheless, by parsing the test design by COI, the test team can show the effort entailed in evaluating associated critical mission tasks.

Once the critical mission tasks are understood, it is generally a fairly straightforward task to identify the critical measures. From there, the process for test design and statistical analyses are the same as with any IEF, if required. Although it may not contain all the details of an IEF for a mature program, by identifying the critical tasks and measures, as well as developing data requirements to evaluate those measures, an estimate of resource requirements can be made. This early estimate of required resources will directly support the OT resource requirements input for the Milestone A TEMP. By accomplishing this process early in a program's life cycle, there is time for the sponsor to seek additional resources and there is potentially time for the technical community to develop newly identified test equipment (e.g., targets, instrumentation, models and simulations, etc.).

4-7.2 Joint Programs

A TIEF may also be used to support planning and input for programs where OPTEVFOR is not the lead OTA. Developing a TIEF and conducting the appropriate reviews ensures OTDs have selected the Navy missions (COIs) and tasks to be supported by the system, and identified the critical tasks, measures, conditions, and data required to support performance evaluation of the program from a Navy perspective. This provides the basis for COMOPTEVFOR input to Air Force Operational Test and Evaluation Center (AFOTEC)/Army Evaluation Command /Marine Corps Operational Test and Evaluation Activity (MCOTEA) test planning documentation.

4-7.3 Nontraditional Acquisition Programs

A TIEF may also be used to support planning and input for nontraditional assessments of Navy programs (i.e., JCTDs) where a full IEF is not required.

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CHAPTER 5 - THE TEST AND EVALUATION MASTER PLAN

(Rev 7, July 2016)

5-1 INTRODUCTION

The TEMP is the single most important T&E document associated with an acquisition program; the controlling T&E management document. By regulation, it must be approved prior to commencement of OT&E. The TEMP is directive in nature, and defines and integrates test objectives, critical issues, system characteristics, test responsibilities, resource requirements, and test schedules. A four-part TEMP format was disseminated via the Defense Acquisition Guidebook in 2009. This four-part TEMP format replaces the former five-part TEMP format. The purpose of this format revision was to strengthen the practice of IT by compelling the DT and OT communities to collaborate on a single section addressing test execution. This reinforced DoD and Navy policy on IT as promulgated in DoDI 5000.02 and SECNAVINST 5000.2E. Use of the legacy five-part TEMP format should only be by exception. If the Program Manager insists on using the five-part TEMP format, the responsible OTD will inform the Commander/Deputy via the division director or squadron commanding officer as soon as possible for resolution at the appropriate level.

For programs on the Office of the Secretary of Defense Oversight List, the TEMP must be approved by the Deputy Assistant Secretary of Defense (Developmental Test and Evaluation) and the DOT&E. For nonoversight programs, final approval of Department of the Navy TEMPs rests with Assistant Secretary of the Navy (Research, Development, and Acquisition (ASN(RDA)) as the Service/Component Acquisition Executive. For Navy TEMPs, the Navy T&E Executive (N84) approves on behalf of the CNO. (The only exception is the ACAT IVT TEMPs, which are approved by the PEO/DA and COMOPTEVFOR).

The IEF (described in Chapter 4) provides the basis for the OPTEVFOR submission to the TEMP. By completing the framework development process, the OPTEVFOR test design team is prepared to provide a comprehensive, detailed description of the minimum, adequate testing needed to determine the operational effectiveness and suitability of the SUT.

5-2 PURPOSE OF THE TEMP

The TEMP combines the developing agency's DT&E plans and COMOPTEVFOR's OT&E plans into one integrated master plan. Because the PEO/DA and COMOPTEVFOR have independent authority, within their respective areas, to determine program test periods and test resources, it is imperative that these independent efforts be integrated into a single program structure. In short, the TEMP is a formal commitment among all stakeholders for the test approach for the life of the program.

5-2.1 Primary TEMP Purposes

- Per SECNAVINST 5000.2E, OPTEVFOR develops the COIs for each program and publishes them in Part III of the TEMP.
- Provides CNO (N84) concurrence (ACAT I through III TEMPs) on the following:
- The thresholds and objectives as stated in the TEMP Part I are consistent with CNO approved requirements.
- The scope of testing makes appropriate use of the Research, Development, Test, and Evaluation (RDT&E) funding, which CNO must provide.
- The planned commitment of Fleet units for testing is consistent with CNO directed schedules and priorities.
- Any differences between the DA and COMOPTEVFOR on the scope, thresholds, or resources for testing have been satisfactorily resolved.

5-2.2 Other TEMP Purposes

- It provides the MDA and program sponsor with a clear understanding of what information will be available to support various decision forums through the course of the program.
- It enables the DA to project T&E costs that must be funded.
- It enables Fleet, range, simulator, and target schedulers to plan, well in advance, for the required services. Specifics, particularly requirements for new or modified facilities, should be identified in the TEMP.

5-3 TEMP PREPARATION

5-3.1.1

A TEMP is prepared jointly by the DA and COMOPTEVFOR, with the involvement of the OPNAV program sponsor and the N842 T&E coordinator in early draft reviews. OPTEVFOR contributes to all parts of the TEMP (in working sessions, through comment letters, etc.) and provides the OT&E portions throughout the document. The parts specifically provided by OPTEVFOR are drafted from the approved IEF (see paragraph 4-4). The OTD serves as the OPTEVFOR action officer for the development or revision of a TEMP, keeping the OTC (if assigned), section head, division director, and deputy director informed as required. During the TEMP review process, the OTD should ensure the minimum acceptable operational performance requirements (older programs) or MOE/MOS (newer programs) from the approved ORD/ICD/CDD/CPD are incorporated. Formal review of the TEMP for all ACAT levels is initiated by transmission of the DA's proposed draft to OPTEVFOR.

5-3.1.2

The contents of the TEMP and the relationship of key portions to the successful completion of the overall OT&E program cannot be overstated. An approved TEMP, or an approved TEMP revision, constitutes direction to conduct the specified T&E program, including the sponsor's committed support, and constitutes approval of the COIs. The basic format is described in paragraph 5-4 and the Defense Acquisition

Guidebook (DAG). Each OTD and OTC must be familiar with this chapter and the pertinent portions of SECNAVINST 5000.2E. The DAG provides substantial discretion with respect to the level of detail required in the TEMP itself. In practice, the level of detail is highly dependent on the preferences of the approval authority. Some approving officials will require that all information be explicitly presented in the document, while others will prefer a more succinct document with references to other documents, such as published OT&E reports and a signed IEF. Current guidance is contained in an annotated version of the DAG promulgated by the DOT&E (see the OT&E reference library.) The action officers for the approval authorities should be consulted early in the document development process to determine preferences.

5-4 TEMP ORGANIZATION

The DAG provides the recommended four-part TEMP format that is the standard for OPTEVFOR. Table 5-1 summarizes each part of the TEMP. Specific review criteria are discussed later in this chapter.

Table 5-1. Basic TEMP Format

Section	Description
Title Page	Program title, name, and submittal, concurrence, and approval signatures.
Part I - System Introduction	Contains mission description, system description, system TA, program background, previous testing, key capabilities (KPPs, Key System Attributes (KSA), MOEs, MOSs, Critical Technical Parameters (CTP)), key interfaces, special test/certification requirements, and systems engineering requirements. Should align to SUT/SoS descriptions, as well as appendix B of the IEF.
Part II - Test Program Management and Schedule	Contains T&E management and organizational construct, common database requirements, deficiency reporting, TEMP updates, and IT program schedule.
Part III – T&E Strategy	Contains overall T&E strategy, top-level evaluation framework, developmental evaluation approach, LFT&E approach, certification for IOT&E, operational evaluation approach, other certifications, reliability growth, and future T&E. OT input can be drawn from sections 2 and 3 of the IEF.
Part IV - T&E Resource Summary	Contains test articles; test sites and instrumentation; test support equipment; threat representation and simulators; test targets and expendables; operational force test support; models, simulations, and test beds; joint mission environment, special requirements; T&E funding requirements; federal, state, and local requirements; and manpower and training. * OT input should be drawn from Section 4 of the IEF.
Annex A – Bibliography	Cite all documents referred to in the TEMP, and all reports documenting Developmental Test and Evaluation (DT&E) and OT&E.
Annex B - Acronyms & Abbreviations	List and define all acronyms and abbreviations used in the TEMP. Ensure acronyms are defined at their first usage.
Annex C – Point of Contact (POC)	Complete list of POCs.

* May use foldouts if desired/required.
** COMOPTEVFOR policy is to avoid using appendices, if possible, in Navy TEMPs; however, for programs with complex and extensive histories, it may be useful to issue an annex for OT&E to date.

5-5 TEMP DEVELOPMENT PROCESS

In addition to providing detailed inputs for all elements of OT&E, the OPTEVFOR staff reviews the entire TEMP since the Commander's signature signifies concurrence on the

integrated master plan for T&E. Specific considerations with respect to each section of the document are:

5-5.1 Part I, System Introduction

5-5.1.1 Mission Description

The mission need for the system is clearly stated to include an operational view of the system's intended operational environment, and program documents (Mission Need Statement (MNS), ORD/ICD/CDD/CPD, etc.) are referenced.

5-5.1.2 System Description

The system configuration, to include all system key functions, is briefly described. All parts of the system are named and listed so there is no uncertainty as to what comprises the SUT. The Mission Assurance Category (MAC) is listed, and the Confidentiality Level (CL) is identified. Refer to DoD 8500 series for further details. Relationship to the overall SoS is described with sufficient clarity. The system description should encompass the SUT and the SoS, as described in section 1 of the IEF.

5-5.1.3 System Threat Assessment

The current ONI Capstone Threat Assessment (TA) or other approved threat document is referenced, and the threat environment for the system is briefly summarized. The threat statement should include any restrictions on how the system will meet and/or counter the threat, as provided for in the ONI Capstone TA. Note that for major systems with extended periods of development, it is highly probable that the system's requirements documents call out earlier TA documentation. In this case, it is appropriate to acknowledge the requirements to which the system is being built, as well as the current TA.

5-5.1.4 Key Capabilities

Review the identified KPPs and KSAs, and their respective threshold and objective values. Review MOEs and MOSs for the system. (For older programs, this may still be referred to as minimum acceptable operational performance requirements.) Ensure that the ORD/ICD/CDD/CPD is referenced, and that critical measures are accurately summarized. Based on the development of the traceability matrix in the IEF, it should be evident whether the requirements documentation provides sufficient detail for a successful evaluation of operational effectiveness and suitability. If not, propose incorporation of critical OTA Created measures (as appropriate) from the IEF via the TEMP comment letter. Ensure threshold values provided by CNO make sense operationally (e.g., interoperable with TEMP-specified systems, better than the current system, etc.). Where possible, ensure that all effectiveness and suitability parameters in this paragraph are testable, and have been assigned threshold values.

5-5.1.5 Key Interfaces

All system key interfaces with existing or planned systems are identified. Integration and interoperability requirements with other Services, DoD components, other government agencies, or allies are addressed.

5-5.1.6 Special Test or Certification Requirements

Unique system characteristics that may require special test and analysis (security testing,Cybersecurity Certification and Accreditation (C&A), resistance to countermeasures; development of new threat simulation, simulators, or targets) are adequately described.

5-5.1.7 Systems Engineering Requirements

CTPs are used to measure critical system characteristics, that when achieved, allow the attainment of a desired operational performance capability. CTPs are measures derived from desired user capabilities, and are normally used in DT&E. They are typically measures identified in the IEF as “DT only.” Ensure that any critical DT Only measures are included among the CTPs or are otherwise documented for collection in DT.

5-5.2 Part II, Test Program Management and Schedule

5-5.2.1 T&E Management

Ensure responsibilities of participating organizations are clearly and properly defined. IT should be the norm. If combined DT and OT are appropriate, ensure that they are properly addressed, including the requirement for a MOA.

5-5.2.1.1

Identify and discuss any operational issues and survivability (vulnerability and lethality LFT&E) requirements that will not be addressed before proceeding beyond LRIP.

5-5.2.2 Common T&E Database Requirements

Ensure the requirements for and methods of collecting, validating, and sharing data among the contractor, DT, OT, and oversight organizations, as well as supporting activities that contribute or use test data (e.g., Cybersecurity C&A, interoperability certification, etc.) are clearly identified. All data should be shared as soon as available. The basic principle is shared data, independent analysis and evaluation. Test data pedigree and responsibilities for maintaining test data should be identified. Without rigorous configuration management, IT data may not be useable in the final OT analysis.

5-5.2.3 Deficiency Reporting

The processes for documenting and tracking deficiencies identified during system development and testing should be described to include how test information is accessed and shared across the program. The processes should address problems or deficiencies identified during CT and government test activities. The processes should also include issues that have not been formally documented as a deficiency (e.g., watch

items). It may be appropriate to address the Blue and Gold sheet process in this section, particularly in a multiservice program.

5-5.2.4 TEMP Updates

The guidelines for keeping TEMP information current between updates should be provided. For a Joint or multiservice TEMP, references that will be followed or exceptions as necessary should be identified.

5-5.2.5 IT Program Schedule

OPTEVFOR inputs the OT&E-related portions of the Integrated Schedule, which should align to the OT phases and schedule discussed in section 3 of the IEF. Ensure the schedule includes:

- A graphic presentation of program milestones, availability of test articles, DT and OT periods, and production schedules. LRIP quantities required for OT&E must be identified for DOT&E approval prior to MS-B for oversight programs.
- Dates that coincide with the Acquisition Program Baseline (APB) document. The APB is a DoD-component document prepared and submitted to the MDA in support of MS-A, -B, -C, and -D reviews. It concisely highlights the status of a program and its readiness to proceed into the next phase of the acquisition cycle.
- A phase of OT&E to support each MS decision beginning with MS-B (OT-A for EOAs, and OT-B1 for OAs).
- At least 30 days between completion of technical evaluation completion and commencement of IOT&E.
- Past VCD phases. A VCD is tied to the phase of testing to which it applies (i.e., a VCD for OT-B1 would be “OT-B1A (VCD)”).
- At least 90 days (plus any additional time required by other activities to prepare for the decision forum) between completion of a phase of OT and the MS decision it supports.
- OT-C and OT-D, even if dates have to be estimated or “Dates TBD” is noted on the schedule.
- Scheduling of system Initial Operational Capability (IOC) and its definition included in a footnote.
- Event dates, such as program reviews with the MDA, MS decision points, test article availability, software version releases, LRIP deliveries, FRP deliveries, IOC, Full Operational Capability, and statutorily required reports. Ensure the DA provides the date (fiscal quarter) when the decision to proceed beyond LRIP is planned.
- A single schedule for multiservice or Joint TEMPs showing all DoD component system event dates.
- Appropriate RDT&E and procurement funding that agrees with source documents. Check that the funding is properly displayed by Fiscal Year (FY) and funding category.
- Planned cumulative funding expenditures presented by appropriation.

- Financial data consistent with the APB document.

5-5.3 Part III, T&E Strategy

5-5.3.1 T&E Strategy

This section should summarize an effective and efficient approach to the test program that has been developed via OTD involvement in the T&E WIPT process. OPTEVFOR provides an IEF to describe the full scope of and rationale for a minimum, adequate test to determine operational effectiveness and operational suitability. Although the DT and OT objectives are presented in separate sections, this paragraph of the TEMP must address how test objectives will be integrated to support the acquisition strategy. The strategy should address the conditions for integrating DT and OT. DoD policy stipulates that evaluations should include a comparison with current mission capabilities using existing data, so that measurable improvements can be determined. If such evaluation is considered to be infeasible or costly relative to the benefits gained, the PM must propose an alternative evaluation strategy. If a comparison is to be conducted, this paragraph should describe the strategy for accomplishing this comparison, and for ensuring data are retained and managed for future comparison with results of evolutionary increments or future replacement capabilities. The program's T&E strategy should also briefly describe the relative emphasis on methodologies (e.g., M&S, Measurement Facility (MF), SIL, Hardware-In-the-Loop Test (HILT), Installed System Test Facility (ISTF), and open-air range). This section should provide a description of the anticipated maturity of the program and the associated scope of the assessment/evaluation to be conducted at each point. The program plan is used to predict what will be available for each planned test period. This formalizes the program's commitment and enables the program to be held accountable for delivering a system that supports the required assessment. If for any reason progress is not as planned, there are two alternatives: a) de-scope the test or b) postpone the test. Part of an OA and the approval to start the assessment is to review the program's maturity against its planned maturity. Although modifications to the planned scope of test are frequent, the process of getting approval to proceed is informative to decision makers and should be considered as carefully as the evaluation itself.

5-5.3.2 Evaluation Framework

This paragraph should describe the overall evaluation approach, addressing program-unique COIs[1] and CTPs.

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[1] The COIs are linked to CNO requirements established in the ORD, ICD, CDD, or CPD. As discussed in Chapter 4, OPTEVFOR uses the U.S. Navy ROC/POE as the general basis for effectiveness COI selection. Historically, COIs were developed on a case-by-case basis with wide variations in specificity. There are legacy programs that still have unique effectiveness COIs. COMOPTEVFOR policy is to replace these legacy COIs with standard mission COIs at the earliest opportunity without causing

5-5.3.2.1 Top-Level Evaluation Framework

Develop a Top-Level Evaluation Framework matrix that shows the correlation between the KPPs/KSAs, CTPs, key test measures (i.e., MOEs and MOSs), planned test methods, and key test resources. The matrix should describe the relationships between the types of testing conducted to evaluate the Joint Capabilities Integrations Development System (JCIDS) identified KPPs/KSAs and the program's CTPs. Equivalent Service-specific formats that identify the same relationships and information may also be used. The evaluation framework matrix should mature/change during TEMP updates as the system matures. In addition, it may be appropriate to include demonstrated values for measures as the acquisition program advances from MS to MS. The content of the evaluation matrix should include KPPs, KSAs, and the top-level T&E issues and measures for evaluation. Typically, the top-level T&E issues would include COIs, CTPs, and key MOEs/MOSs (these correlate with the critical measures from the attribute matrix of the IEF). SoS and technical review issues should be included, either in the COI column or inserted as a new column.

5-5.3.2.2 Reliability Growth

The development of a reliability growth program is a significant technical undertaking. It is outside the scope of traditional OT. As with live fire, it is unlikely an OTD would have the requisite background to analyze the strengths and weakness of a reliability growth program. The OTD should consult with 01B and 01C to access appropriate reliability engineering expertise. From a practical standpoint, the OTD should ensure that the PM-established reliability growth program has benchmarks that can be assessed through the course of OT. Reliability growth curves and failure modes are required at Milestone B per DoD 5000.02(series).

5-5.3.2.3 Design of Experiments (DOE)

A paragraph explaining the (DOE) for the planned testing should be added to the TEMP, usually as paragraph 3.2.2 after the Top Level Evaluation Framework Matrix. In addition to the words that explain how DOE was used to facilitate test design, a table showing the factors addressed through test should explain how conditions are controlled or recorded to understand their effect on system performance. An example paragraph and table are provided below:

DOE will be used to develop test plans for the developmental, integrated, and operational testing of the SUT. The T&E WIPT will identify the following components of the experimental design: (1) goals, (2) metrics, (3) factors and levels that impact the outcome of the test, (4) a strategic method for varying those factors and levels across all tests, and (5) appropriate statistical power and confidence levels for important responses for which they make sense. The T&E WIPT will use a sequential approach

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unnecessary administrative burden. As shown in Chapter 4, most legacy COIs are more appropriately captured as either critical tasks or the associated critical measures.

in test planning. The test plan outlined in this TEMP is adequate to support the OTA's evaluation plan. The evaluation plan is intended to provide a transparent, repeatable, and defensible approach to evaluation. Table 5-2 provides an outline of the overall DOE strategy.

Table 5-2. Overview of DOE Strategy

Test Phase		*DT* IT-2B FQT	*MS* OT-3C IOT&E	*IT* OT-2B OA	*OT* OT-3C IOT&E
Critical Responses		*Frequency* *Classification* *Detection* *MTRC* *MTRW* *MTBOMF(HW)* *MTBOMF(SW)* *AO*	*Frequency* *Classification* *Detection* *MTRC* *MTRW* *MTBOMF(HW)* *MTBOMF(SW)* *EMI Immunity* *FRR* *AO*	*Frequency* *Classification* *Detection* *MTRC* *MTRW* *MTBOMF(HW)* *MTBOMF(SW)* *AO*	*Frequency* *Classification* *Detection* *MTRC* *MTRW* *EMI Immunity* *FRR* *AO*
Factors	Factor Levels	Level of Factor Control (SV, HC, R)			
Altitude	Continuous 2 Levels (0-5,000 ft, 5,000-10,000 ft)	CEP HC—0-5,000 ft	CEP HC—0-5,000 ft	CEP, PK SV	CEP SV
Jamming	Categorical 2 Levels (On, Off)	N/A	Detection Range HC—ON	Detection Range SV	Detection Range SV
Light	Categorical (night, day)	N/A	N/A	Time to Locate R	Time to Locate SV
Emitter Type	Categorical (Type 1, Type 2 , Type 3, Type 4, Type 5, Type 6, None)	PD PCC SV	PD PCC SV	PD PCC SV	PD PCC SV
Pulse Density	Continuous (Light (1 MMPS), Heavy (2 MPPS), Overload(>2 MPPS)	N/A	Density SV	N/A	N/A
Clutter	Categorical (Low, High)	R	R	R	R

5-5.3.2.3.1 DOE Appendix

The OT approach to DOE captured in the IEF must be duplicated as an appendix in the TEMP. Presentation of the DOE material should be consistent with the TEMP formatting, but no further changes to the IEF contents are necessary.

5-5.3.3 Developmental Evaluation Approach

Although the drafting of this paragraph is not the responsibility of the OTD, the OTD must be familiar with the DT&E approach to leverage test resources and data for IT when possible. This paragraph should describe the top-level approach to evaluate the system developmental capabilities and limitations expected at acquisition MSs. It should include the description and rationale of top-level CTPs. CTPs are measurable

critical system characteristics that, if not achieved, preclude the fulfillment of desired operational performance capabilities. While not user requirements, CTPs are technical measures derived from desired user capabilities. Testers use CTPs as reliable indicators that the system will (or will not likely) achieve an operational capability. As noted above, the CTPs generally comprise the majority of the measures identified as "DT only" in the IEF. To the greatest extent feasible, the DT approach should evaluate, in a mission context, to predict operational effectiveness and suitability. The DT strategy should address use of M&S and DT limitations. This section should also include a summary of DT objectives for each phase of DT.

5-5.3.4 LFT&E

As discussed in appendix C, the Department of the Navy's interpretation of the law places responsibility for LFT&E with the PM and DT organizations. For those programs where a requirement to conduct LFT&E has been established, this paragraph of the TEMP will state the key live-fire test objectives for realistic survivability or lethality testing of the system. This section should include a matrix that identifies all tests within the LFT&E strategy over the entire acquisition process. Appropriate SMEs should review the LFT&E section and ensure:

- Planned testing supports the operational aspects of live-fire testing of survivability, lethality, range, size/weight, etc.
- Continuous LFT&E from component-level testing and analysis during the concept demonstration and validation phase to full-up testing prior to major production decisions.
- Planned targets, threat systems or surrogates, and models and simulators are threat-representative and based on the current TA.
- Sufficient assets are provided to address IA, system survivability, and lethality.

5-5.3.5 Certification for IOT&E

This paragraph should identify the requirements for how and when the system will be certified safe and ready for IOT&E. It should identify who is responsible for certification and which decision reviews will be supported using the lead Service's certification of safety and system materiel readiness process. Additionally, the entry criteria for IOT&E, and how the DT&E program will address those criteria, should be identified. A list of the DT&E information (i.e., reports, briefings, or summaries) that provides predictive analyses of expected system performance against specific COIs, KPPs, and KSAs should be provided.

5-5.3.6 Operational Evaluation Approach

OPTEVFOR is solely responsible for the development of this paragraph. The IEF, developed per chapter 4 of this manual, will provide the basis for development of the OT&E portion of the TEMP, including COIs. This paragraph discusses how OT&E is structured to provide operationally oriented evaluations or assessments to support each major MS decision. An outline showing the approach to conduct the dedicated IOT&E and resolution of the COIs should be presented. The basic premise of OT is operational

people, operational equipment, and a realistic operational environment. Any deviations from this standard must be assessed and a judgment made as to whether the nature of the difference compromises the evaluation. If not, then the data may be considered as qualified for use in OT&E.

5-5.3.6.1

The OT approach should also address how the OT&E examines, or has examined, the system in a realistic operating environment, including threat-representative opposing forces and targets, and the expected range of the natural environment. The periods during IT that may be useful for OAs and evaluations should be identified in this section of the TEMP. The OTD should ensure that a new Part III Operational Evaluation Approach is issued when the OT&E program changes. Any changes or alterations made to the OT&E section of Part III require approval by COMOPTEVFOR. If the OT&E outline must exceed 10 pages because of a complex or extensive OT&E history, an annex may be prepared. The key paragraphs of the Part III OT&E approach and its contents are:

5-5.3.6.2 OT Objectives

State the key MOEs/MOSs (the critical measures, and those specified as response variables in the statistical design section of the IEF) that support evaluation of each COI. Describe the scope of the OT by identifying the test mission vignettes and the resources that will be used to conduct the test. Summarize the OT events, key threat simulators, and/or simulation(s) and targets to be employed, and the type of representative personnel who will operate and maintain the system. Identify planned sources of information (e.g., DT, of related systems, M&S) that may be used to supplement OT&E. Quantify the testing sufficiently (e.g., number of test hours, test articles, test events, test firings) to allow a valid cost estimate to be created. This input is drawn from the resource requirement tables in section 4 of the IEF.

5-5.3.6.3 OT M&S

This paragraph should describe the key models and simulations, and their intended use. Include the OT objectives to be addressed using M&S. Identify data needed and the planned accreditation effort. Identify how the OT scenarios will be supplemented with M&S and which organizations will perform the M&S verification, validation, and accreditation support, as stated in the M&S paragraphs of the IEF (section 3). Ensure that there is an explicit statement that all models and simulations used to support OT&E are accredited by COMOPTEVFOR or the lead OTA in the event of a multiservice OT&E. Identify M&S resource requirements for the support of OT in Part IV.

5-5.3.6.4 OT Limitations

Test limitations are those factors that will preclude a full and completely realistic OT. Use the limitations identified in section 3 of the IEF as the basis for OT input to this part of the TEMP (updated as required). OT limitations may include threat realism, resource availability, limited operational (military; climatic; Chemical, Biological, Nuclear, and Radiological (CBNR), etc.) environments, limited support environment, maturity of

tested systems or subsystems, or safety that may impact the resolution of affected COIs. COMOPTEVFOR has defined three general levels of OT limitations:

- **Severe Limitations.** Limitation(s) that preclude COI resolution and adversely impact the ability to form conclusions regarding effectiveness and suitability.
- **Major Limitations.** Limitation(s) that may affect COI resolution but should not impact the ability to form conclusions regarding effectiveness and suitability.
- **Minor Limitations.** Limitation(s) that have minimal impact on COI resolution and do not impact the ability to form conclusions regarding effectiveness and suitability.

5-5.3.6.4.1

For the OT strategy, discuss OT limitations. Some specific items that must be included are:

- Measures taken to mitigate limitations
- Impact of the test limitation on the resolution of COIs
- Effect of the test limitation on the ability to draw conclusions
- Any resources that are not available or have been deleted by CNO direction
- How or in what way a target or simulator does not fully represent the threat
- Requirement for M&S support when it is known or projected that the test requirements cannot be met
- If any system contractor involvement or support is required, the nature of that support, and steps taken to ensure the impartiality of the contractor providing the support per Title 10 USC Section 2399.

5-5.3.6.4.2

Indicate the COIs affected in parentheses after each limitation.

5-5.3.6.4.3

Do not use the previously common, generic, and almost meaningless, limitation that the SUT will not be tested in all environmental conditions. If environmental limitations are significant, be specific as to how. Use the Fleet Numerical Meterology and Oceanographic Center (FNMOC) web site (https://portal.fnmoc.navy.mil/climoportal/index.htm) to focus on particular meteorological parameters of interest and their specific differences between the anticipated test range and the anticipated operational area.

5-5.3.6.5 Other Certifications

5-5.3.6.6

The OTD should identify any accreditations or certifications that fall under COMOPTEVFOR responsibility for completion of OT&E. Additionally, the OTD should review this paragraph to ensure familiarity with other key testing prerequisites and entrance criteria, such as required certifications (e.g., Risk Management Framework

(RMF) Authorization to Operate (ATO), Weapon Systems Explosive Safety Review Board (WSERB), flight clearances, etc.).

5-5.3.6.7 Previous Testing

This section should include the previous OT&E to date, to include the results of previous OT as they affect the test strategy. The OT&E portion of the paragraph should include the following:

- **Test Phases.** The test phase and dates conducted.
- **Configuration Description.** A brief description of the SUT and where it was installed or tested.

This includes where the tests were conducted, who operated and maintained the equipment, COMOPTEVFOR's conclusions regarding operational effectiveness and operational suitability for the SUT and SoS (if available), COMOPTEVFOR's major recommendations regarding the system (e.g., continued program development, Fleet introduction, etc.), the COIs intended for resolution, and how they were resolved. It is appropriate to incorporate this information by reference to published reports when permitted.

5-5.3.7 Future T&E

The approved IEF should provide the basis for this section. It should include a summary of all remaining significant OT&E that has not been addressed in this part of the TEMP (Part III) and extending through the system life cycle. Significant T&E includes those events requiring procurement of test assets or other unique test resources that need to be captured in Part IV, Resource section. Significant T&E can also include any deferred testing or planned product improvements. To the extent that it is known, all future phases of OT&E will include the following information for each phase of testing:

5-5.3.7.1 Future Test Phases

The test phase and dates to be conducted.

5-5.3.7.1.1 Configuration Description

Identify the system to be tested during each phase, and describe any differences between the tested system and the system that will be fielded, including where applicable, software maturity performance and criticality to mission performance, and the extent of integration with other systems with which it must be interoperable or compatible. Characterize the system (e.g., prototype, EDM, production representative, or production configuration). Clearly state that if modifications to the SUT configuration are made (i.e., software updates) during an OT phase, regression testing may be required to ensure previously collected data are not invalid.

5-5.3.7.1.2 OT&E Objective

State the purpose of the phase of testing and include the COIs to be addressed by each phase and any MS decision reviews to be supported. The following should be considered when preparing the OT&E Objective paragraph:

5-5.3.7.1.2.1

When preparing the purpose statement, give careful thought to the phase of testing and the configuration of the equipment or system being tested. Document the program's plan for the maturity and configuration of the SUT at the projected test period. While detailed configuration information will likely not be available, the description should provide all stakeholders with a clear understanding of what will, and equally important, what will not, be available for assessment. Ensure that tactics development is included if an OTG is required.

5-5.3.7.1.2.2

In those cases prior to MS-B where an EOA (OT-A) is being conducted using experimental models, prototypes, modeling, or simulation, the purpose will be to assess the risks of the system. (Note that this assessment will be accomplished through observations or monitoring of operation of the experimental model, prototype, model, simulation, or DT.)

5-5.3.7.1.2.3

In early phases of OT&E after MS-B, where the equipment configuration is more closely representative of the final configuration or where testing is being conducted on a production-representative system prior to IOT&E, the purpose will still be to assess the risks of the system. However, the OTD should have a much clearer picture, given the system metrics, of how the actual system will perform.

5-5.3.7.1.2.4

For IOT&E, the purpose will always be to determine the operational effectiveness and operational suitability of the system.

5-5.3.7.1.2.5

For FOT&E (i.e., OT-D), the objective will be to evaluate those COIs that should have been evaluated in IOT&E, but require additional testing because they were either deferred or not resolved. For FOT&E (i.e., OT-E), the objective will be to verify the operational effectiveness and operational suitability of the production version of the system. In addition to evaluating deferred capability, additional objectives of any FOT&E phase may be the verification of corrected deficiencies or the evaluation of new capabilities introduced after the last formal test phase. Note that when new capabilities (i.e., software upgrades) are planned to be introduced post-IOT&E, a careful assessment of the required scope of regression testing (verifying previously evaluated capability is not adversely affected by the newly introduced capability) needs to be made and should be documented in the TEMP. Depending on the scope of the modification, this may simply entail additional test events to demonstrate (spot check) previous measures, or a more significant test design.

5-5.3.7.1.2.6

When a new or updated version of system software is proposed for Fleet release, the OT&E Objective paragraph will state that the testing will be accomplished on the host system with the specific software version installed (e.g., the purpose of testing will be to "determine the operational effectiveness and operational suitability of the New Weapons System (NWS) with NWS-4 software installed").

5-5.3.7.1.3 Future OT&E Events/Scope of Testing/Scenarios

The information for this section should be derived directly from the approved IEF. If the approved IEF does not address this phase of testing due to previously unforeseen changes in program structure, the OTD should immediately commence work on a revision or change to the IEF that identifies the critical mission tasks and the associated measures necessary to assess operational effectiveness and suitability.

5-5.3.7.1.4 Future OT&E Limitations

This paragraph will be included for each future OT&E phase and must identify those factors (e.g., threat realism, test target limitations, environmental constraints, etc.) that will preclude a fully and completely realistic OT. The limitations in OT&E phases must be well thought out and placed in Part III. When addressing test limitations, include:

5-5.3.7.1.4.1

Each limitation's impact on the assessment (EOAs/OAs)/resolution (IOT&E/FOT&E) of COIs. (Indicate in parentheses after each test limitation the COI(s) affected, except for minor limitations.)

5-5.3.7.1.4.2

Each limitation's affect on the ability to draw conclusions regarding operational effectiveness and operational suitability (IOT&E/FOT&E), or recommending continued program development (EOA/OA).

5-5.3.7.1.4.3

Any resource requirement not available or that have been removed from the TEMP by CNO direction.

5-5.3.7.1.4.4

If a target or simulator is used that is not completely threat representative, how or in what way does it not fully represent the threat. A supporting matrix of threat-to-simulator characteristics and capabilities could be included to identify the differences clearly.

5-5.4 Part IV, Resource Summary

OPTEVFOR provides input for the OT&E-related portions of the T&E resource requirements as identified in the IEF (see chapter 4). The Commander's policy is to ensure that the resources requested support the execution of the minimum, adequate test necessary to evaluate the SUT. (The assets requested must be defendable.) Testing will be planned and conducted to take full advantage of existing DoD investment

in ranges, facilities, and other resources wherever practical. Include all required OT&E resources (e.g., test sites and instrumentation, support equipment, test targets and expendables, operational force test support, manpower/personnel and training, threat simulators or surrogates against which the system will be tested, and other systems and Joint interfaces needed to support assessment of Joint interoperability) in the initial TEMP. OT&E resource funding in the TEMP must be complete and accurately broken out from other T&E. OT&E funding requirements must be reviewed and updated during all TEMP revisions. Regardless of any revisions, the OPTEVFOR test design team should review the test resources section whenever there is a significant change in the program plan, and at a minimum, annually. To be an effective partner in IT and to avoid fear of execution shortfalls, it is equally important that the funding for DT is clearly identified. Simply including DT under a general engineering development line is not satisfactory. Without clear insight, it is not possible to determine if the DT community is resourced to provide the data on which the OT community is reliant. Resources are broken down into the following categories:

5-5.4.1 Test Articles

Identify the actual number of and timing requirements for all test articles, including key support equipment and technical information required for testing in each phase of DT&E, LFT&E, and OT&E. If key subsystems (components, assemblies, subassemblies, or software modules) are to be tested individually, before being tested in the final system configuration, identify each subsystem in the TEMP and the quantity required. Specifically identify when prototype, engineering development, or production models will be used.

5-5.4.2 Test Sites and Instrumentation

Identify the specific test ranges/facilities and schedule to be used for each type of testing. Compare the requirements for test ranges/facilities dictated by the scope and content of planned testing with existing and programmed test range/facility capability. Identify instrumentation that must be acquired specifically to conduct the planned test program.

5-5.4.3 Test Support Equipment

Identify test support equipment and schedule specifically required to conduct the test program. Anticipate all test locations that will require some form of test support equipment. This may include test measurement and diagnostic equipment, calibration equipment, frequency monitoring devices, software test drivers, emulators, or other test support devices that are not included under the instrumentation requirements.

5-5.4.4 Threat Representation

Identify the type, number, availability, fidelity requirements, and schedule for all representations of the threat (to include threat targets) to be used in testing. Include the quantities and types of units and systems required for each of the test phases. Appropriate threat command and control elements may be required and used in live and virtual environments. The scope of the T&E event will determine final requirements for threat and threat-surrogate systems.

5-5.4.5 Test Targets and Expendables

Specify the type, number, availability, and schedule for all test targets and expendables (e.g., targets, weapons, flares, chaff, sonobuoys, smoke generators, countermeasures) required for each phase of testing. Identify known shortfalls and associated evaluation risks. Include threat targets for LFT&E lethality testing and threat munitions for vulnerability testing.

5-5.4.6 Operational Force Test Support

For each T&E phase, specify the type and timing of aircraft flying hours, ship steaming days, and on-orbit satellite contacts/coverage, and other operational force support required. Include supported/supporting systems that the SUT must leverage.

5-5.4.7 Simulations, Models, and Test Beds

Any M&S requirements including labs, applications, and prefaulted modules for M-DEMOs.

5-5.4.8 Manpower/Personnel Training

Specific operator or maintenance training required for Fleet personnel who will operate the SUT and act as OT Adjunct testers.

5-5.4.9 Funding

Include required funding for all OT&E resources that have an associated cost (flight hours, travel, analytical support, test targets, M&S, etc.). Include costs associated with CS testing, as appropriate. Do not include funding required for resources that are or will be funded by resource sponsors other than the PM (such as weapons, flares, chaff, fleet sponsored assets, etc.). For DOT&E oversight programs the TEMP shall include a summary of cost estimates by fiscal year for the execution of the TEMP and all costs shall be clearly delineated in the summary.

5-5.5 Supporting Materials

Review annex A (Bibliography), annex B (Acronyms and Abbreviations), and annex C (POCs) for completeness.

5-6 ADMINISTRATIVE POLICIES

5-6.1

Policies and procedures for the development, staffing, and approval of the TEMP are found in the DAG, SECNAVINST 5000.2E, and DoDI 5000.02.

5-6.2 Multiservice or Joint TEMPs

For multiservice or Joint programs, a single, integrated TEMP is required. Component-unique content requirements, particularly evaluation criteria associated with COIs, can be addressed in a component-prepared annex to the basic TEMP. TEMPs for multiservice programs will be prepared in close coordination with other participating Services' OTAs and will be approved jointly by CNO (N84) and the representatives of the other participating Service chiefs. When the Navy is designated as executive lead

for development and T&E, TEMP preparation will be per SECNAVINST 5000.2E. The lead service will provide the baseline threat documentation. If the Navy is not the lead service, Navy-unique threat issues will be addressed in the integrated TEMP or Navy annex, using the appropriate ONI Capstone TA. See the MOT&E MOA located at Y:\OT&E_Reference_Library\MemorandumsOfAgreement.

5-6.3 Programs Covering a Collection of Systems

For a program consisting of a collection of individual systems, a Capstone TEMP (CTEMP) integrating the T&E program for the entire system may be prepared. A CTEMP addresses the T&E of a defense system comprised of a collection of stand-alone component systems that function collectively to achieve the objectives of the defense system. Individual, system-unique content requirements are to be addressed in an annex to the basic CTEMP. The requirement for a CTEMP is dependent on the degree of integration and interoperability necessary to satisfy the total system's minimum acceptable operational performance requirements (older programs) or MOE/MOS (newer programs).

5-6.3.1 TEMP Reviews

TEMPs are typically reviewed in their entirety twice: once when the DA submits a draft for O-6 level review, and again when the final version is received for the Commander's signature. Before the first review, the OTD should have provided the DA with OT&E schedule inputs for Part II, OT&E inputs for Part III, and OT&E resource requirements for Part IV. OPTEVFOR's review of the complete TEMP should address all parts, with particular focus on the OT&E portions for the draft Part III. The OTD is responsible for ensuring that 01A/B/C all have the opportunity to review and comment on the draft before the Division Director forwards the proposed OPTEVFOR response to the COS. The OPTEVFOR review and response typically includes a Comment Review Matrix (CRM), with comments categorized as administrative, substantive, or critical. A substantive comment identifies potentially unnecessary, incorrect, misleading, confusing, or inconsistent information. A critical comment is one which would cause COMOPTEVFOR to not sign the final TEMP; these must be briefed and approved by the Deputy or Commander prior to release by the COS. All Oversight TEMPs also require briefing and approval by the Deputy or Commander. Reviewers should be especially sensitive to resource and schedule issues in the final draft TEMP. Generally, there should not be any new issues raised when the smooth TEMP is routed for the Commander's signature. The only exception would be if other changes are made in the document subsequent to the O-6 review.

5-6.4 TEMP Updates

Per DODI 5000.02, the TEMP must be updated in support of the MS-B and -C, and the FRP Decision Reviews, when significant program changes occur, or when the program baseline has been breached. The DA is responsible for ensuring the TEMP is updated in support of these events or when the program has changed significantly. The OTD must work closely with the DA to ensure OPTEVFOR's input is provided in sufficient time to support the required update, ensuring that OPTEVFOR is not responsible for program delays while preparing TEMP updates. Per SECNAVINST 5000.2E, CNO

(N84) is the OPNAV single point of contact for TEMP coordination with the OSD. Within the Department of the Navy, TEMP updates fall into two categories: revision and administrative change.

- **TEMP Revision.** A revision addresses changes to evaluation criteria, scope of testing, major resource changes, and/or performance requirements. A revision may also be required if unanimous agreement is not reached to submit an update as an administrative change. A revision is signed by all TEMP signatories.

- **TEMP Administrative Change.** An administrative change reflects fact-of-life changes such as personnel, schedule, test status, history, etc. These changes are assessed as low risk for adversely impacting the scope of planned testing, MSs, or the APB. Administrative changes may be promulgated by the PM based on the concurrence of the T&E WIPT members who represent the signatories.

5-7 PREPARATION, ROUTING, AND RELEASE OF TEMP DOCUMENTS

5-7.1 TEMP Initial Input Letters (Navy)

5-7.1.1

For the initial OT&E inputs to new TEMPs, the OTD should work with the program office to provide the required inputs to meet the program office's TEMP production timeline.

5-7.1.2

The OTD works in coordination with the core team and project analyst to take the relevant material from the approved IEF and develop the smooth input letter, using the TEMP Input Letter template. After format review by the technical editor, 01AE, input letters are signed by the responsible division director.

5-7.2 TEMP Comment Letters (Navy)

The OTD prepares letters commenting on TEMP contents (use TEMP Comment Letter no Major Comment template or TEMP Comment Letter with Major Comment template) for signature within 15 working days after receipt of the draft TEMP from the DA. Timelines are summarized in table 5-3. Multiservice TEMP comment letters must be routed within 14 days—see the MOT&E MOA.

Table 5-3. TEMP Comment Letter Timelines

Days	HQ Action	VX/VMX Action
Next working day after receipt of TEMP	Draft TEMP is routed to the OTD/OTC and test design team members in 01B/C	VX/VMX – OTD is provided a copy for review
NLT 5 working days	Draft TEMP with initial CRM and proposed cover letter entered in Electronic Document Router.	VX/VMX – OTD provides copy of draft TEMP and response to COTD/CO for review
NLT 10 working days	Brief for 00/00D scheduled if required.	CO's comments provided to 50 Division Director. CO/COTD participate in 00/00D brief as

Table 5-3. TEMP Comment Letter Timelines		
Days	**HQ Action**	**VX/VMX Action**
		appropriate.
NLT 30 working days	COS releases O-6 Comment Letter (with 00/00D concurrence if required)	Not Applicable

5-7.3 TEMP Comment Letter Signature

TEMP comment letters (use TEMP Detailed Comments template) are signed by the COS. Briefings to the Commander or Deputy are required for all oversight TEMPs and any TEMPs with OPTEVFOR critical comments.

5-7.4 TEMPs for Signature

TEMPs and forwarding letters (use TEMP Forwarding Letter – Comment template or TEMP Forwarding Letter – No Comment template) should be staffed and returned to the DA/PEO/PM as soon as possible after receipt of the TEMP for signature. The Commander signs all TEMPs and TEMP forwarding letters. Briefings are normally not required unless the recommendation is for the Commander to non-concur. Warfare Division directors are expected to address the following in the "Discussion" block of the Electronic Document Routing record:

5-7.4.1 Status of Comments Previously Submitted by COMOPTEVFOR

If any critical or substantive comments were rejected by the program office, address each one, and the impact of the rejection. Provide rationale for continuing with TEMP signature, or a recommendation for other action.

5-7.4.2 Resources

Make a positive statement that you have reviewed the resources and have found them adequate.

5-7.4.3 DOT&E Position

If this is an oversight program, are there areas of disagreement? If so, explain them, and provide rationale for proceeding to TEMP signature.

5-8 TEMP APPROVAL

Once all issues have been resolved, the smooth TEMP will be signed and dated by the DA and forwarded to COMOPTEVFOR for formal concurrence. Once signed by the Commander, the TEMP will be forwarded to CNO (N84) for final staffing and approval at the appropriate level. For ACAT IVT programs, the TEMP will be effective once signed by the System Command's (SYSCOM) Commander or PEO, and COMOPTEVFOR.

5-8.1.1 TEMP Administrative Change Letters

On occasion, OPTEVFOR may need to make changes to cognizant portions of a TEMP after TEMP approval (e.g., scenario, test dates, new limitations, or significant program

changes). Use the TEMP Change Letter template to make these formal changes to the TEMP. TEMP change letters are signed by the Commander.

5-9 TEST AND EVALUATION COORDINATING GROUP (TECG) (U.S. NAVY ONLY)

5-9.1

In those rare cases where there are critical differences among the DON TEMP stakeholders that cannot be resolved by informal Flag-to-Flag or Flag-to-Senior Executive Service (SES) discussions, it may be necessary to convene a TECG. This Flag/SES forum has historically been required very infrequently. It should not be viewed as a regular forum for adjudication of TEMP differences.

TECGs will be convened by the Director, Test and Evaluation Division (CNO (N842)), via formal correspondence that outlines the purpose for convening the TECG, identifies the attendees, and provides an advance agenda for review prior to the meeting. Additional information on TECGs is in SECNAVINST 5000.2E.

5-9.2

In addition to resolving critical TEMP differences, a TECG may also be used to implement urgent required changes to TEMPs. In this case, either a page change will be issued or the formal report of the TECG will be attached to the TEMP as an annex until the next required update or review. Finally, all Navy disputes concerning ACAT IV designations and disputes concerning the need for OT&E (AAPs) that cannot be resolved among the stakeholders may be arbitrated by the TECG process.

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CHAPTER 6 - TEST PLANNING

(Rev 7, Jul 2016)

6-1 INTRODUCTION

6-1.1

The OT communities' value to the acquisition process stands in the observations and evaluations provided to the stakeholders in the form of robust, repeatable, and defendable test reports. The most valuable elements of these reports are clear and concise COI results paragraphs and Blue/Gold Deficiency sheets. The well-constructed test plan is inextricably linked to the well-written test report. A properly executed test plan provides the test team with all the data required to adequately evaluate the SUT within the SoS for any given COI. Additionally, since the MBTD process and resulting IEF forms the foundation for the test design, the IEF document is critical to and the source of the bulk of the content contained within COMOPTEVFOR test plans. The operational test plan adds the specifics not contained within the IEF or TEMP. Specifics, such as dates and location of the test, test assets and ranges, squadron number, aircraft type(s), ship name/hull number, support asset type and unit name/number, detailed scenarios, etc., all get spelled out in the test plan. Many times, the resources defined as the minimum adequate test in the IEF are not physically available or affordable for the test phase and force additional limitations to be included within a test plan. In other cases, development of the SUT will not have progressed as planned and elements may not have reached the anticipated level of maturity. With this as a back-drop, the operational test plan is the document explaining the "who, what, when, where, why, and how" for the OT. The OTD should base the test plan and expand upon the detailed work specified in the IEF and clearly point out any differences.

6-1.2

The OT plan must be coordinated with all stakeholders. Key stakeholders include DOT&E (for oversight programs), the PM, the Resource Sponsor, Fleet representatives, and analytical support activities. For multiservice tests where OPTEVFOR is the lead agency, close coordination with participating OTAs or responsible test organizations is essential. Proper coordination and early identification of issues requiring resolution to the OPTEVFOR chain of command is critical to successful preparation and approval of the test plan.

6-1.3

For an adequate OT, the OT plan must exercise the SUT within the SoS under conditions that are as close as possible to the expected natural, operational, and combat environment using operational scenarios derived from MBTD vignettes in which Forces employ realistic tactics against realistic simulations of potential adversaries and targets. Additionally, the SUT must be:

6-1.3.1

Representative (considering the stage of development and phase of test) of the intended production equipment (note: what is required to be representative for one vignette may not be adequate for another depending on what tasks are executed and what measures define their success).

6-1.3.2

Operated and usually maintained by Fleet personnel. Operation by Fleet personnel is always required for OT once a mature (production-representative) system is available. System operation by contractors or SMEs may not be appropriate for OT in any but the earliest phases, usually OT-A/OT-A1 (EOAs/OAs) when there is only a prototype or brassboard, or while depending on computer or paper drawings or simulation. The same is not true of maintenance. During early phases of OT, maintenance by Fleet personnel is usually not possible, making maintainability data unusable for COI evaluation. On occasion, the Navy's maintenance plan states a continuing role for contractor personnel in organizational-level maintenance. When testing a system with an approved plan of this kind, contractor personnel participation is permitted exactly as specified in the approved plan, and their performance is subject to review and analysis just as if they were Fleet Service personnel.

6-1.3.3

Operated or exercised in an operationally representative environment. OT seeks to provide data on SUT performance (where performance includes all the elements of operational effectiveness and operational suitability) in the operational environment and the SUT's capability to contribute to the SoS in which it is employed.

6-1.3.4

Installed (considering the stage of development) as it is expected to be installed in the Fleet.

6-1.4 OT Plan

The process for conducting test planning is found in section 6-3. An overview of the content of the OT plan follows:

6-1.4.1 Section 1 – Introduction

The introduction includes a plain-language description of the purpose of test, the SUT and SoS descriptions, guidance for test plan deviations, and a discussion of any differences between the SUT or SoS configuration during test compared to the Fleet configuration.

6-1.4.2 Section 2 – Scope of Test

The scope of test includes discussions on the selected COIs, contributions from IT and M&S, limitations to the scope of test, previously identified deficiencies that impact the scope of test, and a consolidated listing of required resources.

6-1.4.3 Section 3 – Safety

This section identifies the safety roles and responsibilities, hazards specific to the planned OT, and risk mitigation controls.

6-1.4.4 Section 4 – Project Management

Project management covers the administrative requirements for the planned OT phase, including points of contact, program security, visitor control, test reporting, and the control and release of OT data.

6-1.4.5 Appendix A – Test Execution

Appendix A is designed to be removed from the test plan and used during test to facilitate test execution. The appendix includes an overview of the schedule and a detailed schedule, including the event-by-event Detailed Method of Test (DMOT) and Data Collection Plan (DCP).

6-1.4.6 Appendix B – Test Design

Appendix B is included to provide traceability between the Test Plan and the IEF test design. The four Excel spreadsheets are outputs from the IEF Database Tool, specifically from the test plan database created from the appropriate IEF database, and should be imbedded in the Test Plan. They are the Vignette-to-Subtask-to-Conditions matrix (run matrix), the Vignette-to-Data Requirements-to-Test Method matrix (DRTM), the Measures-to-Data Requirements table, and the Conditions-to-Data Requirements table. Grayed out measures and tasks or other grayed out IEF artifacts should be removed from test plans.

6-1.4.7 Appendix C – Test Cards, Data Sheets, and Surveys

As the title indicates, this appendix includes all the test cards, data sheets, surveys, focus group and interview guides necessary to execute the OT phase. Review Best Practice 14 for survey, interview and focus group guidance.

6-1.4.8 Appendix F – Acronyms and Abbreviations

6-1.4.9 Appendix G – References

6-1.4.10 Enclosure (2) Section 1 – Data Analysis Plan

The Data Analysis Plan is organized COI-by-COI and includes the COI resolution methodology and the data analysis methodology for every critical measure.

6-1.4.11 Enclosure (2) Section 2 – Scoring Board

Scoring Board guidance is necessary to effectively conduct the scoring board, including discussions on data validity (qualifying the data for OT), run scoring (did the run meet the controlled condition requirements within allowable tolerances), and data scoring (pass/fail, hit/miss, Operational Mission Fault/Failure (OMF)/not, abort/not, etc.).

6-1.1.1 Appendix F – Acronyms and Abbreviations

6-1.1.1 Appendix G – References

6-2 TEST PLANNING AND THE T&E WIPT

6-2.1

A T&E WIPT will be used by the SYSCOM/PM as early as MS-A for ACAT I/II programs. The T&E WIPT will provide discussion of, coordination on, and resolution of test planning goals and issues. The T&E WIPT is also a forum to initiate discussions concerning fact-of-life funding or physical limitations that may reduce the resources specified for the minimum adequate test as described in the IEF. Many of these resource issues ultimately may require Flag Officer resolution. Additionally, the T&E WIPT will provide opportunities for the open dialogue necessary for properly designed and adequately tested systems in preparation for OT; and the forum necessary for review of required management-level program documentation (ICD/CDD/CPD, and TEMP).

6-2.2

Per SECNAVINST 5000.2E, the T&E WIPT will be chaired by the PM or designated representative (normally a military O-6/O-5 or civilian equivalent). The membership should include the requirements officer, CNO (N84) T&E Coordinator, OPTEVFOR representative (the OTD, including VX/VMX OTDs), program office DT representative, ASN(RDA) staff, and contractors, as applicable. Depending on the program, representation could include joint Service representatives and OSD personnel.

6-2.3

The frequency of T&E WIPT meetings will be determined by the PM. Minutes of each meeting should be distributed to all members and shared internally with all members of the OPTEVFOR test team. Any OT&E issues should be promptly briefed to the cognizant Warfare Division Director and/or Deputy Director.

6-2.4

For DOT&E oversight programs, early and frequent communication with DOT&E representatives are key to successful test program execution. Early contact with DOT&E action officers, to include agreed-upon methods for document routing, data sharing, and test oversight issue resolution, result in more successful and timely test execution. The DOT&E AO should be invited to attend all T&E WIPT meetings. It is the responsibility of the Warfare Division Directors to ensure any DOT&E test adequacy issues are resolved or any disagreements briefed to the Commander before the COT brief to DOT&E.

6-2.5

The independent evaluation of SUT operational suitability is fundamental to COMOPTEVFOR's mission. A key responsibility for the OTD during test operations is to correctly recognize OMFs as failures that preclude successful completion of a

mission, and accurately associate OMFs to the responsible system (the SUT or the SoS). To support this critical role, defining potential OMFs must be accomplished during the test planning process. For mature programs, the primary source for OMF definitions may be published Fleet definitions provided in Mission Essential Subsystem Matrices (MESM) or equivalent documents. If Fleet definitions are not available, the OTD must use requirements documents, DA documents, or the IEF to develop specific definitions for use during OT. While the OTD may seek input from many sources, including representatives from the PM, DT, CT, OPNAV, Fleet, and DOT&E, to make an informed decision, the characterization of specific failures during test is solely the responsibility of the OT team.

6-3 TEST PLANNING PROCESS

6-3.1 Responsibilities

The OTD is responsible for test planning. 01B and 01C provide support to the OTD and the test team during test planning. 01C publishes a checklist outlining the test planning process in detail, and provides a structure for both formal and informal touch points, guiding the OTD through the test planning process. The test planning process should begin immediately following the completion of the IEF, but not later than 7 months prior to the expected start of test. While test planning may occur in parallel with the final stages of IEF development, test planning cannot begin until the IEF section 2.3 is complete and the IEF database is up-to-date with the current phase of test. The overarching philosophy of the test planning process is to start with the IEF, review and update the IEF as necessary, and add enough detail to support the efficient execution of the designed test, including the collection of all required test data. OTDs shall use this test planning process to create OT plans for all phases of OT (IOT&E, FOT&E, OA, EOA, VCD) and for QRAs.

6-3.2 Touch Point A

Touch Point A is an informal, working-level meeting including the OTD, the SH/OTC/LTE, other members of the test team, 01B CTF, and the 01C Division Representative. The purpose of the touch point is to review and update (as necessary) the purpose of test, SUT and SoS descriptions, COIs, critical tasks, critical measures, and limitations to test. The touch point also serves as the hand-off between 01B and 01C competencies as they provide process support to the OTD.

6-3.2.1 Determine the Purpose of Test

The purpose of test describes, in plain English, the primary reason for OT. In general, the purpose of test for a new system should focus on the capabilities being introduced to the Fleet by the SUT. For upgrades to existing systems, the purpose of test should focus on new capabilities being introduced to the SUT.

6-3.2.2 Review References

At this stage of test planning, the review of program documentation should focus on updates and changes since the documentation was reviewed during the IEF production process.

6-3.2.3 Create a Test Plan Database

Coordinate with 01C Division Representative to create a dedicated test plan database as a child of the program's IEF database. The test team shall keep the test plan database updated as changes are made during the test planning process. Coordinate with 01B CTF to ensure the IEF database is also kept current (see Best Practice 17).

6-3.2.4 Review and Update the SUT Description

The SUT description should identify the SUT configuration for the phase of test, including major hardware and software components and subcomponents. New, enhanced, or upgraded capabilities should be described, and these capabilities should be traced to specific hardware and software components. The hardware and software component descriptions should be detailed enough to clearly define the SUT, such that risks or deficiencies identified during test can be assigned to either the SUT or the SoS. Additionally, the configuration descriptions help the test team monitor configuration changes from previous testing and how updates in the middle of test might affect the SUT. A detailed software configuration description will also help identify regression testing requirements for FOT&E phases.

6-3.2.5 Review and Update the SoS Description

The SoS description should describe the external systems the SUT will interface and interact with, and help determine whether risks or deficiencies identified during test are assigned to the SUT or SoS.

6-3.2.6 Review and Update the Mission Decomposition

Review Effectiveness and Suitability COIs and the associated critical tasks and subtasks from the IEF. The test team must have a clear understanding of the SUT mission areas, how the SUT will contribute to the accomplishment of those missions, how the critical tasks and subtasks will be observed, how they will be measured, and the linkage from critical measures, to critical tasks, to COI resolution. For Suitability COIs, the test team must understand the SUT's maintenance strategy, and how the maintenance strategy impacts Suitability COI decomposition. Update COIs, critical tasks, and critical measures as needed, keeping the IEF database updated as well.

6-3.2.7 Review DT Contributions

Review DT measures and data requirements that are necessary for evaluating the effectiveness of the SUT.

6-3.2.8 Determine regression testing requirements

The test team needs to have a plan for regression testing. Regression testing verifies previously evaluated capabilities have not been adversely affected by newly introduced capabilities. See section 6-3.14.4.

6-3.2.9 Review and Update the Limitations to Test

Review the limitations to test in the IEF. See section 6-7 for a detailed discussion of limitations to test in test planning. Update the limitations as needed.

6-3.2.10 Prepare for Touch Point A

The deliverables for Touch Point A include the Purpose of Test, the SUT and SoS Descriptions, the Mission Area Discussion, DT Contributions, and Limitations to Test. Test teams should see the Y: drive OT&E Production Library for the test plan template.

6-3.2.11 Conduct Touch Point A

Touch Point A is a working-level meeting with the OTD, SH/OTC/LTE, test team members, 01B CTF, and 01C Division Representative. A briefing is not required. In addition to a detailed review of Touch Point A portions of the test plan, the OTD will provide a status update on M&S Verification, Validation, and Accrediation (VV&A) efforts (as applicable) and discuss all previous risks and deficiencies. For any disagreements about Purpose, SUT or SoS Description, COIs, or critical tasks that can not be resolved at this touch point, the Warfare Division Deputy Director (or COTD/Assistant Chief Operational Test Director (ACOTD)) should be briefed and will act as the decision authority to proceed to the next test planning phase.

6-3.3 Touch Point B

Touch Point B is a formal, O-6-level review. The meeting has two primary objectives: 1) qualifying previously collected data for OT (only as required) and 2) approving a test schedule. For programs on DOT&E oversight, the DOT&E action officer must be invited to the Touch Point B review.

6-3.3.1 Review all previous program test data and reports

Working with the T&E WIPT, the OTD should be aware of SUT test data that could be used to satisfy OT data requirements. This data could come from previous OT, or from IT or DT. Regardless of the source, potential data for OT must be qualified for each phase of OT.

6-3.3.2 Determine which data must be qualified for OT

For previously collected data, regardless of the source, to be used in a phase of OT, it must be qualified for the specific phase of OT. To be qualified for OT, the data must have been collected in an operationally representative environment, with Fleet representative users, with the SUT stressed in an operationally representative manner (including operationally realistic threats, targets, and loads). Data meeting these criteria and satisfying conditions called for in the IEF are eligible for scoring during Touch Point B. If qualified for OT, previously collected data may be used to satisfy data requirements from the IEF, potentially reducing the scope of OT.

6-3.3.3 Identify data requirements, test events, and DOE runs satisfied by previously collected data

Based on the expected qualification of previously collected data, the test team determines which measures, vignettes, or runs within vignettes, have been satisfied, potentially reducing the scope of the planned OT phase.

6-1.1.1 Determine regression testing requirements

The test team needs to have a plan for regression testing. Regression testing verifies previously evaluated capabilities have not been adversely affected by newly introduced capabilities. See section 6-3.14.4.

6-3.3.4 Review available resources

Beginning with the TEMP and the IEF, the test team reviews the required resources and compares the requirements with available resources. Coordination outside the OPTEVFOR Division or Squadron (via the OPTEVFOR Fleet Resource Personnel, see paragraph 9-3) may be required to identify available resources that could be leveraged for test, including underway periods, Large Force Exercises, and other scheduled test events or range periods. In addition to the resources required for the SUT, consider requirements for data collection tools, instrumentation, and personnel (including travel, training, and proficiency).

6-3.3.5 Review vignettes and define test events

Determine which vignettes, runs, and demonstrations can be grouped together, conducted sequentially, or conducted concurrently. By identifying common tasks being observed or common controlled conditions required for test, test execution may be streamlined and resources optimized.

6-3.3.6 Develop the test schedule

The test schedule should cover the entire Test Phase (e.g., OT-B2, OT-C1). Test Phases are divided into Test Periods. Test Periods are usually driven by real-world schedules, allowing for the execution of a large portion of testing. Test Periods are typically underway periods, squadron detachments, Large Force Exercises, or other major geographic or calendar discriminator. Do not insert an organizational layer into the test schedule unless it is necessary. Test Periods are made up of multiple Test Events. Test Events are the foundation and building block of the test schedule. They are executable, trackable, and focused on collecting data from observed tasks and subtasks. For test designs including randomized run orders, consult with 01B CTF and 01C Division Representative to ensure sufficient operational realism is maintained while satisfying the design requirements. Once the test schedule is approved at Touch Point B, the schedule is maintained by the test team and should be continuously updated as changes occur.

6-3.3.7 Prepare for Touch Point B

The deliverables for Touch Point B are in two parts. The Previous Data Qualified for OT portion of the test plan is in section 2, while the test period description and the Test Schedule are in appendix A. Test teams should see the Y: drive OT&E Production

Library for the test plan templates. For programs on DOT&E oversight, the draft test plan is provided to the DOT&E action officer. Read-aheads should be provided to all participants no later than 2 working days prior to the scheduled Touch Point B.

6-3.3.8 Conduct Touch Point B

Touch Point B is a formal O-6 level review. The Touch Point begins with a scoring board to qualify previously collected data (if required) and includes a thorough review of the proposed test schedule. Touch Point B membership includes:

- Warfare Division Director – required;
- VX Commanding Officer or designated representative – required if VX SUT;
- 01C Director or designated representative – required;
- 01B Director or designated representative – required;
- OTD – required;
- DOT&E Action Officer – must be invited for programs on DOT&E oversight;
- Warfare Division Deputy Director;
- Squadron XO, COTD, ACOTD;
- SH/OTC/LTE;
- 01C Division Representative;
- 01B CTF;
- Test Team Members.

The OTD should brief the results of Touch Point A, then facilitate the conduct of the scoring board (see section 8.4) for previously collected data, if required. Having established which runs, vignettes, and measures have already been observed with associated validated data, the OTD should present the Schedule of Events, outlining the plan for collecting all remaining data requirements. Once the Schedule of Events is approved by the Warfare Division Director, or the Squadron CO for VX SUTs, the test team should proceed with detailed test planning and prepare the DOT&E COT brief, if not already completed, for programs on DOT&E oversight.

6-3.4 Prepare the DOT&E COT Brief

The Commander is prebriefed on all COT briefs given to DOT&E. Use the COT Brief template from the Y: drive OT&E Production Library to construct the brief, using the IEF and the products from Touch Points A and B.

6-3.4.1

The DOT&E, or his designated representative, is to be briefed on the COT for any program under DOT&E oversight. The COT brief should be conducted no later than 180 days before the planned start of testing. The brief is essentially a test plan brief with as much detail as possible 6 months before testing begins. The information

contained within and the format of the COT brief should follow as closely as possible the template and the outline described below.

6-3.4.2 COT Brief Outline

- Introduction Slide:
- Agenda
- Basic Program Information
- Review / Coordination
  - o 01B and 01C
  - o DOT&E
- SUT Description
- SUT CONOPs
- SoS Description
  - o OV-1
- Prior Operational Testing
- Scope of Test
  - o Purpose
  - o Duration (start/stop dates)
  - o Key events
- COIs & Evaluation Criteria (COI by COI)
  - o Evaluation Criteria
  - o Statistical Design
- Test Conduct
  - o Schedule
- M&S
- Limitations
- Potential Barriers to Test
- Resource Requirements
- Reporting
- Way Ahead

6-3.5 Touch Point C

Touch Point C is an informal, working-level meeting including the OTD, the SH/OTC/LTE, other members of the test team, and 01C Division Representative. 01B CTF should be invited, and should participate if available. The purpose of the touch point is to develop the DMOT [Detailed Method of Test]. As the name implies, the DMOT is a detailed, event-by-event, description of how the test will be conducted. With the concurrence of 01C Division Representative, Touch Point C may be combined with Touch Point D for smaller-scope phases of test.

6-3.5.1 Review TACMANs, CONOPS, and NTTPs

The method used to execute each test event should be in line with CONOPS and tactics used by the Fleet. For new systems, OTDs should engage resource sponsors and USFFC Warfare Development Centers to develop initial tactics and CONOPs in a timely manner to support OT.

6-3.5.2 Review Test Methods in the IEF

The OTD must leverage the IEF, as each vignette should already have a test method described. Specifically, review each vignette within the Vignette-to-Data Requirements-to-Test Method (DRTM) matrix and the Vignette-to-Subtask-to-Conditions matrix (Run Matrix) from the IEF database. Expand the test method as needed to fully describe the test procedures necessary to achieve test objectives.

6-3.5.3 Determine Daily Pre-test Briefing and Hot Wash Requirements

Based on each day's test event schedule (from the Touch Point B approved Schedule of Events), the OTD determines the Pre-test Brief and post-test Hot Wash requirements. The Test Planning Checklist provides detailed considerations for both pre-test and post-test briefs.

6-3.5.4 Determine Go/No-Go Criteria

For each major test event, the OTD identifies the prerequisites and "must haves" needed to be in place prior to the start of the test event. The purpose of establishing Go/No-Go criteria is to ensure the test event can be conducted safely and that all data requirements associated with the test event can be collected. Anyone with information, understanding, or belief that conditions exist that could lead to injury or equipment damage is empowered and obligated to communicate his or her concern, and the test team must stop testing to address the concern. Critical thinking (Operational risk Management (ORM)) during the test planning process is required to identify potential risk areas to successful test event execution.

6-3.5.5 Determine Conditional Requirements

Review the IEF DOE for controlled, constant, and recordable conditions to determine what tolerances must be met to validate test data.

6-3.5.6 Define Start and Stop for Each Event

Identify the conditions necessary to start and stop each major test event. Test teams must consider how to transition between major test events, including data management and test equipment, personnel, and SUT logistics.

6-3.5.7 Determine the DMOT for Each Event

Starting with the IEF DRTM, expand the detail already included in the test method section to include pre-test and post-test briefing requirements, roles and responsibilities for adjunct testers, operators, and test team members, and Go/No-Go considerations. The DMOT is written event-by-event per the approved test schedule from the operator's

perspective, including those using the SUT, operating the SoS, and driving the threat presentations.

6-3.5.8 Prepare the Test Cards

Test cards should be prepared for every event and are included in appendix C along with the data sheets, surveys, and interview questions. For Touch Point C, test cards should include, at a minimum, the following:

- Pre-event briefing requirements,
- Test event objectives,
- Go/No-go criteria,
- Controlled conditions and tolerances,
- Detailed test methods for all operators,
- Risk assessment (ORM) guidance,
- Post-event Hot Wash requirements.

6-3.5.9 Prepare for Touch Point C

The deliverable includes the detailed test method for every event in the test schedule, preferably in test card, and should include Pre-test Brief and Post-test Hot Wash requirements, Go/No-Go criteria, conditional requirements for data validity, test methods for all operators, and start and stop definitions. Test teams should see the Y: drive OT&E Production Library for the test plan template.

6-3.5.10 Conduct Touch Point C

Touch Point C is a working-level meeting with the OTD, SH/OTC/LTE, test team members, and 01C Division Representative. 01B CTF should be invited. A briefing is not required. Review the draft test plan in detail. For any disagreements about the DMOT that cannot be resolved at this Touch Point, the Warfare Division Deputy Director (or COTD/ACOTD) should be briefed and will act as the decision authority to proceed to the next test planning phase.

6-3.6 Touch Point D

Touch Point D is an informal, working-level meeting including the OTD, the SH/OTC/LTE, other members of the test team, and 01C Division Representative. 01B CTF should be invited, and should participate if available. The purpose of the touch point is to develop the Data Collection Plan, a detailed, event-by-event, description of how test data will be collected. The focus is on answering the following questions:

- Who is collecting the data?
- What data are being collected?
- Where will the data be collected, recorded, and stored?
- When will the data be collected, and how often?

- Why is each data element required?
- How are the data being collected?

With the concurrence of 01C Division Representative, Touch Point D may be combined with Touch Point C for smaller-scope phases of test.

6-3.6.1 Determine All Data Elements Being Collected Per Event

Touch Point D preparations begin with a detailed review of the Measures-to-Data Requirement matrix, Conditions-to-Data Requirements matrix, Vignette-to-Data Requirements-to-Test Method (DRTM) matrix, and the Conditions Directory from the IEF. The objective is to identify all data elements required for each test event.

6-3.6.2 Determine Required Measurement Tools and Devices

Determine the sources of required data. Identify the required measurement tools and devices, and the SUT components and subcomponents providing the data. Determine if there are any calibration requirements.

6-3.6.3 Build the Data Requirements Table

Build the Data Requirements Table for each data element and recordable condition to include the unit of measure, the precision of the measurement, the source of data, the associated measure(s), the data record, and the person responsible for collecting the data. The purpose of the Data Requirements Table is to ensure data sheets are complete, alternate data sources are available for critical measures, and individuals responsible for data collection are not overloaded. This table does not appear in the final test plan in this form.

6-3.6.4 Build the Data Collection Plan for Each Event

Using the Data Requirements Table, create the Data Collection Plan for each event in the test schedule. The Data Collection Plan should describe data collection procedures, assign data collection responsibilities, describe how data will be collected, establish when data will be collected (including the sample rate), identify test support equipment requirements, and describe how data will be returned to OPTEVFOR.

6-3.6.5 Test Cards

Complete the test cards by adding:

- Data collection requirements,
- Data collection assignments.

6-3.6.6 Create Data Sheets, Surveys, and Interviews

Based on the Data Collection Plan, the test team should create data sheets to facilitate the data collection process while on test, and create surveys, and standardized interview questions as needed. Early coordination with 01C is required to ensure surveys are used appropriately and are correctly written to collect the desired data. Review Best Practice 14 for guidance.

6-3.6.7 Prepare for Touch Point D

The deliverable includes the Measures-to-Data Requirements matrix and the Conditions-to-Data Requirements matrix from the IEF, the Data Collection Plan, data recording responsibilities, and test support requirements as detailed in the test cards, and all data sheets, surveys, and interview questions. Test teams should see the Y: drive OT&E Production Library for the test plan template.

6-3.6.8 Conduct Touch Point D

Touch Point D is a working-level meeting with the OTD, SH/OTC/LTE, test team members, and 01C Division Representative. 01B CTF should be invited. A briefing is not required. Review the draft test plan in detail. For any disagreements about the Data Collection Plan that cannot be resolved at the Touch Point, the Warfare Division Deputy Director (or COTD/ACOTD) should be briefed and will act as the decision authority to proceed to the next test planning phase.

6-3.7 Touch Point E

Touch Point E is an informal, working-level meeting including the OTD, the SH/OTC/LTE, other members of the test team, and 01C Division Representative. 01B CTF must be invited, and should participate in order to provide the context for the design of test, linking test design and data analysis. The purpose of the touch point is to develop the Data Analysis Plan. The Data Analysis Plan is written from the perspective of the analyst, is included in the final test plan in enclosure (2), and provides the details for how data will be analyzed, COI-by-COI, for every critical measure. The analysis plan may include noncritical measures as coordinated with 01C.

6-3.7.1 Review the IEF Section 2.3

Touch Point E preparations begin with a detailed review of the IEF section 2.3. COI-by-COI, review the planned statistical design(s), the DOE(s), critical tasks, and critical measures.

6-3.7.2 Describe the COI Resolution Methodology for Each COI

Focusing on the tasks and subtasks to be observed, describe the resolution methodology for each COI.

6-3.7.3 Describe the Analysis Plan for Every Measure

COI-by-COI, describe how measures will be analyzed and used to evaluate associated tasks to support COI resolution. The discussion should include descriptions of the analytical method or formula to be used to calculate the measure, appropriate units and tolerances, and statistical methods, including factor analysis and confidence interval calculations. For qualitative measures, describe which data will be used, and how they will be used, to evaluate the measure. Detailed discussions of analysis methodologies are not required for calculations with a standard methodology, such as the mean, median, or standard deviation. Planned deviations from standard definitions must be described.

6-3.7.4 Determine the Scoring Criteria for Every Critical Measure

For every critical measure, determine the scoring criteria to establish the validity of the data. The first step in scoring data is to qualify the data for OT. Was the SUT being employed by a Fleet-representative operator? Was the SUT in the Fleet configuration? Was the SUT being stressed in an operationally representative fashion? Having qualified the data for OT, the scoring process needs to review the controlled conditions to ensure the run meets the DOE run requirements (if applicable). Finally, the result of the run needs to be scored. Was it a hit or miss? Pass or fail? Was the failure or fault an OMF? Did the failure or fault result in an abort?

6-3.7.5 Prepare for Touch Point E

The deliverable is the Data Analysis Plan that becomes section 1 of enclosure (2) in the final test plan, including the COI resolution methodology for every COI, and the analysis plan and scoring criteria for every critical measure. The Touch Point also includes the data analysis plan for every measure and the Plan of Action and Milestones (POA&M) for the Post-Test Iterative Process, that are not normally included in the test plan. Test teams should see the Y: drive OT&E Production Library for the test plan template.

6-3.7.6 Conduct Touch Point E

Touch Point E is a working-level meeting with the OTD, SH/OTC/LTE, test team members, 01B CTF and 01C Division Representative. A briefing is not required. Review the draft test plan in detail, discuss the Data Analysis Plan for all noncritical measures and review the POA&M for the Post-Test Iterative Process. For any disagreements about the Data Analysis Plan that cannot be resolved at this Touch Point, the Warfare Division Deputy Director (or COTD/ACOTD) should be briefed and will act as the decision authority to proceed to the next test planning phase.

6-3.8 Test Plan Document Development

Having completed Touch Points A through E, the test team completes the test plan using the Test Planning Checklist as a guide.

6-3.8.1 Resources

For tests using U.S. Navy ships, once actual ships are assigned to the test, the OTD should coordinate with the assigned ship(s) to include COMOPTEVFOR on distribution for all Casualty Report (CASREP) and Casualty Correction Report (CASCOR) messages.

6-3.9 Test Plan Review Board (TPRB)

The final step in the test planning process is to convene a TPRB. The objective of the TPRB is to gain approval from the Warfare Division Director or Squadron Commanding Officer for routing the draft test plan for signature. Additionally, the TPRB shall ensure OT has been planned correctly, test methods and data requirements are adequate and correct, and risk review and mitigation are adequate.

6-3.9.1 Prepare for the TPRB

The deliverable for the TPRB is the complete draft test plan ready for routing. In preparing for the TPRB, the OTD should be prepared to discuss, at a minimum, the following:

- Purpose of Test;
- SUT Description;
- SoS Description;
- Mission Area Discussion (COIs, critical tasks, critical measures);
- Resources;
- Limitations to Test;
- Previous Deficiencies;
- Test Plan Deviation Guidance;
- Safety Responsibilities;
- Risk Mitigation Plan;
- Test Execution;
  - Schedule;
  - DMOT;
  - Data Collection Plan;
- Data Analysis Plan;
- Report Timeline.

Provide the draft Test Plan and any TPRB briefing slides to the participants as a read-ahead no later than 2 working days prior to the scheduled TPRB.

6-3.9.2 Conduct the TPRB

The TPRB is a formal O-6 level review. The OTD is the primary briefer. For the OTD, the goal is to demonstrate complete mastery of the proposed Test Plan and to gain approval for submitting the draft Test Plan for routing. TPRB membership includes:

- Warfare Division Director – required;
- VX Commanding Officer or designated representative – required if VX SUT;
- 01C Director or designated representative – required;
- 01B Director or designated representative – required;
- OTD – required;
- Warfare Division Deputy Director;

- Squadron XO, COTD, ACOTD;
- SH/OTC/LTE;
- 01C Division Representative;
- 01B CTF;
- Test Team Members.

6-3.10 ACAT Programs

Test plans are required for each identified phase of OT&E (e.g., OT-A, OT-B, OT-C, etc.). These include EOAs, OAs, IOT&E, and FOT&E phases. For IT phases, a Data Collection Plan (DCP) will serve as the plan for gathering OT-related data during IT. When conducting a FOT&E phase, determination of the scope and level of testing may be required. The RALOT process may be used to assist in determining exactly what must be tested and how much testing is needed. A RALOT discussion follows.

6-3.10.1 RALOT

The RALOT process was originally designed for cases where existing information technology and business systems (post-IOT&E) are modified and the scope of OT required to support a fielding decision must be determined. However, it can be used effectively throughout the development process for any acquisition program whenever the OTD and the test team need to assess the changes in configuration to determine the scope of required regression testing. RALOT is neither a checklist, nor a hard set of rules. It is a process for evaluating the proposed new capability in view of its likelihood of failure and the impact a failure would have on the overall system's mission. For each application, the RALOT process will need to be tailored to the characteristics of the specific system modification. For a full discussion see; Director, Operational Test and Evaluation Memorandum subject Guidelines for Operational Test and Evaluation of Information and Business System, dated 14 September, 2010 (available in the Y:\ OT&E Reference Library). This memorandum provides a framework for deciding the appropriate level of OT. While the RALOT process was initially designed for software-intensive systems, it provides a rigorous and logical methodology for assessing risk associated with modifications to any system.

6-3.10.2

For information and business systems on DOT&E oversight, the product of the RALOT process is a determination by COMOPTEVFOR on the level of OT required for a system modification. Consequently, the Commander will approve these RALOT determination reports (see table 3-1). For DOT&E oversight programs, COMOPTEVFOR's determination is briefed to DOT&E to obtain concurrence on the OT strategy. Based on the determination of aggregate risk, a cost-effective level of test is selected using table 6-1.

Table 6-1. Level of Test Determination Matrix			
Likelihood of Occurrence	**Operational/Mission Impact Classification**		
	Minimal (1)	**Moderate (2)**	**Severe or Catastrophic (3)**
Likely (3)	**II**	**III**	**III**
Possible (2)	**I**	**II**	**III**
Negligible (1)	**I**	**I**	**II**
Legend: I = Level I OT&E II = Level II OT&E III = Level III OT&E			

Potential determinations are as follows:

- Level I OT&E: An assessment primarily using data from IT events other than a dedicated independent OT event, e.g., DT periods, certification tests, and independent observations of the capability being used in operationally realistic or representative conditions. An OT plan is not required. The report uses the Letter of Observation (LOO) template per chapter 8.
- Level II OT&E: An evaluation that includes an independent operational event, which is carried out by typical users in an operationally realistic or representative environment to assess risk-specific factors of operational effectiveness and operational suitability. A signed test plan is required. DOT&E approval is not required for oversight programs. Report using the IOT&E/FOT&E Report template per chapter 8.
- Level III OT&E: Full IOT&E/FOT&E. DOT&E approval is required for test plans for oversight programs.

6-3.11 Non-ACAT Programs

OT&E is not required for these programs; however, OPTEVFOR's services may be required to test the capabilities of the system. If OT is to be included for a non-ACAT program, a test plan is required. The PM and OPTEVFOR must agree to the scope of appropriate testing.

6-3.12 JCTD

See appendix C for a discussion of the JCTD program. Depending on the previously agreed-to level of OPTEVFOR involvement with the particular JCTD, COMOPTEVFOR provides input for COIs and Measures of Performance (MOP)/MOEs/MOSs. The scope

of the assessment is further refined in the Demonstration Execution Document (DED), a document similar to a test plan that provides sufficient detail to measure MOPs, MOEs, and MOSs and analyze each COI. COIs will be assessed using EOA/OA color codes, assessing military or operational utility. OPTEVFOR will not attempt to resolve JCTD COIs as Satisfactory (SAT) or Unsatisfactory (UNSAT). That task must wait until after transition to formal acquisition, if transition occurs.

6-3.13 QRA

6-3.13.1

As described in appendix C, QRAs are used when necessity dictates a need for a rapid deployment of critical capability to the Fleet and the program sponsor desires a quick assessment by COMOPTEVFOR of capabilities, limitations, and considerations for operational employment of the new system. QRAs are completed in response to a QRA tasking letter promulgated by CNO (N84). The tasking letter and the program sponsor's request letter to CNO (N84) should be used to provide the basis for the QRA test plan (coordinate with 01C for the QRA test plan format). The test plan will be produced using the test planning process described in section 6-3. The QRA will NOT resolve COIs, make effectiveness or suitability determinations, nor Fleet introduction recommendations. QRAs will only assess those capabilities or attributes identified in the tasking letter, and should make a risk assessment for early deployment relative to selected COIs.

6-3.13.2

By virtue of the rapid deployment need, QRAs are limited in scope. Although an IEF is not required, a QRA test plan should take advantage of an available IEF, if one already exists. If an IEF does not exist, and time permits, develop a TIEF to improve test adequacy (see chapter 4). The QRA test plan should be structured to provide clear insight into the risks associated with a rapid deployment with limited OT.

6-3.13.3

The OTD must coordinate with 01C to determine the appropriate format and scope of the QRA test plan as soon as QRA discussions begin. Early coordination, even before the QRA request letter is received, is strongly encouraged.

6-3.13.4

When developing the plan for a QRA, the OTD should:

6-3.13.4.1

Ensure the assessment addresses every issue discussed in the QRA tasking letter.

6-3.13.4.2

Use the DA's request letter, the OPNAV tasking letter, applicable Joint Urgent Operational Need Statements (JUONS), Urgent Operational Needs Statement (UONS-Navy), or Urgent Universal Needs Statements (UUNS-Marine), supported by operational experience, to develop the QRA test plan.

- Determine the system's intended mission(s).
- Define the system's expected capability(ies).
- Identify the system's expected operational environment.
- Identify the system's expected threats.
- Design test events to demonstrate and assess the system's capability in the expected operational environment with the system's expected threats. Focus on heart-of-the-envelope employment.

6-3.13.4.3

When possible, include representatives of the unit expected to deploy with the operational capability in QRA planning and execution.

6-3.13.5

In most cases, the QRA test plan is signed by the Division Director. For programs under DOT&E oversight, the QRA test plan may be signed by the Commander and is provided to the DOT&E. In all cases, the QRA report is signed by the Commander. See chapter 8 for QRA reporting.

6-3.14 VCD

The purpose of a VCD is to confirm correction of deficiencies identified during IOT&E or FOT&E. This evaluation applies to only those deficiencies the Program Manager submits as having been corrected (or substantially mitigated). A VCD can occur through OPTEVFOR review and endorsement of corrective actions or, in some cases, through an end-to-end test of the complete system, depending on the complexity of the system and the extent of the corrections. Where retest of deficiencies is required, a VCD can occur as part of a formal FOT&E phase of test or as a specific stand-alone test limited to the verification effort. VCDs focus on deficiencies vice COI resolution. In order to resolve a COI that was previously evaluated as unsatisfactory or unresolved, a formal FOT&E phase of test is normally required. Typically when the COI is unresolved or is resolved as unsatisfactory, deficiency(ies) prevented the full evaluation of the mission area, and additional testing beyond that required to address the correction of the deficiency(ies) may be required. However, with proper pre-test coordination and thorough test planning, a VCD may be used to evaluate a previously unresolved COI, or to reevaluate a previously unsatisfactory COI. Stand-alone VCDs will use a test plan, produced using the test planning process described in section 6-3, to guide the execution of the VCD. For programs on DOT&E oversight, the signed VCD test plan will be provided to DOT&E prior to execution. An OTRR is not required prior to commencing a VCD.

6-3.14.1 VCD Procedures

Following the initial VCD discussions with the DA, OTDs should coordinate with 01C for program-specific guidance. The following steps are used by the Warfare Division to conduct a VCD:

6-3.14.1.1 Receive VCD Request

The DA should submit VCD requests in writing (i.e., Naval message, letter, or e-mail) to COMOPTEVFOR with an information copy to CNO (N84) identifying the specific deficiency(ies) that have been corrected. The Warfare Division only conducts a VCD in response to a request received from the DA for the system. The OTD should coordinate with the DA to include the following information for each deficiency in the request:

- Root cause analysis
- Corrective action(s)
- DT conducted to verify corrective action.

If not included in the VCD request, the OTD should coordinate with the DA to receive this information (in writing) to support the VCD test design.

6-3.14.2 Review VCD Best Practice

OTDs should review the latest VCD best practices located in the Y: drive OT&E Production Library. The VCD Best Practice addresses the most common statistical tests used in VCD tests and the information required to define the minimum sample size (for each individual deficiency) to conduct a VCD aligned with the originally approved test plan.

6-3.14.3 Determine Scope of Test

After review of the VCD Best Practice, the Warfare Division, with support from 01C and 01B, will:

- Identify the minimum, adequate test needed to determine whether specific deficiency(ies) have been corrected or substantially mitigated.
- Determine whether regression testing is required, and if it is, identify required regression testing.
- If a statistical design is used, coordinate with 01C Division Representative to schedule a working-level meeting with the test team, 01C Division Representative and 01B CTF/Analyst to discuss the proposed statistical design(s) for test and to draft the relevant statistical design paragraphs using section 2.3 of the IEF template.
- If a statistical design or regression testing is required, schedule a DWG with Division A/B code, 01B A/B code, 01C A/B code, 01C Division Representative, 01B CTF, SH/OTC/LTE, OTD, contractor support, and DOT&E (for oversight programs).

6-3.14.4 Regression Testing

OTDs shall consider the need for regression testing of SUT capabilities and system functionalities that may have been affected by the corrective action taken to address the deficiency. In order to assess the need for and amount of regression testing required, OTDs must have a thorough understanding of the following:

- Mission task decomposition (from the IEF process)
- Hardware and software component decomposition (functionally traced back to mission tasks – provided by the program office)
- Hardware and software changes to correct the deficiency (provided by the program office)
- Available resources.

Regression testing can take the form of structured designed tests, free play demonstrations, or routine daily operations. The DWG will assess the amount of required regression testing, if any, given the scope of changes made to correct the original deficiency(ies) and the available resources. Include all regression testing requirements in the VCD test plan.

6-3.14.5 Draft the VCD Test Plan

If testing is required, the OTD, with support from 01C and 01B, develops a test plan for the VCD to describe the specifics of the given test. The test plan will address what data will be collected and how the data will be analyzed / used to determine whether the original deficiency has been corrected or mitigated to such an extent as to merit recharacterization. Where an end-to-end test is deemed necessary, the initial premise should be that the VCD will involve a subset of the vignettes developed for the original test. The cognizant Warfare Division uses the test planning process described in section 6-3 to produce a test plan containing the following for <u>each</u> deficiency identified in the VCD request:

- The original deficiency(ies) to be evaluated.
- The corrective action that has been taken.
- The scope of the VCD: Number of days of laboratory/ground test, number of sorties, steaming days, missile shots , to include any required regression testing.
- The test methodology - where appropriate, reference vignettes or test events from the previously approved OT plan or the IEF; describe any newly constructed vignettes.
- The specific resources required and any shortfalls.

6-3.14.6 Conduct the DWG

If the scope of the planned VCD includes a statistical design or regression testing, the cognizant OPTEVFOR Warfare Division will chair a DWG (with DOT&E participation for oversight programs) to review and validate the planned statistical tests, any regression testing, and the draft test plan. The root cause of the deficiency, corrective actions taken, and any DT data used to verify the implemented solution corrected the deficiency, will be analyzed to validate the scope of test.

6-3.14.7 Warfare Division Director VCD Execution Memo

The Warfare Division Director signs the VCD test plan and forwards a VCD Execution Memo to the Commander that describes the VCD methodology for each deficiency requested by the DA. The memo includes the test plan elements as described in

paragraph 6-3.6.5. For programs under DOT&E oversight, the test plan is briefed to the Commander and a copy of the signed test plan will be forwarded to DOT&E prior to collecting VCD data.

6-4 ROUTING AND RELEASE OF TEST PLANS

6-4.1 Routing

Test plans for DOT&E oversight projects require approval by COMOPTEVFOR no later than 60-days prior to start of project operations. The test plans for non-oversight projects are completed so that COMOPTEVFOR issues them no later than 30-days prior to the start of project operations. For multiservice test plan routing time lines see the MOT&E MOA.

6-4.1.1

For all oversight test plans, the PM will be provided a test plan brief after the Commander has signed the test plan.

6-4.1.2

For all nonoversight test plans, the PM will be provided a test plan brief after the Division Director has signed the test plan.

6-4.1.3

The OTD will brief the OT concept to the PM prior to DT or Technical Evaluation (TECHEVAL) phases. Details as to the timing of this brief, and exceptions to this requirement, will be coordinated via the T&E WIPT. The key point is communication. The program office needs to know the OT outline to prepare adequately for OT.

6-4.2 DOT&E Oversight Test Plans

Table 6-2 summarizes the time lines.

Table 6-2. DOT&E Oversight Test Plan Time Lines

Days Prior to Ops	HQ Action	VX/VMX/HMX Action
190	OTD/OTC presents COT Brief to 00.	OTD present COT Brief to 00. (Coordinate with 50 Division)
180	OTD/OTC present COT Brief to DOT&E. (Ensure OPNAV N84 AO is aware of the place and time of brief with adequate time to prepare.)	OTD present COT Brief to DOT&E. (Coordinate with 50 Division.)
110	Originator starts route to 01B and 01C.	VX/VMX/HMX - Originator starts route at squadron to editors and analyst as appropriate. Route to HQ OTC for staffing with 01B/C/D, editors (for HMX/VMX documents), and 01SA.

Table 6-2. DOT&E Oversight Test Plan Time Lines		
Days Prior to Ops	**HQ Action**	**VX/VMX/HMX Action**
105	01B and 01C provide comments to originator.	HQ OTC forward consolidated HQ CRM to orginator.
100	Originator incorporates changes, and division sends draft test plan to DOT&E AO.	Originator incorporates changes, HQ sends draft test plan to DOT&E AO.
80	Originator receives Comment Resolution Matrix from DOT&E AO and resolves any issues.	Originator incorporates changes and resolves any issues. Get CO's approval.
70	Originator makes corrections and routes document to front office via the editors. 01A and 00D will review prior to 00 brief and signature.	VX/VMX/HMX- Originator prepare smooth document and send to HQ OTC to route for signature
60	Originator submit COMOPTEVFOR approved test plan to DOT&E.	N/A
30	Distribute approved document.	N/A

The Commander approves all COT briefs being presented to DOT&E and all test plans being forwarded for DOT&E review. OPNAV N84 action officer(s) should be notified of the scheduled COT brief so that they can prepare and attend. See paragraphs 6-5 and 6-6.

6-4.3 Non-DOT&E Oversight Test Plans

For nonoversight programs, if the Commander has not indicated a desire to review the test plan prior to approval, the Division Director signs and releases the document. Table 6-3 summarizes the non-DOT&E oversight test plan time line:

Table 6-3. Non-DOT&E Oversight Test Plan Time Lines		
Days Prior to Ops	**HQ Action**	**VX/VMX Action**
55	Originator route to 01B and 01C	VX/VMX/HMX - Originator start rough draft route in squadron to editors and analyst as appropriate. Route to HQ OTC for staffing with 01B/C/D, editors (for HMX/VMX documents), and 01SA.
50	01B and 01C provide comments to originator.	HQ OTC forward consolidated HQ CRM to originator.

Table 6-3. Non-DOT&E Oversight Test Plan Time Lines		
Days Prior to Ops	**HQ Action**	**VX/VMX Action**
50	Originator incorporates changes and route to SH/OTC.	Originator incorporates changes and resolves any issues, get CO's approval.
45	N/A	Originator send to HQ OTC.
44	Route to editors.	N/A
32	Route to Division Director.	N/A
30	Division distribute signed document.	N/A

6-5 TEST PLAN CHANGES

Due to the operational nature of OT, there may be times when an approved test plan must be changed prior to test execution. These test plan changes fall into two categories:

6-5.1 Substantive Test Plan Changes

These involve changes in the scope of testing and/or significant reduction or change of test resources resulting in additional limitations to test. Substantive test plan changes require the same routing process as the original test plan and a formal brief to the Commander and DOT&E for oversight programs. These changes need to be routed as expeditiously as possible to meet the test execution time line.

6-5.2 Administrative Test Plan Changes

These involve changes to participant names (e.g., test team member changes or additions, ships names and hull numbers, etc.). These changes may also add additional information such as data management assessment planning that was not formulated or available when the test plan was originally approved. Administrative changes cannot limit the scope of the original test plan. Administrative test plan changes must be reviewed and approved by the Warfare Division Director. The Commander and Deputy should be informed of any administrative changes made to test plans under DOT&E oversight. Test plan administrative changes via e-mail are encouraged. Use the Test Plan Change Letter template.

6-6 BRIEFING TEST PLANS

6-6.1 General Test Plan Briefing Instructions

The Commander approves all test plans forwarded for DOT&E review.

6-6.2 The Test Plan Brief

The Commander is briefed on all ACAT I and DOT&E oversight test plans (including OAs) as part of the test plan approval process. Briefings should be scheduled so that

time is available to incorporate the Commander's guidance while still allowing at least 30 days (60 days if a DOT&E oversight program) between test plan distribution and commencement of project operations.

6-6.2.1

The test plan is unique in the manner in which it is briefed, mainly due to its bulk and the fact that most of the issues should have been defined previously in the appropriate IEF, the TEMP, and during the test planning process.

6-6.2.2

The sequence, format, and content of the test plan brief should be a more detailed version of the COT brief, and should follow the standard COT brief template in the Y: drive OT&E Production Library. If the OTD deviates from this sequence, a separate outline slide is required prior to system description.

6-7 LIMITATIONS TO TEST

Limitations to any OT limit the testers', customers', or stakeholders' understanding of the full range of capabilities of the SUT within the SoS. As such, any limitation to test implies the CNO or Fleet Commander is accepting some risk by not knowing the system performance or capability in the areas, conditions, or threats associated with the limitation. For test plans for mature systems where a test article exists (IOT&E, FOT&E, late stage OA and QRA), it is very important for the OTD to describe limitations not only in terms of what the limitation is, but also in terms of the impact of the limitation; what is it that will not be known in terms of the COI and what is the impact to COI assessment or resolution? Additionally, any mitigation for the limitation should be discussed. For EOA and OA test plans where the scope of testing is restricted due to the early position of the program within the acquisition life cycle; i.e., there is no representative test article and the EOA is being performed as a paper study, all limitations should be based from the frame of reference of the scope of testing. In other words, for an EOA of a ship that has not started construction, not having a ship to observe, walk on, and test is not a limitation to test, but would be described in the description of the purpose and scope of testing. Limitations fall into three categories, severe, major, and minor. The definitions for the three categories of limitations are as follows:

- **Severe Limitations.** Limitation(s) that preclude COI assessment or resolution and adversely impact the ability to form conclusions regarding effectiveness and suitability.
- **Major Limitations.** Limitation(s) that may affect COI assessment or resolution but should not impact the ability to form conclusions regarding effectiveness and suitability.
- **Minor Limitations.** Limitation(s) that have minimal impact on COI assessment or resolution and do not impact the ability to form conclusions regarding effectiveness and suitability.

Do not use the previously common, generic, and almost meaningless,

limitation that the SUT will not be tested in all environmental conditions. If environmental limitations are significant, be specific as to how. Use the Fleet Numerical Meterology and Oceanographic Center (FNMOC) web site (https://portal.fnmoc.navy.mil/climoportal/index.htm) to focus on particular meteorological parameters of interest and their specific differences between the anticipated test range and the anticipated operational area.

6-8 LOI REQUIREMENTS IN THE TEST PLAN

Project operations involving multiunit coordination will normally require issuing an LOI. The test plan will include a short discussion (section 3 of the test plan) on the LOI when one is to be issued. Information regarding the need for an LOI and the format is contained in chapter 7.

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CHAPTER 7 - TEST OPERATIONS

(Rev 7, Jul 2016)

7-1 GENERAL

Test operations are one of the most critical elements of the OPTEVFOR mission. While it is true that a well thought-out plan is essential to the successful execution of a test, it is also true that no matter how well the test plan or the final report is written, all efforts will fail if they are not founded on sound data. During test execution, the OTD is generally the senior OPTEVFOR representative on site. It is imperative that the OTD arrives fully prepared to execute the plan and deal with likely contingencies, such as weather, system availability, and competing operational priorities. Careful preparation and timely communication with staff experts can assist the OTD in successfully resolving unforeseen issues.

7-2 OTD JOURNAL

Each OTD should maintain a chronological record of each assigned project. It can serve many purposes. It provides a history for subsequent OTDs who are assigned to the project; it facilitates answering new questions about an old test; it can serve as substantiating data if events, agreements, etc., are later questioned. It may be the sole record of something that later becomes important. This record may exist in several forms: loose-leaf notebooks, steno pads, memos for the record, electronic media, etc. Collectively, they are called an OTD journal. If an individual OTD journal consists of a combination of steno pads, electronic media, etc., one document (the master) should maintain the overall chronology, and should reference individual steno pads, electronic media, etc., for details, where appropriate.

The OTD journal cannot and will not serve as a substitute for data or survey sheets in the test plan. Ensure that adequate, accurate, and well thought-out data and survey sheets are available for collection of quantitative and qualitative information.

7-2.1 Content

The OTD journal records, for possible later use, data that the OTD had not considered when developing the data or survey sheets, and may be of significance in the program. While each OTD must use his own judgment when deciding what is significant, it is better to record too much data than too little. Additionally, it is better to record it as soon as an event occurs, rather than to wait until later and risk forgetting. Among the data that may have significance are e-mail, electronic draft, and final documents, or paper copies of any of the following:

- Funding requirements and transactions for OT&E
- Discussions conducted at meetings or over the phone regarding future testing
- Summaries of program meetings and conferences, including attendees, areas of discussion, and stands taken by the various participants

- Mention of working drafts, etc., exchanged between the OTD and other program individuals or offices with notations indicating where copies may be found in the OTD's files
- Notations summarizing verbal business contacts with individuals associated with the program (OPNAV staff, SYSCOM/PEO, labs, other OT agencies, DOT&E, contractors, etc.) with their codes, symbols, phone numbers, etc.
- Mention of receipt of incoming program messages, letters, data packages, etc., with their stowage locations
- An on-scene record of testing (see paragraph 7-2.2)
- A record of drafts (messages, draft Blue and Gold Sheets, reports, etc.) prepared for higher-level review and approval (draft completion dates, murder-board dates, significant events in the review process, approval dates, etc.)
- Identification (by date-time-group or serial number and date) of outgoing program documentation with primary addressee and stowage location
- Significant program information (funding changes, schedule slippages, etc.) with the source of the information
- The line of reasoning that led to a particular stand on an issue or that resulted in the selection of certain parameters, etc. (may be of critical importance to a new OTD who is trying to determine why the previous OTD set up the program in this manner).

7-2.2 On-Scene Record of Testing

OPTEVFOR lessons learned indicate an OTD narrative taken in real time and written in sufficient detail, such that the test scenarios could be reconstructed, is critical for deficiency and final report resolution. An OTD should never depend solely on automated electronic data recording, as many times these recorders fail or the media is delayed in routing and analysis. In addition, third-party analysts are sometimes required for data analysis and need a detailed narrative to interpret the electronic media effectively. While thorough, well thought-out data and survey sheets in the test plan are necessary, plan a running account of testing as part of an OTD journal. In many cases, this account is best made on a note pad or a stand-alone laptop as the operation progresses. If possible, periodically send the OTD narrative electronically to the OTD’s Headquarters SIPRNET account. In any event, the goal is for the OTD to walk away with a detailed written description of how the testing actually occurred: what happened, when, and who (what) was involved. It identifies the operation (by run number, etc.) and provides a running, time-correlated commentary to the end of the exercise. Place particular attention on recording unusual events (breakdowns in communications, intruders in the area, etc.). Note and explain differences between actual and planned scenarios. The OTD's impressions, qualitative assessments of performance, and any other information that later might help him reconstruct the testing, are recorded. Keep in mind an OTD journal is a document to help the OTD and his successor.

7-3 OTD RESPONSIBILITIES BEFORE TEST OPERATIONS BEGIN

7-3.1

Complete a draft personal letter from the Commander to the CO and the Immediate Superior In Command (ISIC) of each unit scheduled to provide key services during the OT&E. The project OTD is responsible for drafting the letters and submitting them to the Flag Secretary in a timely manner for the Commander's signature. The letter should be received by the participating unit CO (or Flag Commander) prior to the receipt of the test plan. At a minimum, the OTD should obtain the Commander's signature no later than 30 days prior to commencement of OT&E. For late changes in OT&E units, consider the use of a "personal for" message in lieu of a letter. Make sure the CO's name is correct and tailor the letter accordingly, especially if a change of command is scheduled subsequent to receipt of the letter and commencement of OT&E. Letters to COs of several units in the same strike group (i.e., all participating in the same OT&E) should each be personalized for that particular unit. Check with the OPTEVFOR Flag Writer (002) to make sure other divisions have not sent the same letter to the same ship on a previous OT&E. Additionally, the division director will receive feedback copies from the flag writer to retain for future reference. These are particularly helpful for Flag-to-Flag letters.

- To a CO who has not previously provided key services for OT&E (and, therefore, is receiving his first personal letter from COMOPTEVFOR) use the OT Support, First Time template to compose a letter based on the phase of testing. Tailor the letter to suit the testing, and, if sending a letter to more than one CO, vary the wording between them to eliminate the appearance of form letters.

- To a CO who has previously provided key services for OT&E (and, therefore, has already received a long personal letter from COMOPTEVFOR) use the OT Support Letter, Previous Support template to compose the letter. Pay particular attention to the personalization of this letter, and ensure that it accurately acknowledges the CO's earlier support.

- At the same time the CO's letter is sent, also send a letter to the CO's ISIC. Use the ISIC Letter template to compose this letter.

7-3.2

The OTD, OTC or Section Head, and supporting contractors should review the IEF and test plan in detail to ensure the test team has a thorough understanding of all critical tasks, measures, and specific data collection requirements to support COI resolution/risk assessment.

- What are the critical data elements needed to answer the COI questions?

- Which test events support the collection of these data elements?

- Who is responsible for observing and documenting the critical data?

- How are the critical data to be collected and recorded?

7-3.3

As the date to begin test operations approaches (the time to commence this process will vary among systems), check to ensure:

- Appropriately trained personnel will be available to operate and maintain the equipment.

- The equipment to be evaluated (including special support equipment) will be installed and checked out.

- Operator and maintenance manuals, the ILSP/Acquisition Logistic Support Plan , NTP, and other necessary documentation as appropriate for the phase of testing will be available from the PM.

- Instrumentation (including range instrumentation) will be available and in working order.

- Targets, simulators, EW services, etc., will be available.

- Participants have received and understand test plans and LOIs.

- The Submarine Operating Authority (SUBOPAUTH) Commander, Submarine Forces (COMSUBFOR) or Commander, Submarine Force Pacific (COMSUBPAC) has concurred with the safety aspects of test plans that involve use of submarines.

- RDT&E support services are on track.

- Contingency plans are available for the unexpected.

- Arrangements have been made for pretest briefings, including arrangements for additional briefers, if necessary.

- Special data forms and surveys are available in sufficient quantity.

- Proper safeguards are provided for all classified materials to be used during test operations. This includes obtaining proper authorization for removal from the command, transportation, and stowage of classified materials. The hand carrying of classified material to or from the test site by the OTD or members of the OPTEVFOR test team requires coordination with the Command Security Manager and approval by the COS.

- If appropriate, rehearsals of test operations are scheduled. Rehearsals are useful if they increase the likelihood of obtaining meaningful data, and are problematic if they destroy operational realism. Live-fire events will typically require one or more

rehearsal events. In these cases, it is appropriate to take measures to eliminate/minimize any early disclosure during the actual test event.

- Prefaulted modules will be available for an M-DEMO, if necessary.

- System certification for the test has been received from the DA.

7-3.4

To ensure tests are conducted per the approved test plan and LOI, the OTD should conduct one or more test briefs for all involved parties no less than 2 weeks before the commencement of testing. At a minimum, there should be a pre-test brief with all test personnel and adjunct tester(s) to ensure everyone at each test location or unit:

- Possesses appropriate sections of the test plan, has read it, and understands his or her responsibilities with respect to data collection and control.

- Knows the critical tasks, measures, and data supporting those tasks and measures.

- Understands the daily testing battle rhythm and the expectations for communication with the OTD; communication method/path and frequency should be addressed. In addition to the normal communication associated with end of day recaps/hot wash-ups, specific direction should be given to test team members to immediately communicate any issues preventing the proper collection of data supporting critical measures.

- Is encouraged to identify potential deficiencies as they become known and draft Blue and Gold Sheets on site during test. While a complete draft Blue or Gold sheet may be difficult for adjunct testers or ship's company personnel to create, identification of the issue and the issue's impact upon the mission should be encouraged.

7-3.5

Immediately prior to the start of test operations, ensure that:

- All hands know their roles and responsibilities.

- The equipment to be evaluated is in working order.

- Equipment necessary to the test scenario (including spares and support equipment) and instrumentation equipment is in working order.

- Conduct an end-to-end dry run of the data collection and analysis process.

- Personnel to activate and deactivate data recorders, and backup data takers, are in place.

- Time synchronization and communications have been established, as necessary.

- Data forms have been distributed, as necessary.
- Calibrations have been accomplished, as necessary.
- Contingency plans have been discussed with appropriate personnel (e.g., with the CO of the test ship or unit).

7-4 COMMAND RELATIONSHIPS

7-4.1

Commander, U.S. Fleet Forces Command and Commander, U.S. Pacific Fleet exercise operational control of Fleet units within their respective areas of responsibility. Through the Fleet scheduling process, they provide units to support COMOPTEVFOR in the execution of OT&E. While earlier documents referred to Fleet units being assigned to COMOPTEVFOR operational control, this was not Operational control (OPCON) as defined by Joint Doctrine, but rather an internal Navy definition associated with the direct command and control of those forces required to support the completion of OTs under COMOPTEVFOR purview. This confusing terminology has been eliminated in current directives; however, the OTD is likely to see documents that make reference to this relationship. To be clear, the operations of Fleet units assigned by the Fleet quarterly employment schedule to support a CNO project (OT or DT) remain the responsibility of the operational chain of command.

7-4.2

Just as the operational chain of command retains full authority and responsibility for unit operations, COMOPTEVFOR retains full authority and responsibility for the execution of the OT per the approved test plan. In practice, this means that while the operational unit commander may decide that a given test cannot be conducted due to safety or operational considerations, the unit commander is not at liberty to modify the test design. The decision to modify an approved OT plan is the prerogative of COMOPTEVFOR.

7-4.3

Test operations will be directed by the officer in tactical command, the senior CO of the assigned ship(s) or air squadron(s), in coordination with the OTD and range facility director, as appropriate.

7-4.4

For large, complex tests, it is often useful to prepare a LOI as is done for major Fleet exercises. This ensures that all participants have a clear understanding of their respective roles and responsibilities in the execution of the test. Project operations involving multi-unit coordination will normally require the issuance of an LOI. The issuance of such LOIs is the purview of the OCE. PMs are not authorized to issue OPORDs to Fleet units, even during real-time, on-scene project operations. OTDs will coordinate with the PM, as necessary, and originate LOIs for project operations required for combined DT/OT. LOIs will be in the format shown in the LOI message template at

Y:\OT&E Production Library\Test Execution. The COMOPTEVFOR scheduler, 01A, will conduct an independent verification to ensure the LOI is executable prior to release. The LOI will be written, assigned a serial number, and released by the appropriate Division Director or Squadron Commanding Officer on behalf of the Commander. For submarine operations, OPTEVFOR will develop the LOI in coordination with the Type Commander (TYCOM)/Squadron for release by the SUBOPAUTH.

7-5 OPERATIONAL TEST READINESS REVIEW (OTRR)

The SYSCOM Commander, PEO, or PM convenes an OTRR prior to certifying a system is ready to enter IOT&E or FOT&E. Included in the review is an assessment of whether test results indicate performance thresholds identified in the TEMP have been satisfied or are projected to meet system maturity for the CDD and CPD, as appropriate. To facilitate this review, Division Directors/Squadron Commanding Officers will provide the PM a COMOPTEVFOR assessment of system readiness, COI by COI, with an associated color code of green or red indicating whether the COI is expected to be resolved SAT or UNSAT, with an explanation. These assessments will be briefed to the Commander or Deputy Commander prior to release to the PM, and no later than 30 days prior to the scheduled OTRR. If not briefed by the PM at the OTRR, the COMOPTEVFOR representative should present the COMOPTEVFOR COI by COI assessment of system readiness. As a part of the OTRR assessment, the status of DT data collection to satisfy DT Only measures and any other DT DRs from the IEF must be addressed. If the data has not been collected prior to OTRR, the need to collect this data during OT must be recognized.

7-6 DA CERTIFICATION E-MAIL

7-6.1

When the DA determines a system is ready for OT&E, he/she will notify CNO (N84), the program sponsor, and COMOPTEVFOR by e-mail. The DA is also required to certify system readiness on systems undergoing OT&E that have been placed in a deficiency status and for FOT&E when the purpose of FOT&E is to conduct testing deferred from IOT&E or to demonstrate correction of IOT&E deficiencies. The certification e-mail may contain a request for a waiver or deferral. Also, the certification e-mail may request deferrals for items not ready or not available for testing.

- The term "waiver" applies to a deviation from the system performance criteria identified in the TEMP. Waivers generally do not change or delay any testing or evaluation of the system. The only exception would be a decision by CNO to waive a requirement that had necessitated a unique test event. In that case, the Commander may elect to modify the OT plan to avoid the needless expenditure of assets.

- The term “deferral” applies to a delay in testing requirements directed by the TEMP. A deferral moves a testing requirement from one test period to a later period. Deferred items cannot be used in analysis to resolve COIs; however, COMOPTEVFOR may comment on operational considerations resulting from the

deferral. A deferral does not change the requirement to test a system capability, function, or mission, only the timeframe in which it is evaluated.

7-6.2

OTDs should take the following action when deferrals are requested or granted:

- If the OTD does not believe that the deferral request is appropriate, the issue must be immediately raised to the Division Director/Squadron Commanding Officer for discussion with the Commander/Deputy. If the Commander does not concur with the proposed deferral, he may send a message to CNO (N84) presenting the rationale for recommending against granting the deferral.

- When CNO (N84) has granted a deferral requested by the DA in the certification e-mail, the OTD should discuss the following issues with the PM:

7-6.2.1

When will the items for which a deferral was granted be available for OT&E?

7-6.2.2

A deferral granted by the CNO neither eliminates the system's requirement to perform or meet the established threshold, nor obviates the need for the particular aspect to be operationally tested.

7-6.2.3

A deferral will, in most cases, lead to a test limitation, but the deferred item should be fully tested in a later phase of OT&E. It is incumbent upon the OTD to ensure an appropriate FOT&E period exists or if one does not, to ensure a period is created and funded via a TEMP update. Issues with the funding or placement of deferred capabilities into a follow-on phase of test should be elevated within the OPTEVFOR chain of command for resolution.

7-6.2.4

Add limitations to the final report, as necessary, to reflect the deferral(s).

7-7 OT&E COMMENCEMENT

OT&E does not begin without an approved COMOPTEVFOR test plan, or DOT&E approved test plan for oversight programs. (Note: This is a matter of law. 10 USC 2399 states “Operational testing of a major defense acquisition program may not be conducted until the DOT&E of the DoD approves (in writing) the adequacy of the plans…”) Transmit the commencement of OT e-mail (use the Commencement of OT Message format at Y:\OT&E Production Library\Test Execution), when testing actually begins.

7-8 OTD RESPONSIBILITIES DURING TEST OPERATIONS

The OTD should ensure:

- Tests are conducted per the approved test plan and LOI. In addition to the pre-test brief, the OTD should conduct test briefs, as required, during testing to ensure test personnel and adjunct testers:
    - Understand their responsibilities with respect to data collection and control.
    - Know the critical tasks, measures, and data supporting those tasks and measures.
    - Understand the daily testing battle rhythm and the expectations for how and when to communicate with the OTD.
    - Immediately communicate any issues preventing the proper collection of data supporting critical measures.
    - Are encouraged to identify potential deficiencies as they become known and draft Blue and Gold sheets on site during test. While a complete draft Blue or Gold sheet may be difficult for adjunct testers or ship's company personnel to create, identification of the issue and the issue's impact upon the mission should be encouraged.
- The OTD Journal is maintained as a running account of how testing actually occurred.
- Any deviations from the test plan or LOI are noted, their impact assessed, corrective action taken, and contingency plans implemented, as necessary. Unusual events during testing that may have some effect on test results should be noted. Be prepared to alter operations if circumstances warrant, keeping the division leadership informed. For DOT&E Oversight programs, the OT plan has specific direction on deviations from the approved plan. The OTD will notify the Division Director of any deviations from the approved test plan as soon as possible.
- Data recorders are refilled, as necessary; recorded data are stored in a safe place.
- Data sheets and/or survey sheets are completed, as specified in the test plan, and turned in to the OTD prior to the end of test.
- COMOPTEVFOR is advised of any potential issues that could result in a COI being unresolved or resolved unsatisfactorily.
    - As test events and data collections progress during test, and analysis indicates issues with collected critical measures for programs with high-interest or long-running test phases, the OTD should communicate with the Division Director and/or squadron CO/COTD/ACOTD and schedule briefs leading to a "running" SERB. A running SERB will review deficiencies and COI resolutions and bring them to the Deputy Commander and Commander for concurrence.

  - Properly marked draft Blue and Gold Sheets may be released to the PM and Program Office by the OTD.

- Unauthorized tampering with equipment, which might invalidate test data, is prevented.

- Reports are generated, as specified in the test plan.

- OTDs may use scoring boards during test to investigate and accurately describe system failures. While participation in a scoring board may be open to a wide audience, including representatives from the PM, DT, CT, OPNAV, Fleet, and DOT&E, the independent assessment and characterization of any specific failure as an OMF and the association of the OMF to the SUT or SoS is the sole responsibility of the OTD and the OT team. See section 804 for scoring board guidance.

7-9 DEVIATIONS FROM THE TEST PLAN

Barring significant unforeseen circumstances, all elements of an approved test plan must be fully satisfied by the end of an operational test. Some variations are insignificant, such as an amended sequence in which events are executed. However, if a test event or vignette cannot be fully executed per the approved test plan, concurrence for any changes should be obtained as soon as possible. Once testing has begun, significant modifications to the planned execution shall be considered deviations to test. Significant modifications include changes that would impact the adequacy of test, such as resource constraints or changes to controlled conditions resulting in the loss of runs associated with a response variable, or changes that impact the expected confidence level associated with critical tasks. Deviations are categorized in one of the following categories:

- **Minor Deviations** should not significantly jeopardize the ability to resolve COIs and should be documented as minor limitations to test.

- **Major Deviations** will jeopardize the ability to resolve a COI and should be documented as either a major limitation (may affect COI resolution) or a severe limitation (precludes COI resolution).

All deviations encountered during test will be documented and the Division Director and/or squadron CO/COTD/ACOTD will be notified during the daily wrap up briefing.

For deviations encountered during test for programs on DOT&E oversight:

- DOT&E concurrence should be obtained before revised test events are executed.

- During test operations, a major deviation requires a pause in test, and coordination with, and concurrence from, the on-site DOT&E representative.

- During test operations, when a DOT&E representative is not on-site, DOT&E concurrence is not required when a need to change the execution of an element of the test plan arises in real time as its execution is underway.

7-10 EARLY TERMINATION AND DEFICIENCY REPORTS

If at any time during OT it becomes apparent that the system being tested will not demonstrate planned program capabilities for operational effectiveness and/or operational suitability, is unsafe to operate, or is wasting Fleet services, COMOPTEVFOR will transmit a deficiency report to CNO, information to the cognizant systems command/PEO, the procuring agency, and ASN(RDA) suspending OT. The OTD should know in advance of testing under what conditions a recommendation for early termination should be made to COMOPTEVFOR. The OTD's analysts, supplemented by the Policy Director (01A) and the Test Planning and Analysis Director (01C), can help determine these conditions. COMOPTEVFOR will then provide the appropriate test data to the PM for corrective action. The report will clearly characterize system performance leading to its placement in "deficiency" status. *The OTD in the field reports the proposal to place a system in a "deficiency" status directly to COMOPTEVFOR only. COMOPTEVFOR then decides whether to send an official report.* (The use of the term "deficiency" in this context should not be confused with the documentation of system deficiencies.)

NOTE

Per the DoD 5000.02(series), system deficiencies of this severity must be resolved prior to proceeding beyond LRIP or limited deployment. When a system undergoing OT&E is placed in a deficiency status, recertification by the SYSCOM commander, PEO, or Direct Reporting Program Manager (DRPM), per SECNAVINST 5000.2E, will be required prior to resumption of OT.

7-11 ANOMALY REPORTS

During OT, failures or anomalies may occur that impact OT and require correction, but are not so severe that the system needs to be placed in a "deficiency" status (see paragraph 7-12). Issues linked to critical tasks that appear to be Major 1 deficiencies (preclude or have a critical impact on mission accomplishment) might meet this criterion.

- OTDs should always document potential risks, failures, or deficiencies in draft Blue or Gold Sheets.

- OTDs must keep their respective Division Director or Squadron CO/COTD informed of such events so the Commander may be informed. Forward a draft Blue or Gold sheet and begin preparations for a running SERB. The properly marked draft Blue or Gold sheet (including the draft watermark & footer note) may be released to the PM and Program Office.

If the Division Director or Squadron Commanding Officer determines an anomaly report should be sent to the PM, he/she can approve the report (see table 3-1) and send it to the PM after briefing the Commander for his concurrence. Should COMOPTEVFOR direct that the CNO and the DA also be made immediately aware of the problem, an anomaly report will be prepared for COMOPTEVFOR's signature. If signed by COMOPTEVFOR, the anomaly report will be addressed to the CNO, DA, and PM; otherwise, the report will be addressed to the PM, allowing the PM to begin immediate work on resolution of the anomaly/problem.

- The anomaly report must identify the failure or anomaly and its impact on OT and system performance. *The OTD in the field reports the anomaly (preferably in Blue sheet format) directly to OPTEVFOR Headquarters or squadron only. OPTEVFOR (COMOPTEVFOR if appropriate) then forwards the report to the PM and other necessary personnel.* See the Anomaly Report Message format at Y:\OT&E Production Library\Test Execution.

7-12 OTD RESPONSIBILITIES AFTER TEST OPERATIONS

Many of the post-test responsibilities identified below should be discussed and understood at the pretest brief. The OTD should ensure:

- Surveys are distributed, completed, and returned to the OTD (or as specified in the test plan).
- When necessary, an M-DEMO is conducted.
- Necessary debriefs are conducted, as are post-test interviews.
- All other data are delivered to the OTD (or as specified in the test plan).
    - Once all data are delivered to the OTD, transmit the completion of OT message (see Completion of OT Message format at Y:\OT&E Production Library\Test Execution).
    - Unless explicitly stated in the approved test plan, all COMOPTEVFOR test phases will call end of test no later than 30 days following the last test event.
    - Should additional time be required for data reduction/analysis, relief will be requested from the Technical Director at the weekly document tracker meeting.
    - Close coordination with 01C and the Scoring Board will assist in determining when all data are in hand to support calling end of test.
- Proper safeguards are provided for all classified materials being returned to the command by the OTD or members of the test team. This includes accounting to the security manager for all classified materials that were hand carried prior to testing.
- Analysis proceeds, as necessary, to allow the evaluation report deadline to be met.

- The initial post-test brief starting the post-test iterative process (see paragraph 7-12 below) is scheduled as soon as possible, normally within 5 working days, but not later than 10 working days, following the return of the test team to headquarters (or squadron).

- The unit CO's report may be provided to the test platform's ISIC after promulgation of the evaluation report; see the ISIC Forwarding Letter template.

7-13 POST-TEST ITERATIVE PROCESS

- Following the conduct of OT&E (to include DT assists), the OTD will start a series of briefs to the ACOS/COTD and B-Code/ACOTD focused on determining the results of the completed testing. For the initial brief and subsequent iterative briefs, the OTD should include the following:

- A power point presentation to guide the brief/discussions (recommended)
- A copy of the approved test plan
- Copies of all requirements documents
- A draft of the test report. The draft is not expected to be complete, but should be, at a minimum, the report template as tailored for the program concerned.
- Copies of all draft Blue and Gold Sheets to be discussed.

    - As the iterative series of briefs progress towards the AWG and SERB (see paragraphs 8-5 and 8-6), the briefs should include more and more of the required AWG and SERB documentation
- If a COI is to be resolved, the corresponding results paragraph
- A POA&M for data reduction/analysis and follow-on briefs

    - Describe when each COI will be discussed (leading to risk/resolution).

    - For dedicated OTs, the initial brief should focus on a discussion of what the test plan stated would be accomplished as compared to what was actually accomplished. The differences between planned and actual should be stated and the resulting limitations should be clearly articulated.

        - The flow of the brief should move through each of the effectiveness COIs, followed by each suitability COI. Specific attention should be paid to data not obtained as a result of lost test events and the resulting impact of not having data as it pertains to COI resolution.

        - Resulting limitations to test beyond those articulated in the test plan will be captured for inclusion in the test report. This is particularly important if missing data are associated with critical tasks and measures.

        - Bottom line: The test team should clearly explain what not having the data means with respect to COI resolution and effectiveness or suitability calls.

- At all initial and subsequent briefs, the OTD should discuss what is known based upon data collected and map out a path forward to discuss any analysis of the results to include reviewing draft Blue and Gold Sheets. The ensuing series of discussions is iterative in nature and will systematically evolve through the analysis of COI specific data and eventual resolution of each COI. For COIs that are awaiting data reduction and subsequent analysis by an outside activity, a discussion should occur addressing where the data are, when the required actions will be completed, and when the follow-up brief to the ACOS/COTD should occur.

- The OTD should schedule and coordinate subsequent iterative briefs. The latter should logically build on the information presented in the first brief as modified by ACOS/COTD direction.

- The iterative series of briefs will culminate with the AWG, followed by a formal SERB per paragraph 8-6. With the exception of certain DT assists, all OT events are required to go through the SERB process. Any event that results in the publishing of a Blue or Gold sheet must go through the SERB process.

- For high-interest programs or programs whose test phase spans many months to over a year, the iterative process may progress into a “running” SERB where deficiencies and COI resolutions are reviewed by SERB members and brought before the Deputy Commander and the Commander for concurrence and release as they become available (including during test). Running SERBs are required for oversight program test periods planned for more than 6 months, or as directed by 00/00D/01C. Running SERBs are encouraged for all programs.

7-14 SHARING AND RELEASE OF OT DATA

7-14.1

Per DODI 5000.02, COMOPTEVFOR shall release valid test data and factual information in as near-real time as possible to the PM. Data may be preliminary and should be identified as such. As a developmental program progresses, each iteration of OT&E provides information regarding the system’s performance in an operationally relevant environment. Such information can be of tremendous value to users, system developers, and decision makers. Timely release of this information, to the maximum extent practical, is desirable. The release of factual test information, such as failure reports, telemetry data, etc., does not degrade OTA independence or credibility and does not jeopardize the independence of OPTEVFOR. When dealing with the PM or the Program Office for any specific program, the general rule of thumb should be: When OPTEVFOR knows something, they should also know. This imposes a responsibility upon the OTD to communicate rapidly and clearly with the OPTEVFOR chain of command to ensure that the same information is available to the Commander.

7-14.2

Factual data does not include information based on consensus or opinion, such as operator or maintainer surveys. Such information is subjective and part of the evaluative process, and will not generally be made available prior to the release of the final report to other than the PM and Program Office. Of note, the OTD may provide evaluative information in the form of properly marked draft Blue and Gold Sheets (including draft watermark & footer note) to the PM and Program Office. Evaluative information will not normally be released to other organizations until COMOPTEVFOR has completed the evaluation and issued a final report.

7-14.3

The sharing of information with the DOT&E is prescribed by statute and is explicitly described in the OT plans for oversight programs.

7-14.4

After promulgation of the evaluation report, test data may be released to other acquisition agencies on request. For Government Accounting Office (GAO) and other nonacquisition community requests for test data and reports, refer all such requests to OPTEVFOR 01A. In the case of data retained by Navy laboratories, once the evaluation report has been published, the data may be released on approval of CNO (N84). On publication of the evaluation report, letters regarding release of test data can be sent to activities retaining the data, as needed.

7-14.5

COMOPTEVFOR welcomes program management and their contractors as observers of OT events in reasonable numbers, as space permits. When observers from outside OPTEVFOR are present during OT (e.g., program offices, Navy laboratories, firing ranges, etc.), the OTD will ensure:

- Observers are briefed on their specific responsibilities regarding the confidentiality and proprietary nature of data obtained during OT.
- Observers are briefed on their responsibility not to reveal any test data or results to anyone other than their supervisors.
- The observer's parent command or activity is directed not to issue a separate report or release any test data prior to publication of the final evaluation report.
- Observers are afforded the opportunity to provide input to the evaluation process.

7-14.6

Observers and personnel from outside OPTEVFOR required to assist in the conduct of OT&E will be designated adjunct testers of COMOPTEVFOR. As such, they will be required to execute the COMOPTEVFOR Adjunct Tester Form.

7-14.7

For MOT&E, data release/sharing will be per the current MOT&E MOA.

7-14.8

The relationship of the OTC and OTD with the Fleet is an important one, particularly in the development of tactics. OTCs and OTDs must be careful to avoid discussing results, evaluation, conclusions, and recommendations pertaining to a system in OT&E, to preclude preemption of the Commander's report to the CNO. Authority for evaluation of the test results, conclusions, and recommendations thereto, resides with the Commander.

7-15 DOT&E RESPONSIBILITIES WHEN OBSERVING OT

Members of the DOT&E staff and their support contractors will routinely observe OT&E for programs for which they exercise oversight. The following procedures have been agreed on for DOT&E observation of OT&E:

- Each observer will be briefed by the OPTEVFOR representative as to the observer's specific responsibilities regarding the confidentiality of data obtained during OT&E.

- DOT&E observers will not, in any way, attempt to alter or direct the conduct of test operations. Conduct of the test will remain entirely under the control of the OPTEVFOR OTD.

To protect the integrity and security of Navy OT, DOT&E observers will not reveal any test data or results to anyone other than their DOT&E supervisors.

CHAPTER 8 - EVALUATION REPORTS

(Rev 7, Jul 2016)

8-1 INTRODUCTION

This chapter contains the basics of the evaluative process for writing operational evaluation reports and the formats used for reporting test results.

8-1.1

The evaluation report provides the CNO with COMOPTEVFOR's conclusions regarding a system's operational effectiveness and operational suitability, and recommendations regarding Fleet introduction, further development, additional OT&E, etc. System evaluations of operational effectiveness and suitability are made on the contribution of the SUT to the SoS warfighting effectiveness, and a separate operational effectiveness and suitability evaluation is provided for the SoS capability to perform its mission in the operational environment. The evaluation report provides the information (test results, evaluation criteria, etc.) to substantiate COMOPTEVFOR's conclusions and recommendations.

- Evaluation reports are prepared at the end of each OT&E phase and are required by DODI 5000.02 for MS-B and -C and the FRP decisions. For high-interest programs, at the discretion of COMOPTEVFOR, conclusions and recommendations may be provided before the formal, full evaluation report is issued via an interim report. Publication of an interim report does not alter the requirement for a final report.

- Publication deadlines are specified in section 816, Preparation, Routing, and Release of Evaluation Reports.

- Evaluation reports are OPTEVFOR’s most important contribution to the acquisition process. Evaluation reports help form the basis for acquisition decisions by articulating the effectiveness and suitability of new systems and capabilities. Evaluation reports also provide a historical record of testing. The goal of all OPTEVFOR reports is to clearly communicate the results of testing to all stakeholders. These results are communicated by describing what was observed, then using operational experience and judgment to evaluate the impact of those observations on mission accomplishment.

8-2 TYPES OF OPERATIONAL EVALUATION AND OTHER REPORTS

There are several types of reports provided as a result of OPTEVFOR involvement in programs. See table 8-1 for a report format guidance.

8-2.1 Operational Assessment Report (OAR) and Operational Milestone Assessment Report (OMAR)

EOAs and OAs, whether conducted as stand-alone OT, combined DT/OT, or fully integrated testing, often support program decision points. These reports will be termed OAR or OMAR.

Table 8-1. Report Format Guidance

Report Type	Test Type	Purpose	Format
OAR	EOA/OA	Early involvement OT reports used in identifying system enhancements and significant areas of risk to the program's successful completion of IOT&E in the form of Blue and Gold sheets. OARs are assessment reports that support all stakeholders, but do not support specific MS decisions.	Full Report (EOA/OA Report template)
OMAR	EOA/OA	Early involvement OT reports used to identify system enhancements and significant areas of risk to the program's successful completion of IOT&E in the form of Blue and Gold sheets. OMARs are assessment reports used to support MS decision meetings.	Full Report (EOA/OA Report template)
OER	IOT&E	To report a full, complete phase of testing. Consists of a cover page, executive letter signed by the Commander, and accompanying enclosure(s). The enclosure contains full details of testing and analysis.	Full Report (IOT&E-FOT&E Report Template)
OFER	FOT&E Software Qualification Test (SQT)	To report a full, complete phase of testing. Consists of a cover page, executive letter signed by the Commander, and accompanying enclosure(s). The enclosure contains full details of testing and analysis. Also used to report on RALOT levels II and III testing. To report on software upgrades, based on a Statement of Functionality (SOF).	Full Report (IOT&E-FOT&E Report Template)
VCD	VCD	To report results for validating correction of specific deficiencies (specific COIs only) from previous testing (end-to-end testing may not be required).	Report (VCD Report template)
QRA	QRA	To report findings for operational considerations/system capabilities when it is necessary to achieve a rapid capability in the Fleet. QRAs do not replace formal OT&E. They are used to support a rapid deployment of a capability to the Fleet.	Report (QRA Report template)
Interim Report	EOA/OA/ IOT&E/	Report provided when, due to unforeseen events, evaluation results are required prior to publication of the full OT report. The report provides the status of testing, an assessment of available data, and a recommendation (if appropriate). Use of this report is at the Commander's discretion. The full formal	Report (Interim Report

Table 8-1. Report Format Guidance

Report Type	Test Type	Purpose	Format
	FOT&E	report is still required.	template)
LOO	IT DT Assist	To report system performance observations to the PEO/PM. Does not resolve COIs or provide risk assessment of COIs or a fielding recommendation. For IT, the LOO periodicity may be identified in the TEMP. Per the PM's DT assist request letter and RALOT level I testing.	Letter with enclosed pending Blue/Gold sheets. Generally delegated for signature by HQ Divisional Director (LOO template)
MUA, LMUA, or OUA	JCTD	Products for the JCTDs that provide an assessment of military utility demonstrated. Not to be used for acquisition programs.	Full JCTD Report

- OAR/OMAR requirements should be listed in the TEMP and, commonly support Defense Acquisition Boards or MS decision meetings.

8-2.2 LOO

When testing under the philosophy of fully integrated testing, the IT phase could last anywhere from months to years. OPTEVFOR must provide periodic feedback (in addition to the OAR/OMAR) to the PM on the progress of the program and the IT effort. This feedback is in the form of observations of system performance using the LOO format. The format for LOOs is intended to be a brief letter to the PM with attached Blue/Gold pending risk sheets for each issue or observation. The periodicity of LOOs may be included in the system TEMP. LOOs are also used to communicate with the program manager when accomplishing a DT assist or RALOT Level I test reporting.

8-2.3 Operational Test Agency Evaluation Report (OER), Operational Test Agency Follow-on Evaluation Report (OFER), and SQT

For IOT&E and FOT&E, system evaluations of operational effectiveness and suitability are made on the contribution of the SUT to the SoS' warfighting effectiveness. A separate operational effectiveness and suitability evaluation may be provided for the SoS capability to perform its mission in the operational environment only when there is sufficient data to conclude the SoS performance differs from the SUT conclusion. A fielding recommendation is provided in the OER or OFER. SQTs will use the same report format as IOT&E/FOT&E. See appendix C for additional discussion of SQTs.

8-2.4 QRA

Emerging operational requirements may occasionally necessitate modifying the established OT process to achieve a rapid capability in the Fleet. In these cases, the program sponsor may seek a risk assessment by COMOPTEVFOR to better understand the capabilities of the proposed system, as well as the risks associated with its fielding. If a QRA is needed, the program sponsor will send a request to CNO (N84), copy to COMOPTEVFOR. Once approved, OPTEVFOR will conduct the QRA and the Commander will issue a report as soon as possible. *A QRA will not take the place of a formal OA or IOT&E and will not be used to resolve COIs, make effectiveness or suitability calls, or provide a limited Fleet introduction, Fleet introduction, or Fleet release recommendation*. A QRA should answer the questions and address the purpose as outlined in the QRA request letter. As such, the QRA request letter is routed with the final report as the report is staffed for signature. See chapter 6 for QRA test planning. Information from a QRA may be used by DOT&E in support of providing a "Section 231" report to Congress when a system being developed is fielded prior to the completion of IOT&E.

8-2.5 VCD

The use of the term VCD is unique to the DON. It reflects the need to provide a rapid response to DON leadership on the status of the correction of deficiencies than could be provided waiting for the next scheduled period of OT. A VCD is generally not a preplanned phase in the TEMP, but can be incorporated into the test program at the request of the program manager after a formal phase of OT to validate certain

deficiencies have been corrected. No TEMP update is required. A test plan is required to describe the specifics of the given test: what data will be collected, how data will be collected, and how the data will be analyzed/used to determine if the original deficiency has been corrected or mitigated to such an extent as to merit recharacterization. See chapter 6 for VCD test planning. The VCD report results should indicate whether the deficiencies are corrected; not corrected, but substantially mitigated; or not corrected. If VCD results enable a change to the resolution of COIs (beyond IOT&E), then those COIs will be listed with the revised resolution in the VCD report, thereby reducing the scope or eliminating the need for later phases of OT for the specific purpose of verifying the deficiency that has been corrected. See appendix C for a detailed discussion of VCD testing.

8-3 EVALUATION REVIEW PROCESS

The evaluation review process establishes a standardized, repeatable evaluative process across all warfare domains, for all reports (with the exception of DT assists) to classify issues, characterize risks/deficiencies, make overall COI assessments or resolutions, and make recommendations for each issue. This process, to include the AWG and SERB, are presented in chronological order.

8-3.1.1 Test Planning

The evaluative process begins with test planning. Test design task decomposition includes identification of SUT-specified requirements, derived requirements, and other attributes. This effort is coordinated and collaborated with the SUT stakeholders (i.e., sponsor and PM). In areas of disagreement, the final determination of whether an attribute to be used for OT evaluation is within the scope of the SUT is the prerogative of the Commander; however, his determination is strongly influenced by the input of the Program Sponsor. The goal is to have all attributes identified prior to testing to ensure SUT evaluation criteria are clearly understood by all stakeholders.

8-3.1.2 During Test/Initial Performance Issue Identification

8-3.1.2.1 Blue and Gold Sheet Drafting

Upon identification of an issue, Blue and Gold sheet templates are used to document all SUT and SoS performance issues. There is only a single issue per sheet and each sheet must stand alone.

8-3.1.2.2 Data Sharing

As system performance issues are identified, the raw data and the issue are provided to the PM per sections 7-9 and 7-10. The draft Blue and Gold sheets are shared with the PM, and must be clearly marked as preliminary information with the DRAFT watermark on each page and the standard draft disclaimer below on the front page.

“Note: This is based on limited initial analysis of the available data. Further data may refine and/or modify the final characterization of the preliminary deficiency [or risk], and will be addressed in the final operational test report.”

This preliminary feedback to the PM does not include any COI preliminary determinations or recommendations, as the evaluative process is immature. In keeping with the tenets of constructive conflict, inputs from key stakeholders are sought. Feedback to/from the PM is important for several reasons:

- Enables the PM to begin addressing performance issues identified as early as possible.
- Provides insight to the OT team as to causal analysis.
- Identifies additional data that may be available for system evaluation by the OT team.

It is important to note that the PM is not being given permission to edit or change Blue and Gold sheets or result paragraphs. Instead, the PM is being given an opportunity to provide additional information for consideration by COMOPTEVFOR during the post-test analytical process and the drafting of the Final Report. Warfare Division or Squadron leaders must manage their test teams and ensure as each Blue or Gold sheet is drafted, they are shared with the program office as soon as possible. Warfare Division leaders and Squadron COs must ensure each Blue and Gold sheet reasonably communicates the issue. The above does not prevent test teams from informally sharing issues as they are discovered during test e.g., daily SITREPS, post event critiques etc.

8-3.1.3 Post-Test Reviews

- **Scoring Board.** The purpose is to expose the data collected for review and to validate whether the data are suitable for addressing the measures delineated in the test plan or DCP. Scoring boards are the first step in the iterative process of data analysis and reporting. Section 8-4 provides details for the conduct of scoring boards.

- **Test Completion.** Once it is clear that all necessary data collection is complete and all data have been received, the end of test e-mail is issued. Normally, end of test will occur 30 days following completion of the last test event unless specifically extended by the Commander or Deputy; see section 7-11 for additional information on extending end of test greater than 30 days.

- **AWG.** Convene the AWG to validate data analysis is accurate and complete. Section 8-5 provides details for the AWG process. All tests will have an AWG. Additionally, AWGs may be conducted on a routine basis for tests of long duration to support “running” SERBs.

- **SERB.** A SERB and Executive SERB (E-SERB) are conducted to thoroughly examine every issue, determine categorization of risk/deficiency level, and determine COI resolution. Section 8-6 provides details of the SERB process. A running SERB may be conducted during test to classify issues early. Running SERBs serve to keep the issues fresh in the mind of the OTD and to reduce the final SERB scope for large-scale tests.

- **Draft the OT Report.** Drafting of the OT report commences before the start of testing with the creation of a draft test report consisting of the report template as tailored for the program concerned. As data are analyzed by the test team during the iterative process, division/squadron analysts and technical writers should review data, calculations, and initial drafts of Blue/Gold sheets associated with measures and issues. Once the AWG and SERB processes are complete, the OTD completes any remaining data analysis and finalizes the rough draft of the OT report, confident that the results and conclusions include the Commander's intent. Any new system performance issue identified following the SERB must be addressed with SERB members as quickly as possible. This evaluative process continues until the OT report is approved by COMOPTEVFOR. The OPTEVFOR report templates are located in the Y:\OT&E Reference Library. Templates are mandatory for OPTEVFOR reports.

8-4 SCORING BOARD

Scoring boards play a key role in a credible, consistent, and collaborative process that produces results that are relevant to both the acquisition decision maker and the warfighter. To be successful, boards must be conducted in an atmosphere of trust, transparency and teamwork. The following guidance is provided to ensure that all participants have a clear understanding of roles and responsibilities.

8-4.1 Scoring Board Purpose

Primarily, the scoring board serves to qualify data for OT, and in so doing supports the decision to call out-of-test. The scoring board serves the following purposes:

- Review test execution and identify instances where actual execution deviated from the test plan's DMOT. When identified, deviations from planned test execution methodologies must be documented and the impact on the validity of the collected data determined by the scoring board.

- Validate data elements were collected and recorded per the Test Plan.

    - DOE runs were executed per the controlled conditions, within established tolerances, identified in the DOE run matrix.
    - SUT was in the proper configuration.
    - SUT, SoS, and threat operators were operationally representative, qualified, and proficient.
    - SUT was stressed in an operationally representative manner.

- Identify data elements needing additional information, or needing to be repeated.
- Score the result of the observed task, if needed (hit/miss, pass/fail, OMF/not, abort/not, etc.).

8-4.2 Scoring Board Membership.

Scoring boards provide a venue for the division or squadron conducting the test to review the data collected with the headquarters test support staff from Codes 01B and 01C. To support this effort, a variety of outside organizations may be invited to participate; however, responsibility for execution of a scoring board rests with the cognizant Deputy Division Director or Squadron COTD conducting the particular test.

8-4.2.1

The scoring board will be chaired by either the Division Section Head for tests being conducted by the headquarters staff or the Squadron Branch Head/Department Head for tests being conducted by a squadron. The chair is responsible for conducting the board in accord with OPTEVFOR policy. The chair will adjourn the proceedings and notify the COS anytime he/she feels OPTEVFOR processes are being compromised.

8-4.2.2

The presence of senior individuals from other organizations in no way relieves the designated chair from responsibility for conduct of the event. Senior individuals from outside OPTEVFOR are to be treated with the courtesy due their positions and are expected to respect OPTEVFOR processes.

8-4.3 Scoring Board Procedures

8-4.3.1

In keeping with the purpose of the board, frank, open dialogue is encouraged. While one would expect that in most cases, the participants will quickly reach consensus based upon a common understanding of the facts, there will be times when individuals will examine the same set of facts and draw different conclusions as to the validity and/or utility of a set of data.

8-4.3.2

There is no desire for a forced consensus. The tendency for "Groupthink" must be studiously avoided. Mature organizations can not only deal with differences in technical/operational judgment; they will in fact become better from the self-examination that is part of the professional discourse.

8-4.3.3

In the event that after an appropriate period of discussion it is evident that there is an irreconcilable difference of professional opinion between the test team and the test support staff, the chair will close the discussion and propose a synopsis of the differences to be placed in the record. Once both parties agree that their views have been captured, the chair will continue with the next topic of discussion.

8-4.3.4

Following completion of the scoring board, the chair will provide the cognizant Division Director/Squadron Commanding Officer and the Director for Test Planning and Analysis with the record of the proceedings taking special note of any open areas of

disagreement. The Division Director/Squadron Commanding Officer and the Director for Test Planning and Analysis will then attempt to resolve any open items. If they are unable to reach agreement, they will prepare a single decision paper outlining their respective positions on the issue at hand. The COMOPTEVFOR Deputy will review and endorse the paper prior to forwarding it to me for a decision.

8-4.3.5

Materials used to prepare for, presented at, or produced by an OPTEVFOR scoring board are to be clearly marked "Predecisional - Not for External Release". Participants must understand that the results of the scoring board are not final until I have had an opportunity to review them and conduct any further inquiry I deem necessary.

8-4.3.6

Individual members of the test team and the headquarters staff are encouraged to speak freely and openly. Intellectual disagreements among members of the OPTEVFOR team should be anticipated. Given that free and open discussion, all participants must take particular care not to represent the positions expressed by individual members of OPTEVFOR as the views of the Commander. All deliberations of the scoring board are considered internal discussions of my staff.

8-4.3.7

Outside participants are encouraged to express their view with the same candor as members of OPTEVFOR. Support contractors and particularly professional staff members from Federally Funded Research and Development Centers such as the Center for Naval Analyses and the Institute for Defense Analyses bring unique experience and technical knowledge to the proceedings; however, it is important for all participants to understand that such individuals are not permitted to speak on behalf of the Government. In a similar vein, care must be taken that nongovernment personnel are not implicitly tasked to perform services. Any requests for additional support/analyses from these individuals must come from their respective COR, not from the scoring board chair or other participants.

8-4.3.8

Military personnel and government civilians are expected to conduct themselves professionally at all times. In the rare case where a non-government participant may fail to comply with the procedures governing the scoring board, the chair should raise the issue with the appropriate COR so that the matter can be properly handled.

8-5 AWG

The AWG is a peer OPTEVFOR, analytical review of test data used for issue/deficiency identification. The AWG focus is on data identified as critical to subtask/COI performance per the associated test plan and data used to support identified issues/deficiencies. This includes positive and negative results and is not limited to data-driven values that did not meet specified thresholds. The AWG is the first of two peer reviews (the SERB being the other) of the post-test iterative process and provides

validation of OT data to ensure accuracy and consistency of data supporting the SERB evaluative process.

8-5.1 AWG Membership

The AWG membership is as follows:

- 01C (Lead Analyst and/or the Director) - required
- Warfare Division Deputy Director - required
- VX COTD (or designated representative) - required for VX SUT
- SH/OTC/LTE - required
- OTD - required
- Division Analyst - required
- Visiting/guest Divisional Analyst - recommended
- 01B CTF - required
- OTD's Support Contractor(s) - optional.

8-5.2 Convening an AWG

The responsible OTD or SH/OTC coordinates with the 01C Lead Analyst and schedules an AWG prior to the Command SERB. The AWG should be conducted as soon as the division is ready to support, but no later than 5 working days prior to, the Command SERB to allow formal reporting and resolution of data issues discovered during the AWG. Every effort is made to vary the visiting divisional analyst to ensure the effective spread of lessons learned across the command. For large-scale programs with long test durations, AWGs may be convened during a test to support a running SERB process. The running AWG and SERB process will keep issues fresh in the OTD's mind and reduce the effort required at the end of test. The OTD must provide read-ahead materials electronically to all AWG members no later than 2 working days prior to the scheduled AWG, to include the draft data appendix, requirements document, approved test plan, and any additional supporting data.

8-5.3 Conduct of the AWG

The AWG focus is on data identified as critical to COI resolution/assessment per the associated test plan and data used to support identified issues/deficiencies. AWG data analysis focuses on:

- All data identified by the test plan as critical for subtask/COI resolution/assessment. This includes the data associated with critical measures. A critical measure is a measure or measures associated with a critical task/subtask. These critical measures include quantitative and qualitative data. They may also include KPPs/MOEs/MOSs that will be included in the Major Test Results tables of the test reports.
- Data substantiating results discussed in the COI results paragraphs of the report.
- Data used to build the risks/deficiencies being presented to the SERB.

- Reliability growth curves, Fleet data, and any other data the division deems pertinent to risk/deficiency characterization or COI resolution/assessment.

8-5.3.1

Every AWG starts with a brief overview/description of the SUT and pertinent SoS to aid reviewing analysts to understand system operation and relevance of the test data to be reviewed. Use of the draft SERB system brief is encouraged.

8-5.3.2

Following the completion of the SUT overview, the OTD/SH/OTC/LTE, supported by the test analyst, will lead the AWG data review using the test plan's table defining critical tasks and associated critical measures. The review will ensure all data associated with the critical measures are reviewed to include a comparison of the planned number of runs versus the actual number of runs. Any data supporting noncritical measures that are used in Blue and/or Gold sheets should also be examined.

8-5.3.3

Again, the focus of the AWG is data-driven issue identification and evaluation of data-driven attributes binned by subtasks associated with COIs. Recommended COI resolution is a SERB function, which is supported from AWG input.

8-5.4 Roles and Responsibilities

8-5.4.1 01C Lead Analyst:

- Coordinate with OTD/SH/OTC/LTEs as appropriate and schedule AWGs.
- Conduct an initial meeting with the OTD/SH/OTC/LTE prior to scheduling the AWG to determine the scope of data analysis and if any special analytical support is needed for the particular system (e.g., DOE expert).
- Determine the visiting/guest analyst.
- Conduct analytical reviews and validate data-driven results prior to the associated Command SERB.
- Collect data review lessons learned and disseminate as best practices and OTD Manual changes, as needed.
- Provide recommended templates for the presentation of data in formal reports.

8-5.4.2 OTD:

- With the SH/OTC/LTE, make initial:
  - Review of reduced test data supporting data-driven deficiencies and positive results.
  - Review test plan to validate required test data were collected and identify any test data issues (e.g., missing data or data not qualified for OT).

- Coordinate with 01C Lead Analyst and schedule an AWG (use telephone conference calls for tests conducted by Air Test and Evaluation Squadrons and to include supporting organizations).
- Prepare data for review by AWG and a SUT/SoS overview brief. Send both as read ahead to AWG.
- Lead the AWG through the data review discussion.

8-5.4.3 Division Analyst:

- Assist the OTD/ SH/OTC/LTE in above responsibilities. As part of the post-test iterative process, the division analyst(s) should already be assisting the OTD and reviewing all data and calculations with the test team. The AWG is the culmination of this effort.
- Prepare supporting OT data for presentation as directed by OTD/ SH/OTC/LTE.
- Participate in AWGs.

8-5.4.4 SH/OTC:

- Assist the OTD in above responsibilities.
- Review test data for completeness, deficiencies, or data anomalies that should be identified for AWG discussion and resolution.

8-5.4.5 Division Visiting/Guest Analyst:

- Review read-ahead materials prior to the AWG.
- Participate in AWGs.

8-5.4.6 01B CTF:

- Review read-ahead materials prior to the AWG.
- Review associated approved IEF prior to the AWG.

8-5.4.7 Warfare Division Deputy Director:

Oversee execution of divisional analytical reviews.

8-6 SERB

The SERB is the second of two peer reviews (the AWG being the first) of the post-test iterative process and provides a peer and senior OPTEVFOR leadership review of all system performance issues identified during test execution and data analysis. The SERB provides a repeatable process for evaluation of COIs along with their respective SUT and SoS issues to ensure OT reporting fairly evaluates the SUT and identifies SoS issues impacting the full realization of the SUT capabilities. The SERB results will be briefed to COMOPTEVFOR within 5 working days of SERB completion for approval or guidance. As previously mentioned, use a running SERB for programs with long test duration or high-interest programs and is encouraged for all programs.

8-6.1 SERB Membership

The SERB membership is as follows:

- Warfare Division Director,*
- VX Commanding Officer or designated representative* (if VX SUT),
- Warfare Division Deputy Director,
- 01C Director,*
- Other warfare division deputy director,
- SH/OTC/LTE,
- OTD,*
- Division Analyst.

* Minimum requirement for SERB to be convened.

8-6.2 Convening a SERB

The Warfare Division Deputy Director schedules a SERB as soon as possible, but no later than 30 days following test completion, to include the minimum membership from paragraph 8-6.1 and a suitable meeting location. As scheduling permits, every effort is made to vary the visiting Warfare Deputy Director to ensure the effective spread of lessons learned across the command. The OTD must provide read-ahead materials to all SERB members no later than 5 working days prior to the scheduled SERB (use of the Outlook calendar scheduling tool is encouraged), to include the draft Blue and Gold sheets, and the SERB/E-SERB Brief slides; see 01C Best Practices folder for the current SERB Checklist and brief templates. The SUT reference documents should also be made available as part of the read-ahead materials (i.e., ORD or CDD and CPD).

8-6.3 Conduct of the SERB

The purpose of the SERB is to conduct a review of the quantitative and qualitative results, the characterization of risk/deficiency level, the proposed recommendation for each issue, and the logic leading to the overall COI assessment or resolution.

- The SERB/E-SERB Brief slides should be presented to the SERB using the template from the best practices (Y:\OT&E Production Library).

- Following the review of the test results, the OTD/ SH/OTC/LTE will lead the evaluative discussion starting with the COI resolution and logic behind the resolution call (results paragraph) followed by a discussion of issues for each respective COI identified during test using the draft Blue and Gold sheets. The OTD will make adjustments to the Blue and Gold sheets as required, and document consensus or lack of consensus between the division director, the VX Commander (when appropriate), and the policy director. If the adjustments made to Blue and Gold sheets are significant enough to change COI resolution, the results paragraph logic will be reviewed and updated.

8-6.4 Post-SERB Data Sharing

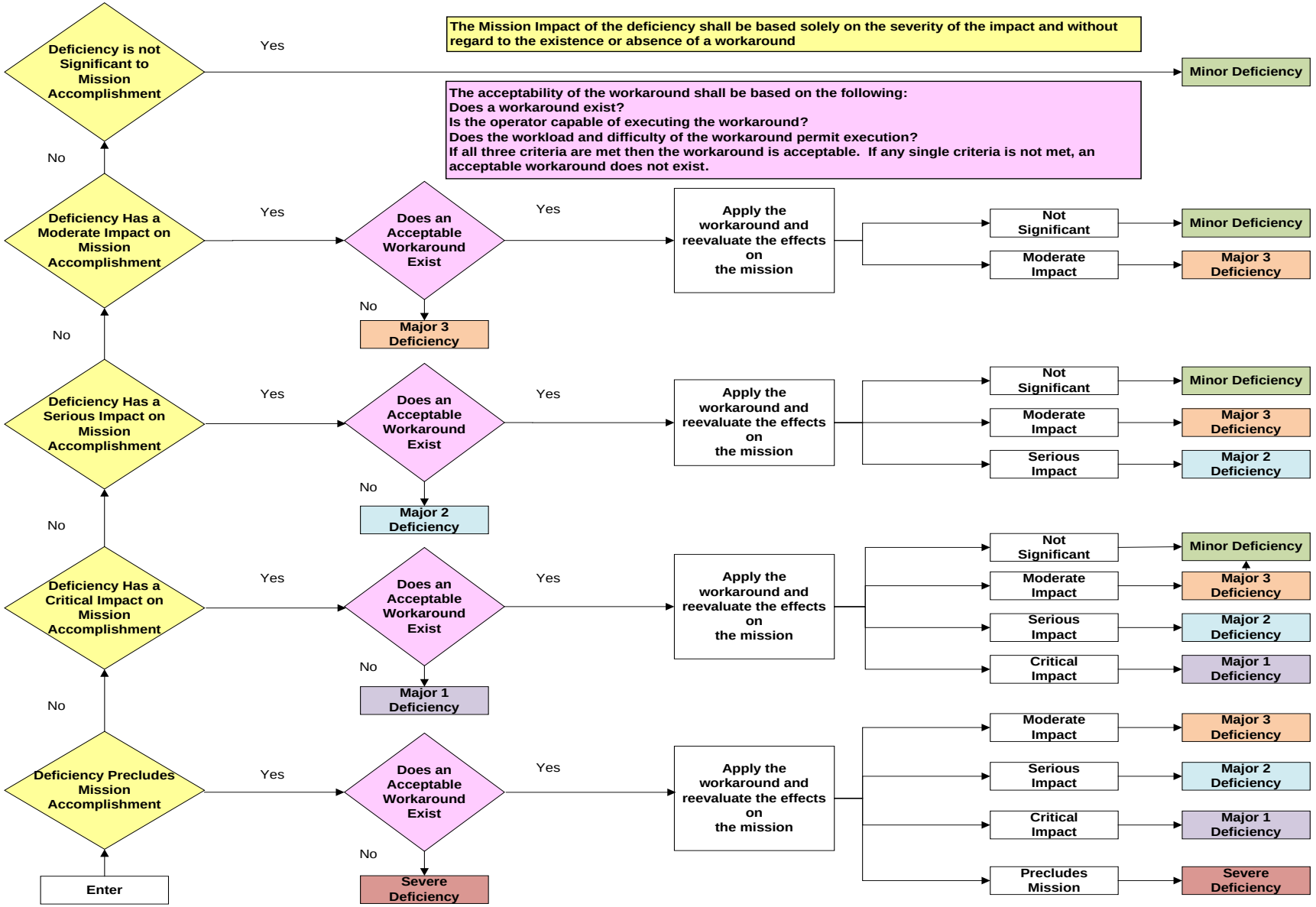
SERB approved draft COI results paragraphs (SAT or UNSAT) and all Blue and Gold sheets will be shared, by e-mail, with the O-6 level PM by the division or squadron O-6 leadership (A-Code or squadron CO/COTD). The e-mail should include the E-SERB scheduled date (normally 5 working days) and a request for comments on the Blue and Gold sheets from the PM.

8-6.5 Executive SERB (E-SERB) Brief to the Commander

The purpose of the E-SERB is to inform the Commander and to receive the Commander's initial guidance concerning SUT and SoS issues, COI assessment/resolution, and associated recommendations. Give particular attention to areas where SERB consensus was not reached. Briefing Minor deficiency or Green risk Blue and Gold sheets is not required, unless:

- The cumulative effect of the Minor/Green Blue and Gold sheets impacts a COI resolution or assessment,
- Consensus on the severity characterization was not reached at the SERB,
- Or the division director/VX Commander directs the Blue or Gold sheet be briefed.

Figure 8-1. Baseline Deficiency Definition Flow Diagram



8-6.6 Outcome of the E-SERB

Successful completion of an E-SERB yields:

- The Commander's concurrence on the binning of Blue/Gold sheets with associated COIs.
- The Commander's concurrence on categorization of the deficiency(ies), as to:
    - Type of deficiency: SUT (Blue) or SoS (Gold),
    - Level of deficiency: Severe, Major 1/2/3, Minor,
    - Inclusion of one or more Operational Considerations,
    - COI resolution,
    - Effectiveness and Suitability determination.

Results are contingent upon the incorporation of all E-SERB directed changes to the presented binning and categorization. E-SERB action items will be documented in formal minutes published by the Division and routed with the final report. To be clear, successful completion of an E-SERB does not mean the Commander concurs with all the Blue/Gold sheets verbatim as they were presented. The E-SERB is not the forum for review of grammar and logical constructs.

8-6.6.1 Post E-SERB Data Sharing

While draft Blue and Gold sheets should already have been shared with the PM and Program Office, once approved by the Commander via the E-SERB process, Blue and Gold sheets are shared with the PM and Program Office. The division director/squadron commanding officer is responsible for ensuring the Commander's intent, as expressed at the E-SERB, is incorporated into the Blue and Gold sheets as they are smoothed for the final report and prior to any external distribution. At a minimum, UNSAT COI results paragraphs and any Not Operationally Effective or Not Operationally Suitable calls will be formally shared with the PM. The results paragraphs and the Effective and Suitable calls will be discussed by e-mail with the O-6 level PM by the division or squadron O-6 leadership (A-Code or squadron CO/COTD). The division or squadron O-6 leadership shall inform the Commander of the results from the discussions with the congnizant PM(s) and afford the Commander the opportunity to engage the PEO. When distributed, the DRAFT watermark should be removed from Blue and Gold sheets, but the "initial analysis/preliminary deficiency" note in the footer should remain.

8-6.6.2 Roles and Responsibilities

8-6.6.2.1 OTD

With the SH/OTC/LTE, make initial:

- Classification determination for issues identified during test planning, execution, and data analysis
- Issue assessment/evaluation (risk/deficiency level)
- COI resolution and associated rationale

- Recommendation for each issue.
- Write issues in Blue and Gold sheets using Six-Part Paragraph (6PP) format.
- Lead the SERB discussion.
- Document the SERB results and brief to the Commander.
- Document E-SERB action items in formal minutes.
- Draft the final report.

8-6.6.2.2 SH/OTC/LTE

- Assist the OTD in above responsibilities.
- Conduct working-level coordination with the requirements officer.
- Share data with the program office (T&E WIPT) and the assistant PM.
- Review and assist in drafting the final report.

8-6.6.2.3 Warfare Division Deputy Director

- Schedule own warfare division SERBs, including the external participants and an appropriate conference room.
- Participate in own warfare division SERBs.
- Review the final report.
- Participate in SERBs for tests outside own warfare division, as requested.

8-6.6.2.4 Warfare Division Director

- Conduct coordination with the PM and the sponsor.
- Chair the SERB.
- Following the SERB, coordinate with the PM and the sponsor to discuss SUT and SoS issue classifications that have not been resolved by the SERB and determine if additional data are available.
- Participate in E-SERB brief to COMOPTEVFOR.
- Approve and promulgate the E-SERB action item minutes.
- Review the final report.
- Participate in SERBs for tests outside own warfare division, as requested.

8-6.6.2.5 VX COs (as appropriate)

- Participate in SERBs.
- Participate in E-SERB brief to COMOPTEVFOR.
- Review the final report and forward the smooth copy to 01A for staffing to the Deputy and Commander.

8-6.6.2.6 01A Director

- Participate in E-SERB brief to COMOPTEVFOR.
- Coordinate staffing of reports from VX squadrons to the Deputy and Commander.

- Ensure policy standardization across warfare divisions/squadrons regarding system evaluations.
- Ensure editorial quality and standards are met across the Force.

8-6.6.2.6.1 01C Director

- Participate in SERBs.
- Participate in E-SERB brief to COMOPTEVFOR.
- Review the final report.
- Ensure technical analytical rigor supports system evaluations.

8-7 OT REPORT CONSTRUCT

Plans for OTs will be derived from joint capability areas using MBTD whenever possible. The MBTD process will create operational vignettes composed of a SoS to include the SUT. OPTEVFOR's evaluative process must segregate issues discovered during OT into SUT issues and broader SoS issues. System evaluations of operational effectiveness and suitability are made on the contribution of the SUT to the SoS' warfighting effectiveness, and a separate operational effectiveness and suitability determination is provided for the overall SoS capability to perform its mission in the operational environment (see figure 8-2). The intent of this guidance is to implement a standardized, repeatable process for OT reporting of all findings while recognizing that every program is unique with subjective judgments based on operational experience being required.

8-7.1 Definitions

The following definitions for SUT and SoS issues apply.

8-7.1.1 SUT

A SUT is defined by either specified or derived requirements that the Navy sponsor has funded the PM to deliver. The SUT evaluation is based on the contribution of the SUT, as defined by specified and derived requirements, to the SoS warfighting capability. SUT issues identified during test are characterized as risks (EOA and OA) or deficiencies (IOT&E or FOT&E). SUT issues will be used in the risk assessment/resolution of appropriate COIs, SUT operational effectiveness and suitability determinations, and fielding recommendations.

8-7.1.1.1 Specified Requirements

Specified requirements must be clearly documented in the system's CD (ORD, CDD, CPD, Functional Requirements Document (FRD), etc.) and must be either:

- A MOE and MOS performance threshold (not objective).
- Any capability stated as a "shall" or "will" statement.

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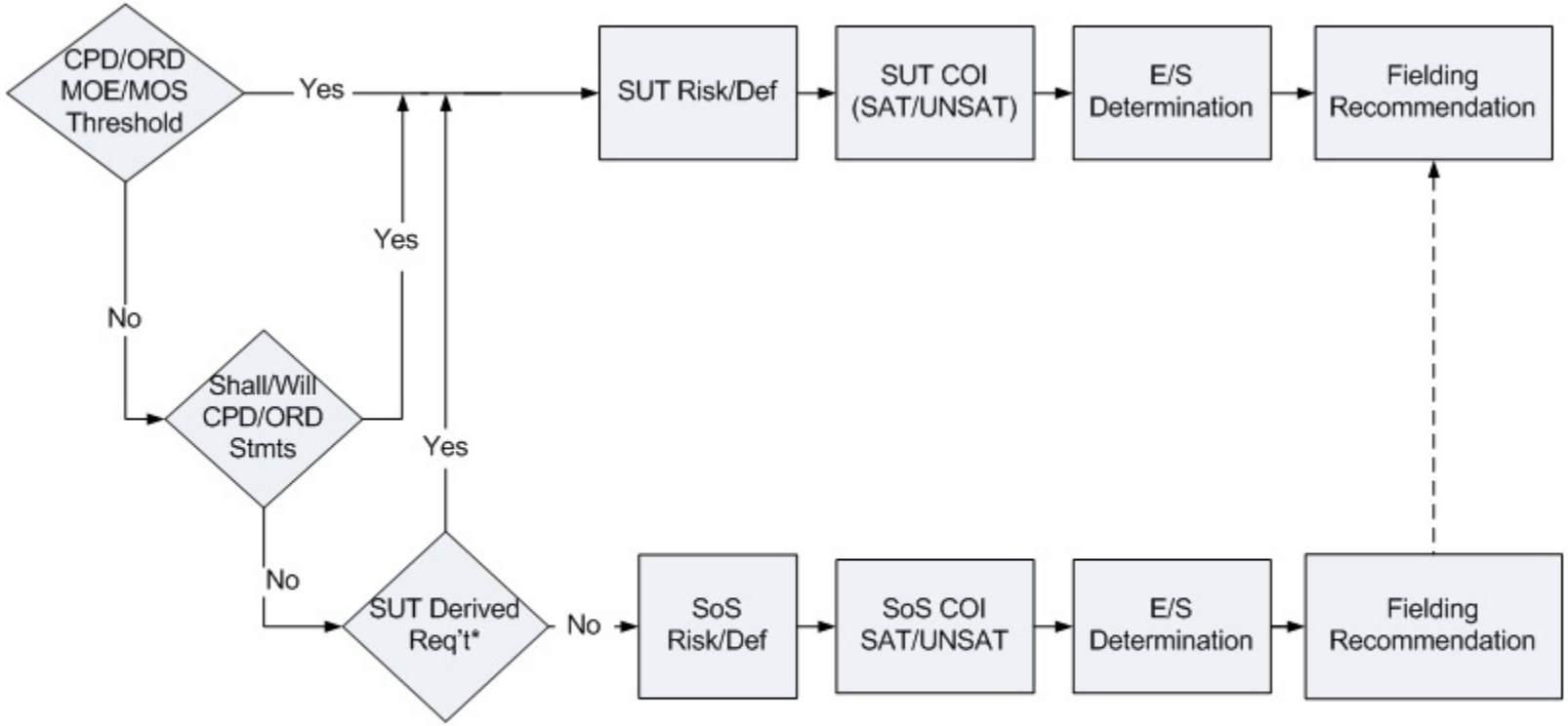
Figure 8-2. SUT and SoS Decision Tree



*Necessary for effective operation of system as integrated on host platform. Must be coordinated with PM and Sponsor to achieve concurrence or clear reason for non-concurrence of whether a derived requirement.

8-7.1.1.2 Derived Requirements

Derived requirements are requirements not clearly stated in the system's CD that are necessary for the effective delivery of the SUT capability as defined in the CD, or are derived from:

- CONOPS
- OSD/Joint Chiefs of Staff/SECNAV/OPNAV instructions
- Threat documents
- SUT specifications
- System stakeholders agreed-on capability/function to be delivered (Navy sponsor's intent for funded capability).

8-7.1.1.3 SoS

A SoS issue is any performance or suitability issue that is not within the purview of the SUT, yet is necessary for mission accomplishment of the SUT when operating in the overall SoS environment. These include those capabilities:

8-7.1.1.3.1

Identified as MOE and MOS performance objectives that adversely impact SUT mission accomplishment.

8-7.1.1.3.2

Required for the full employment of the SUT in its intended overall SoS operating environment (including Joint).

- SoSs will inform operational commanders of significant issues that need addressing to achieve full mission capability of the SUT.
- SoSs will be characterized as SoS risks (EOAs and OAs) or deficiencies (IOT&E or FOT&E). SoSs will be used in the risk assessment/resolution of appropriate COIs and the determination of SoS operational effectiveness and/or operational suitability.
- SoS risks and deficiencies will be used in the drafting of WCB assessments.

8-7.1.1.4 Operational Considerations (OPCON)

OPCONs document tactical considerations, which inform operational commanders of significant aspects (pro and con) of system employment, or make clear what special measures would be required to make the system more efficient in operational use. See the "Deciding the COI Deficiency Levels for IOT&E and FOT&E," section 811, later in this chapter for additional information.

8-8 OT RISK AND DEFICIENCY SHEETS

This methodology describes a continuous method to assess SUT/SoS performance issues. A single deficiency sheet is provided for each SUT/SoS performance issue assessed/evaluated. Performance issues relating to the SUT are documented on "Blue sheets." Performance issues relating to the SoS are documented on "Gold sheets."

SUT issues are those issues directly linkable to what the sponsor has funded the PM to develop and field. SoS issues are those issues that, while not traceable back to the required SUT capability to be delivered, impact the mission accomplishment of the SUT when operating in the SoS environment. If the issue is pre-IOT&E, it will be categorized as a risk using the EOA/OA report template methodology. If it is IOT&E or later, it will be identified as a deficiency categorized per the deficiency definitions (Severe, Major 1, Major 2, Major 3, or Minor) contained in section 811. Blue and Gold sheet templates and the report formats using the Blue and Gold sheets are posted in the OT&E Reference Library, as well as the COMOPTEVFOR Web site. All Blue and Gold sheets will be updated as new data are obtained.

8-8.1 System Deficiency Documentation Procedures

SUT and SoS risks/deficiencies are documented using Blue sheets (SUT) and Gold sheets (SoS). These sheets will use the 6PP style of writing as described in section 8.9.2. There will be a single Blue or Gold sheet for each performance issue identified during testing. A unique number is assigned to each issue. The issue will be updated as new OT-qualified data are acquired using the same Blue or Gold sheet, and the unique number will take on a modifier. These stand-alone risk/deficiency sheets are used for initial performance issue identification and continuously updated through verification of correction (cradle to grave). These sheets are used in the SERB and E-SERB for risk/deficiency level categorization. The Blue and Gold sheets are included in the OAR or OER.

8-8.1.1 Initial Performance/Suitability Issue Identification

- Blue and Gold sheets are used to document all SUT and SoS performance/suitability issues. There is only a single issue per sheet. Specific guidance is provided in the templates. The intent is for the reader to gain a comprehensive understanding of the issue by reading this single sheet.
- There are two types of deficiency sheets. The Blue sheet is for SUT issues and the Gold sheet is for SoS issues. Each sheet has a unique issue number to track the issue from identification to correction. The numbering scheme uses the program Test and Evaluation Identification Number (TEIN) with a three-digit modifier (i.e., 1420-001, 1420-002, or 3000-371-001). In addition, as the same issue is updated, the number includes a modifier for the revision (i.e., 1420-001, 1420-001 Rev 1; 1420-001 Rev 2).

8-8.1.2 Categorization

SUT and SoS issues are categorized as “draft”, “pending risk”, “risk”, “deficiency”, or “closed”. The following are the categorization descriptions and the reporting product each supports.

8-8.1.2.1

A “Draft” categorization is used for issue discovery. Draft is used during data collection to document the current information, when there is not enough data to know if there is a performance/suitability issue. It is also used to update a risk/deficiency with new data

between E-SERBs and formal Flag recategorization. Draft categorizations do not support any product.

8-8.1.2.2

A “Pending Risk” categorization is for documenting performance/suitability issues when enough data have been gathered and preliminary analysis determines that there is a SUT or SoS issue. Pending Risk designation can be made by the Division Director. The Pending Risk categorization supports LOOs. While a formal SERB/E-SERB is not required, the Pending Risk sheets will be reviewed by 01C before release by the Division Director.

8-8.1.2.3

A “Risk” categorization is used for issues identified during OT phases of test prior to IOT&E or FOT&E that have been through the SERB/E-SERB process and have the Commander’s formal approval of the risk categorization (i.e., 4x4 High). The risk categorization supports EOA/OA and QRA Reports. The risk sheets also include the potential deficiency level if the issue is not mitigated. No change to the assigned E-SERB risk “score” (i.e., 4x4 High) can be made until additional data are reviewed through the SERB/E-SERB process and the Commander concurs with the recategorization.

8-8.1.2.4

A “Deficiency” (Severe, Major 1/2/3, Minor) categorization is used during IOT&E, FOT&E, VCD, and applicable IT periods. No change to the assigned E-SERB deficiency level can be made until additional data go through the E-SERB process and the Commander formally concurs with the recategorization. Deficiency categorization support IOT&E/FOT&E/VCD Reports.

8-8.1.2.5

A “Closed” categorization is used to document a deficiency that has been corrected and is no longer an issue. Closed can only be approved by the Commander. Closed is used to record data and analysis of corrected SUT or SoS issues in FOT&E and VCD Reports.

- When there are consecutive DT assists for EOA/OA test periods scheduled, and the Program Office takes action to correct issues associated with a Pending Risk or Risk, then the Pending Risk or Risk should be verified as corrected, and may be reported as such using the methodology and format provided for VCD Corrected and Closed (or Not Corrected) Blue and Gold sheets. Coordinate with 01C for program-specific questions.

- For issues identified during test and subsequently corrected by the Program Office, whether or not to publish a Blue or Gold sheet is dependent on the status of testing. It the test completion message has not been transmitted and the issue has been verified corrected by OT, the issue need not be documented in the final report. However, if the test completion message has been transmitted, and the issue has

been verified corrected by OT, the issue should be documented in the final report as Corrected and Closed Blue or Gold sheet.

8-8.1.3 SERB/E-SERB

Blue and Gold sheets are used for SERB and E-SERB vetting. Post-SERB, all SERB approved Blue and Gold sheets will be shared, by e-mail, with the O-6 level PM by the division or squadron O-6 leadership (A-Code or squadron CO/COTD). The e-mail should include the E-SERB scheduled date (normally 5 working days) and a request for comments on the Blue and Gold sheets from the PM. Briefing Minor deficiency or Green risk Blue and Gold sheets is not required at the E-SERB (see section 8-6.5).

8-8.1.4 Continuous Risk/Deficiency Revisions

As the SUT progresses through its development and additional OT-qualified data are obtained, the original Blue/Gold sheet should be continuously updated to represent the current status of the risk/deficiency. Updates to a risk/deficiency are annotated by the use of a DRAFT watermark across the sheet, as well as the addition of a “Rev” modifier to the issue number followed by the word Draft (i.e., 1420-001 Rev 1 Draft). Once the revision has been approved by the Admiral via the E-SERB process, the draft labeling will be deleted. In summary, when documenting the update using the Blue or Gold sheet, include the following:

- New data
- Add or update the revision number with a DRAFT watermark and “Rev # Draft” modifier and date of the update.
- Once officially recategorized by the Commander during an E-SERB, remove the DRAFT watermark and update the date to the date of the E-SERB.
- For risks or deficiencies, conduct AWG, SERB, and E-SERB.

8-8.1.5 Closing Deficiencies

Deficiencies identified during IOT&E and FOT&E may be closed upon verification of correction. The verification normally occurs during a period of OT, either an FOT&E period or a dedicated VCD period. Only deficiencies are closed. Risks and Pending Risks identified during OT prior to IOT&E or FOT&E that are subsequently not observed during IOT&E or FOT&E were not realized and do not become deficiencies. The associated issue number is retired.

8-9 BLUE/GOLD SHEET WRITING

OPTEVFOR communicates the results of OT to stakeholders and customers formally in test reports. The nectar within the various test reports are the risks and deficiencies identified by the testers. All risks and deficiencies are described within Blue or Gold sheets. There are two basic types of Blue or Gold sheets; risk sheets associated with a LOO or EOA/OA and deficiency sheets associated with IOT&E/FOT&E reports. As noted above, Blue sheets are associated with and apply to the SUT, while Gold sheets apply to or are associated with the greater SoS. Blue/Gold sheets are formatted descriptions of the issue and are intended to stand alone without reference to other

documents. The structure of a Blue or Gold sheet is loosely based on the U. S. Naval Test Pilot School 6PP described in paragraph 8-9.2. Some prior COMOPTEVFOR reports were published using the 6PP as stand-alone prose descriptions of test observations, risks, or deficiencies. All present and future reporting will use the Blue/Gold sheet format and logic. It is imperative to convey clearly the intent and logic inherent in the thought process when communicating test results. A properly constructed Blue/Gold sheet will have the following characteristics:

- The result is **goal-directed**. The writer should identify the purpose of the result and its importance to reader.
- The result is **clear, concise, and organized**. The writer should "cut to the chase" with logically formulated, direct, simple language.
- The result is **easily understood by nonexperts in the subject matter**. The writer should not assume every reader has his or her skills and experience.
- The result is **defendable**. This characteristic refers to, relies on, and reinforces COMOPTEVFOR's credibility.

8-9.1

Additionally, an effective evaluation report is balanced. Balance is added to the report, specifically in the test results paragraph and executive summary (Commander's Report) section, by including discussion of positives and negatives for the SUT. Relate the positives and negatives discussed to the results/outcomes of the critical tasks and measures associated with resolving any given COI. For the Commander's Report, the positive and negatives are associated with the roll-up of missions (COIs) and associated capabilities of the SUT/SoS. Balance should be an outcome of properly explaining why the COI was resolved as satisfactory or unsatisfactory, or in the case of effectiveness, why the SUT is operationally effective or not operationally effective. The same logic applies to the suitability call. Avoid the tendency to focus solely on the deficiencies (or negatives).

8-9.2

The parts of the 6PP are described below. The logic used here is also used in the Blue/Gold sheet templates. The approach is essentially a logical argument presented to the reader for the issue in question so as to prove the writer's position with respect to the issue and conclusion with supporting data and analysis (evidence). Figure 8-3 shows a sample Blue sheet to support the discussions that follow relating the parts of the 6PP to the numbered paragraphs within a Blue or Gold sheet.

Figure 8-3. Sample Blue Sheet

COMMANDER, OPERATIONAL TEST AND EVALUATION FORCE
DEFICIENCY NO. XXXX-001 Rev X

Blue Sheet

DD Mmm YYYY

1. SYSTEM UNDER TEST (SUT) DEFICIENCY. The Access Control Lists (ACL) filters were improperly configured. (Minor)

a. Primary Critical Operational Issue (COI): E-6, Information Assurance (IA).

b. Other Affected COI(s): E-2, Command, Control, Communications (C3I); S-3, Availability.

c. Previously Identified: OT-IIIC on DD Month YYYY. This SUT Deficiency links to SoS Deficiency No. XXXX-001.

2. TEST CONDITIONS, RESULTS, AND ANALYSIS. The capability of the Automated Digital Network System (ADNS) Increment III ACL filters to detect attacks in support of IA was qualitatively evaluated during restoration conditions aboard USS ABRAHAM LINCOLN (CVN 72). IA vulnerability scans discovered improperly configured ACL and no port security. Analysis of the ADNS cipher-text router ACL identified that filters were not configured to allow only packets with legitimate destinations to pass within the ADNS router. Additionally, there was no port security or media access control addressing filtering, thereby allowing a new external device to be plugged into an existing port and gain access to the network.

3. MISSION RELATION. During underway operations, improperly configured ACL filters could allow a malicious insider or an unwitting user to cause a breach of security by plugging in a harmful system to gain access to the network resulting in degraded network performance.

4. CONCLUSION. Improperly configured ACL filters are a Minor deficiency.

5. RECOMMENDATION. Correct as soon as practicable.

8-9.2.1 Part 1 (past tense)

Establish the test conditions. The information here is the start of paragraph 2 of the Blue/Gold sheet. Establishing the test conditions should be done in one or two sentences and should focus on what testing was being conducted when the problem was discovered. Specifically, the writer should describe what vignette, mission, or task/subtask was being performed. The OTD should use the test plan to help frame what was being accomplished. The specific test conditions, which affected the result, apply. These conditions bound the problem and support repeatability. Again, state what was being evaluated and how the evaluation was performed, as well as any pertinent conditions for the test. The “what” is very closely related to the problem or deficiency. The problem or deficiency is called out specifically in paragraph 1 of the Blue or Gold sheet.

8-9.2.2 Part 2 (past tense)

Present data. The data and results presented here follow the establish test condition sentence(s) at the beginning of paragraph 2. Only present data related to the issue. The Blue/Gold sheet should stand alone and reference to appendices should not be made. Pull the specific data/results needed to make the case to the reader from the data appendices. Photos, screen shots, figures, and tables with detailed annotation are encouraged. When annotating figures, photos, or screenshots, use the same wording used in paragraph 2 to allow the reader to easily follow your discussion. Again, state what data were collected. Only name or call out data related to your analysis and conclusions. Data can be quantitative or qualitative. Include a description of any work-around if used by the operators to make the system overcome an issue or deficiency. Present the data from a third-person, objective point of view (e.g., do not use wording like “the OTD observed”). Focus should be on results and not test method.

8-9.2.3 Part 3 (past tense)

Analyze/evaluate the data. The information/analysis of the results presented here forms the basis for paragraph 2 of the sheet and should logically flow into the mission relation. Use the data and results presented to explain the impact upon the operator, mission, or task/subtask. What does the data indicate? The evaluation could include a comparison to legacy systems. Include an evaluation of how any work-around used by the operator mitigates the issue or deficiency and the resulting impact on mission accomplishment both before and after application of the work-around.

8-9.2.4 Part 4 (future tense)

Mission relation. The "so what." The mission relation appears in paragraph 3 and must build upon the data, results, analysis, and evaluation presented in paragraph 2 of the Blue/Gold sheet. This part describes the impact to the Fleet, operator, or mission of the problem described in paragraph 1 of the sheet. A conscious check should be made to ensure the problem is included in the mission relation and the problem is stated in the same context/meaning as in paragraph 1. Present the mission relation paragraph in future tense. The mission relation should normally be no more than one or two sentences. A boilerplate for mission relation is provided in the report templates and its use is strongly encouraged.

8-9.2.5 Part 5 (present tense)

Conclusion. Paragraph 4 of IOTE and FOT&E Blue/Gold sheets. Paragraph 5 for EOA/OA/LOO risk sheets. In IOT&E or FOT&E reports, the conclusion is one simple sentence where the subject is the problem and the predicate is the level of the deficiency (Severe, Major 1, 2 or 3, or Minor). When reviewing the conclusion statement, ensure the problem is restated in the same context as was stated in paragraph 1 of the Blue/Gold sheet. VCD Blue/Gold sheets are subsets of the IOT&E/FOT&E format. For conclusions in VCD sheets where the level of deficiency has been mitigated, the mitigation or change in deficiency level should be stated in parentheses following the conclusion sentence. An example where a Major 3 deficiency was called out in the conclusion is "(mitigated from a Major 1 SUT Deficiency)". For EOA/OA/LOO risks, the conclusion consists of four items in three discrete sentences. The first should capture the conclusion (number word definition) of the consequence and likelihood discussion (the x-y axes of the risk matrix), the second should capture the mitigation discussion (the possibility the risk will not be corrected at IOT&E), and the third sentence should address the potential deficiency level, if left unmitigated.

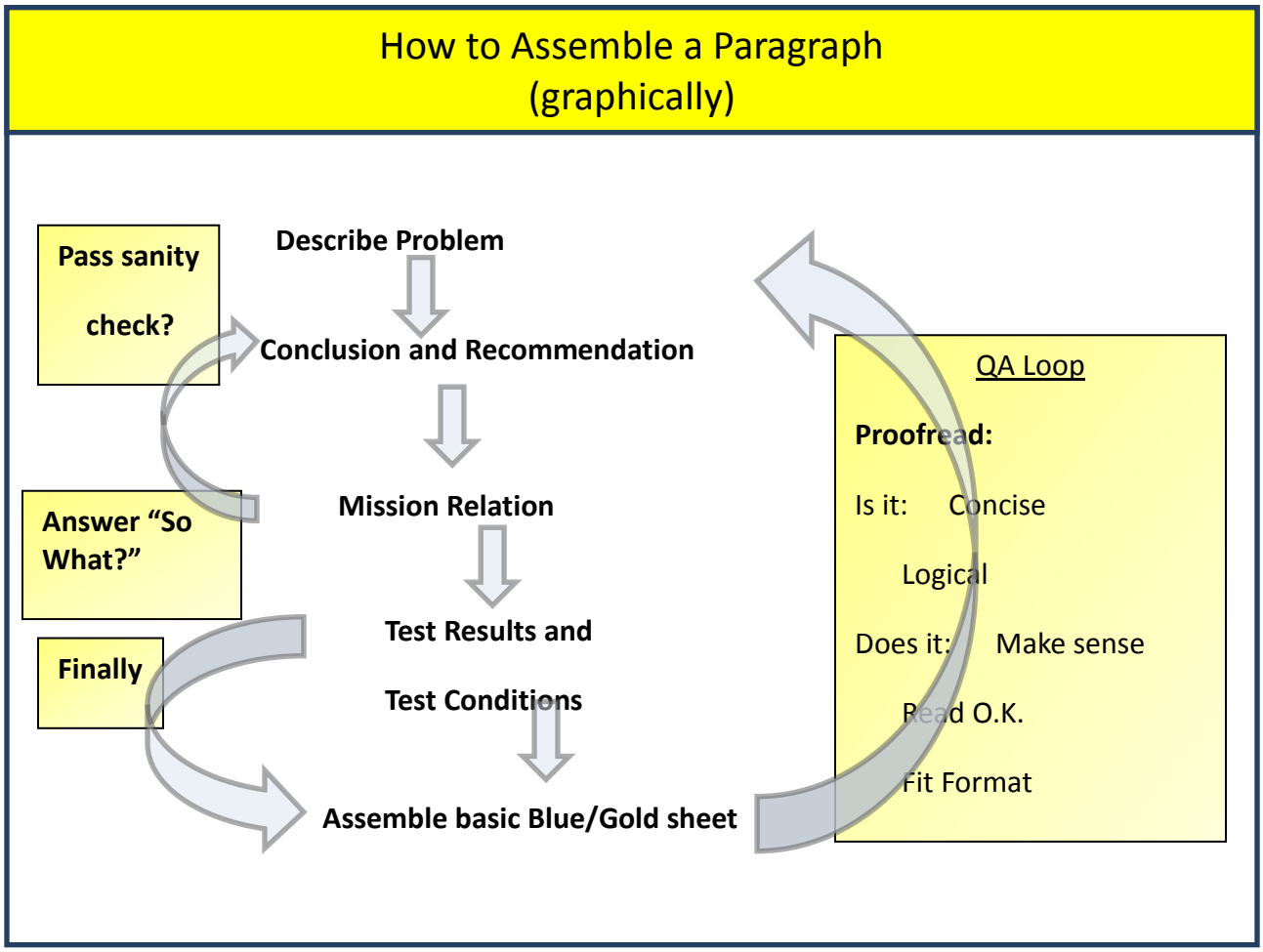
8-9.2.6 Part 6 (future tense)

Recommendation. A general timing as to correction of the deficiency. Things like "should be corrected as soon as practicable" or "…prior to Fleet release," etc. Refer to the templates and use the recommended choices unless a case-specific recommendation is needed. An example where a timing category not listed in the template would be required might be for a submarine or submarine system with a problem that only mattered if under the ice cap, the recommendation timing may be; "…prior to sending the submarine/system under ice."

8-9.2.6.1 Constructing a Blue/Gold Sheet

Figure 8-4 depicts the graphical thought process conducted when building a Blue/Gold sheet. Blue/Gold sheets should not be developed serially (i.e., starting with paragraph 1 and proceeding to the last paragraph). Rather, the sheet should start with describing the problem or observation noted, followed by the mission relation, then moving on to the conclusion and recommendation. Once these three items are known, data and analysis should be gathered to support the conclusion, and the test conditions relevant to the data. Once all this information is gathered, the sheet should be assembled serially.

Figure 8-4. Graphic Representation of Blue/Gold Sheet Development



A guide to aid in constructing Blue/Gold sheets, in the form of questions to be answered, is presented below:

- What is your issue (problem)?
  - Clearly articulating the problem is critical to developing a Blue/Gold sheet. The problem appears in paragraph 1 of a Blue/Gold sheet, as well as in the mission relation and conclusion paragraphs. Take special care to be consistent in these paragraphs when describing the problem.
- How bad is it (Severe, Major 1, 2, 3, or Minor)?
  - This should be your initial judgment and may change as the test team critiques the issue or more is learned during the analysis process.
- What is the impact on the mission, if not fixed?
  - The mission relation appears in paragraph 3 and must build upon the data, results, analysis, and evaluation presented in paragraph 2 of the Blue/Gold sheet.

Present this paragraph in future tense. The mission relation should normally be no more than one or two sentences.

- Was there a work-around and what was the mission impact with and without the work-around?
- What test conditions were relevant to collecting the data?
  - The information here is the start of paragraph 2 of the Blue/Gold sheet. Establishing the test conditions should be done in one or two sentences and should focus on what testing was being conducted when the problem was discovered. Specifically, the writer should describe what vignette, mission, or task/subtask was being performed. The OTD should use the test plan to help frame what was being accomplished.
- What are the data/test results that support the conclusion (qualitative and quantitative test results)?
  - The data and results presented here follow the establish test condition sentence(s) at the beginning of paragraph 2. Only present data related to the issue. The Blue/Gold sheet should stand alone and reference to appendices should not be made. Pull the specific data/results needed to make the case to the reader from the data appendices. Photos, screen shots, figures, and tables with detailed annotation are encouraged. When annotating figures, photos, or screenshots, use the same wording used in paragraph 2 to allow the reader to easily follow your discussion.
- Can I help the reader understand the cause(s) of the problem (analysis)?
  - The information/analysis of the results presented here forms the basis for paragraph 2 of the sheet and should logically flow into the mission relation. Use the data and results presented to explain the impact upon the operator, mission, or task/subtask.
- Recommendation (timeline for correction).
  - Now, the sheet should be assembled and checked for logic:
- Are all parts of the sheet present?
- Does the argument make sense?
- Does the sheet convey what you really wanted it to convey? Does the discussion lead logically to the conclusion?

Once these questions are answered affirmatively, the Blue/Gold sheet is ready for a final proofreading, looking for typographical errors, improper verb tenses, or other grammatical errors.

8-9.2.6.2 The COI Results Paragraph

The COI results paragraph is the first paragraph under each COI results section and is constructed using the following flow and guidance.

8-9.2.6.2.1 Opening Sentence (past tense)

Establish the test conditions. Repeat, verbatim, the COI question in the affirmative or answer format with a verb form "was evaluated." State what was being evaluated and

within the predicate of the sentence, provide a high-level summary of how the COI was evaluated.

8-9.2.6.2.2 Middle Section (several sentences, past tense)

This part of the results paragraph presents overall test results and clearly explains and supports the satisfactory or unsatisfactory conclusion stated at the end of the paragraph. Focus should be on results and not test method. The goal is to provide a clear understanding of the results associated with the COI's critical tasks defined within the IEF or the test plan. Explain what was successful and what was not. Go further and explain what those results mean to the completion of the mission/COI. Severe and Major 1 deficiencies should be discussed in some detail, describing their impact on the COI. Major 2 and Major 3 deficiencies should be mentioned, using their problem definition (paragraph 1 from the blue sheet). A comparison to the legacy system(s) may be included, if helpful. Specifically address positive outcomes as enhancing characteristics when the observed performance improved SUT capability as compared to legacy systems or added new capability to the Fleet. The discussion should be centered on the performance of critical tasks and not overly focused on specific quantitative or qualitative critical measure results (which are listed in the Major Test Results tables preceding the COI Results Paragraphs.) The end product should clearly communicate to the reader what capabilities were successfully demonstrated and what was not and their impact to mission accomplishment. The discussion should be a subjective assessment of COI risk (EOA/OA) or results (IOT&E/FOT&E) by comparing adverse results against the full scope of the COI. In the end, the reader should come away with a clear view of the positive test outcomes versus the negative outcomes and understand why the scales tipped to either the positive (satisfactory) or negative (unsatisfactory). Past tense transition sentences may be used as needed. If there are major/minor deficiencies for the COI, provide a transition sentence (e.g., "some major deficiencies were discovered and are presented below"). The transition sentence can be included where appropriate within the paragraph or following the conclusion.

8-9.2.6.2.3 Closing Sentence (present tense)

Conclusion. Again, state verbatim the COI question in answer form with a conclusion. The conclusion is along the lines of: "[The COI question in statement form] is evaluated as satisfactory (or unsatisfactory)."

- When writing the report for an OAR or OMAR, the results paragraph for the COI risk assessment will follow the same general format as above; however, the presentation will be modified to address program or system risk as presented in the following section.

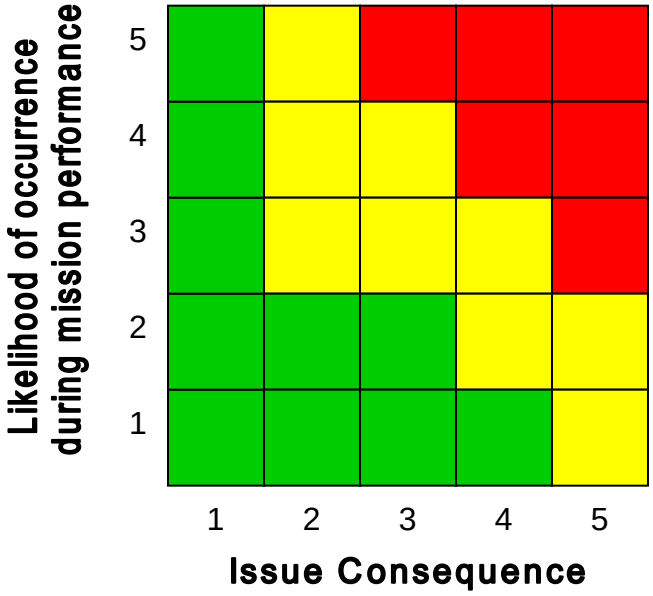
8-10 COI RISK TO IOT&E/FOT&E ASSESSMENTS FOR EOA, OA, AND LOO

8-10.1 General Risk Discussion

The LOO, EOA, and OA reports include risk assessments as part of the report body or as attached Blue or Gold risk sheets. Additionally, the EOA and OA reports provide an

overall risk assessment of the capability of the SUT and SoS to perform required missions in the intended operational environment. OPTEVFOR uses a 5x5 risk matrix based on the issue's consequence (mission impact) and the likelihood of occurrence when employing the SUT in the intended operational environment(s). To that end, the 5x5 consequence versus likelihood matrix depicted in figure 8-5 is used as the basis for all risk assessments. This 5x5 risk matrix is based on the DoD and Systems Command's Risk Management Guides adapted to the OT environment. The risk analysis methodology described in the paragraphs below provides the OTD with a transparent, repeatable, and defendable COI risk assessment process that will identify for the PMs areas of risk that should be addressed to ensure successful completion of IOT&E or FOT&E. The result of the risk assessment is a prioritized list of risks or issues for each COI. After the risk assessment is completed for each issue, a separate assessment of the adequacy of the program office's mitigation plan for each issue is conducted. The independent mitigation assessment will assign a possibility of the occurrence of the issue at IOT&E/FOT&E (high, moderate, low). The mitigation assessment, when combined with the risk assessment, provides the PM and other stakeholders a more complete picture of the critical issues and their possibility of impacting the successful completion of IOT&E/FOT&E. The risk assessment and the risk mitigation assessment are then subjectively combined to determine the overall risk to successful resolution of the COI at IOT&E/FOT&E. The subjective COI assessment is made by comparing all known adverse risk projected to IOT&E against the full scope of the COI (IEF based). Consideration is given to the fact that during the EOA/OA, the full scope of each COI is not assessed and, therefore, unknown at the time of the EOA/OA. The team then weighs projected risk along with unknown performance against the full scope of the COI. Although the ultimate COI assessment is subjective, it is based on objective risks projected to IOT&E and objective COI scope identified in the MBTD (IEF). The rationale for the subjective assessment of the COI is included in the COI results paragraph and discussed in detail in paragraph 8-10.1.1.5. The risk assessment and mitigation assessment methodology for individual risks is described in the paragraphs below.

Figure 8-5. 5 x 5 Risk Matrix



8-10.1.1 Consequence and Likelihood Assessment

8-10.1.1.1 Consequence

As issues impacting the accomplishment of the assigned mission and/or task/subtask are identified, the issue's consequence is classified based on the definitions in table 8-2. The mission impact level assigned to an issue from table 8-2 corresponds to the increments along the x-axis of the 5x5 matrix depicted in figure 8-5.

Table 8-2. Mission/COI Impact Classification

EOA/OA Mission Impact Level	Descriptor	Issue Definition
1	Minor	Annoying system characteristic or nuisance that does not degrade operational/mission performance or suitability
2	Moderate	Issue that degrades (but does not prevent) operational/mission performance or suitability, but can be overcome with operator compensation/workaround
3	Significant	Issue that prevents operational/mission performance or suitability, but can be overcome with operator compensation/workaround
4	Serious	Issue that degrades (but does not prevent) operational/mission performance or suitability, no acceptable operator compensation/workaround
5	Critical	Issue that prevents operational/mission performance, cannot meet mission objectives or suitability threshold, with no workarounds

8-10.1.1.1.1 Consequence Definitions

Table 8-2 is meant to be intuitive. Nevertheless, the definitions are intended to clarify some of the "finer points."

8-10.1.1.1.2 Degraded Operational Performance/Mission

The system's operational performance/mission is less than optimal because:

- Performance or quality of result is less than required or expected.
- Time required to accomplish task is longer than required or expected.

8-10.1.1.1.3 Degraded operational suitability

The system's suitability is less than optimal because supporting characteristics of the system detract from the capability to place the system in use and sustain it under operational conditions.

8-10.1.1.1.4 Prevented Operational Performance/Mission

The system's operational performance/mission is unsatisfactory because performance or quality of result is unsatisfactory to achieve a militarily useful operational capability for the SUT.

8-10.1.1.1.5 Prevented Operational Suitability

The system's suitability is unsatisfactory because supporting characteristics of the system prevent the system from being placed in use and/or sustained under operational conditions without unsatisfactory impacts to employment strategy, concepts of operation, or effectiveness.

8-10.1.1.1.6 Can be Overcome with Operator Compensation/Work-Around

The particular issue can be resolved with additional training and/or experience such that the operator knows to do something (or not do something) that is otherwise not part of the normal training syllabus (operator compensation), or the operator solves the issue by taking some alternative course of action to accomplish the same result (work-around). To be acceptable, it must be an action, or series of actions, that can reasonably be accomplished by an average Fleet user without excessive impact to other capabilities. It is important to note that operator compensation and work-around can be engineered into the training for system operators. An acceptable work-around cannot avoid use of the system.

8-10.1.1.2 Likelihood

The likelihood level for each issue identified is established using the probability of occurrence criteria specified in table 8-3. The likelihood of occurrence level assigned to an issue from table 8-3 corresponds to the increments along the y-axis of the 5x5 matrix depicted in figure 8-5. When assessing the likelihood of occurrence, the SUT should be viewed within the context of conducting the assigned mission and/or associated mission tasks/subtasks in the intended operational environment(s).

Table 8-3. Probability of Occurrence		
Likelihood	**Probability of Occurrence**	**Risk Matrix Level**
Not Likely	~10%	1
Low Likelihood	~30%	2
Likely	~50%	3
Highly Likely	~70%	4
Near Certainty	~90%	5

8-10.1.1.2.1

When determining the probability of occurrence, the variables surrounding the accomplishment of the mission must be understood and clearly articulated. Take care to correctly apply variable type. Failure to correctly apply variables may result in inaccurate likelihood determinations or allow a quantitative threshold in a requirements document to drive the likelihood to a near certainty. There are two types of variables: binary and continuous.

8-10.1.1.2.1.1 Binary Variable

A binary variable is one that can have only two possible values. In a binary variable, an event (condition) either occurs or it does not occur.

- **OT Binary Variable Example**. The SUT mission context is to be capable of operating in a Chemical-Biological-Radiological (CBR) threat environment. The capability required in this example is to be able to detect a CBR threat. The variable (CBR environment) either exists or does not exist. It then follows that the likelihood must be defined assuming operations in a CBR environment (binary variable) since that is the capability needed when a CBR threat is present. The likelihood of occurrence cannot be reduced by the fact CBR threat environments rarely exist. The condition of being in the presence of a CBR threat as applied to the issue and the issue's likelihood determination is either a "yes, the SUT is in a CBR threat environment" or "no, the SUT is not in a CBR threat environment." The preceding is viewed as a "binary" situation and the probability of occurrence is based on the probability of the issue (CBR detection not working in this example) occurring when this variable exists (when in a CBR environment).

8-10.1.1.2.2 Continuous Variable

A continuous variable is one that is a continuum or range of values (more than two possible values).

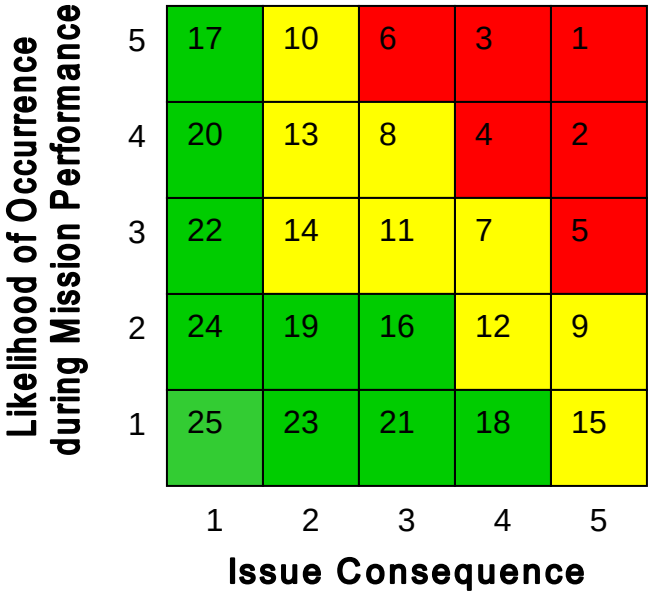
- **OT Continuous Variable Example.** The mission context in this example is associated with the capability of using the ship's bow thruster to get underway from a pier unassisted. The requirement in the CDD states the bow thruster should allow the ship to rotate the bow away from the pier, while the stern is still secured to the pier, against an on-setting wind of 20 knots. It would be easy to consider this a binary variable due to the requirement being a single number (20 knots); however,

you must consider whether the variable has only two possible outcomes or a continuum. In this case, the variable is the on-setting wind and is continuous as it is a continuum or range from 0 to 20 knots that the bow thruster capability must be able to operate in. The results show the bow thruster is underpowered and can only rotate the bow against 12 knots of on-setting wind or less. Therefore, the probability of occurrence of being able to get away from the pier unassisted is based on the probability of being in on-setting wind conditions of 13 to 20 knots (the continuous variable).

8-10.1.1.2.3 Issue Priority

Issues are listed under each COI in priority order based on where the issue plots in the 5x5 matrix displayed in figure 8-6. In figure 8-6, the numbering of each cell provides the order in which to list issues within each COI. The numbering scheme is based on multiplying the consequence number with the likelihood number (i.e., 5x5=25) with the highest number being the first priority listed (i.e., 5x5=25 listed before 4x3=12, which is listed before 2x2=4). Where multiplying results in the same answer (i.e., 4x3=12 and 3x4=12), the issue with the higher consequence assessment (x axis value) will be listed first. If the two issues are the same value (i.e., there are two 3x3=9 issues), they are listed one after the other. The issue priority and plotting on the matrix does not take into consideration the mitigation assessment discussed in the following paragraph.

Figure 8-6. 5x5 Risk Matrix Priority



8-10.1.1.3 Mitigation Assessment for IOT&E/FOT&E

The mitigation assessment, conducted separately from the risk assessment, is used to determine the possibility of the issue being present during IOT&E. The mitigation assessment will use many of the concepts discussed in the issue management section within the DoD Risk Management Guide for Acquisition. Issue management is the application of resources to address and resolve the issue or problem (resources = technical solution/funding availability/schedule impact). To assess mitigation of the issue at IOT&E, OTDs will need to understand the issue management aspects of the program. The mitigation assessment requires discussion with the program office to gain a good understanding of the PM's intentions concerning the issue. Through early involvement in the program via WIPTs, DT assists, IT, etc., the OTD must determine and understand the variables that drive the issue management (PM issue mitigation/correction plan) aspect of the likelihood prediction. The primary variables include:

- The PM's knowledge of the issue and his/her intent to correct,
- Technical challenges (technical solution) to achieve required/desired performance,
- Time available (program schedule) to correct/mitigate issues prior to IOT&E,
- Funding available to correct/mitigate issues prior to IOT&E.

To make a technical, schedule, or cost risk assessment, the OTD will first need to thoroughly understand the issue and determine the PM's plans for correction and mitigation. These risks must be captured by the OTD so they can be presented during the SERB process and documented in the results section of the EOA/OA reports. Consequently, the OTD should develop questions to ask appropriate SMEs to better understand risks associated with the mitigation plans. In some cases, these SMEs may be program office (or even contractor) personnel. SMEs might include software and systems engineers, logisticians, budget analysts, risk management experts, academia, or Fleet operators. Although the OTD may be relying on information provided by the PM, the OTD should not merely parrot the PM team's assessment, but use SME technical/programmatic knowledge combined with operational judgment to arrive at an independent conclusion. While not an all-encompassing list, some of the questions that might be asked include:

- Does the PM have a technical solution?
- Is the proposed solution technologically feasible?
- Does the proposed technical solution impact other critical functions?
- Is there a version of software documented for the proposed change?
- What is the developer's track record with making these types of changes?
- Are there metrics that might give insight into the program's track record regarding corrections?
- What is the "industry standard" for making these types of changes?
- How much developmental regression testing is being proposed?
- Are there suitability impacts as a result of the change?
- Does the change involve hardware and software?
- How much time is realistically needed to design and implement the change?

- Where is the program in the development cycle?
- How much time is available prior to IOT&E?
- How expensive is the proposed change as compared to the overall program budget?
- Is there sufficient cost reserve to make the change?

The result of the mitigation assessment will be a determination of the possibility of the issue existing at IOT&E and result in a categorization of a high (H), moderate (M), or low (L) possibility of existence at IOT&E. The following definitions will be used for the mitigation assessment categorizations:

- High – No intent to correct or no plan to correct, or no understanding of the issue or a technical solution does not exist, or not enough time to correct it prior to IOT&E or inadequate funding to fix.

- Low – PM has a good understanding of the issue and is committed to correcting the issue and has the time and funding to correct the issue, or may have already commenced working the solution due to early identification of the issue.

- Moderate – All other cases. Any situation that is not high or low.

8-10.1.1.4 Potential Deficiency Level if Risk Unmitigated

The final sentence in the conclusion for risk assessments should address the potential deficiency level at IOT&E if the identified risk is left unmitigated. Figure 8-7 should be used as a starting point for the vetting/identification of potential deficiency levels in Blue or Gold sheet risk conclusions.

Figure 8-7. Mission Impact Classification

5	**3/M**	**2/3**	**1/2**	**1/2**	**S/1**
4	**M**	**2/3**	**2/3**	**1/2**	**1/2**
3	**M**	**3/M**	**2/3**	**2/3**	**1/2**
2	**M**	**M**	**3/M**	**2/3**	**2/3**
1	**M**	**M**	**M**	**3/M**	**2/3**
	1	**2**	**3**	**4**	**5**

Mission Impact Classification

Legend

S-- Severe Deficiency

1-- Major 1 Deficiency

2-- Major 2 Deficiency

3-- Major 3 Deficiency

M-- Minor Deficiency

8-10.1.1.5 Overall COI Risk Assessment

The results paragraph for each COI will reflect a roll up of all known risks with a best understanding of potential mitigation of those risks at IOT&E compared to the full scope of the COI as identified in the IEF. The test team will employ the following process in an effort to understand the risk to COI resolution at IOT&E:

8-10.1.1.5.1

Assess the possibility of risk mitigation at IOT&E using the COMOPTEVFOR risk mitigation guidance. A projection of program commitment to risk mitigation is essential to inform programs and decision makers of program risks projected to IOT&E.

8-10.1.1.5.2

Present each risk as a pure risk at the time of EOA/OA along with the mitigation assessment (CxL) H/M/L. This presentation format reflects the negative aspects of program inaction and the potential positive impacts of good mitigation.

8-10.1.1.5.3

Perform a SERB SME subjective assessment of COI risk by comparing all known adverse risk projected to IOT&E against the full scope of the COI (IEF-based). The SERB SME group must be aware that during an OA, much of the full COI scope may not be tested and, therefore unknown at the time of the OA. (Note: If enough of a COI was not testable at the time of the OA, it should have been excluded from consideration during the OA and documented as White in the report.) The team must weigh projected risk along with unknown performance against the full scope of the COI. Although the ultimate COI assessment is subjective, it will be based on the objective risks projected to IOT&E and the COI scope identified in the IEF. The rationale for the subjective assessment of the COI will be included in the results paragraph for the COI. The assessment of each COI remains subjective because of the complex interactions of projecting risk, undiscovered performance, and total scope of the COI. The following two examples are provided to reflect the extreme possibilities available to the SERB SMEs:

8-10.1.1.5.3.2

A COI may be assessed RED if a single red risk projected to IOT&E is so severe that it dominates the full scope of the COI or,

8-10.1.1.5.3.3

A COI may be assessed YELLOW or GREEN if several red or yellow risks projected to IOT&E are isolated to a small subset of the full scope of the COI and will not, in the aggregate, dominate COI performance.

8-10.1.1.5.3.3.1

The judgment of the SERB SME assessment of overall COI risk will be presented at the E-SERB for final resolution by the Commander.

8-10.1.1.5.3.3.2

Overall COI risk assessment, as approved during the E-SERB, will be presented as one of the following:

- High – red
- Moderate – yellow
- Low – green
- Not assessed – white (For COIs that cannot be assessed as a result of system immaturity or lack of information.)

8-11 DECIDING THE COI DEFICIENCY LEVELS FOR IOT&E AND FOT&E

A deficiency is defined as lacking in some necessary quality, capability, or element or not up to a normal standard or complement. Operational capability is defined as an ability or means that is directly traceable to an approved requirement (i.e., ORD, CDD, CPD, etc). Mission-essential capability is defined as an ability that is inherently necessary to complete an assigned mission (e.g., a targeting mechanism is required to properly aim a weapon system, but the targeting mechanism/system may not be part of the weapon SUT). Table 8-4 provides the baseline deficiency definitions that shall be used throughout the evaluative process to make a final conclusion as to the deficiency level. See figure 8-1 for the baseline deficiency decision flow diagram.

Table 8-4. Baseline Deficiency Definitions

Severe	Precludes mission accomplishment
Major 1	Critical impact on mission accomplishment
Major 2	Serious impact on mission accomplishment
Major 3	Moderate impact on mission accomplishment
Minor	No significant impact on mission accomplishment

8-11.1 OPCONs

As previously mentioned in section 807, OPCONs have been defined and are used to document tactical considerations that inform operational commanders of significant aspects (pro and con) of system employment, or make clear what special measures would be required to make the system more efficient in operational use. Although it may present supporting data or examples, it is not a deficiency paragraph by another name. It is a recommendation for the user to consider in the employment or management of the SUT and/or SoS in operational use.

Tactical employment is a by-product of the IOT&E. The OPCONs paragraph is structured, when appropriate, for making recommendations to the operational commander to employ the system more effectively and/or to avoid potential shortfalls in TTPs. When used this way, OPCONs serve as the starting point for the OPTEVFOR Tactics Guides (for air warfare projects), and tactics inputs for Commander, Naval Surface Force (for surface programs) and Submarine Development Squadron TWELVE (for undersea programs).

8-12 RESOLUTION OF COIS AT IOT&E AND FOT&E

OPTEVFOR addresses the resolution of COIs by satisfying the questions posed by the COIs. Derived from the MBTD process and IEF, the test plan will provide an audit trail from the COI questions through the critical mission tasks to the critical system attributes and measures. This trail provides a logical flow path so that the disposition of COIs is directly related to the evaluation of each designed test. Thus, when a test parameter is quantitative, the COI resolution is based on actual results relative to the operational threshold. For nonquantifiable parameters, the COI resolution must be based on two factors: (1) observed results and (2) operational experience and judgment. Additionally, the number and severity of the deficiencies and their cumulative/aggregate impact on mission performance associated with the COI must be considered for COI resolution. The resolution of COIs should be a subjective assessment of COI results by comparing adverse results against the full scope of the COI. In the end, the case should be clearly made to support weighing the positive test outcomes versus the negative outcomes for the critical mission tasks and subtasks. The audience should come away with a firm understanding as to why the scales tipped to either the positive (satisfactory) or negative (unsatisfactory). See figure 8-8. These conclusions will be presented to the SERB for validation and final approval by the Commander.

8-12.1.1

COIs are resolved as follows:

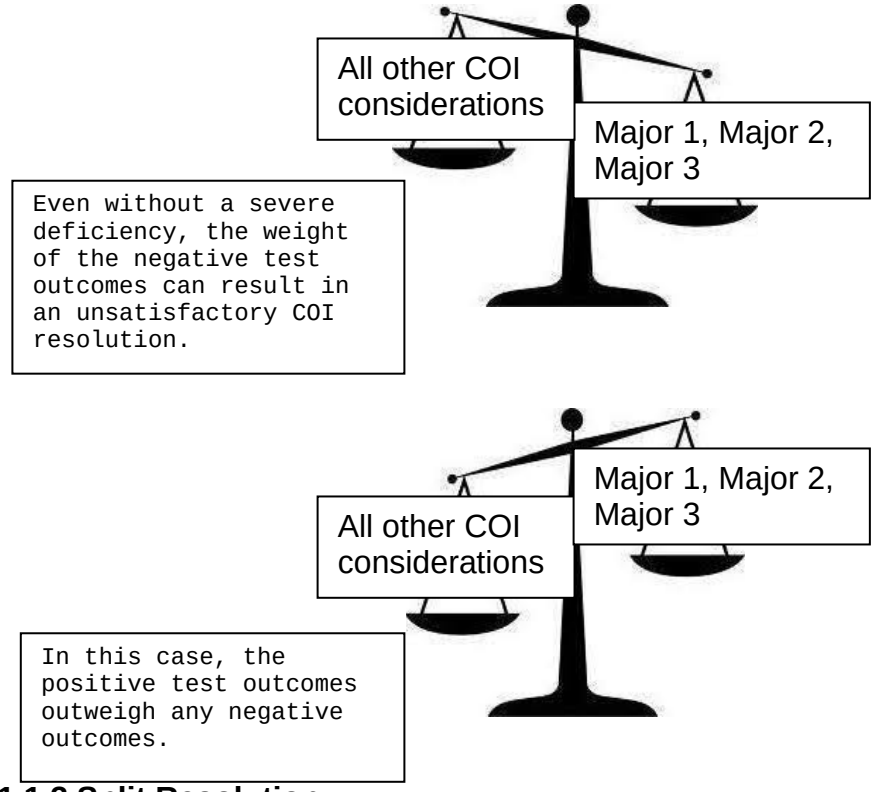
8-12.1.1.1 Resolved

The COI was tested and resolved either SAT or UNSAT.

8-12.1.1.2 Unresolved

Used when a COI requires further testing for final resolution due to a major or severe limitation (see paragraph 5-6). This is used when the COI has been tested, but cannot be resolved**.**

Figure 8-8. Examples of Possible COI Resolution



8-12.1.1.3 Split Resolution

Used when the COI was tested and resolution is not a singular determination. In these instances, split resolution will be used to clearly communicate the differing aspects of the COI resolution. The COI can be split to resolve one aspect (task or condition) as SAT and the other aspect as UNSAT or to communicate when part of the COI is either SAT or UNSAT, and part is unresolved due to a major test limitation (see paragraph 5-6).

8-12.1.1.4 Not Tested

Used only when the COI was not tested during the particular phase of testing in which it was an issue for resolution. This may be due to the absence of a key test resource that poses a major or severe limitation to the test of the COI (see paragraph 5-6) or it may be due to a decision by the Resource Sponsor (on behalf of CNO) to defer testing of more aspects of the SUT until a future test period.

- When a COI has been resolved UNSAT, the severe or major (1, 2, or 3) deficiencies that caused the UNSAT resolution must be reported in the Commander's report as well as in the enclosure. A severe or major (1, 2, or 3) deficiency can impact other COIs, and the deficiency can be used to resolve additional COIs UNSAT. The analysis and evaluation will determine the most appropriate primary COI. The deficiency will be reported under the primary COI where it has the main operational

impact. Other COIs affected by the deficiency will discuss its impact in the individual COI results section and refer back to the primary COI for the deficiency Blue/Gold sheet.

- All COIs should be resolved by the completion of IOT&E. Difficulties achieving this must be brought to the attention of the Commander at the first indication of a problem.

8-13 CONCLUSIONS AND RECOMMENDATIONS IN EVALUATION REPORTING

At the completion of each phase of OT, COMOPTEVFOR provides conclusions and recommendations to the CNO regarding the system tested via an evaluation report. There are a number of factors that must be considered before a decision is made to enter into production of a system; OT&E is only one of these many factors. Since COMOPTEVFOR is normally not aware of the status of many of the other issues affecting a production decision, it is inappropriate to comment on production issues based on OT&E alone. Accordingly, no conclusion or recommendation pertaining to production should appear in the evaluation report. The guidelines for determining the key elements of the conclusions and recommendations, based on the results of testing, are:

8-13.1 EOA/OA

8-13.1.1 Conclusions

Prior to IOT&E, conclusions are presented as identification of system enhancements and of risks toward effectiveness and suitability COI resolution at IOT&E.

8-13.1.2 Recommendations

COMOPTEVFOR recommendations for EOA/OA phases of testing will be “is” or “is not” recommended for continued program development.

8-13.2 IOT&E

8-13.2.1 Conclusions

Conclusions in IOT&E (formerly referred to as OPEVAL) *must* be definitive (i.e., effective or not effective, suitable or not suitable). Conclusions of effectiveness and suitability are made for both the SUT and the overall SoS as it affects the SUT’s capability to deliver the required warfighting capability. Sufficient data should be collected and an evaluation conducted to resolve all COIs. The purpose of IOT&E is to evaluate operational effectiveness and operational suitability. If that is not feasible, the program plan should be reviewed before commencing the test.

8-13.2.1.1 Effectiveness

Effectiveness is a combination of two concepts: does the system meet requirements and does the system maintain or improve warfighting capability when used by the operators. The evaluation of effectiveness is always a combination of these concepts.

A system may meet no requirements but be useful or it may meet all the requirements and be useless. A good rule of thumb is: will the system make the warfighter more effective than he/she was before. Conclusions normally address overall system effectiveness. However, in those cases where the system tested had effectiveness issues in discrete warfare (air, submarine, surface, etc.), mission, or environmental (e.g., jamming) areas, or in several threat regions, the system should be evaluated in each area or threat region and conclusions provided that address effectiveness in each area. Characterize the system's performance regarding where or under what conditions the system was or was not effective (e.g., effective in a non-EA environment, effective against specific threat class, or undetermined against other threat class, etc.) The following are basic definitions to be used during the evaluative process when determining system effectiveness.

8-13.2.1.1.1 Effective

Ideally, all effectiveness COIs were completely and satisfactorily resolved, and there were no severe or major (1, 2, or 3) deficiencies. However, through the evaluative process, it is possible for the system to be determined effective with one or more major (1, 2, or 3) deficiencies and/or unsatisfactory COI resolutions. If as a result of deferrals or limitations to test, there are COIs or portions of COIs that remain unresolved/not tested, characterize the system effectiveness as accurately as possible and recommend additional OT&E to resolve these areas.

8-13.2.1.1.2 Not Effective

If the E-SERB concludes on balance that sufficient effectiveness COIs were not resolved as satisfactory due to severe or major (1, 2, or 3) deficiencies, then the system is not effective. Regardless of the SUT performance when compared to the KPPs and the KSAs, if the operator is unable to successfully employ the system to accomplish the mission, it will be deemed not effective.

8-13.2.1.2 Suitability

8-13.2.1.2.1 Suitable

Ideally, all suitability COIs were completely and satisfactorily resolved, and there were no severe or major (1, 2, or 3) deficiencies. However, through the evaluative process, it is possible for the system to be determined suitable with one or more major (1, 2, or 3) deficiencies and/or unsatisfactory COI resolutions. If as a result of deferrals or limitations to test, there are COIs or portions of COIs that remain unresolved/not tested, characterize the system suitability as accurately as possible and recommend additional OT&E to resolve these areas.

8-13.2.1.2.2 Not Suitable

If the E-SERB concludes on balance that sufficient suitability COIs were not resolved as satisfactory due to severe or major (1, 2, or 3) deficiencies, the system is not suitable. Regardless of the SUT performance when compared to the KPPs and the KSAs, if the operator is unable to successfully maintain and sustain the system to deliver the required warfighting capability, it will be deemed not suitable.

8-13.2.2 Recommendations

A recommendation regarding Fleet introduction is obligatory if the system(s) is intended for Fleet use, or to support the FRPD, or if the TEMP requires it. COMOPTEVFOR addresses Fleet introduction as follows:

8-13.2.2.1 Fleet Introduction

If the system is concluded as operationally effective and suitable, Fleet introduction will normally be recommended. This recommendation may be made contingent on completing specified actions to correct major (1, 2, or 3) deficiencies observed in IOT&E including, if appropriate, verification in FOT&E.

8-13.2.2.2 Limited Fleet Introduction

Limited Fleet introduction can sometimes be recommended if IOT&E results are not generally satisfactory, and it has been concluded that the system is not operationally effective and/or suitable, but there is some benefit to the Fleet by introducing the system in limited quantities to specified units. This recommendation will almost always be made contingent on completion of corrective actions, and may be made contingent on demonstrating those corrective actions in a subsequent phase of IOT&E or FOT&E. When recommending limited Fleet introduction, the conditions that must be satisfied before Fleet introduction should be specified, and will ordinarily include FOT&E whenever system design changes are necessary. The effectiveness and suitability features to be demonstrated in FOT&E must be specified. Whenever possible, a recommendation for limited Fleet introduction should specify to what level of units the introduction should be made (e.g., units required for next phase of OT&E, air squadrons operating in specific scenarios, etc.).

8-13.2.2.3 No Fleet Introduction

A recommendation against Fleet introduction will normally be made if it has been concluded that the system is not operationally effective and/or suitable. A not recommend for Fleet introduction decision is validated during the SERB and approved at the E-SERB.

8-13.3 FOT&E

8-13.3.1 Conclusions

The conclusions drawn in FOT&E will address the system's operational effectiveness and operational suitability, and Fleet introduction if Fleet introduction was not recommended at IOT&E, or no IOT&E was conducted. When the FOT&E is being conducted to examine the integration of a system into other platforms or aircraft, the conclusion will address the system's operational effectiveness and operational suitability in the platform or aircraft tested and, if applicable, Fleet introduction of the system in the platform or aircraft. In those cases where the FOT&E is conducted to examine an upgrade to a system already in production or release of an improved software revision, the conclusion will address the operational effectiveness and operational suitability of the system with the upgrade or new software, and Fleet introduction of the upgraded system or Fleet release of the new software version.

8-13.3.2 Recommendations

- A recommendation regarding Fleet introduction should be made if a recommendation for Fleet introduction has not been made in previous OT&E.

- In those cases where FOT&E is to examine the integration of a system into other platforms or aircraft, or to examine an upgrade to a system already in production, a recommendation regarding Fleet introduction is obligatory.

- The guidelines for determining the level of Fleet introduction of systems in FOT&E are the same as for IOT&E.

8-14 ADDRESSING THE THREAT IN EVALUATION REPORTS

The OTD must prepare the report as it relates to the current ONI Capstone TA, STAR and/or TTVR; the one used to develop the test plan for the particular phase of testing. If, between completion of the test phase and the preparation of the report, there is considerable change to the threat, the evaluation report should recommend further testing against the new, updated threat as described in the updated TA. The OTD must address the threat in the test limitations (if applicable, see paragraph 5-6) and in the analysis of results. The OTD must specifically evaluate any impact the differences in performance between the actual threat and the surrogate used in testing have on reported results. For example, if a subsonic surrogate is used to simulate a near supersonic threat in a shipboard missile system test, the impact, such as speed differential has on reaction times and engagements observed in testing, must be evaluated.

8-15 JCTD REPORTING

On conclusion of a JCTD, an OUA or LMUA will be produced, signed by COMOPTEVFOR, and forwarded to the Operational Manager (OM) (see appendix C). The OM may then use the report to assist in the assessment of the system's military utility. OPTEVFOR observations will state the planned and observed outcomes of the demonstration, an assessment of COIs/MOPs/MOEs, but no determination of effectiveness/suitability. The OPTEVFOR report is not an OA. However, it can incorporate requirements set forth in an approved CD. Regardless of the format, the same objective, analytical rigor applies to observations reported and the assessments made. Of special importance is the summary paragraph, which details the conditions and limitations under which the data were obtained.

8-16 PREPARATION, ROUTING, AND RELEASE OF EVALUATION REPORTS

Timelines for all HQ and VX reports are identical. Any difficulties meeting timelines should be brought to the attention of the COS (01) and the Policy, Education, and Training Director (01A).

8-16.1 Evaluation Reports

The report will be published no later than 90 days after completion of project operations for ACAT I programs, and no later than 60 days for ACAT II-IVT and all non-ACAT programs. Timelines are summarized in tables 8-5 and 8-6.

Table 8-5. ACAT I Evaluation Report Timelines

Day (NLT)	HQ Action	VX/VMX/HMX Action
25 (from end of test)	AWG	AWG
30	SERB	SERB
35	E-SERB	E-SERB
45 (from end of test)	Originator completes rough draft report for technical review, and routes to 01C and analyst.	VX/VMX/HMX - Send rough draft to HQ OTC for staffing with Codes 01B/C/D, editors (for HMX/VMX documents), and 01SA.*
60	Originator incorporates changes and prepares "clean" draft report, and route to division deputy director.	VX/VMX/HMX - Incorporate changes and obtain CO's approval.
70	Division routes smooth document to 01AE, Div A/B, Codes 01A, 00TD, 01, 00D, and 00 for signature and brief.**	VX/VMX/HMX - Send smooth to HQ OTC to route via Div A/B Codes, 00TD, 00D, 01, and 00 for signature.*
90	Division comply with SOP 14-1.	N/A

NLT – Not Later Than

* Use e-mail for applicable sections for HQ review/comment.

** Unresolved issues are pointed out to the Commander by the briefer. The briefing to obtain the Commander's signature occurs no later than 90 days after completion of project operations.

Table 8-6. ACAT II-IVT and all other Evaluation Report Timelines

Day (NLT)	HQ Action	VX/VMX ACTION
End of test	AWG	AWG
10 (from end of test)	SERB	SERB
15	E-SERB	E-SERB
35 (from end of test)	Originator completes rough draft report for technical review, and routes to 01C and analyst.	VX/VMX/HMX - Send rough draft to HQ OTC for staffing with 01B/C/D, editors (for HMX/VMX documents), and 01SA.
45	Originator incorporates changes and prepares "clean" draft report, and routes to division deputy director.	VX/VMX/HMX - Incorporate changes and obtains CO's approval. Send smooth to HQ via 50 OTC.*

Table 8-6. ACAT II-IVT and all other Evaluation Report Timelines

Day (NLT)	HQ Action	VX/VMX ACTION
50	Division route smooth document to 01AE, Div A/B, 01A, 00TD, 01, 00D, and 00 for signature and brief.**	N/A
60	Division comply with SOP 14-1.	N/A

* Use e-mail for applicable sections for HQ review/comment.

** Unresolved issues are pointed out to the Commander by the briefer. The briefing to obtain the Commander's signature occurs no later than 60 days after completion of project operations.

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CHAPTER 9 - RESOURCES

(Rev 4, Jul 2016)

9-1 INTRODUCTION

This chapter focuses on resources available to the OTD. The chapter includes such topics as POC, services, instructions, responsibilities, and specific resources available to the OTD. This chapter also provides an overview of the resource tools necessary to accomplish the job of an OTD.

9-2 ELECTRONIC RESOURCES

9-2.1 OT&E Reference Library

General T&E references are found at Y:\OT&E Reference Library. This folder contains a wide variety of valuable resources that are particularly useful for the OTD, including:

- OTD Manual,
- The COMOPTEVFOR briefing template,
- COMOPTEVFOR Acronym and Abbreviation List (CAAL),
- COMOPTEVFOR OT&E Document Writing Guide Sheets,
- Security classification marking instructions,
- COMOPTEVFOR Analyst's Handbook,
- DoD, CJCS, SECNAV, and OPNAV T&E Instructions,
- DOT&E Guidance,
- M&S Instructions,
- Standard Operating Procedures (SOP),
- Various MOAs.

9-2.2 OT&E Production Library

The Y:\OT&E Production Library holds references, templates, and guidance particular to OPTEVFOR products. For example, all templates, best practices, checklists, and other related references for a test plan are found in the "Test Plan and DCP" folder. There are also folders for the IEF, Modeling and Simulation letters, RALOT, TEMP Input, Test Execution, and Final Reports.

9-2.3 Security Classification Guides and Classification Markings

It is extremely important that COMOPTEVFOR documents have appropriate security classification markings. To mark documents properly, the OTD must have the current Security Classification Guide (SCG) for the particular program, as found on the Defense Technical Information Center (DTIC) website, and must also review the latest guidance on how to mark classified documents, which is found at Y:\OT&E Reference Library\Security Classification Guidance. Further assistance is available from the the Security Manager or from the editors.

9-2.4 TEPS

TEPS is a module within the COMOPTEVFOR Knowledge Management System (KMS) on the unclassified LANs. (https://kms.cotf.navy.mil/home_auth/home.home_mis.home_main). TEPS is a Web-based management tool designed to assist the OTD/SH/OTC/LTEs in the tracking and administration of projects, Fleet services scheduling, and activity reports. Access to the TEPS database is limited to members of OPTEVFOR. Procedures for the use of TEPS may be found in appendix E.

9-2.5 Enterprise OT&E System

The command is pursuing development of an enterprise OT&E support system. This system will incorporate many of the features described above in the reference library and TEPS sections. The system will use an object-oriented database to store information about each program. Structuring the database this way will allow the user to reuse information to develop IEFs, create planning and test report documents, characterize deficiencies, and display the program test anatomy. The process to build this system will be significant. Users will be updated once an implementation strategy is developed.

9-2.6 Shared Drives

The K: drives on the unclassified and classified LANs are shared drives that support access to and storage of T&E documents. The drives are organized by division, and each division is organized by section, with each section organized by office code. While each division may set its own requirements, at a minimum, the K: drive folders for individual programs should be structured with the following guidelines.

9-2.6.1 Program Folder

Program folders should be named with the TEIN and short name (e.g., K:\40\41\0371-03 CBASS). Each program folder should have subfolders for the following, as required:

- Each phase of test
- Requirements documents
- Framework
- Funding
- TEMP.

9-2.6.1.1 Phase of Test

Within program folders, each phase of test should have its own folder using the name of the phase (e.g., K:\50\54\541\0201-08 EA-18G\OT-B1. Each phase of test should have folders for the following documents:

- Briefs,
- Messages,
- Final report,

- Test plan.

9-2.6.1.2 Documents

Once a final, signed, official document is available, save the document in .pdf or .doc format, as applicable, in the appropriate division folder. Remove all draft documents from the main document folder by either deleting the draft document or moving it to a history folder. This action may prevent confusion as to which document is the most current. Update the document tracker when the document is given to a different division. (See yeoman for access.) SOP 14-1 describes the process for finalizing and archiving final documents in .pdf format after signature. 01A posts these documents at the enterprise Knowledge Management (eKM) database online, and in the Y:\00\Signed Test Documents folder.

9-2.7 ORACLE E-Business Suite (EB Suite iProcurement) Financial Software

- EB Suite iProcurement is part of ORACLE E-Business Suite and is the application used by OPTEVFOR to requisition anything procured, except travel. EB Suite iProcurement enables tracking of expenses by project and code.

- Every OTD and supervisor must be familiar with the use of EB Suite iProcurement. Training on the use of EB Suite iProcurement is available on the KMS Web site under the mission support, training drop-down menu.

9-3 PHYSICAL RESOURCES

Depending on the program, an OTD may need to arrange for support (i.e., data collection/analysis/reduction, ranges, targets, etc.) from a variety of activities. In addition to the resources available within the divisions and from the program offices, OPTEVFOR's Fleet Resources Office (01A3, East Coast, 757-282-5546 extension 3294) and Test Resource Requirements (01A7, West Coast, 619-553-4568) can provide assistance in obtaining necessary support.

9-4 TEMPORARY ASSIGNED DUTY (TAD) TRAVEL

All TAD travel, either command or program funded, must be submitted and approved via the Web-based Defense Travel System (DTS). Establishment of DTS accounts and training are provided by the OPTEVFOR travel office during the personnel check-in process.

COMOPTEVFOR's policy is that all personnel exercise discretion in the stewardship of taxpayer funds and be frugal in the use of appropriated funds in support of travel by:

9-4.1

Limiting travel to the absolute minimum level necessary to accomplish the mission in terms of the number of travelers, mode of travel, duration of travel, alternatives to travel, etc.

9-4.2

Using teleconferencing and video-teleconferencing capabilities in lieu of travel whenever possible.

9-4.2.1

Using government quarters, where available; where appropriate, travel arrangements to locations in which government quarters exist should be done in a timely manner to allow OPTEVFOR travelers to use government lodging while on travel.

9-4.2.2

Minimizing resource expenditure for vehicle rentals by ride-sharing arrangements whenever two or more personnel are traveling to the same place.

- Navy Defense Acquisition Career Manager (DACM) pays for travel associated with training of Defense Acquisition Workforce Improvement Act designated personnel. Funding must be identified and received by the traveler prior to processing orders.

- Travel by staff personnel to support programs that have passed Full-Rate Production (FRP) Decision Review (DR) will normally require the use of command Operations and Maintenance, Navy (O&MN) funds. A review of any exceptions (see paragraph B-3.1.1.1) must be completed to ensure the appropriate use of scarce O&MN funding.

9-5 FLEET SERVICES

COMOPTEVFOR is the RDT&E Fleet support scheduling agent for the CNO (N84), including all DT and OT associated with acquisition programs, and those projects and initiatives endorsed by CNO (N84) as requiring Fleet support under this process.

The primary method to identify Fleet support for acquisition projects is in Part IV of 4-Part TEMPs. TEMP inputs should be as specific as possible. These are used to plan and program not only Fleet support, but also financial support, ranges, targets, simulators, and other required support. For OT and IT, the IEF resource section provides a detailed breakdown of resources that should be available even while the TEMP is still in staffing.

9-6 REQUESTING FLEET SERVICES

There are two types of Fleet Service Requests (FSR): standard (quarterly) and emergent.

9-6.1 Standard FSR

Approximately 9 months prior to the actual execution quarter, CNO (N84) sends the "QUARTERLY CALL FOR FLEET RDT&E SUPPORT REQUIREMENTS" message to all RDT&E agencies soliciting Fleet support requirements (the N84 support request will include a cut-off date, after which service requests will be submitted via an Emergent FSR (EFSR) message). OTDs submit FSRs per the Unclassified Test and Evaluation

Support (UTES) database, which can be accessed from the KMS main page or https://utes.cotf.navy.mil/. The UTES Operator's Guide can be found on the COMOPTEVFOR main web page, Y:\OT&E Reference Library, or from the COMOPTEVFOR Fleet Resources managers. When preparing an FSR, the following questions should be considered:

- Hours per day? Day or night operations?
- Type of aircraft, surface ship, or submarine required?
  - Sorties per day?
  - Are services requested: dedicated, concurrent, or Not-to-Interfere Basis (NIB)?
  - Consecutive? If not, minimum and maximum time between periods?
  - In connection with other units?
  - Can this be in connection with transit, Fleet exercise, or other project operations?
  - Why these specific date(s)?
  - How rigid are these dates?
  - Which day(s) (when in connection with other assets)?
  - Can these tests be done simultaneously?
  - DT or OT?
  - Phase?
  - If a specific unit is requested, then why this particular unit?
  - Is same unit(s) required each day (period)?
  - Ship Alteration (SHIPALT)/ Temporary Alteration (TEMPALT) required or preferred?
  - Test location/instrumented range?
  - Which units have this equipment?
  - Any riders? Justify number of riders.
  - Any previous Separate Correspondence (SEPCOR)? If so, make note of it.
  - Is this a continuation of previous quarter services?
  - What type augmentation?
  - Can more testing be done each day (period)?
  - If this asset is not available, is remainder of services required?
  - What is the minimum time required?
  - Does your test support: MS C, LRIP, OTRR, Critical Design Review, IOT&E, FRP, and/or Fleet release?
  - If your program is delayed, what is the delay impact? What is the cancelation impact?

9-6.2

OPTEVFOR resource managers (east and west coast) will forward all OT requests to CNO (N842) for validation and prioritization. Once the validation and prioritization is

complete, CNO (N842) will forward the endorsed “Fleet RDT&E Support Requirements for … that FY Quarter…” to the OPTEVFOR resource managers, who, in turn, will enter them into Web-Enabled Scheduling System (WEBSKED) prior to the quarterly Commander, Task Force 20/ Commander Third Fleet scheduling conference.

When the scheduling conference is completed, OPTEVFOR resource managers will contact the respective OTDs by e-mail (SIPRNET preferred) or telephone with the results of the conference. The following is a list of possible conference results.

9-6.2.1 Unit Assigned

When a specific unit is assigned, the OPTEVFOR resource managers will provide the OTD with the scheduled unit POC. The OTD should contact, at the earliest opportunity, either the unit POC or the command/activity that has been assigned, to ensure that the requirements are known and integrated into the unit's planning at an early stage, and to have COMOPTEVFOR added to the distribution of unit CASREP and CASCOR messages.

9-6.2.2 Direct Liaison Authorized (DIRLAUTH)

OPTEVFOR resource managers will execute DIRLAUTH to locate platform-level support and provide a unit scheduling agent POC to the OTD. The OTD will coordinate with the unit scheduling agent to determine supportability, while keeping the OPTEVFOR resource manager informed.

9-6.2.3 No Fill

Fleet support request is not supportable.

9-6.2.4 Open

Fleet support requested was not available during the scheduling conference; however, it may become available sometime after the conference. All OPEN requests will be reviewed regularly by OPTEVFOR Fleet resource managers for a potential support opportunity.

9-6.2.4.1

In all cases, it is advisable that the OTD contact the PM regarding assigned services for any PM-required action. OTDs should follow up face-to-face or telephone contacts with the service provider with an e-mail detailing the substance of the discussions and save all e-mail traffic with the service provider in order to avoid misunderstandings.

9-6.2.4.2

OPTEVOR Fleet resource managers will provide Fleet scheduler contact information for applicable platforms assigned to the OTD. OTDs should establish contact with the Fleet scheduler (or platform operations officer) as applicable and as soon as feasible. OTDs should be prepared to provide details about what is expected of the platform/crew during testing. OTDs should notify OPTEVFOR resource managers if, during the course of coordination with the platform scheduling agent, the testing is deemed not supportable.

9-6.2.4.3

OTDs requesting submarine support for RDT&E must comply with the following procedures:

9-6.2.4.3.1

Submit a copy of the COMOPTEVFOR signed test plan to the ISIC and SUBOPAUTH NLT 30 days prior to the event.

9-6.2.4.3.2

For complicated tests (e.g., operating above 200 feet, in a high-density, contact-management environment, or shallow water environment), official briefings should be provided by the OTD well in advance of the event for the ISIC, SUBOPAUTH, COMSUBPAC/COMSUBFOR N3, and N32

9-6.2.4.3.3

A presail brief must be held with the ISIC and platform crew prior to the underway event.

9-6.3 Emergent Requirements

Emergent requirements occur when a need arises for Fleet support after the deadline for scheduling conference submission has passed, or services are required in addition to those that were considered at the scheduling conference. When the need occurs, the OTD will coordinate with the OPTEVFOR resource manager to determine the feasibility of the emergent services requested. If the feasibility check yields a negative response, a decision will be made as to whether or not the OTD will draft and transmit the EFSR message. (OPTEVFOR warfare divisions in coordination with VX squadrons will determine message originator). When the CNO (N84) endorses the EFSR message, the OPTEVFOR resource manager will enter the request into WEBSKED for resourcing. Once in WEBSKED, the responsible OPTEVFOR resource manager will coordinate obtaining support services.

NOTE

Emergent requests or schedule change requests have potentially negative impact on Fleet operations, maintenance, and training commitments. OTDs should make every effort to acquire Fleet support prior to the established submission deadline.

The following conditions must be met prior to requesting emergent services:

- The emergent service request must state why services were not requested during the scheduling conference.
- A draft or final test plan must be available so that services required can be clearly identified.

9-6.4 Asset Requests Not Scheduled at Scheduling Conferences

Range and Operating Area (OPAREA) requests are normally coordinated directly with the facility's scheduling authority and the OTD. Due to the demand for these facilities, the OTD should coordinate with the range-scheduling agents well in advance.

9-6.5 Fourth, Fifth, Sixth, or Seventh Fleet Services

Requests for Fifth, Sixth, or Seventh Fleet Area of Responsibility services should be submitted to CNO (N842) via message with information copies to the program sponsor, Fleet commander, and commands involved. Once endorsed by CNO (N842), OPTEVFOR Fleet resource managers will coordinate with applicable Fleet commanders for RDT&E assignments.

9-7 MULTISERVICE REQUESTS

9-7.1 MOT&E Services Support Coordination

Each other-than-Navy Service OTA will establish an internal POC for requests and coordination when a single Service requires resources from other Services. The single-Service OTA conducting a test will initiate the request and coordinate the use of required Joint assets, and will be responsible for the scheduling and managing of those assets. The OTA POCs for test resources are listed below:

ATEC
DCSOPS (703) 681-2936/6518
DSN: 761-2936/6518

AFOTEC
A-8P- Programming
(505) 846-1785
DSN: 246-1785

OPTEVFOR
Test Fleet Resource Scheduling
East Coast: (757) 282-5546 Ext. 3294
DSN: 564-5546 Ext. 3294
West Coast: (619) 553-4568

MCOTEA
S-4 (703) 784-3286

9-8 RELATED COMMUNICATIONS

9-8.1 Notice of Intent (NOI)

The primary purpose of an NOI is to reserve a submerged OPAREA and establish procedures that will minimize mutual interference between submerged submarines, and between submarines and other operations, such as surface ships using variable depth sonar or dropping of explosive ordnance. COMSUBFOR/Commander, Task Force 20.3 is Commander, U.S. Fleet Forces SUBOPAUTH and is assigned the responsibility of coordinating and approving NOI requests. CTF-20 Operations Order (OPORD) 2000, annex C provides the procedures for requesting an NOI. If the test area, participating units, and timeframe are well defined, the NOI requests should be sent to Commander, Task Force 20.3. If test operations are ill defined or inherently flexible, the responsibility for requesting the NOI rests with the primary participating unit.

9-8.2 Communication Plans

Communication plans are an integral component of any OPORD, LOI, or Pre-Exercise (PRE-EX) Message. An important step in formulation of these exercise directives is the assignment of frequencies for short-term tactical and training evolutions. Guidance for submitting frequency requests is contained in annex K of COMUSFLTFORCOM OPORD 2000 series.

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CHAPTER 10 - PROJECT MANAGEMENT AND CONTRACT SUPPORT

(Rev 3, Jul 2016)

10-1 INTRODUCTION

The complexity of conducting successful test and evaluation may require augmentation by the contractor workforce. COMOPTEVFOR has several contract vehicles at its disposal to assist in obtaining the necessary contractor skill sets, specifically OMNIBUS, Government Services Agency (GSA), and Seaport E. The COR will assist you in choosing the right vehicle for your contract requirement. The NAVSUP Contracting Knowledge Site flowchart is a helpful overview of the process and may be found at section 10-14. The following guidance is provided to assist you in understanding the process for submission and execution of a task order requirement.

10-2 KEY TERMS

While attached to COMOPTEVFOR you will deal with contracts. The following are key terms essential to your understanding of contracts:

10-2.1 Best Value

The expected outcome of an acquisition that, in the government's estimation, provides the greatest overall benefit in response to the requirement. Best value will be expressed as either "Trade-off or Lowest-Price Technically Acceptable (LPTA)."

10-2.2 Breach of Contract

Failure to perform as agreed.

10-2.3 Contract

A mutually binding, legal relationship obligating the seller to furnish the supplies or services (including CON) and the buyer to pay for them. It includes all types of commitments that obligate the government to the expenditure of appropriated funds except as otherwise authorized in writing. The OMNIBUS and GSA are examples of a "Contract".

10-2.4 Contract Modification

Any written change in the terms of a contract.

10-2.5 Deliverable

A product of a contractor or other agency's effort partially or wholly fulfilling the objectives of a contract per the requirement documents or other tasking.

10-2.6 Dispute

Disagreement between the contractor and government regarding the rights of the parties under a contract.

10-2.7 Firm-Fixed Price (FFP) Contract

Agreement to pay a specified price when the supplies or services called for by the contract have been delivered and accepted within a specified time period (3 days).

10-2.8 Incremental Funding

The obligation of funds to a contract in periodic installments as the work progresses rather than in a lump sum.

10-2.9 Modification

Any formal revision of the terms of a contract.

10-2.10 Obligation

A monetary liability of the government limited in amount to the legal liability of the government at the time of recording.

10-2.11 Option

A unilateral right in a contract by which, for a specified time, the government may elect to purchase additional quantities of the supplies or services performed by the contractor thereby extending the period of performance of the contract.

10-2.12 Performance Work Statement (PWS)

Description of the required results in clear, specific, and objective terms, with measureable outcomes.

10-2.13 Quality Assurance Surveillance Plan (QASP)

Guide that describes the contract monitoring methods in detail. The QASP is usually written by the same team that develops the work statement and is used in monitoring a contract.

10-2.14 Statement of Work (SOW)

A requirements document for services. It describes the work or services to be performed and may enumerate the methods to be used. It can apply to the acquisition of services or development of hardware. The SOW is the contractual vehicle for expressing exactly to what each party (the contractor and the government) is agreeing. Its clarity has a direct effect on efficient contract administration since it defines the scope of work.

10-2.15 Task order contract

A contract for services placed against an established contract (i.e., OMNIBUS/GSA) or with government services.

10-3 ROLES AND RESPONSIBILITIES

10-3.1 Contracting Officer

FLC Norfolk has unlimited, written authority to approve all Task Orders exceeding $500k. Only the Contracting Officer has the authority to change the terms and conditions of a contract or to enter into a new contract agreement.

10-3.2 Ordering Officer

COMOPTEVFOR has limited written authority (Warrant) to make business decisions limited to Task Orders and actions under $500k for OMNIBUS and $150k for GSA orders. The Ordering Officer conducts all task order administration functions, monitors task order compliance, collects information and provides recommendations to the Contracting Officer.

10-3.3 Command COR

The Command COR is an authorized representative of the Contracting Officer, designated by the command and approved by the Contracting Officer. The COR is the liaison between the end user (customer) and the Contracting Officer and Ordering Officer. The COR does not have the authority to change terms and conditions of the contract or enter into a new contract agreement.

10-3.4 Ordering Officer's Contract Specialist

Conducts all contract administration functions, is the liaison between the COR and Ordering Officer, has no written authority to make business decisions or change the terms or conditions of the contract or enter into a new contract agreement.

10-3.5 Technical Assistant (TA)

The requiring activity representative who may be assigned to provide technical/administrative assistance to the Command COR. TA's may be assigned to assist and support the COR but do not have the authority to provide technical direction or clarification directly to the contractor. Each warfare division has a designated TA assigned.

10-3.6 OTD

Identifies the need for contract support, executes the procedures for obtaining contract support as described below in the Task Order Initiation procedures and will obtain the required funding to support Task Order award. The OTD will also draft the contract package with the support and assistance of the divisional TA and Command COR.

10-4 GENERAL CONTRACT TASK ORDER INITIATION PROCEDURES

10-4.1 Step 1: Define Requirement and Obtain Division Approval

10-4.1.1 Timeline

The process to initiate contract delivery order/task orders should begin a minimum of 8 weeks prior to the desired start date of the period of performance. Consideration of the addition of option years to the period of performance should occur at this time as it may add additional time to the preparation of the contract documents.

10-4.1.2 Action Required

10-4.1.2.1

The OTD/SH/OTC or other designated representative identifies need for contract support.

10-4.1.2.1.1

Type of work required (test engineering, test design, test support, analysis, test plan, and report writing)

10-4.1.2.1.2

SOW and period of performance (support test planning, test execution, final reporting, analysis, etc. and anticipated duration of support)

10-4.1.2.1.3

Estimated deliverables during the period of performance (e.g., test plan, final report, TEMP, etc.)

10-4.1.2.1.4

Estimated labor category the work requires (e.g., Senior Test and Evaluation Engineer, Test and Evaluation Specialist, Statistician)

10-4.1.2.1.5

The OTD/OTC communicates need to the Division Section Head (SH).

10-4.1.2.1.6

If the Division SH concurs, the need for support is communicated to the Division Deputy Director (B Code).

10-4.1.2.1.7

If approved by the B Code, the OTD/SH/OTC or other designated representative notifies the Division TA.

10-4.1.2.1.8

The Division TA coordinates and schedules a Contract Support Review Board.

10-4.2 Step 2: Conduct Contract Support Review Board

10-4.2.1 Purpose

A Contract Support Review Board will decide what type of contract support is required and ensure the level of expertise requested and scope of work are consistent with Command objectives.

10-4.2.2 Timeline

The Contract Support Review Board should be scheduled within 1 week after obtaining Division Deputy Director approval for support.

10-4.2.3 Attendees

The personnel required to convene a Contract Support Review Board are listed below.

10-4.2.3.1 Required Participants

- OTD/SH/OTC
- Division TA
- Deputy Director
- Test Planning and Analysis Division (01C) Representative

10-4.2.3.2 Additional Desirable Participants

- Division SH
- Command COR

10-4.2.4

The OTD/SH/OTC or other designated representative reviews contract support requirements to the board members.

- Program supported,
- Type of work required (test engineering, test design, test support, analysis, test plan, and report writing),
- Scope of work and period of performance (support test planning, test execution, final reporting, analysis, etc. and anticipated duration of support),
- Estimated deliverables during the period of performance (e.g., test plan, final report, TEMP, etc.),
- Estimated labor category the work requires (e.g., Senior Test and Evaluation Engineer, Test and Evaluation Specialist, Statistician, etc.),
- Estimated labor and travel funds required,
- Amount of direct cite funds budgeted in the TEMP,
- Ability of the Program Office to fund,
- Contract vehicle under which the OTD plans to execute their Task Order (OMNIBUS/GSA, etc.).

10-4.2.5

The Division TA presents and recommends a contract support option (OMNIBUS, GSA, Seaport E, etc.) assessing advantages and disadvantages of each contract vehicle. He will also recommend a decision between Trade-Off and LPTA processes.

10-4.2.6

The Deputy Division Director will discuss other options for support such as use of Navy Working Capital Fund government employees and address compliance with Division workforce management goals.

10-4.2.7

01C Division Representative assists in analyzing the required skill sets and level of expertise needed to accomplish the stated objectives.

10-4.3 Step 3: Draft Contract Task Order Package

10-4.3.1 Timeline

The contract package should contain the SOW, Independent Government Cost Estimate, Contract Profile Sheet (if <$500k, CPS is an internal COTF document), approved Oracle requisition, DD254, and funding document. These documents should be drafted by the OTD within *1 week* after obtaining the Contract Support Review Board approval to proceed. Additional documents may be required; the type of contract vehicle you use will dictate which documents must be submitted to support the contract package submission. Your division TA or command COR will be able to assist you with this.

If funding is sent via GLS NAVSUP San Diego to FLC NAVSUP Norfolk, obtain the Procurement Request (PR or ERP number) and ensure the PR/ERP # is included in the e-mail providing electronic copies of Contract Package.

10-4.3.2 Process

See table 1 for the contract package generation process. Also see the Task Order Checklist at section 10-10.

Table 10-1. Contract Task Order Package Generation Responsibilities

Action	Responsible for Action

Table 10-1. Contract Task Order Package Generation Responsibilities	
Action	**Responsible for Action**
Formulate the SOW, IGCE, and Contract Profile Sheet and additional required documentation (e.g., DD254, approved Oracle requisition, Comptroller accepted funding document, etc.) using the templates located on the Y: drive for the contract vehicle selected by the Contract Support Review Board. If using the OMNIBUS: Y: General/OTD Contracts/OMNIBUS 2013/Contract Package submission. If using the GSA: Y: General/OTD Contracts/GSA/Contract Package Submission.	OTD
Reviews contract package for accuracy.	Division TA
Review and recommend approval.	SH
Review and recommend approval.	01C
Review and approve.	Division Deputy Director
Review and approve. Submit to Procurement Processing Department (COMOPTEVFOR or Fleet Logistics Center, Norfolk for processing).	COR
Review and accept.	Contracting Officer

10-4.4 Step 4: Ensure Funds Availability

OTD will work with the TA and Division Director to reach agreement on funding w/PM. Per regulatory requirements, if incremental funding is used, a minimum of 25% of the IGCE (or at least 90 days of coverage for performance periods lasting less than 1 year) must be provided by the program office along with a schedule of when remaining increments will be provided. See section 10-11 (Admiral's letter of April 2015).

10-4.4.1 Timeline

Funds must be available at COMOPTEVFOR no later than *1 week* prior to the submission of the contract package to the COR.

10-4.4.2 Process

- The OTD, SH, OTC, or other designated representative interfaces with the Program Office for funds.
  - After funds are accepted at COMOPTEVFOR, the OTD, SH, OTC, or other designated representative submits an ORACLE request so that funds can be placed on the contract when it is awarded. (***Refer to Oracle iProcurement Training on the KMS page for submission of the required documents; https://kms.cotf.navy.mil/home_auth/home.home_div_training.main)***

- The financial technician approves the ORACLE iProcurement request.
- The Deputy Director approves ORACLE iProcurement request.

10-5 TECHNICAL EVALUATION BOARD (TEB) PROCEDURES

10-5.1 General

Following receipt of contractor proposals by the Ordering Officer, a TEB will be conducted for every Task Order before an award can be made by the Ordering Officer.

10-5.1.1

In unique cases where a Sole Source was executed by the Ordering Officer, a TEB will not be required.

10-5.1.2

Proposal evaluations are assessments of competing proposals and each offeror's ability to perform the prospective task.

10-5.1.3

Technical evaluation is just one element of proposal evaluation and is the process that documents the degree to which each proposal meets or fails to meet the solicitation's minimum performance requirements through assessment of the strengths, weaknesses, and risks of a proposal.

10-5.1.4

Other elements such as past performance evaluation, cost/price evaluation and small business/subcontracting evaluation are performed by the Ordering Officer.

10-5.1.5

Technical evaluations will be conducted using the rating methods including color or adjectival ratings, numerical weights or ordinal rankings as dictated by the Ordering Officer via the COR.

10-5.1.6

Evaluation of proposals other than OMNIBUS Task Order proposals (e.g., GSA, Seaport, etc.) may differ from the process described below. OTDs should contact Technical Assistant (TA) for guidance. Successful evaluation is dependent upon a well-planned task order solicitation that includes a clear and detailed SOW. Award of a Task Order will be based on the factors contained in the solicitation. Source selection method can be LPTA or Trade-Off.

- Lowest Price/Technically Acceptable. LPTA is a source selection method in which each technical proposal is evaluated on the offeror's demonstrated understanding of the SOW and how its approach will successfully accomplish the requirements of the SOW. Each technical proposal will be rated either "Acceptable" or "Unacceptable". Award will be made by the PCO or Ordering Officer to the LPTA offeror.

- Trade-Off. A source selection method in which the Government will award the Task Order to the responsible offeror whose offer conforming to the SOW will be the most advantageous to the Government, price and other factors considered. The trade-off method establishes weighting among the Technical, Past Performance, and Price factors. The weighting of factors is defined in the solicitation.
- Trade-Off Source Selection is more demanding because it is used to justify quantitative ranking and, as such, typically requires more time to conduct than LPTA. In addition, trade-off requires an in-depth, rational, and thorough technical evaluation of the offered proposals thereby critically distinguishing the technical differences between proposals.

10-5.2 TEB Composition

A TEB is composed of a minimum of three government evaluators, at least one of whom has subject matter expertise in the technical area being evaluated. An odd number of voting evaluators is recommended. A non-voting government representative is permitted, however every participant who has access to any portion of a proposal must sign a Nondisclosure Agreement (NDA) before accessing proposal materials. The Division Deputy ACOS (B Code) will have the final word on their TEB composition. The command COR or divisional TA are recommended non-voting alternates to chair the TEB. The typical TEB composition for OMNIBUS Task Order evaluation is:

- Division TA (Nonvoting TEB Chair),
- OTD,
- Division Section Head,
- Test Planning and Analysis Division (01C) Representative.

*01C Representative will be present for all Trade-off TEB boards. 01C Representative is not required to attend the LPTA TEB.

NOTE

The Division Deputy Director may require that additional members beyond those listed above participate in the TEB evaluations. The TEB Chair must be present during all TEB discussions. If a TEB is interrupted, the same voting participants must be present when the TEB reconvenes.

The following government personnel may participate in TEB evaluations:

- OTD/SH/OTCs from other divisions,
- Division Deputy Director,
- Command COR.

10-5.3 TEB Process

TEB planning should be driven by the proposal closing date in the solicitation. The technical evaluation process is initiated once the contractor responses are received by

the OTD from the Contracting or Ordering Officer. The OTD should coordinate with participants so as to complete the TEB on the same day of receiving the proposals. OTDs obtain the Division ACOS concurrence regarding TEB composition.

The OTD shall compare the evaluation criteria with the solicitation, confirming that all elements of the SOW are included in the evaluation criteria and that the evaluation criteria format is consistent with the source selection method (LPTA or Trade-Off). Note that the offeror shall provide a detailed approach to providing personnel who meet the minimum qualifications of the SOW and will provide personnel that meet or exceed the qualifications listed in the SOW by the first day and until the last day of the period of performance.

10-5.3.1

The OTD will ensure that a copy of the contractor responses is provided to each TEB member at the convening of the TEB.

10-5.3.2

All TEB documents are to be collected at the conclusion of the TEB by the TEB Chair. Chair will handle all of the documentation as Contract Sensitive/Source Selection data and ensure it is destroyed appropriately.

10-5.3.3

The TEB Chair will ensure each member and participant has signed an NDA prior to obtaining access to any source selection information. The OTD will make available any other documentation necessary to complete a thorough evaluation.

10-5.3.4

Each TEB voting member will independently evaluate each technical proposal using the evaluation sheets provided. Each proposal will be evaluated against the requirements of the RFP. Proposals will not be compared to other proposals.

10-5.3.5

Evaluate each proposal’s technical approach to provide the deliverables identified in the SOW. To do this, evaluate each proposal’s approach with respect to the performance and experience criteria in the evaluation matrix.

10-5.3.6

For LPTA evaluation, to be considered “Acceptable”, the offeror’s proposal must clearly meet the minimum performance and capability requirements of the solicitation and receive an acceptable rating for the technical proposal in its entirety.

10-5.3.7

The offeror must address each of the areas in sufficient detail so the TEB can reasonably determine if the offeror possesses the ability to perform.

10-5.3.8

Any “Unacceptable” rating must be justified. Be specific in documenting the element of that proposal that failed to meet the requirement.

10-5.3.9

This specific information will aid the contracting officer if the offeror questions why they did not get the award and will help that offeror prepare more competitive proposals in the future.

Examples:

- Any offer that simply reiterates a requirement and states that the offeror possesses the capability to perform is “Unacceptable”.
- An offer that proposes placing an inexperienced, unqualified individual to learn on-the-job fails to satisfy the minimum qualification required on the first day of the performance period and is “Unacceptable”.
- If an individual does not have sufficient experience, provide examples to support the statement and cite the impact on work completion if the bidder is awarded the contract. For example: “The proposal does not demonstrate [the individual possesses] experience performing test and evaluation in an operational test environment. The operational test begins during the first month of the performance period.”

10-5.3.10

A secondary responsibility may be to evaluate each proposal against the desired experience and skills if desired experience and skills are specified in the SOW. In the event the minimum requirements are exceeded, each evaluator should specifically annotate what part of the experience exceeded the requirements and what the benefit will be to the mission (work completion).

- Example: “The offeror has performed in-depth test and evaluation of this program or related programs. These skill sets will greatly reduce time to completion.”

10-5.3.11

After all proposals are evaluated, the TEB Chairman will guide a review of the TEB voting members’ evaluations of each proposal, resolving any misunderstandings (e.g., TEB member lacking subject matter knowledge leading to misunderstanding of either criteria or proposal), and resolving common or repeated proposal strengths or weaknesses identified by more than one TEB member.

Following review, the TEB Chair will formulate a composite summary evaluation using the specific information and ratings from the evaluation sheets of the TEB voting members. Each voting TEB member will sign the composite summary evaluation and the TEB Chair will forward the summary evaluation and all evaluation materials

(proposals and individual evaluation forms and notes) to the contracting officer/ordering officer for further processing.

*The TEB Chair will endeavor to submit findings to the Ordering Officer via the COR or TA in no more than 3 working days. *** A turnover meeting is strongly advised when a change in contractor(s) occurs. Work with the Command COR and your TA on including language in your task to accommodate this turnover as part of the requirement. If a turnover is not practical due to compensation or scheduling issues, a kickoff meeting with the Government and Contractor team is advisable. A kickoff meeting identifies all members of the respective teams, areas of responsibility, contact information, and all urgent requirements.*

10-6 TASK ORDER AWARD

10-6.1

- Services to be furnished under any contract shall be furnished at such times as ordered by the issuance of Task Orders (TO) on a DD 1155 by the Contracting or Ordering Officer. The OTD shall retain electronic copies of all contract related documents that are received from the contracting shop. The OTD is urged to send a copy of all contract awards (to include modifications) to the program office to assist with tracking funds expiration dates and to ensure timely receipt of additional funds. A template e-mail is provided at section 10-13 which should be populated with key information to identify the specific amount of additional funds needed by CLIN # and date required.

TOs issued shall include, but not be limited to the following information:

- Date of order;
- Contract and order number;
- Appropriation and accounting data;
- Item number and description of the services to be performed, period of performance, quantity, and unit price;
- DD Form 254 (contract Security Classification Spec), if applicable;
- DD Form 1423 (Contract Data Requirements List), if applicable;
- Exact place of performance;
- The inspecting and accepting codes (as applicable);
- The firm fixed price (award value);
- List of Government Furnished Property and the estimated value thereof, if applicable;
- Any other pertinent information.

10-7 TASK ORDER MODIFICATIONS

A Modification or Bilateral Modification (supplemental agreement) is a contract modification that is signed by the contractor and the Ordering Officer. Bilateral modifications are used to make negotiated, equitable adjustments resulting from the

issuance of a change order due to a program's scope of work changing (increase or decrease) from the original requirement as stated at time of award. If you feel a modification is necessary, contact your Division TA.

10-8 INVOICE CONCURRENCE

The Command COR is copied on all invoices; timely verification by the OTD of travel expenditures is critical. The OTD shall review contractor monthly reports to confirm expenditures and be proactive in not exceeding the authorized travel budget. For every Task Order that has been awarded, an invoice will be submitted to COMOPTEVFOR via Wide Area Work Flow (WAWF) and received by our Supply Department. The invoice will be sent to the respective OTD by the Supply Department for review and concurrence/non-concurrence for payment. Here is an example of what the OTD may receive:

Example:

Good Morning LCDR Jones.

Please review the attached invoices for accuracy of Labor and Travel/ODC, and respond with your concurrence so it may be certified for payment. These are in reference to (Program Name) Invoice received date: 14 JAN 2014.

A reply is required from the respective OTD/SH/OTC or division representative within 3 (three) working days. Timely replies are required to meet Prompt Payment Certification requirements and to ensure Contractors are notified of any invoice problems within three (3) days of receipt.

Approval recommendations imply that the nature, quantity and type of effort being expended by the Contractor are per the contract.

Very Respectfully
LS2 Jane Doe
Acceptor/Purchasing Agent
COMOPTEVFOR Supply Department

10-8.1

The following is a list of responsibilities every OTD must keep in mind when conducting a review of their respective invoice:

- The OTD makes a timely response back to the Supply Department. This will help ensure that no costs (interest) are incurred by the government due to late responses.
- Ensure you have (at a minimum) the previous monthly report on hand to augment your invoice review.
- The goods have been received or the services have been performed and are per the contract, purchase order, or agreement.

- The prices, subtotals and totals are accurate.
- The invoice includes the contract, purchase order, or agreement number and is per the terms of the contract, purchase order, or agreement.
- The invoice is not a duplicate or has not been paid previously.
- If you have any questions or concerns with the invoice, immediately contact the COR for corrective action before any other action is taken.

10-9 ASSESSING CONTRACTOR PERFORMANCE

During your task order execution the OTD should ensure that the contractor is providing the goods or services per the stated requirement as identified in the SOW. If during performance of the task inadequate progress is being made, communicate immediately with the Command COR. Be prepared to discuss objective evaluation of the contractor's performance and any e-mails documenting communication pertinent to the issue. If necessary, a DD 2772 Contract Discrepancy Report may be prepared and submitted to the contractor documenting the process of constructive performance improvement. The Contracting Officer will require this documentation should a need to issue a "Notice of Concern" or "Show Cause" be required. The form maybe found at Y:\T&E\OTDContracts\CPAR.

If a positive Contract Performance Assessment Report (CPAR) has been submitted recently, the Contracting Officer will need significant documentation if the OTD is considering "Terminate for Default."

The Command COR is required to execute a CPAR annually on each Contract Company supporting each task order at COMOPTEVFOR. The OTD has the responsibility to provide input in support of the task order to the CPARS process. The OTD's input should be submitted to the Command COR using the format provided on the Y drive in the following location: Y:\ T&E\OTDContracts\CPAR. This should be submitted in an email along with the WORD Form/Document.

10-9.1 Sub-Par Contractor Performance

If you are experiencing sub-par performance from a contractor who is supporting your program, follow these guidelines:

Note: At no time will anyone other than the Command COR contact the Contractor to make a report of contractor sub-par performance.

10-9.1.1 What To Do:

a. Ensure your TA is aware of your situation as he will be able to assist you in compiling all of the <u>facts</u> surrounding the sub-par performance, to include names of contractor(s) and government/military personnel involved, and details pertaining to the contractor's performance. Be sure to address whether performance complies with the SOW.

b. With the TA, see the Command COR. Be ready to discuss the facts.

10-9.1.2 Do Not:

a. Reprimand, belittle, or conduct a performance evaluation of the contractor.

b. Use contractor(s) for performance of inherently governmental functions.

c. Create or support a work environment that is difficult and/or unprofessional.

d. Authorize time off, sign time cards, or dictate work hours.

A complete list of governmental functions is found in the Federal Acquisition Regulation (FAR) Manual Part 7, Subpart 7.5, Inherently Governmental Functions. The Command COR has a copy of this document.

10-10 TASK ORDER CHECKLIST

Program_____/TEIN_____

OTD_____/Section Head_____

The elements required for submission of a contract action to the Command COR are:

Date/Initial

____/____Statement of Work (SOW) Times New Roman

____/____Independent Government Cost Estimate (IGCE). If base year is not fully funded, add Fund Allocation Schedule (date and amount) of additional fund increments to fully fund the base year. This information should be provided by your program office and is required for the contract action.

____/____Contract Profile Sheet (CPS, This is a COTF internal document and not required for action >$500K going to FLC NAVSUP)

____/____Funds: (at least 25% of the base year requirement shown on IGCE, or 90 days of funding for tasks less than a year, as required by regulation and noted in the Admiral's letter dated 15 April 15 and located at Y:\T&E\OTDContracts\FUNDING\ADMIRALS Ltr on Funding. Also see:

Y:\T&E\OTDContracts\FUNDING\DEPUTY Ltr on Funding

____/____Approved funding document(s) – accepted and accessible to awarding official *

____/____ORACLE printout(s) (funding and task)* This is for processing by COTF Contracts, i.e., under $500,000. Larger requirements are processed by FLC-Norfolk, do not use Oracle, and funding is sent via ERP. Oracle training is found at:

https://kms.cotf.navy.mil/home_auth/home.home_div_training.main

____/____Determination of Inherently Governmental Functions worksheet**

____/____DD254-DoD Contract Security Classification Specification

____/____Lowest Priced Technically Acceptable (LPTA) evaluation matrix. (This is an exact duplicate of your SOW paragraphs)

* Y:\T&E\OTDContracts\FUNDING\ADMIRALS Ltr on Funding;

For funding routed via N,ERP please use the information at this location to assist your program office route funding. The Financial POC will need to route via GLS NAVSUP San Diego to FLC NAVSUP Norfolk.

** Y:\T&E\OTDContracts\Inherently Gov't Function

10-11 ADMIRAL'S LETTER OF APRIL 2015:

DEPARTMENT OF THE NAVY
COMMANDER OPERATIONAL TEST AND EVALUATION FORCE
7970 DIVEN STREET
NORFOLK, VIRGINIA 23505-1498

4000
Ser 00/165
15 Apr 15

From: Commander, Operational Test and Evaluation Force
To: Program Executive Officers

Subj: POLICY AND PROCEDURES TO INCREMENTALLY FUND CONTRACTS ISSUED BY NAVSUP FLEET LOGISTICS CENTER NORFOLK IN SUPPORT OF COMOPTEVFOR T&E CONTRACT SUPPORT

Ref: (a) Defense Federal Acquisition Regulation Supplement (DFARS) 232.703 "Contract Funding Requirements"
(b) DFARS 232.704 "Limitation of Cost or Funds"
(c) DFARS 252.232-7007 "Limitation of Government's Obligation"
(d) FAR 49 "Termination of Contracts"
(e) NAVSUPGLSINST 7112.1F Administrative Control of Funds and Financial Management https://www.navsup.navy.mil/navsup/ourteam/navsupgls/financial_mgmt/7112%201F%20Adm%20%20Control%20of%20Funds_3jan13.pdf.
(f) NAVSUP Funding Document Manager (FDM) Desk Guide https://www.navsup.navy.mil/site/fdm/FDM_Desk_Guide.pdf

Encl: (1) Procedures for Providing Incremental Funds to Fleet Logistics Center - Norfolk (FLC-N)

1. The Fleet Logistics Center - Norfolk (FLC-N) provides Commander, Operational Test and Evaluation Force (COMOPTEVFOR) the majority of contracting support needed to acquire contracted Test and Evaluation (T&E) services. Previously FLC-N has accepted incremental funds that did not meet all the requirements of references (a) through (f). In some cases FLC-N received incremental funds within days of the contractor expending all available funds. Consequently, workload and productivity burdens were placed on FLC-N in order to prevent interruption to critical program missions. FLC-N is now requiring full compliance when providing incremental funds.

2. While full funding for the period of performance of service contracts and task orders would be optimal, it is clear that circumstances beyond the Program Executive Office (PEO) and Program Management Office (PMO) control may require an incremental approach.

Subj: POLICY AND PROCEDURES TO INCREMENTALLY FUND CONTRACTS ISSUED BY NAVSUP FLEET LOGISTICS CENTER NORFOLK IN SUPPORT OF COMOPTEVFOR T&E CONTRACT SUPPORT

In order to meet expectations and be in full compliance with regulations, funding must be provided to FLC-N per the procedures contained in Enclosure (1) and an agreed written schedule.

3. In the event the PMO does not provide incremental funding per references (a) through (c), (e) and (f), and the allotment schedule, the Contracting Officer is required to terminate the contract/task order for the convenience of the Government per reference (d). This action will result in contractor settlement costs, gaps in service and re-procurement costs *if* FLC-N permits a follow-on competition. In order to avoid these costs and negative impacts to your programs, I request that you ensure your PMOs are aware of and use the incremental funding procedures in Enclosure (1) so that we can collectively meet the expectations of FLC-N and be in compliance with all federal and defense acquisition regulations.

4. My points of contact for this matter are Ms. Nicole von der Heyde at (757) 282-5546, extension 3033 or e-mail at nicole.vonderheyde@cotf.navy.mil and Mr. Christopher Beck at (757) 282-5546, extension 3245 or e-mail at christopher.beck@cotf.navy.mil. FLC Norfolk contracting point of contact is Ms. Jill Joscelyn-Smith at (757) 443-1219 or e-mail at jill.joscelyn@navy.mil.

5. I kindly ask that each PMO provide the name, phone number and e-mail address for their Budget Financial Managers (BFMs) to my points of contact listed above. Thank you!

J. R. PENFIELD

10-12 DEPUTY'S LETTER OF APRIL 2016:

DEPARTMENT OF THE NAVY
COMMANDER OPERATIONAL TEST AND EVALUATION FORCE
7970 DIVEN STREET
NORFOLK, VIRGINIA 23505-1498

4000
Ser 00D/217
18 Apr 16

From: Commander, Operational Test and Evaluation Force
To: Program Executive Officers

Subj: PROCEDURES TO INCREMENTALLY FUND CONTRACTS ISSUED BY NAVY SUPPLY FLEET LOGISTICS CENTER NORFOLK IN SUPPORT OF COMOPTEVFOR TEST AND EVALUATION CONTRACT SUPPORT

Ref: (a) COMOPTEVFOR letter dated 15 Apr 2015, Policy and procedures to incrementally fund contracts issued by NAVSUP Fleet Logistics Center Norfolk in support of COMOPTEVFOR T&E contract support

Encl: (1) Procedures for Providing Incremental Funds to Fleet Logistics Center Norfolk (FLC-N)

1. In follow-up to reference (a) and with the desire to continue fostering a collaborative team approach to our testing efforts, I wanted to provide you an update on the progress achieved with your Program Management Offices (PMO) in meeting Defense Federal Acquisition Regulation Supplement (DFARS) Naval Supply Directives requirements for incremental funding of contracts and discuss areas where we can further improve. As background, The Fleet Logistic Center – Norfolk (FLC-N) provides Commander, Operational Test and Evaluation Force (COMOPTEVFOR) the majority of contracting support needed to acquire contracted Test and Evaluation (T&E) services. While full funding for the period of performance of service contracts and task orders is optimum, there are circumstances beyond the Program Executive Officers (PEO)/PMO control that may require an incremental approach. If an incremental approach is used, there are specific procedures and regulations that must be followed to be in compliance with DFARS.

2. Overall, there has been a marked improvement in meeting DFARS requirements especially in view of FY15 fiscal challenges and the lengthy continuing resolution in FY16. COMOPTEVFOR greatly appreciates your leadership and willingness to be an advocate for us in this matter. In the spirit of continuous improvement and ensuring that we meet DFARS expectations and requirements, I request that you re-emphasize procedures contained in reference (a) and I offer the following as a supplement and lessons learned during the past year (during which 42 task orders were issued) in order to help educate the workforce:

a. Firm Fixed Price (FFP) contract/Task Order: DFARS 232.703-1(2) mandates that "an incrementally funded FFP contract shall be fully funded as soon as funds are available". If funds aren't provided per regulations and agreed allotment schedule, the Government is required to

Subj: PROCEDURES TO INCREMENTALLY FUND CONTRACTS ISSUED BY NAVY SUPPLY FLEET LOGISTICS CENTER NORFOLK IN SUPPORT OF COMOPTEVFOR TEST AND EVALUATION CONTRACT SUPPORT

terminate for convenience. Negative impacts to the government and your PMOs include settlement costs, fees the prime must pay Subcontractors for termination as well as severance payments. An additional ramification of not providing funds on time is future task orders risk performance periods truncated to only the period of time that can be fully paid by those funds thereby eliminating incremental funding.

(1). There were 21 documented instances in which incremental funding was not provided in accordance with the contract/task order's allotment schedule (i.e., at least 60 days prior to contractor expending the entire amount of obligated funds).

(2). In four cases the contractor had to stop work prematurely to avoid incurring expenses that would have exceeded the amount of funds obligated.

b. There were five documented instances in which incremental funding was provided covering less than a 90 day period of performance. Re-competing a task order every 90 days would be an ineffective acquisition strategy.

3. Maximizing the efficiency and effectiveness of limited program funds is especially critical. By providing funds for longer durations when possible, procurement costs will be reduced and the risk of unnecessarily incurring termination costs will be minimized if not eliminated.

4. Enclosure (1), "Procedures for Providing Incremental Funds to Fleet Logistics Center-Norfolk", has an updated vendor code for NAVSUP FLC Norfolk for use with Navy ERP documents.

5. My points of contact for this matter are Ms. Nicole von der Heyde at commercial (757) 282-5546, extension 3033 or email at nicole.vonderheyde@cotf.navy.mil and Ms. Arvett Blount at commercial (757) 282-5546, extension 3326 or by email at arvett.blount@cotf.navy.mil. Thank you for your continued support.

S. T. CRAIG
Deputy

Procedures for Providing Incremental Funds to Fleet Logistics Center - Norfolk (FLC-N)

The Naval Supply Systems Command's Fleet Logistics Center (FLC), Norfolk provides COMOPTEVFOR with much of the contracting support needed to deliver Test and Evaluation Services to the PMOs. To ensure compliance with references (a) through (d), FLC-Norfolk requires the following whenever PMOs provide less than full funding:

a. Funds are provided by the PMO in **increments that will cover no less than 90 calendar days of contractor's performance period** (i.e., 25 percent of the annual contract/task order amount / 50 percent of a six month period of performance).

b. **An "allotment schedule" specifying the calendar date(s) and amount(s) that the PMO will provide the balance of funds** required to fully fund the contract/task order.

c. A minimum of **60 calendar days "buffer"** so that the Contractor and Contracting Officer can comply with their requirements (i.e., the contractor must notify the Contracting Officer at least 30 days prior to expending 75 percent of obligated funds. The Contracting Officer then has 30 days in which to obtain the additional funding and issue a modification obligating those funds on the contract/task order).

d. A **breakdown showing how the incremental funds provided are to be obligated on the contract/task order**. This breakdown must identify the amount of funds to be placed upon each of the Contract Line Item Number (CLIN) (i.e., if the contract/task order contains a CLIN for Labor and a CLIN for Travel, then a funding document cannot simply state $85,000 funds are provided. Rather the breakdown of how the $85,000 is to be allocated to each CLIN is required to be provided). Failure to match the existing contract/task order CLIN structure will result in rejection of the funding document by FLC Norfolk.

e. Per NAVSUPGLSINST 7112.1F, Administrative Control of Funds and Financial Management, reference (e), all funding shall be **submitted electronically to NAVSUP FLC Norfolk for processing** using the prescribed automated system (i.e., NAVAIR, SPAWAR, NAVSUP, NAVSEA, ONR and SSP are required to use the Navy Enterprise Resource Planning (NERP) which authorized personnel may access at: https://ep.erp.navy.mil/. All others shall use NAVSUP Funding Document Manager FDM) https://www.navsup.navy.mil/site/fdm/FDM_Desk_Guide.pdf) found at reference (f).

f. Regardless of the automated funding system used, the following information must be provided:

(1) Cite on each funding document a "*COTF contract #_____ (and, if applicable) Task/Delivery Order #_____*" on which the funds are to be obligated.

(2) In the case of a new award cite "*This funding is for award of a **Follow On** to COTF contract # ___(fill in)_____ (and if applicable) Task/Delivery Order #____(fill in)____.*",

(3) Cite on each funding document the applicable TEIN (Test Evaluation Identification Number), Project Name, and the Technical and Financial POC's (names, email addresses, phone numbers' and COTF Codes),

(4) E-mail a copy of the transmitted Funding Document to: COMOPTEVFOR Funds@cotf.navy.mil for our situational awareness.

g. Additional guidance applicable to each automated system:

(1) NAVSUP Funding Document Manager (FDM)2276 (RCP)/MIPR:

(a) All non-Navy ERP funding must be submitted through NAVSUP FDM for acceptance by NAVSUP FLC Norfolk Comptrollers. Enclosure (3), FDM Desk Guide, provides guidance on submitting documents. Please note the following:

(b) All funding shall be **direct cite (RCP)**; All funding should be routed to **FLC Norfolk (UIC N00189)**, not a detachment of FLC Norfolk;

(2) Navy Enterprise Resource Planning (NERP):

(a) For all Navy ERP documents, NAVSUP FLC Norfolk's **Purchase Group (RGrp) is J3D** and the **Vendor Code is 20002103**.

(b) Additionally, a **ZSPS document**, vice a ZFD document, must be created in NERP.

10-13 TEMPLATE E-MAIL (WHEN DISTRIBUTING TASK ORDERS AND MODIFICATIONS) TO PM BUDGET OFFICE:

[OTDs: Send an e-mail containing the following information when additional funds are needed to fully fund the current Period of Performance under a Task Order:]

From: OTD *(Insert OTD name here)*

To: PM Budget Office *(Insert names of PM Budget Office Personnel here)*

Enclosed is a copy of Task Order #____ *(OTD insert the 4 digit task order number found in Block #2 of DD Form 1155 or Block #4 of SF 1449)* **which was recently awarded under contract #** _____ *(OTD insert the 13 Alpha Numeric Contract # found in Block #1 of DD Form 1155 or Block #2 of SF 1449***) providing contractor OT&E support services to the** _____ *[OTD insert the full Program Name as well as the short title Here.]* **program TEIN #**_____ *[OTD insert TEIN here.]***. This Task Order is currently incrementally funded in the amount of $**_____ *[OTD insert the total "FUNDED" amount shown in Section B (usually the 2nd page) of the task order.]***. An additional $**_____ *[OTD calculate & insert the difference between the VALUE of the CLINs to be performed during the current period of performance (PoP) and the total "FUNDED" amount of those CLINs.]* **still needs to be provided in order to fully fund the current period of performance which runs from** _____ *[OTD insert current PoP STARTING date DD MONTH YY]* **until** _____**.** *[OTD insert current PoP ENDING date DD MONTH YY].*

Please keep in mind that DFARS 232.703-1(2) requires "an incrementally funded fixed price contract shall be fully funded as soon as funds are available." In order to prevent interruption of your critical program mission support (and to comply with acquisition regulations), please transmit the required additional funds as soon as they are available. Please ensure your funding document identifies the funds are for the following CLINs under the Task Order and Contract identified above:

CLIN: __*__# CLIN Description ____*____ $___*_____(amount needed to fully Fund)

CLIN: __*__# CLIN Description ____*____ $___*_____(amount needed to fully Fund) CLIN: __*__# CLIN Description ____*____ $___*_____(amount needed to fully Fund)

[OTD insert 4 digit CLIN #, Description and the remaining amount needed based on Task Order].*

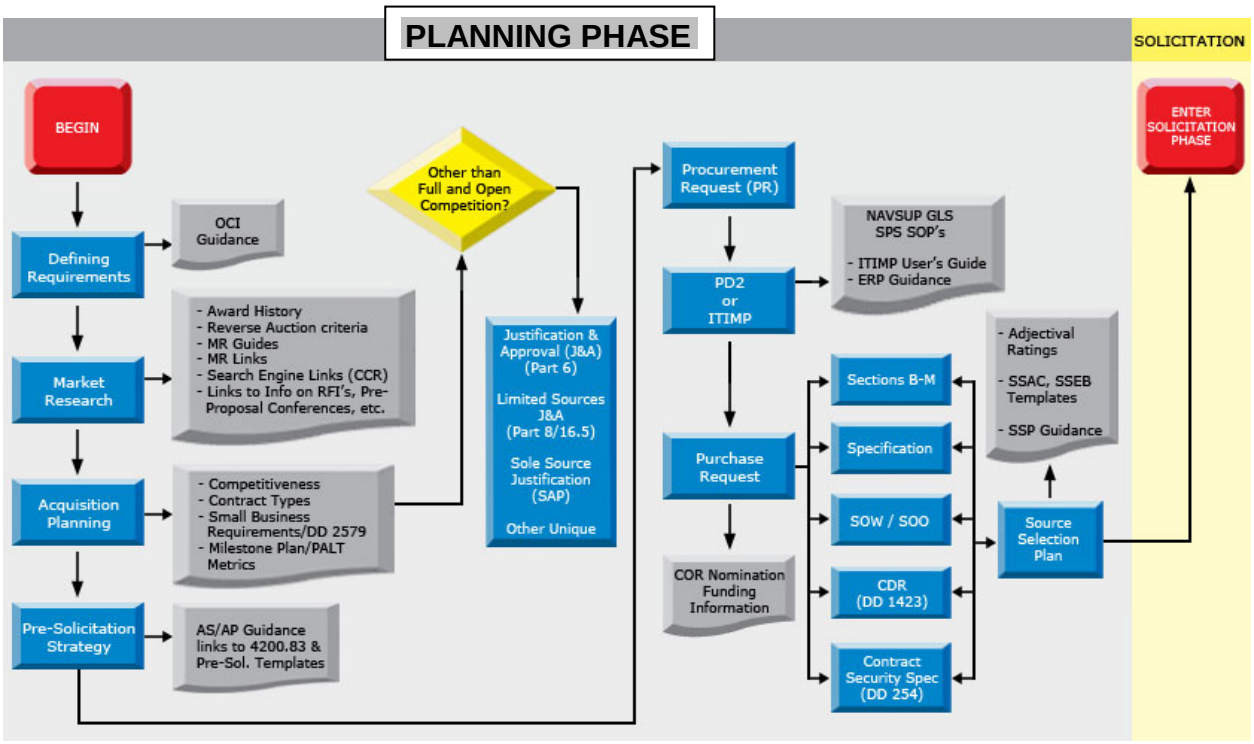
When transmitting additional funds, please e-mail a courtesy copy of the funding document to the Contracting Officer (*OTD insert name & e-mail***), Contracting Officer's Representative (Nicole von der Heyde**

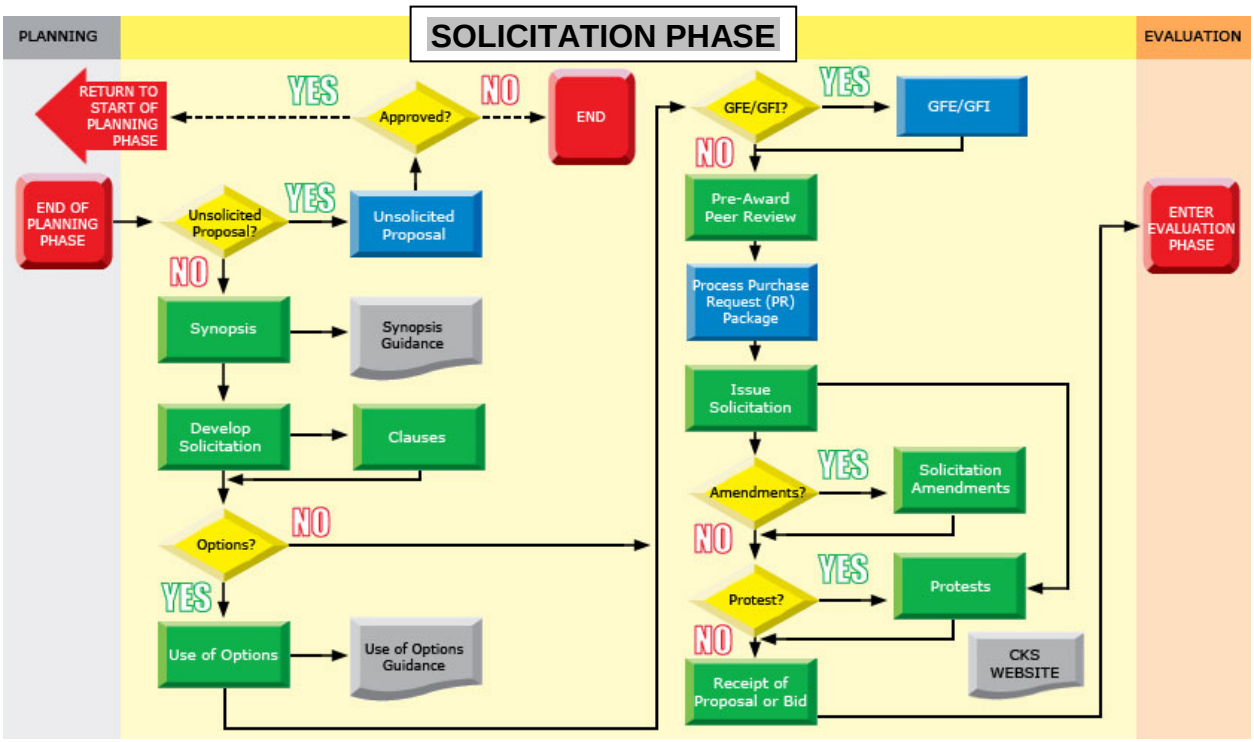
Nicole.vonderheyde@cotf.navy.mil), OTD, TA and COTF Funds e-mail (COMOPTEVFOR.Funds@cotf.navy.mil).

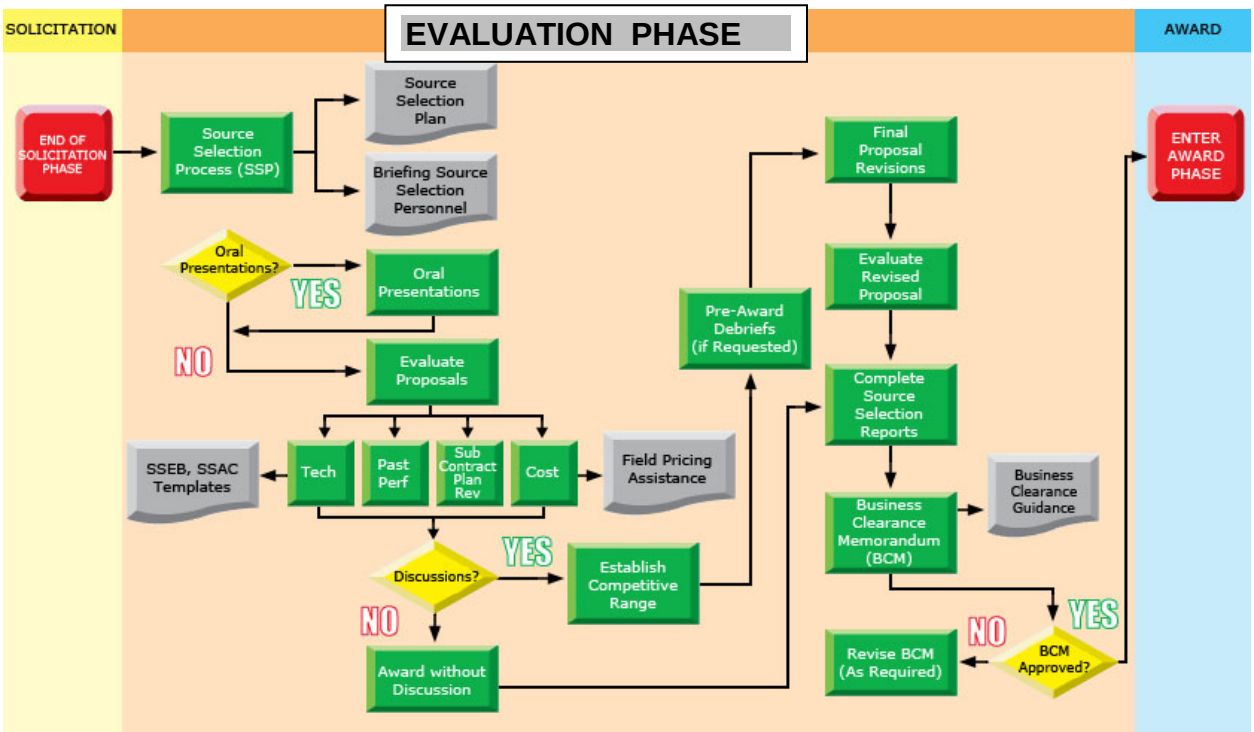
Thank You (*OTD insert Name and Contact info***)**

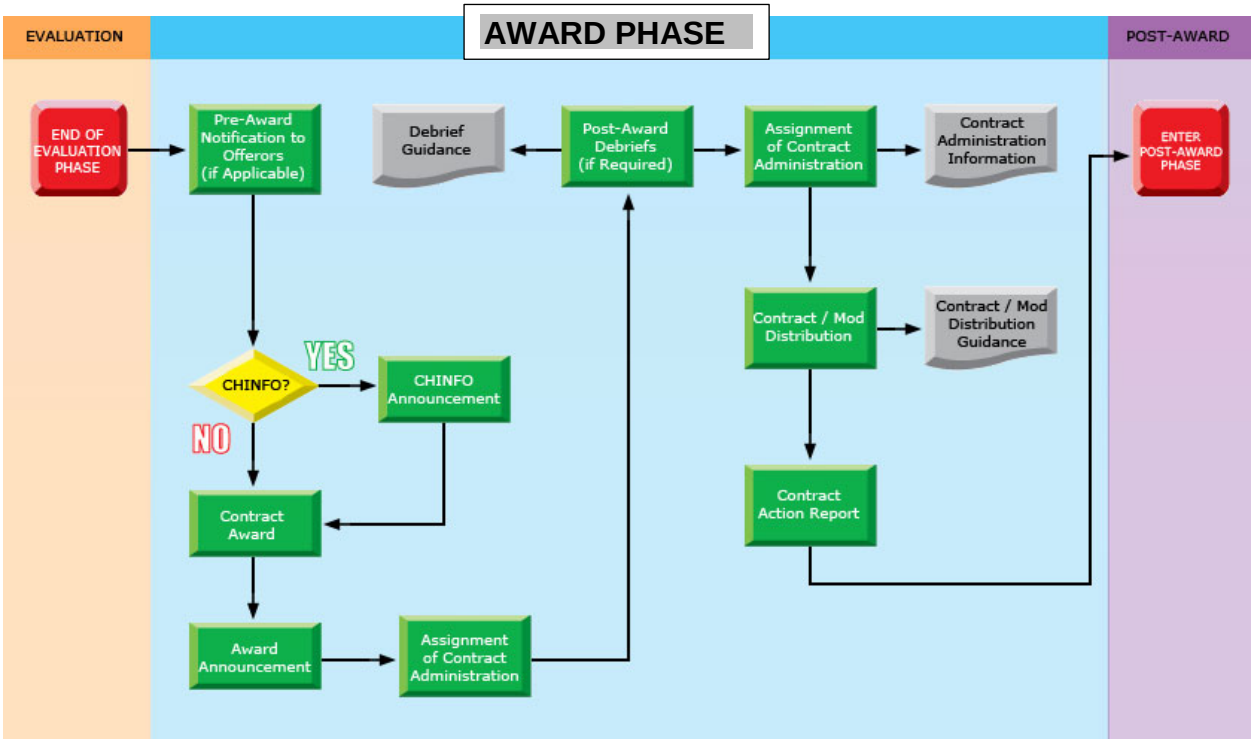
10-14 NAVSUP CONTRACT PROCESS FLOWCHARTS

The following flowcharts depict the general processes.




SOLICITATION PHASE
PLANNING
EVALUATION
RETURN TO START OF PLANNING PHASE
YES
Approved?
NO
END
END OF PLANNING PHASE
Unsolicited Proposal?
YES
Unsolicited Proposal
NO
Synopsis
Synopsis Guidance
Develop Solicitation
Clauses
Options?
NO
YES
Use of Options
Use of Options Guidance
GFE/GFI?
YES
GFE/GFI
NO
Pre-Award Peer Review
Process Purchase Request (PR) Package
Issue Solicitation
Amendments?
YES
Solicitation Amendments
NO
Protest?
YES
Protests
NO
CKS WEBSITE
Receipt of Proposal or Bid
ENTER EVALUATION PHASE


EVALUATION PHASE
SOLICITATION
AWARD
END OF SOLICITATION PHASE
Source Selection Process (SSP)
Source Selection Plan
Briefing Source Selection Personnel
Oral Presentations?
YES
Oral Presentations
NO
Evaluate Proposals
SSEB, SSAC Templates
Tech
Past Perf
Sub Contract Plan Rev
Cost
Field Pricing Assistance
Discussions?
YES
Establish Competitive Range
NO
Award without Discussion
Pre-Award Debriefs (if Requested)
Final Proposal Revisions
Evaluate Revised Proposal
Complete Source Selection Reports
Business Clearance Memorandum (BCM)
Business Clearance Guidance
BCM Approved?
YES
NO
Revise BCM (As Required)
ENTER AWARD PHASE


AWARD PHASE
EVALUATION
POST-AWARD
END OF EVALUATION PHASE
Pre-Award Notification to Offerors (if Applicable)
Debrief Guidance
Post-Award Debriefs (if Required)
Assignment of Contract Administration
Contract Administration Information
ENTER POST-AWARD PHASE
CHINFO?
YES
NO
CHINFO Announcement
Contract / Mod Distribution
Contract / Mod Distribution Guidance
Contract Award
Contract Action Report
Award Announcement
Assignment of Contract Administration

APPENDIX A - ACRONYMS AND ABBREVIATIONS

6PP	Six-Part Paragraph
AAP	Abbreviated Acquisition Program
ACAT	Acquisition Category
ACOS	Assistant Chief of Staff
ACOTD	Assistant Chief Operational Test Director
ACTD	Advanced Concept Technology Demonstration
AEC	Army Evaluation Command
AFB	Air Force Base
AFOTEC	Air Force Operational Test and Evaluation Command
AFTTP	Air Force Tactic, Technique, and Procedure
ALSP	Acquisition Logistic Support Plan
AMW	Amphibious Warfare
A_o	Operational Availability
AO	Action Officer
AoA	Analysis of Alternatives
AOR	Area of Responsibility
AOTD	Assistant Operational Test Director
APB	Acquisition Program Baseline
APN	Aircraft Procurement, Navy
ASD(NII)	Assistant Secretary of Defense for Networks and Information Integration
ASN(RDA)	Assistant Secretary of the Navy (Research, Development, and Acquisition)
ASW	Antisubmarine Warfare
ATO	Authority to Operate

AUTEC	Atlantic Undersea Test and Evaluation Center
AW	Air Warfare
AWG	Analysis Working Group
BIT	Built-in Test
BMD	Ballistic Missile Defense
C3	Command, Control, and Communications
C&A	Certification and Accreditation
CAAL	COMOPTEVFOR Acronyms and Abbreviations List
CAAS	Contractor Assistance and Advisory Service
CAE	Component Acquisition Executive
CASCOR	Casualty Correction Report
CASREP	Casualty Report
CEWG	COI Evaluation Working Group
CBR	Chemical, Biological, and Radiological
CD	Capabilities Document
CDD	Capability Development Document
CDR	Critical Design Review
CIO	Chief Information Officer
CL	Confidentiality Level
CNO	Chief of Naval Operations
CO	Commanding Officer
COI	Critical Operational Issue
COMOPTEVFOR	Commander, Operational Test and Evaluation Force

COMSUBLANT	Commander, Submarine Force Atlantic
COMSUBFOR	Commander, Submarine Force
COMSUBPAC	Commander, Submarine Force Pacific
CON	Construction
CONEMP	Concept of Employment
CONOPS	Concept of Operations
COR	Contracting Officer Representative
COS	Chief of Staff
COT	Concept of Test
COTD	Chief Operational Test Director
CPAR	Contract Performance Assessment Report
CPD	Capabilities Production Document
CS	Contracted Service / Cybersecurity
CT	Contractor Test(ing)
CTEMP	Capstone Test and Evaluation Master Plan
CTF	Core Team Facilitator
CTF	Commander Task Force
CTP	Comparative Test Program
DA	Developing Agency
DACOS	Deputy Assistant Chief of Staff
DACM	Defense Acquisition Career Manager
DAG	Defense Acquisition Handbook
DCP	Data Collection Plan
DED	Demonstration Execution Document

DIACAP	DoD Information Assurance Certification and Accreditation Program
	(Replaced in 2015 by the Risk Management Framework)
DIRLAUTH	Direct Liaison Authorization
DMOT	Detailed Method of Test
DON	Department of the Navy
DoD	Department of Defense
DOE	Design of Experiment
DOT&E	Director, Operational Test and Evaluation
DOTMLPF	Doctrine, Organization, Training, Material, Leadership and Education, Personnel, and Facilities
DR	Decision Review
	Data Requirement
DRPM	Direct Reporting Program Manager
DT	Developmental Test(ing)
DT&E	Developmental Test and Evaluation
DTS	Defense Travel System
DWG	Design Working Group
EA	Evolutionary Acquisition
ECP	Engineering Change Proposal
EFSR	Emergent FSR
E-IPR	Executive IPR
eKM	Enterprise Knowledge Management
EMCON	Emission Control
EMD	Engineering and Manufacturing Development
EOA	Early Operational Assessment

E-SERB	Executive System Evaluation Review Board
EU	Extended Use
EW	Electronic Warfare
EXW	Expeditionary Warfare
EXWDC	Expeditionary Warfare Development Center
FAR	Federal Acquisition Regulation
FFP	Firm-Fixed Price
FHN	Family Housing, Navy
FHP	Force Health Protection
FMC	Full Mission Capable
FMR	Financial Management Regulations
FoS	Family of Services
FOT&E	Follow-on Operational Test and Evaluation
FPIN	Financial Policy and Information Notice
FRP	Full Rate Production
FRPD	Full Rate Production Decision
FSA	Field Support Activity
FSO	Fleet Support Operations
FSR	Fleet Service Request
FXP	Fleet Exercise Publication
FWE	Foreign Weapons Evaluation
FY	Fiscal Year
GAO	Government Accounting Office

GPS	Global Positioning System
GSA	Government Services Agency
HITL	Hardware-in-the-Loop
HMX	Marine Helicopter Squadron
HQ	Headquarters
I&I	Integration and Interoperability
IAP	Integrated Assessment Plan
ICD	Initial Capabilities Document
ICTB	Initial Capability Technical Baseline
ID	Identification
IEF	Integrated Evaluation Framework
IGCE	Independent Government Cost Estimate
ILSP	Integrated Logistic Support Plan
INSURV	Board of Inspection and Survey
INT	Intelligence Operations
IO	Information Operations
IOC	Initial Operational Capability
IOT&E	Initial Operational Test and Evaluation
IPT	Integrated Product Team
IPR	In-Process Review
ISIC	Immediate Superior in Command
ISTF	Installed System Test Facility
IT	Integrated Test(ing)
ITT	Integrated Test Team

IW	Irregular Warfare
JCD	Joint Capabilities Document
JCIDS	Joint Capabilities Integrations Development System
JCTD	Joint Capabilities Technology Demonstration
JITC	Joint Interoperability Test Command
JT	Joint Test
JT&E	Joint Test and Evaluation
JROC	Joint Required Operating Capability
JUONS	Joint Urgent Operational Need Statement
KMS	Knowledge Management System
KPP	Key Performance Parameter
KSA	Key System Attribute
LAN	Local Area Network
LBTS	Land-Based Test Site
LFT	Live-Fire Testing
LFT&E	Live-Fire Test and Evaluation
LMUA	Limited Military Utility Assessment
LOG	Logistics
LOI	Letter of Instruction
LOO	Letter of Observation
LPTA	Lowest Price Technically Available
LRIP	Low Rate Initial Production

M&S	Modeling and Simulation
M-DEMO	Maintenance Demonstration
MAC	Mission Assurance Category
MAIS	Major Automated Information System
MBTD	Mission-Based Test Design
MC_{MA}	Mission Capability by Primary Mission Area
MCMTOMF	Mean Corrective Maintenance Time for Operational Mission Failures
MCN	Military Construction, Navy
MCOTEA	Marine Corps Operational Test and Evaluation Activity
MDA	Milestone Decision Authority
MDAP	Major Defense Acquisition Program
MESM	Mission Essential Subsystem Matrix
METL	Mission Essential Task List
MF	Measurement Facility
MFHBOMF	Mean Flight Hours Between Operational Mission Failures
MIW	Mine Warfare
MNS	Mission Need Statement
MOA	Memorandum of Agreement
MOB	Mobility
MOE	Measure of Effectiveness
MOP	Measure of Performance
MOS	Measure of Suitability
MOS	Missions of State
MOT&E	Multiservice Operational Test and Evaluation
MPN	Military Personnel, Navy

MR	Maintenance Ratio
M&S	Modeling and Simulation
MS	Milestone
MTB	Mission Technical Baseline
MTBOMF	Mean Time Between Operational Mission Failures
MTP	Management and Transition Plan
MUA	Military Utility Assessment
NSMWDC	Naval Surface and Mine Warfare Development Center
NATO	North Atlantic Treaty Organization
NAWDC	Naval Air Warfare Development Center
NCO	Non-Combat Operations
NDA	Nondisclosure Agreement
NIB	Not-to-Interfere Basis
NIPRNET	Nonsecure Internet Protocol Router Network
NLT	No Later Than
NMETL	Navy Mission-Essential Task List
NOI	Notice of Intent
NSW	Naval Special Warfare
NTP	Navy Training Plan
NWCF	Navy Working Capital Funds
NWP	Naval Warfare Publication
NWS	New Weapons System
O&MN	Operations and Maintenance, Navy

O&MNR	Operations and Maintenance, Navy Reserve
OA	Operational Assessment
OAR	Operational Test Agency Assessment Report
OER	Operational Test Agency Evaluation Report
OFER	Operational Test Agency Follow-on Evaluation Report
OIPT	Overarching Integrated Product Team
OM	Operational Manager
OMAR	Operational Test Agency Milestone Assessment Report
OMB	Office of Management and Budget
OMF	Operational Mission Failure
ONI	Office of Naval Intelligence
ONR	Office of Naval Research
OPAREA	Operating Area
OPCON	Operational Consideration
OPCON	Operational Control
OPEVAL	Operational Evaluation
OPN	Other Procurement, Navy
OPNAV	Office of the Chief of Naval Operations
OPORD	Operations Order
OPSEC	Operations Security
OPTEVFOR	Operational Test and Evaluation Force
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
OT	Operational Test(ing)
OT&E	Operational Test and Evaluation

OTA	Operational Test Agency
OTC	Operational Test Coordinator
OTD	Operational Test Director
OTRR	Operational Test Readiness Review
OUA	Operational Utility Assessment
OTG	Operational Tactics Guide
OV	Operational View
PANMC	Procurement of Ammunition, Navy and Marine Corps
PCO	Procurement Contracting Officer
PEO	Program Executive Office/Officer
PIN	Policy and Information Notice
PM	Program Manager
POA&M	Plan of Action and Milestones
POC	Point of Contact
POE	Projected Operational Environment
POR	Program of Record
PRE-Ex	Pre-Exercise
PWS	Performance Work Statement
QASP	Quality Assurance Surveillance Plan
QRA	Quick Reaction Assessment
QRT	Quick Reaction Test
RALOT	Risk Assessment Level of Test

RDT&E	Research Development Test and Evaluation
RDA	Research, Development, and Acquisition
RFP	Request for Proposal
RFPPR	RFP Program Review
RMF	Risk Management Framework
RML&A	Reliability, Maintainability, Logistic Supportability, and Availability
ROC	Required Operating Capability
RPN	Reserve Personnel, Navy
RV	Response Variable
S&T	Scientific and Technological
SAT	Satisfactory
SCN	Ship Construction, Navy
SDTS	Self-Defense Test Ship
SECNAV	Secretary of the Navy
SELEX	Selected Exercise
SEP	Systems Engineering Plan
SEPCOR	Separate Correspondence
SERB	System Evaluation Review Board
SES	Senior Executive Service
SH	Section Head
SHIPALT	Ship Alteration
SIL	System Integration Laboratory
SIPRNET	Secret Internet Protocol Router Network
SME	Subject Matter Expert

SOF	Statement of Functionality
SOP	Standard Operating Procedure
SoS	System of Systems
SOW	Statement of Work
SPECWAR	Special Warfare
SQT	Software Qualification Test(ing)
STAR	System Threat Assessment Report
STS	Strategic Sealift
STW	Strike Warfare
SUBOPAUTH	Submarine Operating Authority
SUT	System Under Test
SUW	Surface Warfare
SV	System View
SYSCOM	Systems Command
T&E	Test and Evaluation
TA	Threat Assessment / Technical Assistant
TACAIR	Tactical Aircraft
TACSIT	Tactical Situation
TAD	Temporary Assigned Duty
TEB	Technical Evaluation Board
TECG	Test and Evaluation Coordinating Group
TECHEVAL	Technical Evaluation
TEIN	Test and Evaluation Identification Number
TEMP	Test and Evaluation Master Plan

TEMPALT	Temporary Alteration
TEPS	Test and Evaluation Program System
TES	Test and Evaluation Strategy
TO	Task Order
TRR	Test Resource Requirements
TTP	Tactics, Techniques, and Procedures
TTVR	Target Threat Validation Report
TYCOM	Type Commander
UJTL	Universal Joint Task List
UNSAT	Unsatisfactory
UNTL	Universal Navy Task List
UONS	Urgent Operational Need Statement
USAF	United States Air Force
USC	Unites States Code
USCG	United States Coast Guard
USD(AT&L)	Under Secretary of Defense (Acquisition, Technology, and Logistics)
USMC	United States Marine Corps
USN	United States Navy
USSOCOM	United States Special Operations Command
UTES	Unclassified Test and Evaluation Support
UUNS	Urgent Universal Need Statement
UUV	Unmanned Underwater Vehicle
UWDC	Undersea Warfare Development Center

VCD	Verification of Correction of Deficiencies
VMX-1	Marine Operational Test and Evaluation Squadron ONE
VX-1	Air Test and Evaluation Squadron ONE
VX-9	Air Test and Evaluation Squadron NINE
WAWF	Wide Area Work Flow
WCB	Warfare Capability Baseline
WEBSKED	Web-Based Scheduling System
WIPT	Working Integrated Product Team
WPN	Weapons Procurement, Navy
WSERB	Weapon Systems Explosive Review Board

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APPENDIX B - FINANCIAL RESOURCES

(Rev 3, July 2016)

B-1 INTRODUCTION

This appendix focuses on financial resources available to the OTD, and includes such topics as POCs, services, instructions, responsibilities, and specific resources available to the OTD.

B-2 FISCAL GUIDANCE AND PROCUREMENT INTEGRITY

B-2.1

OPTEVFOR personnel involved with managing appropriated funds shall, at all times, act as good stewards of fiscal resources provided for executing the command's mission. The policy will be to establish and maintain a solid and unquestionable reputation for fiscal responsibility, such that COMOPTEVFOR becomes synonymous with the ideals of fiscal integrity, frugality, and value-added.

B-2.2

OPTEVFOR leadership and management personnel, particularly those directly involved with funds management and/or execution, will, in their appropriated funds dealings, always act conservatively, consistently, and unquestionably in the best interests of the command and the Navy, and, just as importantly, in the best interest of the American taxpayers. To be effective, funds administrators and managers should have a fundamental understanding and appreciation for basic financial principles and an understanding of the regulations and policies that must be followed. This is an area where it is essential that the OTD ask the experts before acting.

B-2.3

OPTEVFOR staff frequently interface with contractor personnel, internally and externally. All staff must be familiar with the basic tenets of procurement integrity:

As representatives of the U.S. Government, OPTEVFOR staff must ensure not only full legal compliance but also that there is not even a perception of impropriety in dealing with individuals and organizations doing business with the Government. Actions that call into question an individual's integrity or propriety in financial or contractual matters can have far-reaching consequences for the DON.

B-3 FUNDING SOURCES AND REGULATIONS

B-3.1

The purpose of this section is not to make the OTD a financial expert; but rather, to provide a basic understanding of the key laws and regulations that must be observed and to help facilitate a clear dialogue between the OTD and the Comptroller staffs.

B-3.1.1 Sources of Funds

OPTEVFOR is financially supported by a variety of different funding sources:

B-3.1.1.1 Direct Operating Funds

OPTEVFOR is a “mission-funded” activity (i.e., resourced to perform its mission directly through the annual Congressional appropriations process), where funds are appropriated by Congress directly to support the core COMOPTEVFOR mission. Such directly appropriated funds are sometimes interchangeably referred to as direct funds, direct operating funds, mission funds, or core funds. In any event, OPTEVFOR’s annual operating funds (less FOT&E travel support) are provided solely from within the Research, Development, Test, and Evaluation - Navy (RDT&E-N) appropriation. After the annual RDT&E-N appropriation by Congress, authority to obligate and expend these funds flows from Congress to the Treasury, then to the Office of Management and Budget (OMB), to the DoD Comptroller, to the DON Comptroller, then to the Office of Naval Research (ONR) Comptroller, and finally to COMOPTEVFOR, where the funds are deposited (after various adjustments along the way) into our operating account. RDT&E-N funds are legally available for obligation for 2 years – the appropriation and the funds therein are said to have a 2-year life. However, because these funds are appropriated as our direct annual operating budget, OPTEVFOR is incrementally funded on an annual basis and is expected to obligate the funds within the first year of the life of the appropriation. Thereafter, new annual appropriations are made, again with a 2-year legal life, but with the expectation that we will obligate all operating funds by the end of the first fiscal year.

B-3.1.1.2 PM Funds (reimbursable funds)

In addition to direct annual operating funds, OPTEVFOR receives and is responsible for the proper execution of funds from various projects and PMs. Unlike the direct operating funds from the RDT&E-N appropriation, these funds are not to provide for core OPTEVFOR annual operating requirements, but rather for specific T&E requirements unique to individual projects from which the funds are provided. Such funds provide for range support, laboratory support, analytic support, test weapons, targets, program-specific travel, etc. While some might think that they are, in a sense, used to supplement our annual operating funds provided for by the RDT&E-N, they support program-specific T&E requirements for which the command is not supported and/or funded directly within RDT&E-N (e.g., range support, laboratory support, targets, test weapons, program-specific travel, etc.). It is inappropriate to use program funds (reimbursables or direct cite) for acquiring goods and/or services that are considered a core part of the command’s mission (e.g., general headquarters administration). Use of reimbursable funds for such purposes is considered an illegal augmentation of an appropriation and a violation of 31 USC, Section 1517. (It is sometimes referred to as the “Anti-Deficiency Act,” discussed later; basically, it directs activities to not exceed their annual funds operating authority.) Additional guidance regarding use of reimbursable funding by OTDs and OTCs is included in paragraph B-6, Amplifying Guidance on Reimbursable Funds Use.

B-3.1.1.3 FOT&E Travel Funds

The third source of funds from which OPTEVFOR draws each year is from O&MN appropriation. These funds are provided via the CNO Field Support Activity (FSA) Comptroller (vice the ONR Comptroller). These funds have a 1-year life for obligation (vice 2 years, as in the case of RDT&E-N funds) and must be fully obligated prior to the end of each fiscal year. These funds may be used for one purpose alone: travel in support of FOT&E. The DoD Financial Management Regulations (FMR) and the DON Financial Policy Management Manual direct that FOT&E (OT-D and OT-E phases of test per SECNAV M 5000 series) efforts demonstrating operational suitability be funded from within the O&MN appropriation. Because OPTEVFOR is centrally funded for O&MN money to be used for FOT&E travel, the command cannot accept O&MN from outside sources to be used for FOT&E travel. There are three exceptions to the requirement as it pertains to FOT&E as follows:

The travel involves evaluation of system components that were not available for testing during IOT&E.

The travel involves accomplishment of deferred or incomplete IOT&E.

The travel involves VCDs discovered during IOT&E.

B-3.1.1.3.1 Exceptions

When one of these exceptions applies, as determined by the OPTEVFOR Comptroller, FOT&E expenditures may be funded via other appropriations. The specific types/sources of money that may be used under these exception criteria vary with circumstances; thus, an OTD/OTC involved with this situation should liaise with the OPTEVFOR Comptroller early on to determine the most appropriate funding. This policy extends to reimbursable orders citing Navy Working Capital Funds (NWCF). Within the body of a funding document, NWCF will state what the source appropriation is to ensure COMOPTEVFOR financial records are maintained to provide a good audit trail, and to ensure COMOPTEVFOR can demonstrate compliance with the law or policy.

B-3.1.1.3.2 Uses of Funds and “Color of Money”

The “color of money” is an expression referring to the appropriation from which the money originates. The color is important in that there are laws and regulations that dictate what different appropriations can and cannot be used for. There are a number of appropriations supporting the Navy’s various missions and functions, including, but not limited to:

O&MN;

Operations and Maintenance, Navy Reserve (O&MNR);

Military Personnel, Navy (MPN);

Reserve Personnel, Navy (RPN);

Aircraft Procurement, Navy (APN);

Ship Construction, Navy (SCN);

Weapons Procurement, Navy (WPN);

Other Procurement, Navy (OPN);

Procurement of Ammunition, Navy and Marine Corps (PANMC);

RDT&E-N;

Military Construction, Navy (MCN, often referred to as MILCON);

Family Housing, Navy (FHN).

B-3.1.1.3.2.1

As previously indicated, OPTEVFOR receives direct annual operating funds support from just two sources: RDT&E-N (annual operating budget) and O&MN (FOT&E travel funding).

B-3.1.1.3.2.2

With respect to reimbursable funds received from program offices, OPTEVFOR serves primarily as a central pass through/funding agent for such funds intended to support T&E activities that essentially occur "outside the fence." In this regard, OPTEVFOR handles program funds from numerous appropriations, including O&MN, RDT&E-N, APN, SCN, OPN, and WPN.

B-3.1.1.3.2.3

Each appropriation is defined by statute and regulations as for what it may be used. Inappropriate use of an appropriation (even though the actual expenditure may be appropriate or legal) constitutes a violation of Title 31 USC, Section 1301 (sometimes referred to as the "color of money" statute).

B-3.1.1.3.2.4

The following examples are provided with reference to the appropriations most commonly used by OPTEVFOR in the area of reimbursable program funds:

B-3.1.1.3.2.4.1 O&MN

Finances the basic day-to-day operations of the Fleet and principal shore activities (except in the case of OPTEVFOR, where RDT&E-N funds are used for all expenses for which most other commands use O&MN). OM&N supplies funds for annual operating expenses for other activities and Fleet commands, such as supplies, utilities, civilian manpower, travel, administrative support, fuel, repair parts, Operating/Operational Target (OPTAR), transportation leasing arrangements, maintenance of property, etc.

B-3.1.1.3.2.4.2 RDT&E-N

Finances the expenses necessary for basic and applied scientific RDT&E, including maintenance, rehabilitation, lease, and operation of facilities as authorized by law. In the case of OPTEVFOR, it serves as the equivalent of O&MN for purposes of covering our annual operating expenses. The appropriation is subdivided into seven budget activities: basic research, applied research, advanced technology development, advanced component development and prototypes, engineering and manufacturing development, management support (in which OPTEVFOR falls), and operational system development.

B-3.1.1.3.2.4.3 APN

Finances the procurement of Navy and Marine Corps aircraft and provides for related supporting programs. Supporting programs include equipment for modification of in-service aircraft, aircraft spare parts, ground support and training equipment, and industrial facilities and tools.

B-3.1.1.3.2.4.4 SCN

Finances primarily the CON of new ships, but also the conversion of existing ships (e.g., the SSN to SSGN conversion program), including all hull, mechanical, and electrical equipment; electronics; guns; torpedo and missile launching systems; and communications systems.

B-3.1.1.3.2.4.5 WPN

Finances the procurement of missiles, torpedoes, guns, and ancillary weapons-related supporting equipment for Navy forces and Marine air forces. Supporting equipment includes equipment for modification of in-service missiles, torpedoes, guns, and gun mounts; targets used in weapons training exercises and weapons evaluation; hardware for navigation and communications satellite, and other space programs; spare parts; ground support and training equipment; and industrial facilities and tools required for the production and maintenance of missiles.

B-3.1.1.3.2.4.5.1 OPN

Finances the procurement, production, and modernization of equipment not otherwise provided for. Such equipment ranges from the latest electronic sensors required to update the naval forces to trucks, training equipment, and spare parts. This equipment is an integral part of programs to improve the Fleet and shore establishment by expanding or maintaining existing capabilities or replacing ineffective units.

B-3.1.1.3.2.4.5.2 Statutory Implications

- There are several fundamental laws that serve as the underpinning for much of the "how and why" funds are administered the way they are. The laws are frequently referred to in the aggregate as the "Anti-Deficiency Act."

    - **Title 31 USC, Section 1301.** Commonly referred to as the "color of money" or "purpose" statute, it states that funds may only be obligated and expended for the purposes authorized by the Congress in specific appropriations acts or other laws. It is a primary control that the Congress exercises over the executive branch.

    - **Title 31 USC, Section 1341.** States that an officer or employee of the United States may not authorize an obligation exceeding the amount available in an appropriation or make any obligation before the appropriation becomes effective in law.

    - **Title 31 USC, Section 1517.** States that an officer or employee of the United States may not authorize an obligation in excess of an apportionment. An

apportionment is a subdivision of a congressional appropriation that carries with it legal responsibilities. OPTEVFOR is apportioned resources from both the RDT&E-N and O&MN appropriations.

- Penalties for violation of these statues include suspension from duty without pay and/or removal from office and/or restitution of funds to the treasury by the responsible or accountable individual. If the violation is deemed "knowing and willful," the penalty can include fines of up to $5,000 and/or up to 2 years in jail. Violations are reported up the DON/DoD/OMB administrative chain to the executive branch. The law mandates that violations be reported to the President, then to Congress.

- **Misappropriation of Funds.** Funding received from any source may not be used for a purpose not specifically provided for in the law. Reimbursable funding also requires authorization from the issuing authority as to how the funds are intended to be used. Where doubt exists, an OTD/OTC should check with the OPTEVFOR Comptroller for a determination as to whether a planned use of funds is appropriate.

B-4 AMPLIFYING GUIDANCE ON USE OF PROGRAM FUNDS

B-4.1 General Guidance Regarding Program Funds

OPTEVFOR personnel responsible for managing reimbursable or direct cite funds from program offices (sometimes referred to in the colloquial as "PM funds") in support of planned T&E efforts will adhere to the following broad principles:

B-4.1.1

OPTEVFOR personnel charged with managing appropriated funds shall, at all times, act as good stewards of fiscal resources provided for executing the command's mission.

B-4.1.2

Program funding will be used only for the purposes described in broad terms herein and will always be managed in a conservative manner to reflect positively on the command if/when subjected to audits by program offices or other outside agencies.

B-4.1.3

Program funding will not be used to augment direct appropriated (mission) funds.

B-4.1.4

OPTEVFOR personnel will not rely exclusively on PM approval for use of program funds – once a funding document is accepted by OPTEVFOR, sole fiduciary responsibility for the proper use of the funds resides with COMOPTEVFOR and the Comptroller. This command, not the program office, becomes thereafter solely responsible and accountable for any misdeeds (perceived or real), regardless of whatever authorization or enabling support may have been involved by program offices or other outside activities.

B-4.1.5

Funding for all CNO project support is the responsibility of the PM (often referred to as the program office). Each OTD/OTC responsible for a CNO project requiring the technical expertise of research laboratories or Contracted Service (CS) is responsible for working with the Comptroller staff to coordinate the transfer of funds from the PM to the OPTEVFOR Comptroller. During TEMP revisions or updates, a review of the Part IV Resource Summary is essential for updating funding requirements to support any analytical contracts, range time, laboratory requirements, or Temporary Additional Duty (TAD) travel needed in the course of the project's active life. The movement of resources by a PM can often take weeks or months, so early identification of funding issues within a program by the OTD/OTC is essential.

B-4.1.6

Program funds provided by program offices must be handled at all times in such a manner to demonstrate COMOPTEVFOR is acting as a good steward of fiscal resources. If additional assistance or clarification relative to a specific use of program funding is required by an OTD/OTC, he/she should contact the OPTEVFOR Comptroller for resolution.

B-4.1.7

In interpreting federal appropriations law, the Supreme Court has stated that an established fundamental rule is that "The expenditure of public funds is proper only when specifically authorized … not that public funds may be expended unless prohibited …" This axiom is important where federal monies are concerned, since it refutes the popular and common misconception that "if the rules don't say I can't, then I can."

B-4.1.8

In addition to various Supreme Court rulings, the United States Comptroller General decisions have repeatedly demonstrated that where taxpayer funds are involved, traditional concepts like "show me where it says I can't" and "it's easier to get forgiveness than permission" are not applicable. Expenditures of federal funds are appropriate only when the laws/regulations/policies are supportive. A corollary to this precept is that where federal law or departmental regulations/policy is silent on an issue, expenditures related to that issue are not authorized.

B-4.1.9

Where two (or more) appropriations or sources of funds are equally and legally appropriate for a given purpose, it is left to the command as to which source of funds will be used for that purpose; but once a source is selected, the command must thereafter assiduously follow the same policy and use only that source of funds for that purpose. Once a command has selected a funding source for a given purpose, subsequently selecting an alternative source of funds when/if the original source is unavailable (or for any other reason), is inappropriate and potentially illegal.

B-4.1.10

A command may not augment “direct appropriated funds” by any means. If a given appropriation is specifically earmarked for use for certain purposes, and thereafter that source of funds is deemed inadequate or perceived to be inadequate for the purpose(s) intended, a command cannot decide to use other sources of funds for such purposes (even when/if the alternative source is the same “color of money”). Such an act represents an inappropriate augmentation of funds and could ultimately lead to an Anti-Deficiency Act violation on the part of the command. Bottom line, if there is the slightest doubt, consult the OPTEVFOR financial staff for guidance before expending funds or returning funds to the PM.

B-4.2 Specific Guidance Regarding Program Funds

While exceptions may arise that will be adjudicated by the Comptroller’s office, the following “rules of the road” apply with respect to use of program funding. In general, the following uses of funding received from PMs are acceptable (assuming the “color of money” stipulations discussed further below are met):

B-4.2.1 Analytic Support Services

Includes contractor and laboratory support services unique to the program from which the funds are provided. Such services or support will use program funding when the services or support is not otherwise available from the staff. Laboratory support services are funded on a reimbursable basis. Contractual support is funded via direct cite funding by the program office. An OTD/OTC must exercise care in establishing an appropriate professional and personal relationship with support contractor personnel. The contractual support provided by a contractor must never result in or give the outward appearance of a “personal services” contract. As stated in FAR 37.104 (series), a personal services contract is one that, by its terms or as administered, makes the contractor employees appear to be, in effect, government employees.

B-4.2.1.1

All command support contracts are nonpersonal contracts and prohibit government employees from acting in the capacity of a “supervisor.” Each contract has a PM within the company to oversee and manage the workload of each contracted employee. Vacations, time off, sick leave, etc. are all approved by the contractor's management and not by command/government personnel. Additionally, command personnel are not authorized to give contractors working in the facility "59" minutes as can be given to civil servants. Any time not spent in support of a negotiated contract must be approved by the company PM. For example, contractor personnel participating in command social events or ceremonies during the workday should have prior approval by the company PM to determine if that time will be paid out of overhead or if the individual is charged vacation time.

B-4.2.1.2

However, technical cognizance and discussions of project status are essential, and should be conducted between division personnel and contractor personnel to ensure:

- Clear understanding of program support requirements,
- A successful working environment,
- Adequate support to the command's mission.

B-4.2.2 Flying Hour Support

Reimbursable funds from the program supported will pay for required flying hours in support of program T&E.

B-4.2.3 Lab/Range Services

Laboratory/range services in support of T&E will be funded using reimbursable funds from the program being tested.

B-4.2.4 IOT&E Travel

IOT&E travel for programs of record will be funded using reimbursable program funds. After FRP DR, travel in support of FOT&E will be funded with O&MN funding, as previously discussed.

B-4.2.5 Program-Unique Equipment, Supplies, or Consumables

This is arguably the most sensitive use of program funding. Caution is warranted where such purchases are concerned, since there is an inherently greater risk of a well-intended, but nonetheless inappropriate, purchasing decision, resulting in an unintended violation of law. Equipment purchases involving program reimbursable funding must involve unique equipment, the focus of which is exclusively in support of the specific program providing the funds. (The same direction applies to program-unique supplies and consumables.) The command is mission funded and, as such, is expected to provide for common equipment, supplies, and consumables needed to support our direct-funded military/civilian personnel and our mission from within our annual direct operating funds. Therefore, the policy at COMOPTEVFOR will be that procurement of equipment or consumables using reimbursable funds will be the exception to the rule; and such purchases will receive greater scrutiny during the requisition approval process and require Comptroller office approval prior to ordering.

When questionable or high-risk purchases are denied, OTDs are encouraged to exercise the option of returning available funds to the program such that the program office's procurement/supply team orders such items for subsequent loan to the OTD/OPTEVFOR. This relationship with a PM keeps COMOPTEVFOR clear of fiduciary liability issues with regard to future audits and places such risk on the program office. In cases where such equipment/supplies procurement are deemed program-unique and acceptable for funding via program reimbursable funds, and are preapproved by the PM's office (approved within the narrative on the funding document) and the OPTEVFOR Comptroller (responsible for ensuring legal fiduciary requirements are met by this command), the OTD will solicit and obtain written guidance from the PM as to disposition of the equipment/supplies on completion of the project and prior to actual ordering of the item(s).

B-4.3 Inappropriate Uses of Program Funding

In general, the following are inappropriate uses of reimbursable funds. Appropriate alternative sources of funds are as indicated.

B-4.3.1 Information Technology Equipment

Unless unique to a specific project, information technology equipment (computers, monitors, laptops, personal digital assistants, etc.) will not be purchased using program reimbursable funds. If deemed appropriate, and subject to funds availability, the command's mission funding (direct-appropriated RDT&E-N) will normally be used for such purposes. (Note: While most hardware fits this category, some software applications may justify use of program funds if unique to the program. Details provided to the Comptroller office will assist in determining the appropriate source of funds in such cases.)

B-4.3.2 Mobile Phones/Other Personal Communications Equipment

Cell/mobile phones, Blackberries, and other PDAs will not be purchased using program reimbursable funds. If deemed appropriate and necessary for the conduct of the command's mission, and subject to funds availability, the command's direct funding (mission-funded RDT&E-N) will be used for this purpose. Given the cost/sensitivity involving procurement of such equipment, the Comptroller's office is prohibited from ordering such equipment, unless advance approval from the 00/01 level has been provided.

B-4.3.3 Office Supplies

Unless unique to a specific program or project, office supplies will not be procured using program reimbursable funds. Subject to availability, the command's mission-funded RDT&E-N funding will normally be used for this purpose.

B-4.3.4 Personal Items

Personal items, other than those addressed herein, normally will not be purchased using reimbursable program funds. In most instances, the general rule is that purchase of personal items using federal funds is forbidden. Where such items may be allowed, whether or not to use mission or reimbursable funding would depend on whether or not the requested items can be shown to be exclusively related to a specific program. Disallowed personal items include apparel, uniform items, sunglasses, sunscreen, food items of any description, food preparation items of any description, entertainment items (other than such items received as part of the command awards system), etc.

B-4.3.5 Full-Time Civilian Hires

COMOPTEVFOR will not hire permanent civilian positions using reimbursable funding. Subject to availability, the command's mission-funded RDT&E-N funding is used for this purpose. Reimbursable program funds may be used to support manpower requirements using contractor or laboratory/working capital fund manpower (these personnel may work full time at the headquarters during their term of service; however, they are not permanent OPTEVFOR employees).

B-4.3.6 "Color of Money" Concerns

The above guidance does not address the color of money issues that sometimes arise regarding use of program funding. Program offices often have at their disposal various colors of money involving appropriations as diverse as O&MN, OPN, RDT&E-N, SCN, APN, PANMC, WPN, etc. When a PM sends reimbursable funding to OPTEVFOR, it is done with the understanding that, on acceptance, fiduciary responsibility for proper use of the funds and compliance with law/regulations transfers to COMOPTEVFOR. Because the burden of risk transfers with the funds, program offices may not always be as discriminating as OPTEVFOR in selection of funding sources for a particular purpose. COMOPTEVFOR's policy will be to ensure that PM funds in support of T&E efforts are used in a fiscally responsible manner. While there may be exceptions to the rules above relative to use of reimbursable (PM) funds, it is expected that exceptions/waivers to the guidance herein will be rare. In questionable circumstances where disagreement exists regarding interpretation and implementation of this policy regarding appropriate use of reimbursable funds, the OPTEVFOR Comptroller is charged with making a final determination as to the appropriate course of action, guided by the precepts herein if guidance is not otherwise specified in higher-level guidance/documentation. To the extent that a Comptroller decision is questioned, an appeal can be made to the Commander via the COS, but the Comptroller decision will stand, pending follow-on arbitration.

B-4.4 Program Funding Documents

All program funding documents are to be forwarded to the OPTEVFOR Comptroller on a Project Directive, Military Interdepartmental Purchase Request, NAVCOMPT Form 2276, Request for Contractual Procurement; or NAVCOMPT Form 2275, Order for Work and Services. The type of funding document used will generally depend on the type of support required by the OTD/OTC. The Comptroller will review all incoming funding documents to ensure the document used by the issuer was the appropriate type for the work to be performed and/or how the funds are to be used. The Comptroller also confirms the source of funding is appropriate for the work to be performed such that COMOPTEVFOR remains compliant with fiscal laws relative to proper use of appropriated funding. Funds are accepted and disbursed to either cognizant external activities or the force contract officer for contractor support. Funding intended for use on an analytical support contract must be: (1) received as direct citation and (2) authorized for use in support of CS (formerly Contractor Assistance and Advisory Service (CAAS)). The funding document should contain a statement that the funds are, or are not, authorized for CS and should use the appropriate funds coding to designate the funds as useable for CS.

B-4.5 Additional Fiscal Guidance/Support Available

Additional information regarding the use of funding provided to OPTEVFOR can be found in FPINs published by the command. FPINs can be found on the COMOPTEVFOR KMS.
(https://kms.cotf.navy.mil/home_auth/home.home_mis.home_main). (Log in to KMS homepage, pull down the Mission Support menu, select COMOPTEVFOR Instructions, then FPINs.) Should questions or issues relative to the use of funds arise for which the

OTD/OTC is unable to ascertain the correct approach and that are beyond the scope of OTD Guide/FPIN guidance, the OTD/OTC should contact the Comptroller and/or Deputy Comptroller directly for specific assistance. The Comptroller/Deputy have access to Fiscal Policy and Fiscal Law offices on the staff of the SECNAV that can be queried to ensure the command safeguards funds, and uses funding in a legal manner and within the bounds of the law/policy. When in doubt, an OTD/OTC should contact the Comptroller's office for issue resolution; early notification works best since legal/policy issues may require outside adjudication.

APPENDIX C - THE CONTINUUM OF TESTING

(Rev 6, Jul 2016)

C-1 INTRODUCTION

Per SECNAVINST 5000.2E, T&E programs will be structured to:

- Provide essential information for assessment of acquisition risk and decision making.
- Verify attainment of technical performance specifications and objectives.
- Verify that systems are operationally effective and suitable for intended use.

For programs of record, three principal types of T&E are conducted to accomplish these objectives: Developmental Test and Evaluation (DT&E), OT&E, and IT. SECNAVINST 5000.2E and DoDD 5000.01 discuss each of these in detail. This appendix addresses the role of OPTEVFOR in the test continuum**.** The challenge for the OTD is to understand the entire testing continuum and, with that knowledge, make the best use of available resources to design and execute the minimum, adequate test program.

C-2 T&E DEFINITIONS

C-2.1 DT&E

DT&E is planned and conducted by the DA, usually a SYSCOM or a PEO. In practice, DT is typically managed by the PM through an assistant PM for T&E. In some cases, the principal responsibility for the actual performance of T&E is assigned to a warfare center. SECNAVINST 5000.2E mandates the DA conduct adequate DT&E throughout the development cycle to support risk management, provide data on the progress of system development, and to determine readiness for OT. DT&E is conducted at contractor or government test and engineering activities. OPTEVFOR should participate in DT&E when feasible to evaluate OT-relevant DT results and to provide both an early operational perspective to developers and identification of OT issues to the PM.

C-2.2 IT

Integrated testing takes a holistic view of both the developmental and operational test objectives and seeks opportunities where test events can be leveraged to serve both. OPTEVFOR uses the IEF to provide a comprehensive view of the information that will ultimately be needed to determine the effectiveness and suitability of the SUT. By providing the IEF as an input to the Milestone B TEMP, OPTEVFOR ensures that all stakeholders have a clear view of the critical missions, tasks, attributes and measures that will need to be observed. Early and frequent involvement by test agencies is required to ensure successful execution of IT. The DA, test agencies, and user representative (resource sponsor) must share a common interpretation of the system capability needs so that DT and OT are tailored to optimize resources, test scope, and schedule. Test data qualified for OT use (*OT-qualified data*) should have the following distinguishing characteristics:

- Representative forces (friendly and opposing) will be used whenever possible, and employ realistic tactics and targets.

- Typical users (Fleet personnel) are required to operate and maintain the SUT for OT under conditions simulating combat stress and peacetime conditions.

C-2.3 OT&E

Operational test and evaluation is defined in statute 10 USC. As the Navy's Operational Test Agency, OPTEVFOR is responsible for determining the operational effectiveness and operational suitability of the SUT during realistic testing with actual Fleet operators and maintainers. In addition, the CNO has tasked COMOPTEVFOR to evaluate how the SUT operates within the SoS to deliver the required warfighting effects. To support the Service Acquisition Executive and resource sponsor, OPTEVFOR also conducts a series of operational assessments prior to MS-C. These assessments are focused on identifying the enhancing characteristics of the system under development as well as the risks to the successful completion of IOT&E. The test article will be representative of the intended production equipment. Also, it will be installed as closely as possible, as is expected in the Fleet.

- Production or production-representative articles will be used for the dedicated phase of IOT&E that supports the post-Milestone (MS)-C FRP DR.

- Sufficient and accurate data must be recorded during the test to document all operationally significant system or equipment characteristics.

- Additionally, OT&E includes the evaluation and analysis of data from an operational viewpoint to assess or determine the operational effectiveness and operational suitability of a system.

- The two products of OT&E are:

    - The Evaluation Report.
    - The OPTEVFOR Tactics Guide (OTG). Not every test will result in an OTG. Most OTGs are produced in support of air warfare systems during IOT&E. Submarine tactics are developed by Submarine Development Squadron ONE TWO. Surface platform and weapons systems tactics may be documented in OTGs developed in concert with the Surface Force. Generally, OTGs are not produced in support of FOT&E unless a major increase in new capability is introduced.

C-3 A COMPARISON OF DT&E AND OT&E

DT&E and OT&E necessarily examine the same performance features of a system; however, their objectives are different. DT&E and OT&E normally differ in the way tests are conducted, what is being tested, and the evaluation criteria and test measurements. Table C-1 illustrates this comparison.

Table C-1. Comparison of DT&E and OT&E

How Tests are Conducted	
DT&E testing is generally conducted: • In a controlled environment that minimizes the chance that unknown or unmeasured variables will affect system performance • By technical personnel skilled at "tweaking" to maximize performance • Against simulated threats tailored to demonstrate various aspects of specified system technical performance.	OT&E testing is generally conducted: • In an operationally realistic environment (e.g., high seas, temperature extremes, high density electromagnetic environments) under conditions simulating combat stress and peacetime conditions • With Fleet operators and maintenance personnel • Against threats which replicate, as closely as possible, the spectrum of operational characters • Using Fleet tactics.
Testing Subject/Topic	
DT&E is focused on evaluating the technical parameters of the weapon or system.	OT&E tests the performance of the SUT in the execution of a set of critical mission tasks. This generally puts the SUT into a larger SoS needed to deliver a required warfighting capability.
Evaluation Criteria	
DT&E – Technical criteria are measured to verify that the SUT performance meets its specification requirements.	OT&E – is focused on validating the contribution of the SUT to the CNO-specified warfighting requirements.
Measurement and Frequency	
DT&E • The tester generally knows what he/she wants to measure (some particular parameter: launch velocity; the number of *g's* pulled as the missile acquires; time to climb; etc.). • DT&E tests are structured to hold many things constant, isolate others, and allow measurement of one or two parameters of interest. • Special instrumentation is often installed to capture required data.	OT&E • An objective is to create conditions that replicate combat as closely as possible. • Using actual Fleet platforms in complex, time-compressed test events with high costs generally precludes an incremental experiment and test approach. • While every effort is made to identify the root cause of deficiencies, OT&E may not have the time or resources necessary to collect the data needed to isolate the cause of a failure. It is generally more important for OT&E to ensure that as many possible failure modes are identified prior to Fleet release.
General Note: Data collection instrumentation used for DT should be examined to determine applicability and use during OT&E. Additionally, data acquired during DT should be reviewed for use during OT&E.	

C-4 PROGRAM OF RECORD OT&E

C-4.1 General

In the Navy, COMOPTEVFOR plans and reports OT&E directly to CNO. All ACAT I, II, III, and IVT programs require OT&E. Table C-2 provides a description of the criteria for ACAT and AAP.

Table C-2. Description and Decision Authority for ACAT I-IV and AAPs

ACAT	Criteria for ACAT or AAP Designation	Decision Authority
ACAT I	• Major Defense Acquisition Programs (MDAP) (10 USC 2430) • RDT&E total expenditure >$365 million in FY 2000 constant dollars, or • Procurement total expenditure >$2.19 billion in FY 2000 constant dollars, or • MDA designation as special interest	ACAT ID: USD(AT&L) ACAT IC: SECNAV, or if delegated, ASN (RD&A) as the CAE (not further delegable)
ACAT IA	• Major Automated Information Systems (MAIS) • Program costs/year (all appropriations) >$32 million in FY 2000 constant dollars, or • Total program costs >$126 million in FY 2000 constant dollars, or • Total life-cycle costs >$378 million in FY 2000 constant dollars • MDA designation as special interest	ACAT IAM: ASD(NII)/DoD CIO ACAT IAC: SECNAV, or if delegated, ASN (RD&A), as the CAE (not further delegable)
ACAT II	• Does not meet the criteria for ACAT I • Major systems (10 USC 2302(5)) • RDT&E total expenditure >$140 million in FY 2000 constant dollars, or • Procurement total expenditure >$660 million in FY 2000 constant dollars, or • ASN (RD&A) designation as special interest • Not applicable to IT system programs	ASN (RD&A), or the individual designated by ASN (RD&A)
ACAT III	• Does not meet the criteria for ACAT II or above • Weapon system programs: o RDT&E total expenditure ≤$140 million in FY 2000 constant dollars, or o Procurement total expenditure ≤$660 million in FY 2000 constant dollars, and o Affects mission characteristics of ships or aircraft or combat capability • Information technology system programs: o Program costs/year ≥$15 million ≤$32 million in FY 2000 constant dollars, or o Total program costs ≥$30 million ≤$126 million in FY 2000 constant dollars, or o Total life-cycle costs ≤$378 million in FY 2000 constant dollars	Cognizant PEO, SYSCOM commander, DRPM, or designated flag officer or SES official ASN (RD&A), or designee, for programs not assigned to a PEO, SYSCOM, or DRPM
ACAT IVT	• Does not meet the criteria for ACAT III or above • Requires OT&E • Weapon system programs: o RDT&E total expenditure ≤$140 million in FY 2000 constant dollars, or o Procurement total expenditure ≤$660 million in FY 2000 constant dollars • Information technology system programs: o Program costs/year <$15 million, or o Total program costs <$30 million, or	Cognizant PEO, SYSCOM commander, DRPM, or designated flag officer, SES official, or PM ASN (RD&A), or designee, for programs not assigned to a PEO, SYSCOM, or DRPM

Table C-2. Description and Decision Authority for ACAT I-IV and AAPs

ACAT	Criteria for ACAT or AAP Designation	Decision Authority
	o Total life-cycle costs ≤$378 million in FY 2000 constant dollars	
ACAT IVM	• Does not meet the criteria for ACAT III or above • Does not require OT&E as concurred with by OTA • Weapon system programs: o RDT&E total expenditure ≥$10 million ≤$140 million in FY 2000 constant dollars, or o Procurement expenditure ≥$25 million/year ≥$50 million total ≤$660 million total in FY 2000 constant dollars • Not applicable to information technology system programs	Cognizant PEO, SYSCOM commander, DRPM, or designated flag officer, SES official, or PM ASN (RD&A), or designee, for programs not assigned to a PEO, SYSCOM, or DRPM
AAP	• Does not meet the criteria for ACAT IV or above • Does not require OT&E as concurred with in writing by OTA • Weapon system programs: o Development total expenditure <$10 million, and o Production or services expenditure <$25 million/year, <$50 million total • Information technology system programs: o Program costs/year <$15 million, and o Total program costs <$30 million	Cognizant PEO, SYSCOM commander, DRPM, or designated flag officer, SES official, or PM ASN (RD&A), or designee, for programs not assigned to a PEO, SYSCOM, or DRPM

ASD(NII)	Assistant Secretary of Defense for Networks and Information Integration
ASN (RD&A)	Assistant Secretary of the Navy (Research, Development, and Acquisition)
CAE	Component Acquisition Executive
DoD CIO	Department of Defense Chief Information Officer
DRPM	Direct Reporting Program Manager
FY	Fiscal Year
MDA	Milestone Decision Authority
RDT&E	Research, Development, Test, and Evaluation
SECNAV	Secretary of the Navy
SES	Senior Executive Service
USC	United States Code
USD(AT&L)	Under Secretary of Defense (Acquisition, Technology, and Logistics)

NOTE

OT&E is not required for ACAT IVM or AAPs per SECNAVINST 5000.2E. Written concurrence from COMOPTEVFOR is required for designation of a program as an ACAT IVM. For an AAP, written concurrence from COMOPTEVFOR must be obtained stating that OT&E is not required.

C-5 TYPES OF OT

C-5.1 OA

An OA is a test event conducted before initial production units are available and which incorporates substantial operational realism. An OA is conducted per a test plan and must be approved by DOT&E for programs on OSD OT&E oversight. The focus of an OA is to assess overall risk to a system successfully completing IOT&E and will usually address the following:

- Significant trends noted in development efforts
- Programmatic voids
- Areas of risk
- Adequacy of requirements from a testability perspective
- Capability of the SUT to meet performance goals in operational effectiveness and suitability at IOT&E.
- Capability of the SUT to deliver required warfighting effects in a SoS context.

OAs should be conducted when there is enough system maturity to conduct an operational test incorporating substantial operational realism and may use technology demonstrators, prototypes, mockups, or simulations if those articles can be placed in an operational context and risk to IOT&E can be adequately assessed. An OA does not have to use production-representative articles and does not substitute for the IOT&E necessary to support FRP decisions. As a general criterion for proceeding through Milestone C, at least one OA will be conducted and the results documented in a formal report. An OA may also be used to support other program reviews. OAs are not intended to support FRP DRs, Fleet release, or introduction recommendations. All OAs are included in the TEMP. There are two types of OAs:

C-5.1.1

OT-A (Early Operational Assessment (EOA)) is conducted during the Material Solution Analysis and Technology Development phase. Results support decision makers at MS-B in determining whether to continue development and approve entry into the Engineering and Manufacturing Development phase of the acquisition process.

C-5.1.2

OT-B (OA) is OT&E conducted during the Engineering and Manufacturing Development phase. OT-B may be subdivided into discrete phases (e.g., OT-B1, OT-B2, etc.). OAs are conducted per a test plan employing significant operational realism to identify

enhancing characteristics of the system as well as to discover and categorize risks to a successful IOT&E. Results of OT-B assessments identify program enhancements and risks, and the final OT-B phase will support the MS-C LRIP decision by the MDA.

C-5.2 IOT&E

OT-C is OT&E conducted on a production-representative test article(s) during the Production and Deployment phase of the acquisition cycle, and is a prerequisite for the FRP DR. COMOPTEVFOR makes a determination on operational effectiveness and operational suitability, and a recommendation regarding Fleet introduction.

C-5.3 VCD

VCD is not a major phase, but is included as a phase of OT when necessary. A VCD is generally not a preplanned phase in the TEMP, but can be incorporated into the test program after a formal phase of OT to verify that certain deficiencies have been corrected. No TEMP update is required, but a test plan is required. While VCDs normally do not resolve COIs, with proper pre-test coordination and test planning, COIs may be evaluated during a VCD. For reporting purposes, a VCD is tied to the previous phase of testing to which it applies (i.e., a VCD for OT-B1 would be "OT-B1 VCD"). VCDs are done to assist the MDA in ensuring the deficiencies cited as corrected by the DA from a previous phase of OT have actually been corrected. This type of test will examine only those deficiencies (and associated COIs) the DA states have been corrected (or substantially mitigated). The purpose is to show the deficiencies as demonstrated corrected; demonstrated to be substantially mitigated, i.e., to a degree that recategorization is warranted; demonstrated not corrected; or as not demonstrated. If the results of a VCD change the determination of a COI (beyond IOT&E), then the new resolution is reported. See Chapter 8, Evaluation Reports, for report requirements.

C-5.4 FOT&E

FOT&E is all OT&E conducted after the IOT&E. FOT&E is divided into two major phases:

C-5.4.1

OT-D is FOT&E conducted after IOT&E (post-MS-C/FRP DR), using equipment of the same design as in IOT&E or preferably production systems. It includes completion of any deferred or incomplete OT&E. OT-D is described in detail in Chapter 5, TEMP.

C-5.4.2

OT-E is FOT&E conducted on production systems, unless previously accomplished in OT-D. The major objective of OT-E is the validation of the operational effectiveness and operational suitability of production systems. OT-E should be scheduled and conducted whenever production articles are not available for testing in prior OT&E.

C-5.5 Software Testing

Software will be operationally tested in the system in which the application is installed or implemented when fielded. The software used for IOT&E of the core block will provide a performance baseline for testing subsequent increments. For each increment of

software for a software-intensive system, the OTD shall use the DoD guidelines for conducting OT&E for software-intensive system increments and Department of the Navy (DON) Acquisition and Capabilities Guidebook, Annexes 5-F, 5-G, and 5-H for determining elements of risk and the appropriate level of OT.

C-5.5.1 SQT

When a software revision or increment is to be released as part of an acquisition MS decision, the OT is considered an IOT&E. When a software revision or increment is to be released not in conjunction with an MS decision, the decision may be made to use the SQT process. SQT applies to software modifications of limited scope, as determined by CNO (N84), such as aircraft and weapon systems' operational flight programs and other systems in which software provides a similar function. When a program is approved for SQT, CNO (N84) will assign a Test and Evaluation Identification Number (TEIN); and an SQT TEMP will be written using the format from SECNAVINST 5000.2E. For SQT, a Statement of Functionality (SOF) prepared by the PM and approved by the program sponsor will be used in lieu of a CDD/CPD to develop the SQT TEMP. SQT reports use the standard OPTEVFOR evaluation report format template. (see chapter 8)

C-5.5.1.1 SOF

The PM will forward a SOF to COMOPTEVFOR, via the program sponsor, copy to CNO (N842). The program sponsor's endorsement will serve as validation of software requirements for that intended release. The SOF will:

- Define new capabilities of the improved software.
- Address software corrections to previous deficiencies.
- Address any capabilities that were deleted or modified.
- Describe the breadth and depth of regression testing conducted.
- Address specific operational requirement(s) of the new software.
- Describe safety and/or security issues or functions added, modified, or deleted.

C-5.6 Significant Alterations

It is not possible to provide an explicit definition of a significant alteration, which is handled much like a new system for system acquisition purposes. The decision to classify a modification, ECP, ordnance alteration, block upgrade, product improvement, etc., as a significant alteration is based on the scope of the change, the funding level, the importance of the system, the numbers to be produced, etc. CNO (N84) will consider factors such as these in making the decision. In general, where an alteration is intended to improve a warfighting capability vice suitability, the alteration would require some measure of OT&E prior to Fleet introduction. The judgment of COMOPTEVFOR, the DA, the CNO Resource and Program Sponsor, and (where applicable) the Naval Board of Inspection and Survey (INSURV) will be major factors considered by N84 in determining the applicability and scope of testing significant alterations.

C-5.7 QRA

Emerging operational requirements may occasionally necessitate modifying the established OT process to achieve a rapid capability in the Fleet. In these cases, the program sponsor may seek a risk assessment by COMOPTEVFOR to better understand the capabilities of the proposed system as well as the risks associated with its fielding. If the sponsor decides a QRA is needed, the sponsor sends a request to CNO (N84), with a copy to COMOPTEVFOR. If tasked by CNO (N84), OPTEVFOR will conduct the QRA as rapidly as is feasible. *A QRA will not take the place of a formal OA or IOT&E as described in the TEMP, nor will it be used to resolve COIs, make effective or suitable determinations, or provide positive Fleet introduction/Fleet release recommendations*. *(If critical deficiencies are uncovered that clearly outweigh any potential operational benefit, the Commander reserves the right to make a recommendation against Fleet release.)* A QRA is an operational risk assessment to address the purpose and answer the questions as outlined in the QRA tasking letter. A QRA will require a DCP to define the data collection requirements. The signature authority will be determined on a case-by-case basis since a QRA often represents a critical warfighting capability with CNO personal attention. All QRA reports are signed by COMOPTEVFOR. See chapter 6 for QRA test planning and Chapter 8 for QRA report format. The following information must be included in the QRA request:

- Purpose of the assessment and, specifically, what system attributes the program sponsor wants assessed,
- Length of time available for the assessment,
- Funding available for the assessment.

C-6 TYPES OF IT

SECNAVINST 5000.2E requires that planning for DT and OT (IT) be coordinated at the test design stages so that each test phase uses resources efficiently to yield the data necessary to satisfy common needs of the PM and the OT&E agency. Where full IT is not possible or feasible, there are two legacy methods for integrating T&E that should also be considered, to include combined DT/OT and DT assist. The goal should be to maximize IT and use the OT-qualified data to support the required independent OT period. The following paragraphs describe IT and the two legacy methods.

C-6.1 IT

IT is the collaborative planning and collaborative execution of test phases and events to provide data in support of independent analysis, evaluation, and reporting by all stakeholders, particularly the DT (contractor and government) and OT communities. IT blends or combines CT, DT, and OT to form a cohesive testing continuum. This integration cannot occur, unless the participants (CT director, DT director, and OTD) have determined their entering requirements for adequate testing of the SUT. IT does not remove or combine any of COMOPTEVFOR's current or future requirements for reporting based on a separate (OPTEVFOR) analysis of the shared test information produced by the IT effort. IT does not eliminate the requirement for an independent IOT&E phase of OT&E. However, the expectation is that the IOT&E period may be

reduced in scope and time due to the early, integrated involvement of operational testers throughout the entire continuum of system development. Any reduction in the scope of IOT&E is highly contingent on the stability of the configuration of the SUT and the amount of qualified data that can be brought forward. Regardless of any reductions in scope, IT should substantially increase the probability of successful completion of IOT&E, by bringing OT concerns earlier in development. IT includes several key planning paradigms, including:

C-6.1.1

A requirement for the OT team to provide detailed OT input (IEF) to the IT planning process and provide it early in the program schedule. To this end, OPTEVFOR will develop a Tailored IEF to support the MS-A TEMP and a complete IEF to support the development of the MS-B TEMP.

C-6.1.2

The sharing of data throughout development and the associated IT periods. This sharing will support the monitoring of the progress of system capabilities, attributes, KPP, MOEs, and MOSs towards the successful resolution of COIs.

C-6.1.3

Blue and Gold Sheets may be created, modified, and closed based on results obtained during IT.

Robust testing minimizes surprises when the warfighter receives the product and ensures the specified capabilities are evaluated in the operational environment. Risk is reduced by bringing all testing agents together early in the process to ensure capabilities are tied to missions and tasks, mission-based testing is conducted, system anomalies/deficiencies are identified early in the process, and all data are shared. Cost is reduced by the sharing of resources, elimination of duplicative testing, and the early identification and correction of deficiencies. Schedule compression is achieved by combined versus sequential testing and the sharing of high demand testing assets. None of these objectives can be achieved without the cooperation of all parties and a commitment to a team approach between program office, OT, DT, and contractor personnel.

C-6.2 Combined DT/OT

Combined DT/OT, in its strictest sense, is a test phase in which DT and OT testers share test assets and data, and in which the events meet DT and OT requirements. An example of this would be a test in which DT and OT testers collect data from the same event or flight. Combined DT/OT is frequently employed for live fire events that tend to be constrained due to safety considerations (e.g., air-to-air missile firings and torpedo set-to-hit firings). The following comments apply to combined DT/OT in a broad sense:

C-6.2.1

While combined testing may be possible in some cases, the differing objectives of DT&E and OT&E may make it more difficult to combine the two than it may first appear. The explanation is as follows:

- DT&E is properly conducted to test some individual specification or parameter (e.g., the number of *g's* pulled by a projectile) with other parameters held constant. The test is designed to measure *technical performance* of a system.

- The mission of OPTEVFOR is to assess whether, given the achieved technical performance, the weapon system can be operationally effective and operationally suitable (for both the SUT and in the SoS) when employed under typical combat and environmental conditions by Fleet personnel against an enemy who fights back. Thus, OT&E is conducted on a mission-by-mission basis, varying such factors as sea state; visibility; own-ship speed and maneuvers; and the method of illumination, range, firing doctrine, target maneuvers, enemy countermeasures, etc.

C-6.2.1.1

Early planning for combined DT and OT *is essential* to ensure efficient use of resources. Participation by OPTEVFOR in the planning and execution of combined tests must ensure that the tests conducted and data collected are sufficient and credible to meet OT&E requirements.

C-6.2.1.2

A separate, independent OT plan will be provided, and separate and independent evaluation of OT results will be conducted and reported. Depending on the phase of testing, OPTEVFOR will identify new and changed risks or deficiencies in standard Blue and Gold sheet format.

C-6.2.1.3

Prior to combined DT/OT, the OTD should review the DT&E test plan for the technical characteristics, test objectives, and to understand how the PM intends to test the system. The OT team needs to understand what will be tested and how it may impact OT.

C-6.2.1.4

Combined DT/OT typically requires an MOA between the PM and COMOPTEVFOR that outlines the DT and OT objectives, capabilities/functions to be demonstrated, test conditions, test operations, etc. The MOA format is available in the OT&E Reference Library.

C-6.3 DT Assist

C-6.3.1

DT assist is simply DT with active involvement of OT personnel. As DT assists are not a formal phase of OT, they will not be assigned an OT number, *but will be assigned a*

DT assist number in TEPS for test and/or document tracking purposes. OT testers help execute the DT plan. There is no OT plan, and no OT report is required. A DT assist may be conducted for several different reasons. It may be done to allow OTDs to become more familiar with a system, to supplement DT personnel, or to allow the performance of non-hazardous developmental testing on aircraft assigned to OT squadrons. In all cases, a DT assist provides the system's developers with an early operational perspective. Though COMOPTEVFOR does not provide a formal report, Pending Risks will be captured in Blue and Gold Sheets. If the program manager requests, the results will be compiled in a LOO with the Blue and Gold Sheets appended. Conducting a Divisional SERB is at the discretion of the A-Code, but Blue and Gold sheets will be reviewed by 01C prior to LOO signature. If provided, the LOO will only be addressed to the PM or PEO as requested.

C-6.3.2

Table C-3 is provided to highlight the differences between DT assist and formal combined DT/OT phases of testing.

C-6.3.2.1

In DT assists, we generally do not identify minor, major, or severe limitations, since the recipient is generally completely familiar with the limited scope of the observations.

C-6.3.2.2

DT assist is more than passive observation of DT. OTDs have routinely monitored DT, and that should continue. A DT assist signifies that the OT test team is actively engaged in the data collection and is performing its own independent analysis. Ideally, a DT assist should be characterized on the program-integrated schedule just as combined DT/OT is shown, with simultaneous DT and OT activity. However, if it is not included on the schedule, a DT assist may still be pursued and accomplished.

C-6.3.2.3

As is the case for all DT data, if the data meet OT requirements they can be used to supplement OT data and help resolve COIs in future phases.

C-6.3.2.4

For DT assists, use of an MOA is recommended. This ensures all parties have like expectations about the scope of the test, when testing commences and ends etc. This is also a good place to specify that COTF needs access to DT data and reports. The DT assist MOA template can be tailored for the specific case.

C-6.3.2.5 DT Assist After MS-C

A DT assist can be employed during any phase of the acquisition process, including post-MS-C. However, it is most appropriate for “fly and fix” applications where COI resolution and conclusions regarding effectiveness and suitability are neither needed nor desired. Because most programs are seeking “effective and suitable” conclusions after MS-C, the DT assist approach is often not the vehicle of choice. It can be used effectively, though, as a lead-in to formal IOT&E, FOT&E, or prior to a request for a

VCD. If a DT assist, with a LOO, is being used to support a fielding decision, as in the case of a software intensive system, any Pending Risks identified during the DT assist should be written based on the risk to deployment or fielding.

Table C-3. DT Assist-Combined DT/OT-IT Comparison

DT Assist	Combined DT/OT	IT
No OT number assigned. It is not a formal phase of OT.	This is a formal phase of OT, complete with OT number, such as OT-A.	Formal phase of OT and assigned an IT number, such as IT-A1.
MOA signed by OPTEVFOR division director or VX CO is recommended.	MOA required with PM.	Integrated Test Team (ITT) Charter required. An MOA may be required for documenting mission analysis prior to a TEMP or TEMP update.
No OTP, OTA IEF required.	OTA IEF and OT test plan required.	OTA IEF required. Data Collection Plan is required.
No formal OT report; a DT assist LOO signed by OPTEVFOR division director may be provided to PM.	LOO or OTA Assessment Report (OAR)/MS Assessment Report (OMAR) required.	LOO or OAR/OMAR required.
COIs not specifically addressed, and not resolved.	COIs addressed commensurate with type of report. Color-codes for EOAs and OAs.	COIs addressed commensurate with type of report.
No conclusions reached.	Conclusions: COI risk assessments and recommendation for continued program development.	Conclusions: Commensurate with type of report. No effectiveness or suitability determinations and Fleet introduction recommendations may be made.
Certification message not required from DA.	Certification message required from DA.	Certification message is not required from DA.
May be discussed in TEMP - optional.	Must be discussed in TEMP.	Must be discussed in the TEMP.
Data may be used to support COI resolutions in later stages of OT&E.	Data may be used to support COI resolutions - now or later.	Data may be used to support COI resolutions - now or later.
Not appropriate for VCDs. VCD requires a brief report and OT number.	Appropriate for VCD.	May be appropriate for VCD.
Recommended for inclusion in TEMP Part II Integrated Schedule - optional Example: DT XXXXXXX DT-B	Required for inclusion in TEMP Part II Integrated Schedule. Example: DT XXXXXXX DT-B	Required for inclusion in TEMP Part II Integrated Schedule. Independent OT periods must be designated as OT-X. Example:

Table C-3. DT Assist-Combined DT/OT-IT Comparison

DT Assist	Combined DT/OT	IT
OT XXXXXXX DT ASSIST	OT XXXXXXX OT-A	IT XXXXXXX IT-B
General Note: Documentation signatory authority is per table 3-2.		

C-7 MOT&E

C-7.1 MOT&E

MOT&E is OT conducted jointly by two or more Services for formal DoD acquisition programs. A lead organization will be designated to coordinate all testing involving more than one military department or defense agency. This lead organization will prepare a single TEMP, test plan, and a single T&E report on the operational effectiveness and suitability of the system for each participating organization. The basic framework for the conduct of MOT&E for the four Services is contained in the MOT&E MOA.

C-7.2 Navy Lead Service

When the Navy is lead Service, OT&E will be conducted per the provisions of SECNAVINST 5000.2E, the MOT&E MOA, and this guide. OPTEVFOR performs essentially the same functions as in normal OT&E, with the following modifications:

- All planning including the MBTD process will be coordinated with other Service OT&E agencies.
- OPTEVFOR will begin the planning process (MBTD) by issuing a call to other Service OT&E agencies for COIs and their test objectives. These issues and objectives will then be consolidated into the IEF and coordinated with other Service OT&E agencies.
- Formal coordination action on the TEMP will accommodate other Service OT&E requirements and inputs.
- Participating OT&E agency test directors and/or project officers will meet to assign responsibilities for accomplishment of the critical issues/test objectives (from the IEF).
- Each participating agency will then prepare the portion of the overall test plan for their assigned critical issues/objectives, in OPTEVFOR test plan format, and will identify its data needs. OPTEVFOR will then prepare the MOT&E test plan.
- The appropriate ONI Capstone TA will be the TA used for overall program and Navy-unique threat issues. Other Services may supplement the threat requirements of the ONI Capstone TA through use of their Service-unique TAs.

C-7.3 Other Lead Service

When another Service has the lead, either a fully integrated TEMP or a Navy appendix to the lead Service TEMP, will be prepared that clearly reflects the unique Navy testing aspects of the program, in addition to addressing multiservice testing. The threat for overall program issues, based on the ONI Capstone TA, will also be addressed in the integrated TEMP or Navy appendix. This integrated TEMP or Navy appendix will provide the basis for planning and executing Navy-unique testing. Navy input to test documentation generated by other OTAs should be based on a tailored IEF, as discussed in paragraph 4-9.

C-7.4 Discrepancy Reporting

The lead OT&E agency is responsible for ensuring a system is established to track discrepancies and to provide periodic status reports to participating OT&E agencies. Control of promulgation of such reports should be included in an MOA between the participating OT&E agencies.

C-7.5 Deviations from Lead Service OT&E Procedures

Deviations from lead Service OT&E procedures may be authorized by written agreement between participating OT&E agencies. Close coordination will be required to ensure the requirements of Navy OT&E are met.

C-7.6 Test Reporting

For major programs, the lead Service will prepare and coordinate the single (interim or final) report, reflecting the system's operational effectiveness and operational suitability for each Service. If a participating Service deems it necessary to produce an independent evaluation report, it will be appended to the single MOT&E final report.

C-7.7 MOT&E Funding

Each Service OTA is funded differently for the execution of OT. The USAF and USA are directly funded via Program Objective Memorandum (POM) for OT while the Navy and Marine Corps rely on the PM/Joint Program Office (JPO) to fund testing resources. Consequently, the lead OTA will ensure that the TEMP Part IV clearly identifies each Service's specific test resources (assets and funding) and where that funding is coming from (specific PM/JPO, POM, etc.).

C-8 JOINT TEST PROGRAMS

C-8.1 Discussion

COMOPTEVFOR's mandate is to test and evaluate new and improved warfighting capability in as near a realistic operational environment as possible, which should include some testing in a joint environment for most programs. However, simply conducting OT of a Navy-only acquisition program in a joint environment does not make it a joint test program. For the purposes of this document, joint OT is defined as any test of a system, subsystem, component, or technology program that involves funding or formal management (including test management) by more than one DoD component, with the goal of providing a new or improved capability for a validated joint need. This includes programs where one DoD component may be acting as acquisition agent for another DoD component.

C-8.2 Types of Joint Testing

There are three basic types of tests for joint programs: MOT&E (described above), Joint Test and Evaluation (JT&E), and JCTDs. MOT&E is OT&E conducted jointly by two or more Services. The MOT&E MOA governs the conduct of MOT&E among the four Service OTAs. Some Services delegate authority to conduct OT&E to supporting agencies or commands. For these cases, an MOA may be required to codify test activities (e.g., resources, test execution, reporting, etc.). JT&E and JCTD are joint test

concepts that are outside the DoD Directive 5000.01 and are funded outside the normal service budget process. While JT&Es and JCTDs attempt to address shortfalls in joint warfighting, JT&E has a TTP focus, and JCTD has a technology/hardware focus. (See paragraph C-8.2.1.1 for JT&E overview.) To support input to other OTA-led joint testing, or JCTD test planning, a tailored IEF documenting OPTEVFOR's mission and requirements analysis is required (see paragraph 4-9).

C-8.2.1 JT&E

C-8.2.1.1 Overview

JT&E evaluates concepts, TTPs, architectures, processes, and addresses specific warfighter needs and issues that occur in joint environments. The JT&E program is funded and directed by DOT&E per DoD Instruction 5010.41. Detailed guidance on the conduct of JT&E is available in the JT&E Program Handbook located in Y:\OT&E Reference Library\JT&E or on the JT&E Web site (http://http://www.jte.osd.mil/.jte.osd.mil/). There are two types of JT&E:

- Quick Reaction Test (QRT), normally lasting less than 1 year
- Joint Test (JT), up to 3 years in duration.

C-8.2.1.2 Documentation and Test Reporting

Detailed guidance is available in the JT&E Program Handbook. QRT and JTs may use the MOT&E MOA to guide the relationship among participating OTAs. Where Navy expertise and liaison is required, CNO (N84) will task COMOPTEVFOR to provide an OTD to act in a Navy operational oversight function. When tasked, QRTs and JTs will be assigned a 5000-series local TEIN for tracking and administration within the TEPS.

C-8.2.2 JCTDs

C-8.2.2.1 Background

C-8.2.2.1.1

A JCTD is an integrating effort to assemble and demonstrate a desired capability based on mature advanced technologies in a realistic environment to clearly establish military and/or operational utility. In response to a combatant commander's request, the USD (AT&L) approves all new-start JCTDs by issuing an approval memorandum. Each JCTD is assigned a sponsor, typically a combatant command who represents the end user of the system or capability.

C-8.2.2.1.2

Once the JCTD makes it through the approval process, a Working Integrated Product Team (WIPT) is developed to plan, coordinate, and execute the assessments of the JCTD. The WIPT is comprised of members who fall under three distinct managers of the program. See http://www.acq.osd.mil/jctd/documents.html for the JCTD guidance and process.

C-8.2.2.1.2.1 Operational Manager (OM)

The OM plans, schedules, and executes the OUA or Limited OUA (LOUA). The OM starts the process with the assistance of an OTA to develop COIs, which make up the foundation of the IAP. The IAP is similar to a TEMP and is the overarching test schedule for the program. The OM is also responsible for drafting the DED for each OUA or LOUA. The DED is similar to a test plan.

C-8.2.2.1.2.2 Technical Manager (TM)

The TM is responsible for all contracts and acquisition instruments for the program, and manages the budget for the JCTD. The TM is also responsible for delivering the Joint Capability Solution to the OM for the assessments. The TM is responsible for ensuring that any technologies are adequately mature and have met all technical and safety certifications before they are used in any operational demonstrations.

C-8.2.2.1.2.3 Transition Manager (XM)

The XM is responsible for planning and supporting any Extended Use (EU) of the interim capability. The XM identifies and facilitates funding for the transition of the capabilities and for any EU period that has been planned. The XM is responsible for all transition documentation for the capability to enter the JCIDS. All three managers are co-developers of the implementation directive, management plan, and the transition plan. Through the WIPT, they all work closely together in each phase of the program to ensure that the program is properly planned, executed, and remains on schedule.

C-8.2.2.2 COMOPTEVFOR Participation

C-8.2.2.2.1

Many JCTDs will have little or no Navy interest, while a few may be developing an important new capability for the Fleet. COMOPTEVFOR (based on input from the requesting sponsor combatant commander) will determine which JCTDs merit our participation. Since JCTDs are not formal acquisition, COMOPTEVFOR has no official mandate for participation in the process. Nonetheless, given JCTDs may eventually transition to formal acquisition and the rigors of OT, early involvement in selected JCTDs can be critical to rapid development and deployment to the Fleet. With COMOPTEVFOR approval, a JCTD will be assigned an OTD and receive an appropriate level of attention, which could well exceed that normally expended on a formal acquisition program.

C-8.2.2.2.2

An OUA (replacing the MUA or LMUA) must be conducted by an independent activity (like OPTEVFOR). Following the demonstration(s) and depending on the success, a JCTD may transition to a formal acquisition program at the appropriate MS, may be produced in small quantities and introduced to the Fleet; or may be shelved. JCTDs are not acquisition programs; they transition solutions to the combatant commander.

C-8.2.2.3 Documentation

Because a JCTD is not a formal acquisition program, it will not have the traditional DoD and SECNAV documentation. The following are the JCTD documents:

C-8.2.2.3.1 Implementation Directive

An implementation directive provides guidance and direction for implementing a JCTD. The primary goal of an implementation directive is to define the JCTD program, its objectives, and key participating agencies with their associated areas of responsibility and resources.

C-8.2.2.3.2 Management and Transition Plan (MTP)

Each JCTD is required to have an MTP, which is, basically, an agreement between the developer and sponsor. Included should be an overview of the JCTD, a schedule of planned events and demonstrations, programmatic and organizational details, funding information, COIs, and a description of the residual operational capability expected on completion of the demonstration(s). Requirements may be incorporated in the MTP or may not be documented at all. JCTD sponsors may include a CONOPS, which addresses theater-level interoperability, compatibility, and integration issues.

C-8.2.2.3.3 IAP

A TEMP-like document, the IAP, includes an OUA approach and an OUA framework. The OUA approach section includes the schedule, demonstration venues and participants, data requirements, resources, and constraints. The OUA framework includes COIs, objectives, top-level capabilities and metrics, MOPs, and MOEs.

C-8.2.2.3.4 CONOPS and TTP Outline

The CONOPS and TTP outline should include required capabilities with metrics, CONOPS, COIs, the expected threat and operational environments, operational scenarios, and tactical vignettes.

C-8.2.2.3.5 Tailored IEF

The Tailored IEF is an OPTEVFOR document that captures the mission and requirements analysis performed by an OTD (as described in the Implementation Directive or other requirement documents) for those JCTDs that are of particular interest to the Navy.

C-8.2.2.3.6 DED

The DED is akin to a standard test plan for a nonoversight program.

C-8.2.2.3.7 Final Reports

Final reports for JCTDs are similar to the EOA/OA formats and are described in Chapter 8, Evaluation Reports.

C-8.2.2.4 Requirements

Since JCTDs are technology demonstrations by nature, most will not have a formal set of performance requirements. Often, the demonstration is used to quantify system

capabilities and define requirements. If there are no thresholds or objectives, the test team should ascertain what the JCTD is meant to do, and determine COIs and MOEs/MOPs needed to reflect those capabilities. Also, ask how the JCTD *could* be used. Bring ideas before the WIPT and get agreement, then do the test planning. OPTEVFOR participation in JCTDs should focus on:

C-8.2.2.4.1

Providing a sound OT methodology, complete with COIs, MOEs, and MOPs

C-8.2.2.4.2

Developing COIs and MOEs/MOPs, including suitability issues

C-8.2.2.4.3

Assessing and documenting the demonstration results so that transition to formal acquisition will be as easy as possible

C-8.2.2.4.4

Making recommendations for system improvement

C-8.2.2.4.5

Identifying strengths and weaknesses observed.

C-8.2.2.5 TEPS

When tasked, JCTDs will be assigned a 5000-series local TEIN for tracking and administration within TEPS.

C-9 U.S. SPECIAL OPERATIONS COMMAND (USSOCOM) NAVAL SPECIAL WARFARE (SPECWAR) RESEARCH, DEVELOPMENT, AND ACQUISITION (RDA) POLICY

Procedures for USSOCOM (and its component SPECWAR) systems and equipment must be streamlined to ensure the most rapid possible progress from the concept stage through final development. In many instances, USSOCOM/SPECWAR systems are needed to meet preparedness requirements for contingency operations around the world. The following references provide guidance for RDA procedures for USSOCOM/SPECWAR systems or equipment and are located in Y:\OT&E_Reference_Library\USSOCOM Acquisition:

- USSOCOM Directive 70-1, Acquisition Management System Policy, of 19 March 2010
- USSOCOM Directive 71-4, Requirements Generation System, of 9 June 2009

Applicable USSOCOM MOAs for Navy, Air Force, and Army are in the OT&E Reference Library.

C-10 FOREIGN COMPARATIVE TESTING (FCT) AND DEFENSE ACQUISITION CHALLENGE (DAC) PROGRAMS

Title 10, U.S. Code Section 2350a(g) and 2359b establish two programs: the FCT Program and the DAC Program, respectively. The FCT Program tests allied or friendly nations' defense equipment and technologies to see if they can satisfy DoD needs. DAC allows non-DoD entities to propose technologies, products, or processes to existing DoD acquisition programs. At the OSD level, FCT and DAC Programs are managed by the Comparative Testing Office (CTO) (http://www.acq.osd.mil/cto/documents.html).

C-10.1

The purpose of the FCT Program is to establish the ability of North Atlantic Treaty Organization (NATO) and friendly foreign countries to satisfy U.S. requirements or operational deficiencies.

- Authorizes side-by-side testing of foreign non-developmental or Commercial Off-the-Shelf (COTS) equipment.
- Focuses on mature or late-stage technologies.

C-10.2

The DAC Program provides increased opportunities for the introduction of innovative and cost-saving technologies into DoD acquisition programs. DAC provides an "on-ramp" to DoD acquisition systems for small and medium vendors.

C-10.2.1

CNO, under the policy guidance of the ASN (RD&A), has responsibility within the Navy for management and program execution of Foreign Weapons Evaluation (FWE) and NATO Comparative Test Program (CTP).

C-10.2.2

When procurement of a foreign weapon system is planned, CNO will direct the DA and COMOPTEVFOR to assess the adequacy of any previously conducted DT&E and OT&E, and provide recommendations on the need for additional T&E prior to procurement. If additional T&E is required, CNO (N84) will assign an ACAT and TEIN. T&E will then be conducted using normal system procurement procedures.

C-10.2.3

Close liaison between the CTO project personnel and OPTEVFOR is required during test planning and evaluation periods to ensure data can be used effectively in follow-on OT.

C-10.2.3.1

Additional information on FCT and DAC Programs is available at the CTO Web site listed above and in SECNAVINST 5000.2E.

C-11 LFT&E

Live Fire Testing (LFT) is conducted to provide a timely and thorough assessment of the vulnerability and lethality of a system as it progresses through its development and subsequent production phases. The primary emphasis of LFT is on realistic testing as a source of personnel casualty, vulnerability, and lethality information, taking into account the susceptibility to attack and combat performance of the system. LFT will include, when feasible, the firing of threat munitions (or surrogates) at operational, combat-loaded U.S. weapon systems to test their vulnerability; and/or the firing of U.S. munitions or missiles against operational, combat-loaded threat targets (or surrogates) to test the lethality of those munitions or missiles. Guidelines for the conduct of LFT&E are provided in SECNAVINST 5000.2E.

The basic planning document for LFT&E is the TEMP. The TEMP Part III will contain a separate section that charts the LFT&E course of action during the acquisition process. The LFT&E section of Part III of the TEMP will be developed by the DA under the cognizance of DOT&E and will include:

- Description of the overall LFT&E strategy for the item
- Critical LFT&E issues
- Required levels of system vulnerability/lethality
- Management of the LFT&E program
- LFT&E schedule, funding plans, and requirements
- Related prior and future LFT&E efforts
- Evaluation plan and shot selection process
- Major test limitations for the conduct of LFT&E.

LFT&E resource requirements (including test articles and instrumentation) will be appropriately identified in the TEMP Part IV T&E Resource Summary. See chapter 5 for TEMP details.

C-11.1

Within the Navy, LFT&E is primarily a developmental test responsibility since it is directly tied to the fundamental platform design. COMOPTEVFOR's major interest is system vulnerability and lethality and the associated impacts on the successful execution of mission tasks. The role of the OTD in LFT&E will be:

- Review the LFT&E section of the TEMP.
- Request a copy of the detailed LFT&E plan for review.
- Monitor the LFT to obtain a firsthand impression of the vulnerability or lethality of the SUT.
- Obtain a copy of the detailed LFT&E report for review.

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APPENDIX D - TEST AND EVALUATION STAKEHOLDERS

(Rev 5, Jan 2016)

D-1 INTRODUCTION

In addition to the relationships discussed in chapter 2, there are a number of other organizations the Operational Test Director will likely encounter in the design, planning, execution, and reporting of operational tests. Since most are aligned by warfare area, the stakeholder list is provided by warfare division.

D-2 UNDERSEA WARFARE

D-2.1 Cryptologic Systems Group (CPSG)

The Cybersecurity Product Area Directorate and the Air Force system program office for public key infrastructure with direct links to Headquarters United States Air Force and Defense Information Infrastructure. CPSG manages special compartmental projects for the Department of Defense and National Security Agency space systems. (VACM, KG3X)

D-2.2 Johns Hopkins University Applied Physics Laboratory

A Federally Funded Research and Development Center (FFRDC). Supports advanced test and test data analysis for submarine and surface ship combat systems and sonar systems to include in-lab playback of test event recordings on tactical systems. (SURTASS, AN/BQQ-10, AN/BYG-1)

D-2.3 Naval Undersea Warfare Center (NUWC) Keyport Washington and NUWC Detachment Pacific

Supports test development, execution, and analysis for submarine and surface ship combat systems, sonar systems, and torpedoes. (SQQ-89, Mk-48, Mk-54)

D-2.4 OHIO Replacement Program Office (PMS 397)

Is conducting the early research and design for the next-generation Sea-Based Strategic Deterrence submarine (SSBN). (OR)

D-2.5 Program Executive Office, Integrated Warfare Systems, Undersea Systems (PEO IWS 5E)

Program Manager, oversees the design and development of the CRUDES ASW and Mission Planning segments. (SQQ-89, USW DSS)

D-2.6 Program Executive Office, Littoral Combat Ship (PEO LCS) Maritime Surveillance Systems (PMS 485)

Oversees the design and development of the SURTASS ASW Program. (LFA, CLFA, TL29A, and ICP)

D-2.7 Special Operation Forces Mobility Program Office (PMS 399)

Oversees the Submarine Force's integrated Special Operation Forces lock-in/lock-out chambers aboard the SSGNs, Lock-Out Trunks of the VIRGINIA Class, the Navy's six Dry-Deck Shelters, and it will conduct the research, design, and acquisition of the Joint Multimission Submersible. (DDSX)

D-2.8 Submarine Acoustic Systems Program Office (PMS 401)

Develops and implements the Warfare System Modernization Plan that defines future upgrades, systems standards, and interface definitions for development of submarine acoustic systems to include towed arrays and the AN/BQQ-10(V) Sonar System. (AN/BQQ-10)

D-2.9 Submarine Combat System Program Office (PMS 425)

Develops and acquires the combat and weapons control systems to include the AN/BYG-1(V) Combat System for both in-service and new CON ships. (AN/BYG-1)

D-2.10 Submarine Sensor Systems Program Office (PMS 435)

Designs, develops, and oversees the CON of EW Systems, periscopes, and the Photonics Mast. (ISIS, BLQ-10)

D-2.11 Tactical Networks Program Office (PMW 160)

The Tactical Networks Program Office provides affordable, interoperable, and secure net-centric enterprise capabilities to the Navy, joint, and coalition warfighters. (SubLAN)

D-2.12 Undersea Defensive Warfare Systems Program Office (PMS 415)

Conducts research, development, and CON of submarine defensive systems, including noisemakers and anti-torpedo torpedoes. (TWS)

D-2.13 Undersea Integration Program Office (PMW 770)

The Undersea Integration Program Office delivers integrated and interoperable C4I capabilities and support to the Navy by connecting the undersea architecture of manned and unmanned systems and undersea vehicles. (OE538, LBUCS, CSRR)

D-2.14 Undersea Weapons Program Office (PMS 404)

Oversees the research, development, CON, and modernization of all undersea weapons, including the M-54 lightweight torpedo employed aboard surface ships and aircraft and the Mk-48 ADCAP/CBASS heavyweight torpedoes employed aboard submarines. (Mk-48, Mk-54)

D-2.15 VIRGINIA Class Program Office (PMS 450)

Oversees the design, CON, and delivery of the United States' newest attack submarine. (VA)

D-2.16 Submarine Development Squadron 12

Develops and evaluates submarine tactics. Provides operational insight into development of new technology and equipment.

D-2.17 Undersea Warfighting Development Center (UWDC)

UWDC integrates undersea CONOPS, TTP, theater level Command and Control of ASW forces, and prepares submarine crews to conduct assigned advanced missions and all combat missions. UWDC in concert with NWDC develops, validates, publishes, and revises TTP for submarine and undersea warfare to include the Integrated Undersea Surveillance Systems.

D-3 AIR WARFARE

D-3.1 Air Test and Evaluation Squadron ONE (VX-1)

The primary mission of VX-1 is to conduct tests, evaluations, and investigations of antisubmarine warfare aircraft weapons systems, airborne early warning aircraft systems, airborne strategic weapons system, support systems, equipment, and materials in an operational environment. The squadron also develops, reviews, and disseminates new ASW tactics and procedures for Fleet use, serving as the model manager for all Air ASW tactical publications. The squadron is administratively assigned to Commander, Naval Air Force, Atlantic.

D-3.2 Air Test and Evaluation Squadron NINE (VX-9)

VX-9 is charged with the testing and evaluation of weapons and their related systems for the F/A-18 family of aircraft, naval aviation attack helicopters, and the Harrier family of aircraft. The squadron is administratively aligned under Commander, Naval Air Force, U.S. Pacific Fleet.

D-3.3 Marine Aviation Weapons and Tactics Squadron One (MAWTS-1)

Conducts training for aviation units, most notably the Weapons and Tactics Instructor (WTI) course at Marine Corps Air Station Yuma.

D-3.4 Marine Helicopter Squadron ONE (HMX-1)

Is a United States Marine Corps helicopter squadron responsible for the transportation of the President of the United States, Vice President, Cabinet members, and other VIPs. In addition to its VIP transport role, it is also tasked with operational test and evaluation of new flight systems for Marine Corps helicopters. The squadron is under the administrative control of the Deputy Commandant for Aviation. Routine operational control is under the White House Military Office. Operational testing is executed under the direction of COMOPTEVFOR, when required.

D-3.5 Marine Operational Test and Evaluation Squadron One (VMX-1)

VMX-1 is an independent test organization conducting operational test and evaluation of assigned USMC aircraft under the direction of COMOPTEVFOR. The squadron is under the administrative control of the Deputy Commandant for Aviation with the charter to:

- Address future requirements
- Build an operational tactics guide
- Develop tactics, techniques, and procedures
- Sponsor tiltrotor issues and concepts of employment

D-3.6 Air Test and Evaluation Squadron THREE ONE (VX-31)

Developmental Test and Evaluation squadron based at Naval Air Weapons Station China Lake, CA, falls under Naval Test Wing Pacific (NTWP). Responsible for testing manned and unmanned aircraft, air weapons, and air weapon systems.

D-3.7 Commander, Naval Air Forces (CNAF)

Is dual-hatted as Commander, Naval Air Force, Pacific (COMNAVAIRPAC) and is the aviation TYCOM for all United States Navy naval aviation units. CNAF is responsible for the material readiness, administration, training, and inspection of units/squadrons under its command, and for providing operationally ready air squadrons and aircraft carriers to the Fleet. COMNAVAIRPAC exercises administrative control of VX-9.

D-3.8 Commander, Naval Air Force, Atlantic (COMNAVAIRLANT)

Is the aviation TYCOM for the United States Atlantic Fleet naval aviation units. AIRLANT is responsible for the material readiness, administration, training, and inspection of units/squadrons under its command, and for providing operationally ready air squadrons and aircraft carriers to the Fleet. COMNAVAIRLANT exercises administrative control of VX-1.

D-3.9 Commander, Naval Air Systems Command (NAVAIR)

Provides material support for aircraft and airborne weapon systems for the United States Navy and Marine Corps. Serves as the ultimate technical authority for all U.S. Naval aircraft. Key organizational components that deal with OPTEVFOR include:

- **AIR 4.0** – Assistant Commander for Research and Engineering. Provides technical authority for all aspects of aircraft design and engineering.
- **AIR 5.0** – Assistant Commander for Test and Evaluation.

D-3.10 Naval Aviation Warfighting Development Center (NAWDC)

NAWDC trains Navy Air Forces in advanced TTP across all combat mission areas at the individual, unit, and integrated levels ensuring alignment of the training continuum; develops, validates, standardizes, publishes, and revises TTPs; provides operational and subject matter expertise support to Strike Group Commanders, Numbered Fleet Commanders, and Combatant Commanders.

D-3.11 Naval Air Warfare Center, Aircraft Division (NAWCAD)

Is an organization within the Naval Air Systems Command (NAVAIR), (aligned under AIR 4.0 – the NAWCAD Commander serves as Assistant Commander for Research and Engineering) focused primarily on aircraft development and testing for the Department of the Navy (DON). NAWCAD supports major aspects of aircraft developmental testing

including aircraft performance, flying qualities, electromagnetic compatibility, and carrier suitability. NAWCAD serves as ISIC for Naval Test Wing Atlantic and the Training Systems Division (Orlando, FL).

D-3.12 VX-20

Developmental Test and Evaluation squadron based at NAS Patuxent River, MD, falls under Naval Test Wing Atlantic (NWTL). Responsible for testing fixed-wing aircraft and aircraft systems, to include systems for the P-3, P-8, E-2, C-2, C-130, E-6, T-6, and T-34 aircraft.

D-3.13 HX-21

Developmental Test and Evaluation squadron based at NAS Patuxent River, MD, falls under Naval Test Wing Atlantic (NWTL). Responsible for testing rotary-wing aircraft and aircraft systems, to include systems for the H-1, H-3, H-46, H-53, H-57, H-60, MQ-8B, and V-22 series aircraft and UAVs.

D-3.14 VX-23

Developmental Test and Evaluation squadron based at NAS Patuxent River, MD, falls under Naval Test Wing Atlantic (NWTL). Responsible for testing fixed-wing tactical aircraft and aircraft systems, to include systems for the F-18, EA-6B, and T-45 series aircraft.

D-3.15 Naval Air Warfare Center, Weapons Division (NAWCWD)

Is an organization within the Naval Air Systems Command (NAVAIR), (aligned under AIR 5.0 – the NAWCWD Commander serves as the Assistant Commander for Test and Evaluation) focused primarily on EW and weapons development and testing for the DON. NAWCWD also hosts significant science and technology activity for aviation systems. NAWCWD has two locations in Southern California: China Lake hosting the land test range and Point Mugu, hosting the sea test range. NAWCWD serves as ISIC for Naval Test Wing Pacific.

D-3.16 Air Force Operational Test and Evaluation Center (AFOTEC)

Is a direct reporting unit of Headquarters, United States Air Force. It is the Air Force operational test agency responsible for testing new systems being developed for Air Force and multiservice use. AFOTEC employs a detachment construct for the execution of operational testing.

D-3.16.1 Detachment 1 (Edwards AFB, CA)

Lead agency for accomplishing Block 2 and 3 Initial Operational Test and Evaluation of the F-35 Lightning II for the U.S. Air Force, U.S. Navy, U.S. Marine Corps, United Kingdom Ministry of Defense, and the Royal Netherlands Air Force. Leads the Joint Operational Test Team.

D-3.16.2 Detachment 2 (Eglin AFB, FL)

Evaluates operational system(s) mission capability, effectiveness, and suitability for Air Force and multiservice users. Primarily focused on weapons and weapon system testing.

D-3.16.3 Detachment 4 (Peterson AFB, CO)

Operationally tests space, missile, and missile defense capabilities.

D-3.16.4 Detachment 5 (Edwards AFB, CA)

D-3.16.5 Operationally tests aircraft systems. Detachment 6 (Nellis AFB, NV)

Plans and conducts operational test and evaluation of fighter aircraft.

D-4 COMMAND, CONTROL AND COMMUNICATIONS

D-4.1 Navy Information Operations Command (NAVIOCOM)

The Naval OPSEC Support Team (NOST) located at the NAVIOCOM Norfolk, has been designated the Naval (Navy and USMC) OPSEC Support Element, providing OPSEC support throughout the fleet. NIOC is the only Navy organization tasked with providing penetration assessment services for C4I systems.

D-4.2 Joint Interoperability Test Command (JITC)

The JITC Operational Test and Evaluation (OT&E) Division (JT1) conducts operational testing of Information Technology and National Security Systems acquired by the Defense Information Systems Agency, other DoD organizations, and non-DoD entities to ensure operational effectiveness, suitability, and security. JITC conducts the test and collects the data. JITC then prepares an Operational Test and Evaluation Report (OTER), consistent with the test concept and plan, and provides a copy to the appropriate offices of the Component and to DOT&E.

D-4.3 U.S. Fleet Cyber Command

Directs Navy cyberspace operations globally to achieve military objectives in and through cyberspace. Organizes and directs Navy cryptologic operations worldwide and supports information operations and space planning and operations as directed. Executes cyber missions as directed. Operates, maintains, secures, and defends the Navy's portion of the Global Information Grid: Delivers integrated cyber, information operations, cryptologic, and space capabilities. Assesses Navy cyber readiness; manages the Man, Train and Equip (MT&E) functions associated with Navy Component Commander (NCC) for U.S. Cyber Command and Service Cryptologic Commander (SCC) responsibilities.

D-4.4 Commander, TENTH Fleet (C10F)

Numbered Fleet Commander for Fleet Cyber Command and exercises operational control of assigned naval forces to coordinate with other naval, coalition, and Joint Task Forces to execute full spectrum of cyber, EW, information operations and signal

intelligence capabilities, and missions across the cyber, electromagnetic, and space domains.

D-4.5 Navy Information Dominance Force (NAVIDFOR)

NAVIDFOR is the C5I Type Commander. It is responsible for Fleet Readiness, C5I Modernization and Sustainment, Cyber Security, Information Technology Efficiencies, Improvement Program, and training for the C5I workforce.

D-4.6 Program Executive Office for Command, Control, Communications, Computers, and Intelligence (PEO C4I)

PEO C4I provides integrated communications and information technology systems that enable information dominance and the command and control of maritime forces. PEO C4I is the ISIC responsible for C4I-related Program Management Warfare Offices (PMW).

D-4.7 SPAWAR Program Managers

D-4.7.1 PMW 120

The Battle Space Awareness and Information Operations Program Office provides net-ready intelligence, meteorological, oceanographic, and information operations products and services that allow Sailors to correlate data from organic sensors and national sources, to gauge enemy intentions, provide I&W, and determine operationally relevant information about the physical environment.

D-4.7.2 PMW 130

The Information Assurance and Cybersecurity Program Office provides cybersecurity products and services to ensure protection of Navy and joint information and telecommunications systems from hostile exploitation and attack through cryptographic, network, and host-based security products that provide for strong authentication, data integrity, confidentiality, nonrepudiation, and availability of network resources and information.

D-4.7.3 PMW 150

The Navy Command and Control Program Office provides operational and tactical command and control capabilities, by integrating real-time and near real-time representations of tactical situations, while including targeting support, chemical-biological warnings, and logistics support for the Navy, Marine Corps, and joint and coalition warfighters.

D-4.7.4 PMW 160

The Tactical Networks Program Office provides affordable, interoperable, and secure net-centric enterprise capabilities to the Navy, joint, and coalition warfighters.

D-4.7.5 PMW 170

The Communications and GPS Navigation Program Office provides satellite, line-of-sight, and extended-line-of-site communication systems for voice and data

communications and GPS capabilities for ship navigation, command and control systems, and weapons systems.

D-4.7.6 PMW 180

The Navy’s Program Manager for developing, acquiring, fielding, and sustaining integrated, network-ready products and services, including intelligence, meteorology, oceanography, and information operations.

D-4.7.7 PMW 740

The International C4I Integration Program Office delivers and integrates tailored, C4I releasable systems to foreign partners through Foreign Military Sales, Foreign Military Financing, and other DoD-funded international programs to enhance interoperability between the United States and its strategic partners.

D-4.7.8 PMW 750

The Carrier and Air Integration Program Office delivers integrated and interoperable C4I capabilities and support to our Navy's aircraft carriers, amphibious ships, command ships, and aircraft by leading advanced planning for Fleet modernization and new CON ship C4I efforts.

D-4.7.9 PMW 760

The Ship Integration Program Office delivers integrated C4I capabilities to the Navy's unit and group-level ships in new CON and as part of the Navy Modernization Plan.

D-4.7.10 PMW 770

The Undersea Integration Program Office delivers integrated and interoperable C4I capabilities and support to the Navy by connecting the undersea architecture of manned and unmanned systems and undersea vehicles.

D-4.7.11 PMW 790

The Shore and Expeditionary Integration Program Office delivers relevant, integrated, and interoperable C4I capabilities and support to our Navy's shore and expeditionary forces through modernization, acquisition, and system integration.

D-5 SURFACE WARFARE

D-5.1 Board of Inspection and Survey (INSURV)

Surface warfare section testing performed by the Board of Inspection and Survey bears several similarities to OT&E conducted by COMOPTEVFOR 70 division. Since testing of platforms and combat systems tends to be quite expensive, the cost efficiencies realized by conducting combined INSURV/COMOPTEVFOR test events whenever possible can be quite substantial.

D-5.2 Commander, Carrier Strike Group FOUR (CSG-4)

USFF's lead agent for Integration and Interoperability (I&I) reviews conducted to establish WCB kill chains, which subsequently inform COI selection consistent with

Navy's required operational capabilities and projected operational environments (ROC & POE).

D-5.3 Naval Surface and Mine Warfighting Development Center (NSWDC)

NSMWDC trains Navy Surface Forces in advanced TTPs across all combat mission areas at the individual, unit, and integrated levels ensuring alignment of the training continuum; develops, validates, standardizes, publishes, and revises TTPs; and provides operational and subject matter expertise support to Strike Group Commanders, Numbered Fleet Commanders, and Combatant Commanders.

D-5.4 Military Sealift Command (MSC)

Mans and operates Fleet auxiliary vessels, such as the Joint High Speed Vessel (JHSV) and Dry Ammunition and Cargo Ship (T-AKE). Responsible for maintenance and operations of all vessels assigned to the MSC, including Military Preposition Force (MPF) ships.

D-5.5 Missile Defense Agency (MDA)

The(MD) is a research, development, and acquisition agency within the Department of Defense. The Navy's program element of MDA is PD-452, which coordinates the developmental efforts of the Navy's afloat and shore Ballistic Missile Defense (BMD) systems. MDA also supports an independent Operational Assessment (OA) of the Ballistic Missile Defense System through the BMDS Operational Test Authority (OTA) team, which is led by the Commanding General, Army Test and Evaluation Command (ATEC), and is comprised of representatives from COMOPTEVFOR, AFOTEC, and JITC.

D-5.6 Naval Air and Missile Defense Command (NAMDC)

Navy's Warfare Center of Excellence and lead organization for naval, joint, and coalition Integrated Air and Missile Defense (IAMD) matters. An Echelon IV Command, NAMDC reports to Commander Pacific Fleet, via Commander, U.S. 3rd Fleet. NAMDC assesses, integrates, and synchronizes Navy IAMD efforts across the DOTMLPF spectrum.

D-5.7 Naval Surface Warfare Center, Corona Division (NSWCCD)

One of two suppliers of Navy Working Capital Funded (NWCF) government civilian OTDs, AOTDs, and analysts. Additionally, one of Surface Warfare division's main data reduction and analysis agencies. As a third-party data collector, NSWCCD serves warfighters and program managers as an independent performance assessment agent throughout systems' life cycles by gauging the Navy's warfighting capability of weapons and integrated combat systems, from unit to force level, through assessment of those systems' performance, readiness, quality, supportability, and the adequacy of training.

D-5.8 Naval Surface Warfare Center, Dahlgren Division (NSWCDD)

Host to COTF Detachment Dahlgren. Home to several laboratories conducting R&D, as well as DT&E activities for programs covered by Surface Warfare Division TEINs.

D-5.9 Naval Surface Warfare Center, Port Hueneme Division (NSWCPHD)

One of two suppliers of NWCF government civilian OTDs, AOTDs, and analysts.

D-5.10 PEO Integrated Warfare Systems (PEO (IWS))

Manages surface ship and submarine combat technologies and systems, and coordinates Navy Open Architecture across ship platforms.

D-6 LCS DIVISION

D-6.1 PEO Littoral Combat Ships (PEO LCS)

Provides a single program executive responsible for acquiring and maintaining the littoral mission capabilities of the LCS Class from end to end, beginning with procurement, and ending with Fleet employment and sustainment. These include programs in support of Mine Warfare, Littoral Combat Ship Mission Modules, Unmanned Maritime Systems, Littoral Combat Ship, and the new LCS-to-frigate transition.

D-6.2 Naval Mine and ASW Warfare Center of Excellence (NMAWC)

The warfighting center of excellence for Mine Warfare (MIW) and Antisubmarine Warfare (ASW), focuses efforts across numerous resource sponsors, systems commands, research laboratories, training organizations, and operational commands to ensure Navy-wide competency in the MIW and ASW mission areas. NMAWC is the primary command through which issues related to MIW and ASW are coordinated with tactical development agencies and commands.

D-6.3 Naval Surface Warfare Center Panama City Division

Conduct research, development, test and evaluation, in-service support of mine warfare systems, mines, naval special warfare systems, diving and life support systems, amphibious/expeditionary maneuver warfare systems, other missions that occur primarily in coastal (littoral) regions and to execute other responsibilities as assigned by Commander, Naval Surface Warfare Center.

D-7 OTHER ORGANIZATIONS

D-7.1 Assistant Secretary of the Navy (Research, Development and Acquisition)

Responsible for the research, development, and acquisition of Navy and Marine Corps platforms and warfare systems.

- **Principal Military Deputy** - Principal military advisor to ASN(RDA) on all Navy and Marine Corps acquisition matters.
- **Principal Civilian Deputy** - Principal civilian advisor to ASN(RDA) on all Navy and Marine Corps acquisition matters.
- **Deputy Assistant Secretary of the Navy (DASN) RDT&E** - Principal advisor to ASN(RDA) on all matters pertaining to Navy science, technology, advanced research and development programs, system prototypes, and the management of science and engineering.

- **DASN Ships** - Principal advisor to ASN(RDA) on all matters pertaining to aircraft carriers, surface ships, and submarines, as well as associated weapon systems.
- **DASN Air** - Principal advisor to ASN(RDA) on all matters pertaining to aircraft, cruise missiles, air-launched weapons, airborne sensors, avionics, and support equipment.
- **DASN ELM (Expeditionary Programs and Logistics Management)** – Focuses on enabling the combat effectiveness of operating forces in an expeditionary role. Coordinates the rapid acquisition activities for urgent needs across the DON, including Joint Urgent Operational Needs (JUON), USMC Urgent Universal Needs (UUN), and Navy Urgent Operational Needs (UON).
- **DASN C4I and Space** - Principal advisor to ASN(RDA) on all matters pertaining to space, C4I, IO, and Information Technology programs and policy.
- **RDA Cheng** - Provide engineering leadership and focus within the acquisition community to ensure the DON delivers integrated and interoperable enterprise capabilities.

D-7.2 Center for Naval Analyses (CNA)

A FFRDC that provides analytical support to the Chief of Naval Operations, Fleet Commanders, as well as subordinate operational commanders. There is a CNA representative assigned as an advisor on the staff of COMOPTEVFOR. In addition, a second CNA representative supports the DOT&E-funded Interoperability and Cybersecurity Program at OPTEVFOR and other CNA representatives provide direct support to selected warfare divisions and squadrons.

D-7.3 Commander, US Fleet Forces Command (USFF)

US Fleet Forces Command supports both the Chief of Naval Operations and Combatant Commanders worldwide by providing naval forces ready-for-tasking. The command provides operational and planning support to Combatant Commanders and integrated warfighter capability requirements to the CNO.

- Additionally, U.S. Fleet Forces Command serves as the CNO's designated Executive Agent for Antiterrorism/Force Protection (ATFP), Individual Augmentees (IA), and Sea Basing.
- In collaboration with U.S. Pacific Fleet, USFF organizes, mans, trains, maintains, and equips Navy forces, develops and submits budgets, and executes readiness and personnel accounts to develop both required and sustainable levels of Fleet readiness. Additionally, the command serves as the unified voice for Fleet training requirements and policies.
- OPTEVFOR’s engagement with the USFF staff is generally through the N-8 staff. COMOPTEVFOR is the only outside commander to participate in the USFF Fleet Introduction Program assessment process.
- Together with the Commander, U.S. Pacific Fleet, the Commander, USFF nominates effects chains for evaluation during the Warfare Capability Baseline Assessments.

D-7.4 Deputy Secretary of Defense for Developmental Test and Evaluation (DASD, DT&E) (Office of the Director, Defense Research and Engineering, Office of the Under Secretary of Defense, Acquisition, Technology, and Logistics)

Serves as focal point for all policy, practice, procedures and workforce issues relating to developmental test and evaluation within DoD. The DASD (DT&E) is a non-Senate-confirmed political appointee. In addition to providing policy and guidance for DT&E within the Department, the DASD (DT&E) staff monitors developmental test and evaluation activities of the Major Defense Acquisition Programs.

- The DASD (DT&E) approves Test and Evaluation Strategies and Test and Evaluation Master Plans on behalf of the Under Secretary of Defense (AT&L) and submits an independent annual report to the Congress. (See 10 USC Sec 139d for the governing statute.)
- The DASD staff is organized by warfare areas: Air Warfare; Land and Expeditionary Warfare; Naval Warfare; Information Systems; and Space and Missile Defense.
- In addition to DT&E oversight, the DASD (DT&E) also serves as the Director , Test Resource Management Center, a DoD Field Activity responsible for oversight of the Major Range and Test Facility Bases (See 10 USC Sec 196 for the governing statute.)

D-7.5 Director, Operational Test and Evaluation, Office of the Secretary of Defense (OSD/DOT&E)

The Director is a Senate-confirmed Presidential Appointee who serves as the principal staff assistant and senior advisor to the Secretary of Defense on OT&E in the DoD.

D-7.5.1

The DOT&E is responsible for issuing DoD OT&E policy and procedures; reviewing and analyzing the results of OT&E conducted for each major DoD acquisition program; providing independent assessments to Secretary of Defense, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)), and Congress; making budgetary and financial recommendations to the Secretary regarding OT&E; and oversight to ensure OT&E for major DoD acquisition programs is adequate to confirm operational effectiveness and suitability of the defense system in combat use.

D-7.5.2

The staff is led by a Principal Deputy (career SES) and is supported by four Deputy Directors and a Deputy for Live Fire Test and Evaluation as well as a Science Advisor.

D-7.5.3

The four Deputy Directors (Deputy Assistant Secretary of Defense equivalents) oversee the following areas:

- Air Warfare,
- Land and Expeditionary Warfare (including land-based rotary-wing aviation),
- Naval Warfare (including Navy sea-based helicopters),

- Net-centric and Space Systems/Ballistic Missile Defense (includes Defense Business Systems).

D-7.5.4

The DOT&E also manages several other efforts not directly related to his primary responsibilities. These include the Joint Test and Evaluation Program managed by the Deputy Director for Air Warfare and the Interoperability and Cybersecurity Assessment Program managed by the Deputy Director for Net-centric and Space Systems (see appendix C for additional information on these programs.)

D-7.6 Institute for Defense Analyses (IDA)

A FFRDC that provides analytical support to the Office of the Secretary of Defense. The Operational Evaluation Division provides analytical support to the Director, Operational Test and Evaluation.

D-7.7 Office of the Chief of Naval Operations

- **N84/ONR** - Director, Innovation, Technology Requirements, and T&E. Dual-hatted as the Director of the Office of Naval Research and the Navy's T&E Executive. Determines the requirements of Science and Technology (S&T), T&E. Establishes and promulgates Navy S&T and T&E requirements, issues policy, regulations, and procedures governing S&T and T&E. Acts for CNO in resolving T&E requirements issues. Approves Test and Evaluation Strategies, Test and Evaluation Master Plans, and LFT&E Management Plans on behalf of the CNO.
- **N842** - **T&E Division of N84**. Coordinates warfare T&E programs, C4I/AIS T&E programs, and T&E Modeling and Simulation.
- **N89** - **Special Access Programs Coordinator**. Responsible for management of the DON Special Access Program (SAP) Central Office.
- **N2/N6** - **Deputy CNO for Information Dominance**. Responsible for functional integration of intelligence, information warfare, information/network management, oceanography, and geospatial information. Coordinates resource investments to deliver information-centric capabilities and competitive advantages.
- **N2/6F** - **Director, Concepts, Strategies, and Integration**. Serves as the Warfare Integration Directorate (resource sponsor) validating requirements and provisioning program of record systems across Navy equities in Communications and Networks (F1), ISR Capabilities (F2), Electronic and Cyber Warfare (F3), and Decision Superiority (F4).
- **N9** - **Deputy CNO for Warfare Systems**. Responsible for optimizing Navy investments through centralized coordination of Navy warfighting and warfighting support analysis and assessments, Navy capability development and integration, joint and Navy requirements development, and resources programming.
- **N9I** – Responsible for warfare integration of the systems provided by N9 and N2/N6 resource sponsors.
- **N95** - Resource sponsor for naval expeditionary warfare missions and programs. Mission areas include AMW, mine warfare, naval special warfare, expeditionary

warfare (Explosive Ordnance Disposal (EOD), and maritime expeditionary security force/naval coastal warfare).

- **N96** - Resource sponsor for surface combatants and command ships. Readiness, safety, survivability, training, and preparation for war for above surface forces.
- **N97** - Resource sponsor for submarines, deep submergence systems, and undersea surveillance systems and preparation for war for below surface forces.
- **N98** - Resource sponsor for aircraft carriers, specific aviation type ships, and naval aircraft, and preparation for war for naval air forces.
- **N99** – Unmanned

D-7.8 Expeditionary Warfare Development Center (EXWDC)

EXWDC is a warfighting development center under the administrative control of Commander, Naval Expeditionary Command. EXWDC provides training and subject matter expertise for anti-terrorism/force protection, CON, expeditionary warfare, and irregular warfare.

APPENDIX E - ELECTRONIC MANAGEMENT SYSTEMS

(Rev 4, July 2016)

E-1 INTRODUCTION

This appendix provides an overview of the Test and Evaluation Program System (TEPS) and also discusses the shared drives and archiving of test documents.

E-2 TEPS

E-2.1

TEPS is a module within the COMOPTEVFOR Knowledge Management System (KMS) on the unclassified LAN. (https://kms.cotf.navy.mil/home_auth/home.home_mis.home_main). TEPS is a Web-based management tool designed to assist the OTD/OTC in the tracking and administration of projects, Fleet services scheduling, and activity reports. Access to the TEPS database is limited to members of OPTEVFOR. When a TEIN assignment letter is received from OPNAV (N842), the new TEIN is entered in the TEPS database (see 01A1) and the appropriate OPTEVFOR OTD desk code is assigned. TEPS TEIN assignments are coordinated via the 01A deputy. When required, a temporary local TEIN (3000-XXX) series may be assigned to programs that have not yet been assigned a formal TEIN by N842. TEIN (4000-XXX) and (5000-XXX) series are assigned for training and JCTDs, respectively. The TEPS User Guide is available for review on the Y: drive as needed.

E-2.1.1 TEPS Requirements

E-2.1.1.1 Key Data Fields

Data fields that must be filled in prior to saving a project or phase page are marked with a red asterisk. Table E-1 lists additional key data fields that are critical to program management and require OTD/OTC focus.

Table E-1. Critical TEPS Fields

Data Field	Field Location	Comment
Short Title	Project Main	Programs may have multiple short titles. Include common abbreviations to assist the search for programs when the TEIN is unknown.
Status	Project Main	**1.** "OPEN" - OPTEVFOR is expending resources (funding, OTD time attending meetings, etc.). **2.** "OPEN NO OT" - No involvement from OPTEVFOR is anticipated (program is fielded with no planned improvements). **3.** "REC CNX" - Program has been or is being removed from the Fleet.
Test Status	Phase Main	The KMS Test Plan and Final Report Trackers check this field. Select from the following: COMP = End of Test message sent—all data received. DEFICIENT = Test not started due to programmatic issues. FUTURE = Phase of test beyond the next phase. INCOMP = Test event was attempted, but results were incomplete and another attempt for this phase is planned. INTEST = Start of test message has been released. NA = This field not applicable for test phase. NEXT = Next phase of testing planned. CNX = Phase was cancelled. Selecting "CNX" removes the phase from all trackers. Enter CNX (must have TEIN CNX letter)
Est. Start Date	Phase Main	The KMS Test Plan Trackers are based on this date.
Start Date	Phase Main	The date actual testing began. Should be the same as the start test message.
Last Test Event Dates Estimated Date	Phase Main	The date for the last planned test event for this phase (planned or estimated) to end.
Last Test Event Dates Actual Date	Phase Main	The actual end date for the last planned test event for this phase testing, regardless of data collection or data analysis. Last event used to gather data for this phase of test.
End Date	Phase Main	The date testing ended (to include data collection). The KMS Final Report Trackers are based on this date. Should be the same as the end of test message.
Est. End Date	Phase Main	The KMS Final Report Trackers use this date when End Date has not been

Table E-1. Critical TEPS Fields		
Data Field	**Field Location**	**Comment**
		filled in.
Test Result Code	Phase Main	After the final report is signed, select the appropriate option from the pull-down menu. Contact 01A1 in cases where the option is not clear.
Recommend Code	Phase Main	After the final report is signed, select the appropriate option from the pull-down menu.
Project COIs	Project COI	Ensure all COIs have been entered.
Phase COIs	Phase COI	Ensure all COIs for the phase appear. After the final report is signed, edit each COI to update the assessment or resolution, as appropriate. For RED or UNSAT COIs, a remark may be added to clarify the deficiency.
Major Deficiencies	Phase COI Edit for IOT&E and FOT&E Phases	After the final report is signed, select the appropriate number of major deficiencies associated with each COI.
Final Report	Phase Documentation Final Report Edit	The KMS Final Report Trackers look for a completion date. For phases that do not have final report, use the "NA" status to remove the phase from the Final Report Trackers. Enter the date in the "Doc Provided to Editors/Vault" box. This alerts 01A to upload report to eKM. Upon completion of upload to eKM, 01A will enter "yes" in the "01A Uploaded Document" box. This removes the document from the tracker.
TP SIG COMOPTEVFOR and TP SIG DOT&E	Phase Documentation TP SIG COTF and DOT&E Edit	The KMS Test Plan Trackers look for a completion date. For phases that do not have test plans, use the "NA" status to remove the phase from the Test Plan Trackers. TP SIG DOT&E is only required for DOT&E oversight programs. Enter the date in the "Doc Provided to Editors/Vault" box. This alerts 01A to upload the Test Plan to eKM. Upon completion of upload, 01A will enter "yes" in the "01A Upload Document" box. For non-oversight test plans, this removes the document from the tracker. For oversight test plans, the "Complete Date" must be entered in the "TP Sig DOT&E" box before the document comes off of the tracker.

E-2.1.1.2 Shared Drives

E-2.1.1.2.1

The K: drives on the unclassified and classified LANs are shared drives that support access to and storage of T&E documents. The drives are organized by division, each division is organized by section, and each section is organized by office code. While each division may set its own requirements, at a minimum, the K: drive folders for individual programs should be structured with the following guidelines.

E-2.1.1.2.2 Program Folder

Program folders should be named with the TEIN and short name (e.g., K:\40\41\0371-03 CBASS). Each program folder should have subfolders for the following, as required:

- Each phase of test,
- Requirements documents,
- Framework,
- Funding,

- TEMP.

E-2.1.1.2.3 Phase of Test

Within program folders, each phase of test should have its own folder using the name of the phase (e.g., K:\50\54\541\0201-08 EA-18G\OT-B1. Each phase of test should have folders for the following documents:

- Briefs,
- Messages,
- Final report,
- Test plan.

E-2.1.1.2.4 Documents

Test documents are built and stored in the K: drive document folders until they are finally signed. Once signed, most of these documents are archived elsewhere. However, as discussed below, there are certain documents that are not archived elsewhere, and therefore should be retained in the K: drive document folders.

E-2.1.1.3 Archiving of Documents

Per SOP 14-1 (Processing and Handling of Signed Test Documents), the primary means of archiving signed test plans, final reports, and IEFs is the Enterprise Knowledge Managemetn (eKM) site. These documents are also archived in the Y:\00\Signed Test Documents folders on NIPR and SIPR. TEPS can also be used to archive documents, but only those that are unclassified. Within TEPS, uploading documents is done in either Project Documentation or Phase Documentation, depending on the document. Finally, the division's K: drive folders may be used to archive test documents.

E-2.1.1.3.1.1 eKM Archiving

The eKM holds only test plans, final reports, and IEFs.

E-2.1.1.3.1.2 Y:\00 Signed Test Documents Archiving

In addition to test plans, final reports, and IEFs, the Y:\00 Signed Test Documents folders hold M&S accreditation letters and TEMPs.

E-2.1.1.3.1.3 TEPS Archiving

TEPS can upload any unclassified document, and may be used to archive douments not stored in eKM or the Y-drive, to include:

- TEMP comment letter,
- Deficiency report message,
- Anomaly report message,
- MOAs,
- OT commencement message (start test message),

- OT completion message (end of test message),
- Requirements documents (ICD, CDD, CPD, ORD, etc.).

E-2.1.1.3.1.4 K: Drive Archiving

The K: drive is the only place for archiving of certain classified documents which are not posted to eKM or the Y: drive, and cannot be stored on TEPS due to classification. This includes the following classified documents:

- TEMP comment letter,
- Deficiency report message,
- Anomaly report message,
- MOAs,
- OT commencement message (start test message),
- OT completion message (end of test message),
- Requirements documents (ICD, CDD, CPD, ORD, etc.).

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APPENDIX F - SQUADRON AND HQ TEST COORDINATION AND DOCUMENT STAFFING

(Rev 1, Apr 2016)

F-1 PURPOSE

The goal of this procedure is to ensure effective coordination between COMOPTEVFOR HQ and OT squadrons, and efficient routing of VX/VMX/HMX squadron documents during test planning, test execution and final report development.

F-2 OVERVIEW

Communication and coordination between COMOPTEVFOR HQ elements (50 Division, 01B, and 01C) and the VX/VMX/HMX squadrons for all OT-related products is required from cradle to grave. Regardless of supported and supporting relationships, coordination is critical to ensure all aspects of OT (to include targets, Fleet schedules, ranges, etc.) are planned and available for test execution. Coordination must be early and continuous to ensure transparency across the command and with external stakeholders. While each program is unique, the following is the general coordination guidance for each product:

- IEF: 50A/B/OTC coordinates with DOT&E/Sponsor/PM.
- TEMP: 50A/B/OTC coordinates with DOT&E/Sponsor/PM.
- Test Plan:
  - Squadron coordinates with Sponsor/PM.
  - 50A/B/OTC coordinates with DOT&E.
- Report:
  - Squadron coordinates with Sponsor/PM.
  - 50A/B/OTC coordinates with DOT&E.

The supported/supporting relationship between the OT squadrons and COMOPTEVFOR HQ is based on the document in development. For IEF, M&S Accreditation and TEMP development, COMOPTEVFOR (50 division) is supported and the OT squadrons are supporting. For Test Plan/DCP and Final Report development, the OT squadrons are supported and COMOPTEVFOR (50 and 01C) is supporting.

F-3 ROLES AND RESPONSIBILITIES

F-3.1 OTD

The OTD's primary responsibility is to ensure all necessary operational and T&E expertise are engaged, and sufficient statistical and analytical rigor is employed to conduct a thorough test and to produce a clear and accurate test report. The OTD is the squadron's Subject Matter Expert (SME) for his program(s). The OTD is responsible to the squadron Commanding Officer (CO) for the substance of all test plans and test reports. The OTD is responsible for the proper management of all program funds, and for all phases of test planning, approval, execution, analysis, and

reporting. The OTD is accountable for communicating with the program offices and other external agencies, as appropriate. OTDs may be assigned a variety of support staff, including military or government civilian assistant OTDs or contracted support, as needed.

F-3.2 OTC

The OTC is a position assigned in the Air Warfare Division (50). The OTC coordinates the efforts between the OTD, who is located in the squadron, and the division Section Head, DACOS, and ACOS in 50 Division, as well as any other COMOPTEVFOR HQ entities that support the OT squadrons (01A/B/C/D, Comptroller, etc.). The OTC is the COMOPTEVFOR HQ SME for his programs and is responsible to the ACOS for the substance of all test documentation and situational awareness of SUT performance/issues during test planning through reporting. Unique to the OTD/OTC relationship, the OTC has the following responsibilities:

- Manage all interaction with DOT&E in coordination with the OTD.
- Coordinate all program funding with the program office to ensure that the OTD has adequate funding to execute test.
- Submit official Fleet resource requirements in support of test execution.
- Coordinate and schedule all COMOPTEVFOR HQ briefs and DOT&E briefs that require squadron support.
- Provide consolidated COMOPTEVFOR HQ Comment Resolution Matrix (CRM) to OTD following HQ review of squadron created documents.
- Produce Start Test and End Test messages based on OTD input.
- Support the squadron in staffing squadron documents through COMOPTEVFOR HQ
- Maintain awareness of all aspects of SUT performance/program status during test execution.

F-3.3 01C Action Officer (AO)

01C Test Planning and Analysis is responsible for the analytical rigor applied to all test planning documents and reports across the Force. It supports the development of all test plans, reports, and supporting modeling and simulation documents. The 01C AO supporting the squadrons is the process SME for test planning, execution, and report writing.

F-3.4 50 Division ACOS

The 50 Division ACOS is responsible for being the primary interface with 0-6 PMs during IEF and TEMP development and, during all phases of program development, with DOT&E Deputy Directors and AOs. The ACOS/DACOS ensure that all Division products are ready for Flag-level review and/or signature. The ACOS ensures COMOPTEVFOR representation at high-visibility test events and at all Operational Test Readiness Reviews (OTRR)/mission control panels, Working Integrated Product Team (WIPT) executive level meetings, and DOT&E Concept of Test Briefs.

F-3.5 Squadron CO

The squadron CO is responsible for primary interface with O-6 PMs during Test Execution. The squadron CO/COTD/ACOTD ensure that all squadron products (Test Plans and Final Reports) are ready for Flag-level review. The squadron CO may represent COMOPTEVFOR at high-visibility test events and OTRR/mission control panels, WIPT executive level meetings, and DOT&E concept of test briefs.

F-4 DOCUMENT DEVELOPMENT AND STAFFING

F-4.1 IEF

50 Division owns; OTC initiates; OTD SME supports; Squadron CO/COTD/ACOTD involvement; review and concurrence achieved through the E-IPR process; 50 Division writes/staffs, gets 00 approval.

F-4.2 TEMP Inputs

50 Division owns; OTC initiates; OTD/ACOTD support for resources; Squadron CO visibility during O-6 review to ensure adequacy of resources; 50 Division writes/staffs, gets 00 approval.

F-4.3 Test Plan

- For oversight EOA/OA/QRA/IOT&E/VCD/FOT&E test plans and IT DCPs: Squadron owns; OTD initiates; OTC/01C/D supports; Squadron creates/edits; CO-approved draft Word version sent to OTC for routing (for HMX-1/VMX-1 Word version editors included in staffing process).
- For non-oversight EOA/OA/QRA/IOT&E/VCD/FOT&E test plans and IT DCPs which are released at the O-6 level: letterhead is required, therefore, 50A will review post squadron CO and release. 50A will inform 00/00D of impending approval of non-oversight test plans and will provide them for 00/00D review if directed.
- Details of OTC/01C supporting role: During test plan development, when squadron is ready for COMOPTEVFOR review (prior to squadron CO approval), OTD will send copy of document to OTC who will forward to 01B/C/D. OTC and 01B will review document for adherence to IEF test design. OTC and 01C will review for format, adequacy of data collection and analysis plan, and adherence to approved test planning and execution processes. OTC and 01B/CD will review comments together and OTC will provide a consolidated CRM to OTD for further TP development and staffing through the squadron CO.
- When CO-approved document has been reviewed by COMOPTEVFOR HQ front office, OTC will incorporate comments into CRM for correction to document. OTD will adjudicate CRM and return updated document and adjudicated CRM to OTC for staffing to front office.

F-4.4 Reports

- Includes DT assist LOO, EOA/OA/IOT&E/VCD/FOT&E reports, MUA reports, and QRA reports. Squadron owns; OTD initiates; OTC/01C/D supports; Squadron creates/edits; 50A/B Code involvement during AWG, SERB and ESERB; CO-approved draft Word version sent to OTC for routing (for HMX-1/VMX-1 word

version editors included in staffing process). For DT assist LOO requiring COMOPTEVFOR letterhead: Squadron will e-mail final product to 50 Division as a Word document to print on letterhead and acquire approval signature. 50A will inform 00/00D of impending approval of LOOs and will provide them for 00/00D review if directed.

F-4.4.1 Details of OTC/01C Supporting Role

- In preparation for AWG, OTD will provide draft data appendix to OTC/01C. 01C reviews and provides CRM to OTC.
- In preparation for SERB, OTD will provide draft B/G sheets and COI results paragraphs to OTC/01C. OTC will review documents for content. 01C will review for format and adherence to approved test reporting policies. OTC and 01C will review comments together and OTC will provide a consolidated CRM to OTD for incorporation/adjudication prior to SERB.

F-4.4.2

When CO-approved Final Report has been reviewed by COMOPTEVFOR HQ front office, OTC will incorporate comments into CRM for correction to document and send to squadron. OTD will adjudicate CRM and return updated document and adjudicated CRM to OTC for staffing to front office.

F-4.5 Modeling and Simulation Documents

Includes M&S Requirements Letter, M&S Accreditation Plan, and M&S Accreditation report. 50 Division owns; OTC initiates; OTD/COTD/ACOTD supports. 50 division writes/staffs, gets 00 approval.

F-4.6 Other Communication

All communication between COMOPTEVFOR HQ and squadron during document development must include all three stakeholders to maintain situational awareness (OTD, OTC and 01C).

F-4.7 CRM

All COMOPTEVFOR HQ CRMs, with squadron adjudication included, will be routed with final document.

APPENDIX G - GLOSSARY

(Rev 4, Jan 2016)

Acquisition Category (ACAT). Categories established to facilitate decentralized decision making and execution and compliance with statutorily imposed requirements. The categories determine the level of review, decision authority, and applicable procedures. ACAT I, ACAT II, ACAT III, and IV (ACAT IV is USN and USMC only)

Acquisition Program Baseline (APB). The PM initially develops the APB as a concept baseline for the Milestone A (MS-A) decision point. A development baseline and a production baseline are prepared for MS-B and -C. These baselines capture the threshold and objective values for the minimum number of cost, schedule, and performance attributes (called "key performance parameters") that describe the program over its life cycle. (CJCSM 3170.01C)

Adjunct Tester. A person, not normally assigned to COTF, who is appointed by COTF to assist in test execution and/or data collection for a particular phase of test. Each adjunct tester will be required to execute the COMOPTEVFOR Adjunct Tester Form. The template is found with Test Plan templates.

Advanced Concept Technology Demonstration (ACTD). An ACTD (formerly a Joint Concept of Technology Demonstration (JCTD)) is a demonstration of the military utility of a significant new technology and an assessment to clearly establish operational utility and system integrity. (CJCSI 3170.01G)

Advisory and Assistance Services. Technical support provided under contract by nongovernmental sources, with outputs that take the form of information, advice, opinions, alternatives, analyses, evaluations, recommendations, and training. (FAR 37.104)

Analytical Support. Support provided via military or civilian analysts, Navy laboratory or defense contractors to assist force personnel in data collection, reduction, and analysis in support of OT&E.

Analysis. A verification method involving the use of recognized analytic techniques (including computer models) to interpret or explain the behavior/performance of the system element. Analysis of test data or review and analysis of design data should be used as appropriate to verify requirements (Defense Acquisition Guidebook). See Verification.

Analysis of Alternatives (AOA). The evaluation of the performance, operational effectiveness, operational suitability, and estimated costs of alternative systems to meet a mission capability. The AoA assesses the advantages and disadvantages of alternatives being considered to satisfy capabilities, including the sensitivity of each alternative to possible changes in key assumptions or variables. The AoA is one of the

key inputs to defining the system capabilities in the capability development document. (CJCSM 3170.01C)

Application Software. Consists of the computer program, firmware, and associated data that implement the operational capabilities required for tactical weapon system employment; e.g., target tracking, navigation, avionics programs, and Built-In Test (BIT). A software change required because of changed system performance requirements or new or redesigned hardware shall be termed application vice support software.

Attribute. A quantitative or qualitative characteristic of an element or its actions. (CJCSM 3170.01C) For purposes of OT, "element," refers to the system under test.

Availability. A measure of the degree to which an item is in an operable and committable state at an unknown (random) point in time. (DAU Glossary) In OT&E, Operational Availability (A_o) is the usual measure. (See Operational Availability.)

Board of Inspection and Survey (INSURV) Responsibilities. INSURV is tasked with certain responsibilities relating to RDT&E and the acquisition process. When tasked by CNO, PRESINSURV will submit an individual technical assessment of readiness for OT&E to CNO and COMOPTEVFOR for all ships, craft, or ship installations at the ACAT I and II levels.

Capability Development Document (CDD). A document that captures the information necessary to develop a proposed program(s), normally using an evolutionary acquisition strategy. The CDD outlines an affordable increment of militarily useful, logistically supportable, and technically mature capability. The CDD supports a Milestone B decision review. The CDD format is contained in CJCSM 3170.01C. (DoD 5000.2 and CJCSI 3170.01G)

Capability Production Document (CPD). A document that addresses the production elements specific to a single increment of an acquisition program. The CPD defines an increment of militarily useful, logistically supportable, and technically mature capability that is ready for a production decision. The CPD must be validated and approved prior to a Milestone C decision review. The CPD format is in the JCIDS Manual, CJCSM 3170.01C. (DoD 5000.02 and CJCSI 3170.01G) OT&E shall determine the operational effectiveness and suitability of a system under realistic operational conditions, including combat; determine if thresholds in the approved CPD and COIs have been satisfied; and assess impacts to combat operations.

Capstone Test and Evaluation Master Plan (CTEMP). A TEMP which addresses the testing and evaluation of a defense system consisting of a collection of individual systems which function collectively to achieve the objectives of the defense system. Individual system-unique content requirements are addressed in an annex to the basic CTEMP. (DAU Glossary)

Combined Developmental Testing (DT) and OT. Used to save time and reduce costs; must be configured to meet operational capabilities/functions and developmental test objectives; must be covered by an MOA; and must be followed by an appropriate

final period of testing which will emphasize appropriate separate OT before a MS-C decision.

Commercial Off-the-Shelf (COTS) Items. Use of COTS items offers significant opportunities for reduced development time, faster insertion of new technology, and lower life-cycle costs, owing to a more robust industrial base.

COMOPTEVFOR. Commander, Operational and Test Evaluation Force. This acronym should be used to represent the Commander. (Note: The acronym OPTEVFOR should be used in reference to COMOPTEVFOR's staff.)

Compatibility. The capability of two or more items or components of equipment or material to exist or function in the same system or environment without mutual interference. (DAU Glossary) Compatibility includes physical, functional, electrical and electronic, and environmental issues.

Computer Resources. The totality of computer hardware, firmware, software, personnel, documentation, supplies, services, and support services applied to a given effort.

Computer Software (or Software). A combination of associated computer instructions and computer data definitions required to enable the computer hardware to perform computational or control functions.

Computer Software Documentation. Technical data or information, including computer listings and printouts, which documents the requirements, design, or details of computer software; explains the capabilities and limitations of the software; or provides operation instructions for using or supporting computer software during the software's operational life.

Concurrent Testing. A form of combined DT/OT in which test events are generally broken into separate DT and OT events. Concurrent testing consists of DT and OT testers on a ship, conducting separate and distinct test scenarios, some for DT, some for OT.

Condition. Variables of the environment that affect the performance of subtasks in the context of the assigned mission. They are categorized by conditions of the physical environment (e.g., sea state, terrain, or weather), military environment (e.g., forces assigned, threat, command relationships), and civil environment (e.g., political, cultural, and economic factors). (OPNAVINST 3500.38B)

Contracting Officer Technical Representative (COTR). Personnel nominated by COMOPTEVFOR and appointed in writing by the contracting officer and designated in the contract, who provide technical direction/clarification and guidance with respect to the contract specifications or SOW. The term COR is now used interchangeably with COTR.

Criteria. The element of a standard that defines acceptable levels of performance. (OPNAVINST 3500.38B)

Critical Intelligence Parameters (CIP). CIPs are those key performance thresholds of foreign threat systems, which, if exceeded could compromise the mission effectiveness of the U.S. system in development. CIPs, and their accompanying production requirements, will be included in the System Threat Assessment Report (STAR) unless DIA's Acquisition Support Division in the Defense Warning Office (DWO-3), the Threat Steering Group, and the program office agree that CIPs are not required. If a CIP is breached, the responsible intelligence production center will notify the program office and DIA/DWO-3 per DIA Instruction 5000.002. DIA/DWO-3 will notify the appropriate organizations in the Office of the Secretary of Defense. (Defense Acquisition Guidebook) CIPs are expressed in terms of a potential adversary's quantity, type, force mix, and system capabilities for actual and projected specific threats.

Critical Operational Issues (COI). A key Operational Effectiveness (OE) and/or Operational Suitability (OS) issue (not a parameter, objective, or threshold) that must be examined in OT&E to determine the system's capability to perform its mission. A COI is normally phrased as a question that must be answered in order to properly evaluate OE or OS. (DAU Glossary)

Critical Safety Item. A part, assembly, installation or production system with one or more critical safety characteristics that, if missing or not conforming to the design data, quality requirements, or overhaul and maintenance documentation, would result in an unsafe condition.

Current Threat. The threat which has been fielded or is assessed to be currently available.

Cybersecurity. Prevention of damage to, protection of, and restoration of computers, electronic communications systems, electronic communications services, wire communication, and electronic communication, including information contained therein, to ensure its availability, integrity, authentication, confidentiality, and nonrepudiation.

Defense Acquisition Board (DAB). The senior DoD acquisition review board for ACAT 1D and selected ACAT IAM programs, chaired by the Under Secretary of Defense for Acquisition. The Vice Chairman of the Joint Chiefs of Staff is the Vice-Chair. Other members of the board are the Deputy Under Secretary of Defense for Acquisition; service acquisition executives of the Army, Navy, and Air Force; the Director of Defense Research and Engineering; the Assistant Secretary of Defense for Program Analysis and Evaluation; the Comptroller of the Department of Defense; the Director of Operational Test and Evaluation; the appropriate DAB Chair; and the Defense Acquisition Board Executive Secretary. Other persons may attend at the invitation of the chair. (See DoD Directive 5000.49, Defense Acquisition Board.)

Deferrals. The term "Deferrals" applies to a delay in testing requirements directed by the resource sponsor. A deferral moves a testing requirement from one test period to a

later period. Deferred items cannot be used in the analysis to resolve COIs; however, the OTA may comment on operational considerations in the appropriate sections of the test report. A deferral does not change the requirement to test a system capability, function, or mission, only the timeframe in which it is evaluated. Also see Waivers. (SECNAVINST 5000.2E)

Deficiency. Operational need minus existing and planned capability. The degree of inability to successfully accomplish one or more mission tasks or functions required to achieve mission or mission area objectives. Deficiencies might arise from changing mission objectives, opposing threat systems, changes in the environment, obsolescence, or depreciation in current military assets. (DAU Glossary)

Demonstration. A verification method involving the performance of operations at the system or system element level where visual observations are the primary means of verification. Demonstration is used when quantitative assurance is not required for verification of the requirements (Defense Acquisition Guidebook). See Verification.

Derived Measure. Any requirement not clearly stated in the system's capabilities document that is necessary for the effective delivery of the system under test capability as defined in the capabilities document, or are derived from:

1. Concept of Operation
2. Office of the Secretary of Defense/Joint Chiefs of Staff/Secretary of the Navy/Office of the Chief of Naval Operations instructions
3. Threat documents
4. System under test specifications
5. System Stakeholders agreed upon capability/function to be delivered (Navy Sponsor's intent for funded capability). (COMOPTEVFOR derived definition)

Developing Agency (DA). The agency or command responsible for system design and development, and accomplishment of DT&E to verify attainment of technical performance specifications and objectives. The DA is usually a SYSCOM/PEO. (DAU Glossary)

Developmental Test and Evaluation (DT&E). Any engineering-type test used to verify status of technical progress, verify that design risks are minimized, substantiate achievement of contract technical performance, and certify readiness for initial Operational Testing (OT). Development tests generally require instrumentation and measurements and are accomplished by engineers, technicians, or soldier operator-maintainer test personnel in a controlled environment to facilitate failure analysis. (DAU Glossary)

Direct Liaison Authorized (DIRLAUTH). That authority granted by a commander (any level) to a subordinate to directly consult or coordinate an action with a command or agency within or outside of the granting command. DIRLAUTH is more applicable to planning than operations and always carries with it the requirement of keeping the

commander granting DIRLAUTH informed. DIRLAUTH is a coordination relationship, not an authority through which command may be exercised.

Director, Operational Test and Evaluation (DOT&E). According to DoD Directive 5000.1, DOT&E is the principle advisor to the Secretary of Defense on DoD OT&E matters.

Discrepancy Reporting. The lead OT&E agency is responsible for ensuring a system is established to track discrepancies and to provide periodic status reports to participating OT&E agencies. Control of promulgation of such reports should be included in an MOA between the participating OT&E agencies. An example of another agency's reporting is the service reports that can be issued by any Air Force organization.

Documentation. Documents used to determine suitability, e.g., operator and maintenance instructions, repair parts lists, support manuals, and manuals related to computer programs and system software. (DAU Glossary)

DT Assist. Similar to an early phase of combined DT/OT, but with a predominantly DT flavor. OTDs take an active role in the DT effort. DT Assists are not assigned an OT number and are not a formal phase of OT. See paragraph C-6.3 for detailed information.

Early Operational Assessment (EOA). An Operational Assessment (OA) conducted early in an acquisition program (prior to, or in support of, MS-B), often on subsystems and early prototype equipment, to forecast and assess the risk to successful completion of the IOT&E. EOAs also assist in determining any system-unique test assets for future developmental and operational tests. (DAU Glossary) (See Operational Assessment.)

Evaluation Report. One of the two products of OT&E (the other product is the tactics guide).

Evolutionary Acquisition (EA). The preferred DoD strategy for rapid acquisition of mature technology for the user. An evolutionary approach delivers capability in increments, recognizing up front the need for future capability improvements. Each increment is a militarily useful and supportable operational capability that can be developed, produced, deployed, and sustained. Block upgrades, pre-planned product improvements, and similar efforts that provide a significant increase in operational capability and meet an acquisition category threshold as specified by DoDI 5000.02 are managed as separate increments. (DoDI 5000.02)

Examination. A verification method involving visual inspection of equipment and evaluation of drawings and other pertinent design data and processes should be used to verify conformance with characteristics such as physical, material, part, and product marking and workmanship (Defense Acquistion Guidebook). See Verification.

Exit Criteria. Program-specific accomplishments that must be satisfactorily demonstrated before a program can progress further in the current acquisition phase or

transition to the next acquisition phase. (DAU Glossary) Exit criteria may include such factors as critical test issues, the attainment of projected growth curves and baseline parameters, and the results of risk reduction efforts deemed critical to the decision to proceed further. Exit criteria supplement minimum required accomplishments and are specific to each acquisition phase.

Failure (Reliability). The malfunction or inoperable state of a previously operable system or part of a system; reliability failures exclude damage caused by careless or improper operation or operation outside the environment for which it was designed.

Fleet Operators. In the context of this manual, Fleet operators refers to Sailors, Marines, Soldiers, and/or Airmen, to include the U.S. Coast Guard.

Fleet-Releasable Software. Software for which OT&E results confirm that all significant design problems have been identified, that solutions to these problems are available, and that the software actually tested is effective and suitable for its intended use and meets operational requirements. This term is reserved for use by CNO following successful OT&E.

Fleet Services. These are used to plan and program not only Fleet support, but also financial support, ranges, targets, simulators, and other required support.

Follow-on Operational Test and Evaluation (FOT&E). The Test and Evaluation (T&E) that may be necessary after the Full Rate Production Decision Review (FRPDR) to refine the estimates made during Operational Test and Evaluation (OT&E), to evaluate changes, and to reevaluate the system to ensure that it continues to meet operational needs and retains its effectiveness in a new environment or against a new threat. (DAU Glossary)

Foreign Weapons Evaluation (FWE). FWE evaluates foreign weapons systems, equipment, and technologies that have the potential to satisfy a specific U.S. requirement. FWE applies to any system, subsystem, or component purchased from a friendly or neutral country which is available for procurement by the U.S.

Full Mission Capable (FMC). Material condition of any piece of military equipment, aircraft, or training device indicating that it can perform all of its missions. (JP 1-02)

Full Rate Production and Deployment (FRP&D). Continuation into full-rate production results from a successful Full-Rate Production (or Full Deployment) Decision Review by the MDA. The decision to proceed into Full-Rate Production will be documented in an acquisition decision memorandum (ADM). This effort delivers the fully funded quantity of systems and supporting materiel and services for the program or increment to the users. During this effort, units will typically attain Initial Operational Capability (IOC). As technology, software, and threats change, FOT&E shall be considered to assess current mission performance and inform operational users during the development of new capability requirements. (DoDI 5000.02)

Full Rate Production Decision (FRPD). The decision to enter into full rate production for the system.

Full Rate Production Decision Review (FRPDR). A review normally conducted at the conclusion of Low Rate Initial Production (LRIP) effort that authorizes entry into the Full Rate Production (FRP) and Deployment effort of the Production and Deployment phase of the Defense Acquisition Management Framework. (DAU Glossary)

Human Factors. A body of scientific facts about human characteristics. The term covers all biomedical and psychosocial considerations. It includes, but is not limited to, principles and applications in the areas of human engineering, personnel selection, training, life support, job performance aids, and human performance evaluations (DoD 5000.2). OT includes examination of those elements of system operation and maintenance which influence the efficiency with which people can use systems to accomplish the operational mission of the system (e.g., arrangement of controls and displays), the work environment (e.g., room layout, noise level, temperature, lighting, etc.), the task (e.g., length and complexity of operating procedures), and personnel (e.g., capabilities of operators and maintainers).

Human Factors Engineering. The systematic application of relevant information about human abilities, characteristics, behavior, motivation, and performance to provide for effective human-machine interfaces and to meet Human System Integration (HSI) requirements. Where practicable and cost effective, system designs should minimize or eliminate system characteristics that require excessive cognitive, physical, or sensory skills; entail extensive training or workload-intensive tasks; result in mission-critical errors; or produce safety or health hazards. (DoDI 5000.02)

Incremental Development. In this process, a desired capability is identified, an end-state requirement is known, and that requirement is met over time by developing several increments, each dependent on available mature technology. Incremental development relies heavily on prototyping, both physical and functional, to get stakeholder feedback and reduce risk. See Evolutionary Acquisition. (DAU Glossary and Defense Acquisition Guidebook)

Initial Capability Technical Baseline. This is a multi-tier product providing the following:

- ICTB 1 – Describes a CONEMP designed to provide an effect described in an MTB.
- ICTB 2 – Defines the SYSCOM contributions to the scenario detailed in ICTB 1.
- ICTB 3 – Links system/platform specific requirements to the SOS mission level capabilities in ICTB 2. The ICTB 3 integrated architecture describes the technical approaches and agreements made between individual programs.

Initial Capabilities Document (ICD). Representatives from multiple DoD communities shall assist in formulating broad, time-phased, operational goals, and describing requisite capabilities in the ICD. Programs that enter the acquisition process at MS-B shall have an ICD that provides the context in which the capability was determined and approved, and a CDD that describes specific program requirements. Projects that

undergo a MS-A decision shall have a T&E strategy that primarily addresses M&S, including identifying and managing the associated risk, and that evaluates system concepts against mission requirements. Pre-MS-A projects shall rely on the ICD as the basis for the evaluation strategy.

Initial Operational Capability (IOC). The first attainment of the capability to employ, effectively, a weapon, item of equipment, or system of approved specific characteristics, that is manned or operated by an adequately trained, equipped, and supported military unit or force. (JP 1-02)

Initial Operational Test and Evaluation (IOT&E). Dedicated Operational Test and Evaluation (OT&E) conducted on production, or production representative articles, to determine whether systems are operationally effective and suitable to support a Full Rate Production (FRP) decision. (DAU Glossary)

Integrated Evaluation Framework. The IEF is the primary document for defining adequate OT, and for integrating the OT requirements with DT and CT requirements to form an IT matrix. It defines the OT objectives and the requirements for resolution of each COI, as well as the OTD's minimum IOT&E requirements.

Integrated Program Summary (IPS). A DoD component document prepared and submitted to the MDA in support of MS-A, -B, -C, and -D reviews. It concisely highlights the status of a program and its readiness to proceed into the next phase of the acquisition cycle.

Integrated Testing (IT). IT is the collaborative planning and collaborative execution of test phases and events to provide shared data in support of independent analysis, evaluation, and reporting by all stakeholders, particularly the developmental (both contractor and government) and operational test and evaluation communities. (OSD memo, dated 25 April 2008) IT is not an event or separate test phase, nor is it a new type of test. IT is a process intended to result in resource efficiencies (time, money, people, and assets) and an enhanced data set for separate evaluations. For example, the data from an IT could be used by the contractor for design improvements, by the developmental evaluators for risk assessments, and the operational evaluators for operational assessments. However, IT does not replace or eliminate the need for dedicated Initial Operational Test and Evaluation required by 10 USC 2399, "Operational Test and Evaluation of Defense Acquisition Programs" and DoD Instruction 5000.02. (Interim DAG Chapter 9)

Intelligence Production Requirement (IPR). An IPR may be initiated by a user whenever there is a perceived data gap. It may cover current, midterm, or long range intelligence requirements which cannot be wholly satisfied by the resources of the requester.

Interoperability. The ability of systems, units, or forces to provide data, information, materiel, and services to and accept the same from other systems, units, or forces and to use the data, information, materiel, and services so exchanged to enable them to

operate effectively together. National Security System (NSS) and Information Technology System (ITS) interoperability includes both the technical exchange of information and the operational effectiveness of that exchanged information as required for mission accomplishment. (CJCSI 6212.01F).

IT Integration. IT blends or combines contractor, developmental, and operational testing to form a cohesive testing continuum. This integration cannot occur unless the participants (CT, DT, and OT) have determined their entering requirements for adequate testing of the system under evaluation. IT does not remove or combine any of OPTEVFOR's current or future requirements for reporting based on a separate (OPTEVFOR) analysis of the shared test information produced by the IT effort.

Joint Interoperability. Joint Interoperability is an effectiveness measure that examines the use of systems which must exchange information or services with non-Navy systems and platforms; that is, Army or Air Force and in some cases, Marines or Coast Guard. For instance, in designing a test for a submarine antenna, the capability of the antenna to assist the platform in communicating with Army helicopters, USAF aircraft and satellites, and a Marine unit might need to be examined.

Joint Test and Evaluation (JT&E) Program. An OSD program that is structured to evaluate or provide information on system performance, technical concepts, system requirements or improvements, and system interoperability; to improve or develop test methodologies; or for force structure planning, doctrine or procedures.

Key Performance Parameters (KPP). Those system requirements designated by the resource sponsor as critical or essential to the development of an effective military capability and that make a significant contribution to the characteristics of the future joint force as defined in the Capstone Concept for Joint Operations. KPPs must be testable to enable feedback from test and evaluation efforts to the requirements process. KPPs are validated by the Joint Requirement Oversight Council (JROC) for JROC Interest documents, by the JCB for JCB Interest documents, and by the DOD component for Joint Integration, Joint Information, or Independent documents. CDD and CPD KPPs are included verbatim in the APB. (CJCSI 3170.01 series)

Key System Attributes (KSA). A system requirement considered crucial in support of achieving a balanced solution/approach to a KPP or some other key performance attribute deemed necessary by the sponsor. KSAs provide decision makers with an additional level of capability performance characteristics below the KPP level and require a sponsor 4-star, Defense agency commander or Principal Staff Assistant to change. (CJCSI 3170.01 series)

Land-Based Test Sites (LBTS). An LBTS is a facility that duplicates, simulates, or stimulates the employment of a system's planned operational installation and use for the purpose of conducting DT. (Navy) (DAU Glossary)

Lead Component/Service. The DoD Component responsible for management of a system acquisition involving two or more DoD Components in a joint program. (DAU Glossary)

Lethality. The probability that a weapon will destroy or neutralize a target. (DAU Glossary)

Level of Effort (LOE). Effort of a general or supportive nature which does not produce definite end products or results, i.e., contract for man-hours.

Level of Repair Analysis (LORA). A trade study conducted by a contractor as part of the system/equipment engineering analysis process. A basis on which to evolve an optimum approach to repair recommendations concurrent with the design and development process. Also referred to as Optimum Repair Level Analysis (ORLA) or Level of Repair Analysis (LOR/A). (DAU Glossary)

Life Cycle Costs (LCC). The total cost to the government of acquisition and ownership of that system over its useful life. It includes the cost of development, acquisition, operations, and support (to include manpower), and where applicable, disposal. For defense systems, LCC is also called Total Ownership Cost (TOC). (DAU Glossary)

Likert Scale. The most widely used scale in survey research. When responding to a Likert questionnaire item, respondents specify their level of agreement to a statement. Futher detail is provided in survey best practices.

Live-Fire Test and Evaluation (LFT&E). LFT is conducted to provide a timely and thorough assessment of the vulnerability and lethality of a conventional weapon or conventional weapon system as it progresses through its development and subsequent production phases. The primary emphasis of LFT is on realistic testing as a source of personnel casualty, vulnerability, and lethality information, taking into account the susceptibility to attack and combat performance of the system. LFT will include, when feasible, the firing of threat munitions (or surrogates) at operational, combat-loaded U.S. weapon systems to test their vulnerability; and/or the firing of U.S. munitions or missiles against operational, combat-loaded threat targets (or surrogates) to test the lethality of those munitions or missiles. (Derived from DAU Glossary)

Live-Fire Test and Evaluation Report.

1. Report prepared by the Director, Operational Test and Evaluation (DOT&E) on survivability and lethality testing. Submitted to the Congress for covered systems prior to the decision to proceed beyond Low Rate Initial Production (LRIP). Prepared within 45 days of receiving the Component LFT&E Report.
2. Report prepared by the Component on the results of survivability and lethality testing. (Defense Acquisition Guidebook)

Logistic Supportability. The degree of ease to which system design characteristics and planned logistics resources (including the Logistics Support (LS) elements) allow for the meeting of system availability and wartime usage requirements. (DAU Glossary)

Logistic Support (LS) Elements. A traditional group of items, that taken together constitutes LS. These include: maintenance planning; Manpower and Personnel (M&P); supply support; support equipment; Technical Data (TD); training and training support; computer resources support; facilities; Packaging, Handling, Storage, and Transportation (PHST); and, design interface. (DAU Glossary)

Low Rate Initial Production (LRIP). The first effort of the Production and Deployment (P&D) phase. This effort is intended to result in completion of manufacturing development in order to ensure adequate and efficient manufacturing capability and to produce the minimum quantity necessary to provide production or production-representative articles for IOT&E; establish an initial production base for the system; and permit an orderly increase in the production rate for the system, sufficient to lead to full-rate production upon successful completion of operational (and live-fire, where applicable) testing. (DoDI 5000.02 and DAG)

Maintainability. The ability of an item to be retained in, or restored to, a specified condition when maintenance is performed by personnel having specified skill levels, using prescribed procedures and resources, at each prescribed level of maintenance and repair. (DAU Glossary) MTFL, MCMTOMF, and Maintenance Ratio (MR) are frequently calculated in maintainability evaluations.

Major Deficiency. An operational mission failure or software fault (precludes successful completion of a mission and no acceptable work-around is known). If occurring in sufficient numbers during testing, can lead to an unresolved/split resolution or UNSAT resolution of a COI. Conversely, only one major deficiency occurring may not lower the result to below a stated threshold, meaning that the COI is still resolved as SAT.

Material Support Date (MSD). The date when all necessary supply support of the system or equipment is furnished. Supply support includes allowance quantities stocked in the supply system or furnished directly to the end-user.

Matrix. The arrangement of specific elements into rows and columns to indicate interdependence or correlation.

Mean Corrective Maintenance Time for Operational Mission Failures (MCMTOMF). Normally computed as part of Test S-2, MCMTOMF is the average time required to perform active corrective maintenance. Corrective maintenance is the time during which one or more personnel are repairing an operational mission failure and includes: preparation, fault location, part procurement from local (onboard) sources, fault correction, adjustment and calibration, and follow-up checkout times. It excludes off-board logistic delay time.

Mean Time to Fault Locate (MTFL). The total fault location time divided by the number of critical failures. Frequently computed as part of Test S-2, Maintainability.

Measure. The element of a standard that provides the basis for describing varying levels of task performance.

Measure of Effectiveness (MOE). The data used to measure the military effect (mission accomplishment) that comes from the use of the system in its expected environment. That environment includes theSUT and all interrelated systems, that is, the planned or expected environment in terms of weapons, sensors, Command and Control (C2), and platforms, as appropriate, needed to accomplish an end-to-end mission in combat. (DAU Glossary) In MBTD, MOEs are measures traced to effectiveness COIs or subtasks of effectiveness COIs.

Measure of Suitability (MOS). Measure of an item's capability to be supported in its intended operational environment. MOSs typically relate to readiness or operational availability, and hence reliability, maintainability, and the item's support structure. (DAU Glossary) In MBTD, MOSs are measures traced to suitability COIs or subtasks of suitability COIs.

Milestone A Decision. The decision to establish a new acquisition program and establish a concept baseline containing initial program cost, schedule, and program objectives. Approves entry into the Technology Development (TD) phase of acquisition.

Milestone B Decision. The decision to begin the Engineering and Manufacturing Development (EMD) phase of acquisition.

Milestone C Decision. The decision to begin the Production and Deployment (P&D) phase of acquisition.

Militarily Useful Capability. A capability that achieves military objectives through operational effectiveness, suitability, and availability, which is interoperable with related systems and processes, transportable and sustainable when and where needed, and at costs known to be affordable over the long term. (CJCSM 3170.01C)

Minor Deficiency. A deficiency that affects system performance, but does not impact the ability to perform the mission. Usually requires only a minor workaround to continue testing.

Mission. The task, together with the purpose, that clearly indicates the action to be taken and the reason therefore. (JP 1-02)

Mission Analysis. The mission analysis is a combined effort between OPTEVFOR and the program representatives (T&E IPT), and should include other participants such as the Fleet Forces Command (N8) representative, and operational user representatives. Other SMEs may be included to ensure this evolution is completed correctly. These SMEs might include center of excellence representatives.

Mission-Based Test Design (MBTD). MBTD is COMOPTEVFOR's primary test planning methodology.

Mission Capability by Primary Mission Area (MC_{MA}). The percentage of time the test aircraft is capable of performing a specified mission.

Mission Critical System. A system whose Operational Effectiveness (OE) and Operational Suitability (OS) are essential to successful completion or to aggregate residual combat capability. If this system fails, the mission likely will not be completed. Such a system can be an auxiliary or supporting system, as well as a primary mission system. (DAU Glossary)

Mission Need Statement (MNS). A statement of operational capability required to perform an assigned mission or to correct a deficiency in existing capability to perform the mission. (Replaced by the Initial Capabilities Document (ICD))

Mission Reliability. See Reliability.

Mission Technical Baseline (MTB). SYSCOMs develop and maintain these documents in coordination with Fleet Forces, OPNAV, and COMOPTEVFOR. MTBs consist of a scenario summary, commander's intent, tactical situation with associated targets, desired effects, controlling threat baseline, integrated architecture, and requirements document.

Model. A model is a representation of an actual or conceptual system that involves mathematics, logical expressions, or computer simulations that can be used to predict how the system might perform or survive under various conditions or in a range of hostile environments.

Modeling and Simulation (M&S). DoD directives encourage the use of M&S to assist in projecting operational effectiveness and operational suitability prior to MS-B, but limit its use in subsequent OT&E to that of supplementing OT&E test data. Because of the increased emphasis on the use of simulation in early OT&E, the OTD must give careful consideration to requirements for the use of threat simulation.

Multiservice T&E. T&E conducted by two or more DoD Components for systems to be acquired by more than one DoD Component, or for a DoD Component's systems that have interfaces with equipment of another DoD Component. (DAU Glossary)

NATO Comparative Test Program (CTP). NATO CTPs evaluate foreign weapons systems, equipment, and technologies that have the potential to satisfy a specific U.S. requirement. NATO CTP applies only to items of NATO origin. (See Foreign Comparative Testing (FCT) (DAU Glossary)

Net-Ready Key Performance Parameter (NR-KPP). The NR-KPP assesses information needs, information timeliness, cybersecurity, and net-ready attributes required for both the technical exchange of information and the end-to-end operational effectiveness of that exchange. The NR-KPP consists of measurable and testable characteristics and/or performance metrics required for the timely, accurate, and complete exchange and use of information to satisfy information needs for a given capability. The NR-KPP is comprised of the following attributes:

1. IT must be able to support military operations.
2. IT must be able to be entered and managed on the network.

3. IT must effectively exchange information.

(See CJCSM 3170.01C and CJCSI 6212.01F for amplifying information)

Nondevelopmental Item (NDI).

1. Any previously developed item of supply used exclusively for government purposes by a Federal Agency, a State or local government, or a foreign government with which the United States has a mutual defense cooperation agreement.
2. Any item described in paragraph 1 that requires only minor modifications or modifications of the type customarily available in the commercial marketplace in order to meet the requirements of the procuring department or agency.
3. Any item of supply being produced that does not meet the requirements of paragraphs 1 or 2 solely because the item is not yet in use. (FAR 2.101) See Commercial Off-the-Shelf (COTS).

Notice of Intent (NOI). An NOI reserves a submerged operating area and establishes procedures that will minimize mutual interference between submerged submarines, and between submarines and other operations, such as surface shipsn, using variable depth sonar or dropping of explosive ordnance. (COMSECONDFLT OPORD 2000)

Operational Assessment (OA). A risk assessment for successful completion of IOT&E made by an independent operational test activity, with user support as required, on other than production systems. An OA is a test event that is conducted before initial production units are available and which incorporates substantial operational realism. The focus of an OA is on significant trends noted in development efforts, programmatic voids, areas of risk, adequacy of requirements, and the capability of the program to support adequate OT. An OA is conducted when there is enough system maturity to conduct an operational test and may use technology demonstrators, prototypes, or Engineering Development Models, if those articles can be placed in an operational context and risk to IOT&E can be adequately assessed. An OA will not substitute for the IOT&E necessary to support Full Rate Production (FRP) decisions. Normally conducted prior to, or in support of, Milestone C.

Operational Availability (A_o). (See Availability for basic definition.) A_o is computed and reported as follows:

- For continuous-use system, operational availability shall be designated A_o and shall be determined as the ratio of system "uptime" to system "uptime plus downtime."
- For "on-demand" systems, operational availability shall be designated A_{od} and shall be determined as the ratio of the "number of times the system was available to perform as required" to the "total number of times its performance was required." (Note: "Total number of times its performance was required" shall be the number of times attempted and the number of times it was operationally demanded, but not attempted because the system was known to be inoperable.)

Operational Consideration (OPCON). A type of OT deficiency or issue used in OT reports to document tactical considerations which inform operational commanders of significant aspects (pro and con) of system employment, or make clear what special measures would be required to make the system more efficient in battle.

Operational Effectiveness. The overall degree of mission accomplishment of a system when used by representative personnel in the environment planned, or expected (e.g., natural, electronic, threat etc.), for operational employment of the system, considering organization, doctrine, tactics, supportability, survivability, vulnerability, and threat (including countermeasures, initial nuclear weapons effects, and NBCC threats). (DAU Glossary and CJCSM 3170.01C)

Operational Evaluation (OPEVAL). Term formerly used for IOT&E. OPEVAL can be used as a generic term to refer to the conglomerate OT&E processes across an acquisition cycle.

Operational Mission Failure (Reliability). A hardware failure or software fault that precludes successful completion of a mission, and must be specifically defined for each system.

Operational Mission Software Fault (Reliability). A software fault that precludes successful completion of a mission, and must be specifically defined for each system.

Operational Requirements. User- or user representative-generated validated needs developed to address mission area deficiencies, evolving threats, emerging technologies, or weapon system cost improvements. Operational performance requirements from the Capability Development Document (CDD) and Capability Production Document (CPD) form the foundation for weapon system technical specifications and contract requirements. (DAU Glossary)

Operational Requirements Document (ORD). With the implementation of the JCIDS process (2003), the ORD was replaced by the CDD and CPD. Many acquisition programs are grandfathered and will continue to use an ORD for system requirements for OT&E.

Operational Suitability. The degree to which a system can be placed and sustained satisfactorily in field use with consideration being given to availability, compatibility, transportability, interoperability, reliability, wartime usage rates, maintainability, safety, human factors, habitability, manpower, logistics supportability, natural environmental effects and impacts, documentation, and training requirements. (CJCSM 3170.01C)

Operational Test and Evaluation (OT&E). The field test, under realistic conditions, of any item (or key component) of weapons, equipment, or munitions for the purpose of determining the effectiveness and suitability of the weapons, equipment, or munitions for use in combat by typical military users; and the evaluation of the results of such tests. (DAU Glossary)

Operational Utility Assessment (OUA) Report. The OUA report describes how a Joint Capability Technology Demonstration's (JCTD's) products affect the resolution of an Operational Problem (OP) and fulfill operational Desired Capabilities (DC). It declares the level of operational utility according to the Concept of Operations (CONOPs) and TTPs and provides post-JCTD transition, CONOPs and TTP and DOTMLPF recommendations. The OUA report and applicable Initial Capabilities Document (ICD) [if required in lieu of OUA Report] and /or Capability Development Document (CDD) are needed to meet the requirements of the Joint Staff JCIDS process. Referred to as a "Military Utility Assessment (MUA)" by the JCIDS Manual. See Military Utility Assessment (MUA). (DAU Glossary)

Operations Security (OPSEC). OPSEC, as it relates to COMOPTEVFOR testing, may be defined as the identification and protection of a broad spectrum of classified and open-source information that collectively reveals current and future U.S. military capabilities, plans, and operational procedures. In this respect, it encompasses and relates to other security programs such as signal security, physical security, automated data processing, and operational deception.

OTD Journal. The OTD journal records, for possible later use, data that the OTD hadn't considered when developing the data or survey sheets, and may be of significance in the program. While each OTD must use his own judgment when deciding what is significant, it is better to record too much data rather than too little. And, it is better to record it as soon as an event occurs, rather than to wait until later and risk forgetting.

Operational Test Readiness Review (OTRR). A multidisciplined product and process assessment to ensure that the production configuration system can proceed into Initial Operational Test and Evaluation (IOT&E) with a high probability of success. More than one OTRR may be conducted prior to IOT&E. (Defense Acquisition Guidebook)

OPTEVFOR. The acronym used in reference to COMOPTEVFOR's staff.

Program Executive Officer (PEO). A military or civilian official who has responsibility for directing several Major Defense Acquisition Programs (MDAPs) and for assigned major system and non-major system acquisition programs. A PEO normally has no other command or staff responsibilities within the Component, and only reports to and receives guidance and direction from the DoD CAE. (DAU Glossary)

Program Manager (PM). Designated individual (military or civilian) with responsibility for and authority to accomplish program objectives for development, production, and sustainment to meet the user's operational needs. The PM shall be accountable for credible cost, schedule, and performance reporting to the Milestone Decision Authority (MDA). (DoDD 5000.1)

Projected Threat. A best estimate based on historical trends data, evidence of continuing research and development, postulated military requirements, technological

capabilities, and the best intelligence available. This threat consists of the weapon systems and characteristics that an adversary can be expected to develop and deploy during the specified period. See System Threat Assessment Report (STAR).

Quick Reaction Assessment (QRA) (USN and USMC only). A QRA is a quick assessment that examines specific operational considerations and capabilities of a system. Used when operational necessity dictates deploying a rapid capability in the Fleet. A QRA will not be used to resolve COIs. (See SECNAV M-5000.2)

Reliability. The probability that a system will perform its required functions without failure (see failure) under stated conditions for a stated period of time. In OT&E, reliability is usually reported in one of two ways:

- Mission Reliability (R). For equipment operated only during a relatively short duration mission (as opposed to equipment operated more or less continuously), the probability of completing the mission without an operational mission failure.
- Mean Time Between Operational Mission Failures (MTBOMF). For more or less continuously operated equipment or systems. MTBOMF measures reliability as it relates to the overall mission of the equipment or system being tested and is the total operating time divided by the number of operational mission failures. MTBOMF is the figure used in the calculation of overall mission Reliability (R). MTBOMF is sometimes modified to Mean Flight Hours Between Operational Mission Failures (MFHBOMF).

Resource Sponsor. See Sponsor.

Research, Development, Test, and Evaluation (RDT&E). See NAVSO P-2457 (RDT&E Management Guide).

Research Laboratories. Laboratories available to provide analytical support to COMOPTEVFOR in the OT&E of assigned CNO projects.

Requirement (Military Requirement or Operational Requirement). An established need justifying the timely allocation of resources to achieve a capability to accomplish approved military objectives, missions, or tasks. (JP 1-02) The need or demand for personnel, equipment, facilities, other resources, or services, by specified quantities for specific periods of time or at a specified time. (DAU Glossary)

Risk. A measure of future uncertainties in achieving program performance goals and objectives within defined cost, schedule, and performance constraints. Risk can be associated with all aspects of a program (e.g., threat, technology, maturity, supplier capability, design maturation, performance against plan) as these aspects relate across the Work Breakdown Structure (WBS) and Integrated Master Schedule (IMS). Risks have three components: 1) A future root cause (yet to happen), which, if eliminated or corrected, would prevent a potential consequence from occurring, 2) A probability (or likelihood) assessed at the present time of that future root cause occurring, and 3) A

consequence (or effect) of that future occurrence. (Risk Management Guide for DoD Acquisition, Sixth Edition)

Risk Assessment Level of Test (RALOT). A tool to be used by the OTA in determining the scope of the OT required for supporting fielding decisions for existing systems (post IOT&E) that have been modified. See paragraph 6-7.

Risk Mitigation Plan. A document that records the results of Risk Mitigation Planning. It typically addresses topics such as descriptive title of the risks, date of the plan, points of contact for controlling identified root causes, options for mitigation, risk status, fallback approach, recommendations, approval levels, and resource requirements. (Risk Management Guide for DoD Acquisition, Sixth Edition)

Safety. Freedom from conditions that can cause death, injury, occupational illness, damage/loss of equipment or property, or damage to the environment. (DAU Glossary) The program's risk management activities, and organizational and cultural values dedicated to preventing injuries and accidental loss of human and materiel resources and to protecting the environment from the damaging effects of DOD mishaps. (CJCSM 3170.01C)

SECNAVINST 5000.2E. The fundamental Navy instruction on T&E.

Self-Defense Test Ship (SDTS). Realistic OT for softkill and short range hardkill self-defense weapon systems is often restricted by safety considerations that prohibit threat-representative target presentations for manned ships. For this reason, the former USS PAUL F FOSTER (DD 964) has been configured as an unmanned ship outfitted with current softkill and hardkill self-defense weapon systems for use by the DT and OT communities.

Severe Deficiency. A deficiency that prevents the accomplishment of a requirement designated as critical to achievement of a KPP and results in the inability to accomplish the mission. If a deficiency is determined to be severe, the affected COI should be resolved UNSAT for IOT&E and FOT&E.

Simulation. A method for implementing a model. It is the process of conducting experiments with a model for the purpose of understanding the behavior of the system modeled under selected conditions or of evaluating various strategies for the operation of the system within the limits imposed by developmental or operational criteria. Simulation may include the use of analog or digital devices, laboratory models, or test-bed sites. Simulations are usually programmed for solution on a computer; however, in the broadest sense, military exercises and war games are also simulations. (DAU Glossary)

Simulator. A generic term used to describe equipment used to represent weapon systems in DT, OT, and training, e.g., a threat simulator has one or more characteristics which, when detected by human senses or manmade sensors, provide the appearance of an actual threat weapon system with a prescribed degree of fidelity. (DAU Glossary)

Software Qualification Test (SQT). Post-MS-C software testing will be conducted by COMOPTEVFOR as SQT and is solely intended for a Fleet release recommendation. SQT applies to software modifications of limited scope, such as aircraft and weapons systems Operational Flight Programs (OFP) and other systems in which software provides a similar function.

Software Test. Software will be operationally tested in the system in which the application is installed or implemented when fielded. The software to be used for IOT&E and FOT&E will be the software intended for Fleet use.

Software Upgrade (U.S. Navy). Navy software upgrades (releases) fall into three categories: ***Major*** -- adds new functions or warfare capabilities, interfaces with a different weapon system, redesigns the software architecture, or rewrites the software in a different language (requires OT by OPTEVFOR); ***Minor*** -- changes that do not add any significant functions or interfaces as determined by CNO (OT by OPTEVFOR upon CNO approval); ***Maintenance*** -- releases that are fixes to minor problems (no testing by OPTEVFOR).

Specified Requirement. A system requirement that is clearly documented in the system's capabilities document(s) (Operational Requirements Document, Capabilities Development Document, Capabilities Production Document, Functional Requirements Document, etc.) and must be either:

1. A KPP, KSA, MOE, MOS, or other performance threshold (not objective), or
2. Any capability stated as a "shall" or "will" statement.

Sponsor. The DoD Component, Principal Staff Assistant or domain owner responsible for all common documentation, periodic reporting, and funding actions required to support the capabilities development and acquisition process for a specific capability proposal. (CJCSI 3170.01G) (Also commonly called resource sponsor.)

Standard. The minimum acceptable proficiency required in the performance of a particular task under a specified set of conditions. (OPNAVINST 3500.38B) Defined by the ORD/CD or assigned by OPTEVFOR, standards consist of measures and criteria.

Statement of Work (SOW). That portion of a contract which establishes and defines all nonspecification requirements for contractor's efforts either directly or with the use of specific cited documents. (DAU Glossary)

Subtask. The further breakdown of a task into the discrete events or actions required to complete the task. (See OPNAVINST 3500.38B)

Survivability. The capability of a system and its crew to avoid or withstand man-made, hostile environment without suffering an abortive impairment of its ability to accomplish its designated mission. (DAU Glossary)

Susceptibility. The degree to which a device, equipment, or weapons system is open to effective attack due to one or more inherent weaknesses. (Susceptibility is a function

of operational tactics, countermeasures, probability of the enemy fielding a threat, etc.) Susceptibility is considered a subset of survivability. (DAU Glossary)

Sustainability. The ability to maintain the necessary level and duration of operational activity to achieve military objectives. Sustainability is a function of providing for and maintaining those levels of ready forces, materiel, and consumables necessary to support military effort. (CJCSM 3170.01C)

Synergy. Interaction of discrete agents or conditions such that the total effect is greater than the sum of the individual effects.

System-of-Systems (SoS). A set or arrangement of interdependent systems that are related or connected to provide a given capability. The loss of any part of the system will significantly degrade the performance or capabilities of the whole. The development of a SoS solution will involve trade space between the systems as well as within an individual system performance. (CJCSM 3170.01C)

Systems Engineering (SE). The overarching process that a program team applies to transition from a stated capability to an operationally effective and suitable system. SE encompasses the application of SE processes across the acquisition life cycle (adapted to each and every phase) and is intended to be the integrating mechanism for balanced solutions addressing capability needs, design considerations and constraints, as well as limitations imposed by technology, budget, and schedule. The SE processes are applied early in concept definition, and then continuously throughout the total life cycle. (Defense Acquisition Guidebook)

System Service Reports. Service reports are issued when a system in RDT&E has a major or minor failure. They may be issued during any phase of T&E or between scheduled phases of T&E.

System Threat Assessment. Describes the threat to be countered and the projected threat environment. The threat information should reference DIA or Service Technical Intelligence Center-approved documents. (DoDI 5000.02)

System Threat Assessment Report (STAR). The STAR is the basic authoritative threat assessment tailored for and focused on a particular U.S. defense acquisition program. Included in the STAR is an assessment of those projected capabilities -- doctrine, strategy, tactics, organization, equipment, and military forces -- that a potential enemy could use to defeat or degrade the U.S. system during its employment. The STAR is initially prepared at MS-A for all ACAT I programs, and updated at MS-B, -C, and -D. A component-prepared system threat assessment is required for ACAT II, III, and IV programs. (See DoDI 5000.02)

System Under Test (SUT). The SUT is the hardware and/or software being delivered/developed to meet the requirements set by the resource sponsor and provide the capabilities needed by the Fleet. Through MBTD, the SUT evaluation will be made against specified, derived, and other requirements endorsed by the resource sponsor. Issues that are identified as specific to the SUT shall be used for COI risk [Early

Operational Assessment (EOA) and Operational Assessments (OA)] or deficiency [Initial Operational Test and Evaluation (IOT&E) or Follow-on Operational Test and Evaluation (FOT&E)] determinations, COI resolution (SAT/UNSAT), system effectiveness/suitability determinations, and fielding recommendations.

Tactical Development and Evaluation (TAC D&E). A program designed to improve tactical readiness through development of tactical doctrine for the effective employment of current combat systems or systems approaching IOC. (See Navy Warfare Development Command Web site-www.NWDC.navy.mil)

Tactical Situation (TACSIT). TACSITs provide Red Order of Battle (OOB), Red doctrine and TTPs, Blue OOB, Blue doctrine and TTPs, environmental details, C2, ROE, and more based on current OPLANs. They are Fleet documents.

Task. A discrete event or action, not specific to a single unit, weapon system, or individual, that enables a mission or function to be accomplished by individuals and/or organizations. (OPNAVINST 3500.38B)

Technical Evaluation (TECHEVAL). The study, investigations, or Test and Evaluation (T&E) by a developing agency to determine the technical suitability of materiel, equipment, or a system, for use in the Military Services. (See Development Test and Evaluation (DT&E).) (DAU Glossary)

Test. Any program or procedure which is designed to obtain, verify, or provide data for the evaluation of any of the following: 1) progress in accomplishing developmental objectives; 2) the performance, operational capability and suitability of systems, subsystems, components, and equipment items; and 3) the vulnerability and lethality of systems, subsystems, components, and equipment items. (DAU Glossary) The test verification method is an activity designed to provide data on functional features and equipment operation under fully controlled and traceable conditions. These data are subsequently used to evaluate quantitative characteristics (Defense Acquistion Guidebook). See Verification.

Test and Evaluation Identification Number (TEIN). When a program becomes a program of record, the CNO will assign a TEIN. If the program is internal to COMOPTEVFOR the TEIN will start with 3000.

Test and Evaluation Master Plan (TEMP). Documents the overall structure and objectives of the Test and Evaluation (T&E) program. It provides a framework within which to generate detailed T&E plans and it documents schedule and resource implications associated with the T&E program. The TEMP identifies the necessary Developmental Test and Evaluation (DT&E), Operational Test and Evaluation (OT&E), and Live Fire Test and Evaluation (LFT&E) activities. It relates program schedule, test management strategy and structure, and required resources to: Critical Operational Issues (COI), Critical Technical Parameters (CTP), objectives and thresholds documented in the Capability Development Document (CDD), evaluation criteria, and milestone decision points. For multiservice or joint programs, a single integrated TEMP

is required. Component-unique content requirements, particularly evaluation criteria associated with COIs, can be addressed in a component-prepared annex to the basic TEMP. (See Capstone TEMP). (DAU Glossary) See SECNAVINST 5000.2E, DoD Instruction 5000.02, and the Defense Acquisition Guidebook..

Test and Evaluation Coordinating Group (TECG). A TECG will convene when T&E issues arise that cannot be resolved between the applicable commands or when extensive T&E coordination is required. A TECG may also be used to implement urgent required changes to TEMPs. In this case, either a page change will be issued or the formal report of the TECG will be attached to the TEMP as an annex until the next required update or revision.

Test Report. Formally documents the results, conclusions, and recommendations as a result of each phase of DT/OT. (DAU Glossary)

Test Reporting. For major programs, the lead service will prepare and coordinate the single (interim or final) report reflecting the system's operational effectiveness and operational suitability for each service. The participating services' independent evaluation reports will be appended to final reports.

Threat. The sum of the potential strengths, capabilities, and strategic objectives of any adversary that can limit or negate U.S. mission accomplishment or reduce force, system, or equipment effectiveness. (DAU Glossary)

Threat Assessment. The provisions of intelligence assessment of the threat in the appropriate context and detail necessary to support plans, programs, or actions. Threat support is normally provided in the form of threat or capabilities publications, generic threat assessments, and specific threat statements, all of which emphasize system projections and threat forecasts. Threat support also includes operational intelligence on foreign naval targets and force employment. (See System Threat Assessment and Capstone Threat Assessment in the DAU Glossary)

Threat Support. The provisions of intelligence assessments of the threat in the appropriate context and detail necessary to support plans, programs, or actions. Threat support is normally provided in the form of threat or capabilities publications, generic threat assessments, and specific threat statements, all of which emphasize system projections and threat forecasts. Threat support also includes operational intelligence on foreign naval targets and force employment. (See DoDI 5000.02 and DIA Directive 5000.200)

Threat Validation. The evaluation of, and concurrence with, threat documentation. DIA evaluation of service-produced threats stresses the appropriateness and completeness of the intelligence positions and the logic of extrapolations from existing intelligence. (See DoDI 5000.02)

Threshold. A minimum acceptable operational value below which the utility of the system becomes questionable. (CJSCM 3170.01C)

Training. The level of learning required to adequately perform the responsibilities designated to the function and accomplish the mission assigned to the system. (DAU Glossary)

Under Secretary of Defense (Acquisition, Technology, and Logistics) (USD (AT&L). The USD(AT&L) has policy and procedural authority for the defense acquisition system, is the principal acquisition official of the Department, and is the acquisition advisor to the Secretary of Defense (SECDEF). In this capacity the USD(AT&L) serves as the Defense Acquisition Executive (DAE), the Defense Senior Procurement Executive, and the National Armaments Director, the last regarding matters of the North Atlantic Treaty Organization (NATO). For acquisition matters, the USD(AT&L) takes precedence over the Secretaries of the Military Departments after the SECDEF and Deputy SECDEF. The USD(AT&L) authority ranges from directing the Military Departments and Defense agencies on acquisition matters, to establishing the Defense Federal Acquisition Regulation Supplement (DFARS), and chairing the Defense Acquisition Board (DAB) for Major Defense Acquisition Program (MDAP) reviews. (DAU Glossary)

Universal Navy Task List (UNTL). A list of Navy tasks considered essential to the accomplishment of an assigned or anticipated mission. OPNAV Instruction 3500.38 series applies.

User. An operational command or agency that receives or will receive benefit from the acquired system. Combatant Commanders (COCOMs) and their Service Component commands are the users. There may be more than one user for a system. Because the Service Component commands are required to organize, equip, and train forces for the COCOMs, they are seen as users for systems. The Chiefs of Services and heads of other DoD Components are validation and approval authorities and are not viewed as users. (JCIDS Manual) See Validation Authority. (DAU Glossary). In MBTD, users are Fleet operators that employ the SUT.

Validation. Provides objective evidence that the capability provided by the system complies with stakeholder performance requirements, achieving its use in its intended operational environment. Validation answers the question: “Is it the right solution to the problem?” Validation consists of evaluating the operational effectiveness, operational suitability, sustainability, and survivability of the system or system elements under operationally realistic conditions (Defense Acquisition Guidebook).

1. The review of documentation by an operational authority other than the user to confirm the operational capability. Validation is the precursor to approval. (JCIDS Manual)
2. The process by which the contractor (or as otherwise directed by the DoD Component procuring activity) tests a publication/Technical Manual (TM) for technical accuracy and adequacy. (DAU Glossary)
3. The process of evaluating a system or software component during, or at the end of, the development process to determine whether it satisfies specified requirements. (DAU Glossary)

Verification. Provides evidence that the system or system element performs its intended functions and meets all performance requirements listed in the system performance specification and functional and allocated baselines. Verification answers the question: "Did you build the system correctly?" (Defense Acquisition Guidebook). See Analysis, Demonstration, Examination, and Test.

Verification of Correction of Deficiencies (VCD) (U.S. Navy). VCDs are used to support acquisition decisions for limited or full rate production. Evaluation of corrections to specific deficiencies cited in a previous OT&E report will apply to only those COIs that have been corrected, and the evaluation will not require end-to-end testing of the complete system.

Vignette. A convenient or logical grouping of a subtasks to allow testing and data collection. Vignettes are conducted under the varying conditions determined to have impact on the associated subtask performance.

Vulnerability. The characteristics of a system that cause it to suffer a degradation (loss or reduction of capability to perform the designated mission) as a result of having been subjected to a certain (defined) level of effects in an unnatural (man-made) hostile environment. Vulnerability is considered a subset of survivability. (DAU Glossary)

Waivers. The term "Waivers" applies to a deviation from the criteria identified for certification for operational testing in SECNAVINST 5000.2E. Waivers do not change or delay any testing or evaluation of a system. Also see Deviations. (SECNAVINST 5000.2E)

Warfighting Development Centers In DEC 2014, COMUSFLTFORCOM and COMPACFLT stood up Warfighting Development Centers (WDC) to replace Warfare Centers of Excellence. WDCs are established for air, undersea, surface, and expeditionary forces. Navy Warfare Development Command (NWDC) leads cross domain warfare integration at all levels of Naval warfare. COMUSFLTFORCOMINST/COMPACFLTINST 3501.4 pertains.

Workaround. A procedure developed for taking into account shortcomings or other problems in a program and devising workable solutions to get around the problems. (DAU Glossary)

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