

## OPTEVFOR: U.S. Navy Operational Test and Evaluation Perspective: Collaboration in an Uncertain Environment

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**I**t is the mission of the Operational Test and Evaluation Force (OPTEVFOR) to ensure that all systems are as effective, suitable, and survivable as possible and convey their capabilities and limitations to the warfighter. In this regard, the test and evaluation (T&E) community has the unique opportunity to provide advice, guidance, and the wisdom gained from our exposure to the T&E of hundreds of systems providing warfighting capability over the past 60 years and the lessons learned from their successes and failures.

### About OPTEVFOR

The U.S. Navy's OPTEVFOR, headquartered in Norfolk, Virginia, is the Navy's sole independent Operational T&E command. It is our mission to report to the Chief of Naval Operations (CNO) on the operational effectiveness and operational suitability of new and improved warfighting capability.

In effect, we're information providers. However, we do not limit our service to the final examination of a warfighting capability. We are active participants in all phases of product development providing operational insight and identifying both real and potential operational shortfalls to a system's end-

state capability. As Dr. McQueary, (Director, Operational Test and Evaluation, Office of the Secretary of Defense) has said, "OT&E should be a period of confirmation, not discovery" and we can only achieve that by being there throughout the process.

How do we do that and with what resources? *Figure 1* is a high level view of OPTEVFOR's portfolio. This figure provides a view of how we are organizationally aligned, both internally and externally, and our resources. Bottom line is, fewer than 300 people, an operating budget of just over \$11 million annually, and an average per year of \$40 million of reimbursable funding from program managers.

OPTEVFOR is currently assigned OT&E responsibility for over 300 programs. These programs span the Navy's warfighting enterprises of aviation, surface, subsurface, command and control, and expeditionary warfare. The wide range of product types that support new and improved warfighting capability requires a diverse level of operational and technical experience within the staff at OPTEVFOR in order to adequately support our mission. This diversity is obtained by the continuing rotation, average 3 year tour, of fleet operational personnel that serve as the operational test coordinators and operational test directors.

### OPTEVFOR initiatives

The Navy T&E community in general and OPTEVFOR specifically are actively engaged in developing methods, procedures, and policies to help ensure that the financial investments of the U.S. Department of Defense (DoD) and the Department of the Navy are provided the opportunity to generate the highest rate

#### OPTEVFOR

Who we are:

- Navy's Independent OT&E Agent
- Reporting Directly to CNO
- Information Providers to Decision Makers and Warfighters
- Supporting both Acquisition and Experimentation

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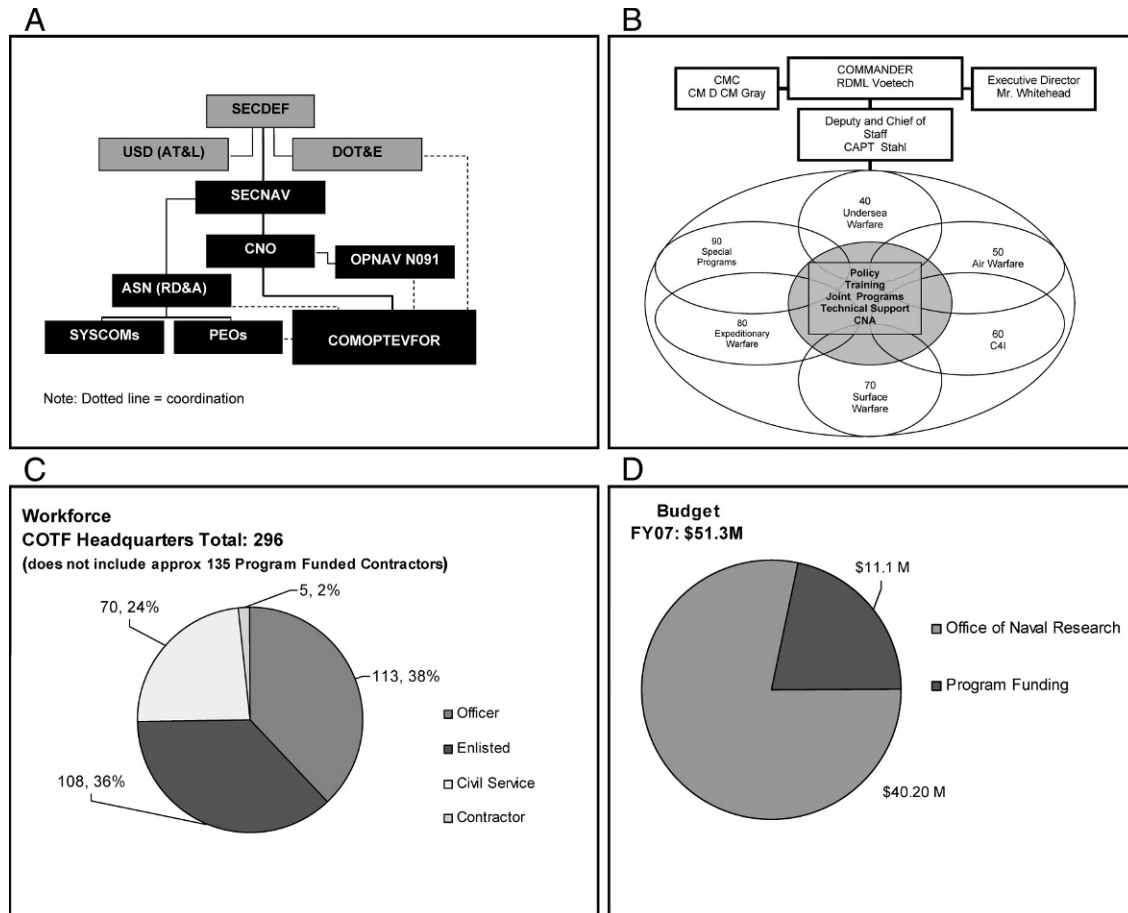


Figure 1. Operational Test and Evaluation Force portfolio

of return possible in warfighting capability and preservation of human life. Four specific initiatives currently ongoing are:

1. The Navy's enterprise approach to T&E (T&E Board of Directors)
2. T&E cycle time reduction
3. Mission-based test design
4. Integrated testing

### Navy's enterprise approach to T&E

As the result of a recommendation to the chief of Naval Operations (CNO) in July 2005 that stated:

"The need for a T&E capability that is synchronized with product procurement across the spectrum is critical to support the Navy's future war fighting needs. As part of the enterprise integration of T&E there is a need for a single Navy T&E process owner. An additional dimension is the need for a more effective and efficient business model in the relationship between government and industry, the desire to achieve synergism,

and produce a "win-win" situation for both entities."

As a result of this recommendation, the Navy's Test and Evaluation Board of Directors was formally established by the Assistant Secretary of the Navy for Research, Development, and Acquisition in April 2007. This board of directors is composed of Flag and Senior Executive stakeholders from the CNO staff, Navy System Commands, Program Executive Offices, and the Marine Corps, and is co-chaired by the Department of the Navy T&E Executive and COMOPTEVFOR. It is the function of the Board of Directors to apprise department leadership of T&E enablers to ensure that the needs of acquisition programs are met and balanced with overall Navy warfare enterprise goals. The Board resolves issues among T&E enablers, recommends priorities to be executed by the responsible organizations, supports the Navy enterprise and integrated T&E process, and champions improvement initiatives to meet program requirements while continually improving T&E cost efficiency.

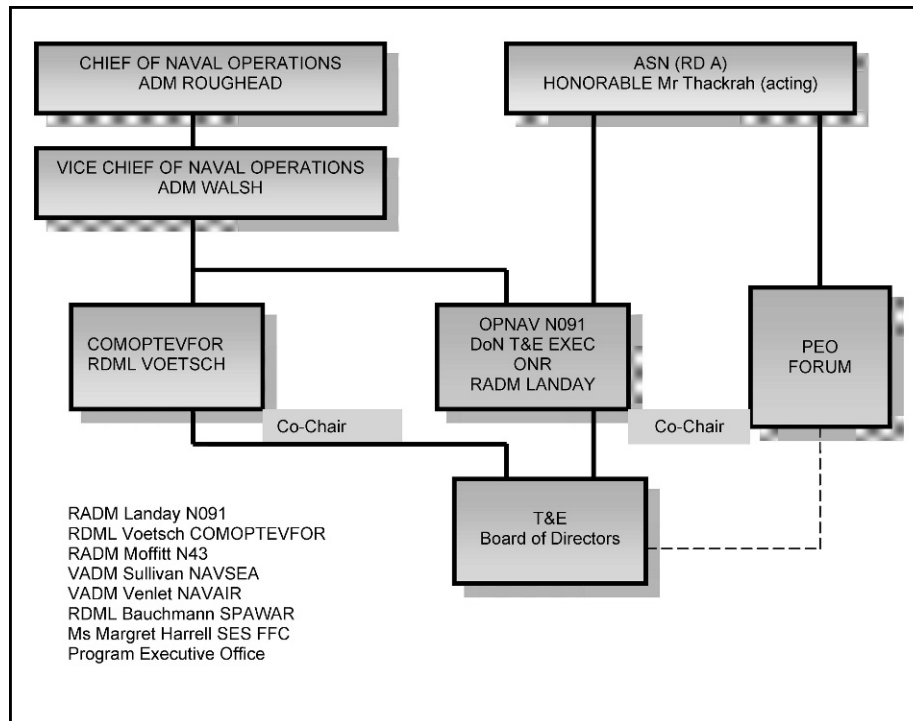


Figure 2. Navy test and evaluation board of directors

To this end, the vice chief of Naval Operations (VCNO), the assistant commandant of the Marine Corps, and the assistant secretary of the Navy for Research Development and Acquisition realigned the reporting requirements of the Navy T&E executive to not only the VCNO but also to the assistant secretary for Research Development and Acquisition. What this means is now the Department of the Navy, Navy, and Marine Corps, have a single process owner for T&E. And, that process owner reports to and represents not just the CNO but also the Navy's service acquisition executive on all T&E policy. This is a very powerful move because now there is a chain of command between the CNO, the person ultimately responsible by law for training and equipping the fleet, and the business decision maker on the acquisition side that provides the CNO with warfighting products.

### T&E cycle time reduction

Over the past several years the decision cycle by the development and acquisition community to provide products to the fleet has, in many instances, been reduced beyond the ability of the operational tester to provide, in a timely manner, value-added information to the decision maker. Reduced cycle time of product development and fielding for highly software intensive systems now ranges from several months to less than a year. In addition, the final capability that is delivered to the fleet is more often than not, not determined until

the platform is ready for deployment. *And let's never forget it is all about the warfighters needs!* The ability of the operational tester to plan, based on proposed yet uncertain final system capability and configuration, schedule warfighter resources, execute the test, conduct the analysis and write an evaluation report is severely hampered by the time it takes to conduct these activities in the long established methods and processes currently utilized (Figure 2).

Operational testing has, over the past 10 years taken on a more technical analysis of the capabilities provided by developers. The ability to collect system performance data at levels significantly below the operational level (that is the operator and supervisor level) has resulted in a belief that it is the responsibility of the operational tester to conduct extensive "failure analysis" on system performance when a shortcoming or failing is identified during test. This belief is counter to evaluating a system's performance capability at the operational mission level. By elevating the level of evaluation back to the operational mission level, it is possible to reduce the evaluation and report time on a warfighting capability. This elevating of the evaluation level, combined with leveraging all available data and information, wherever it is created, contractor, program office, or operational test will allow for significantly greater insight in a systems performance capability as well as allow for greater confidence in that system after it is deployed.

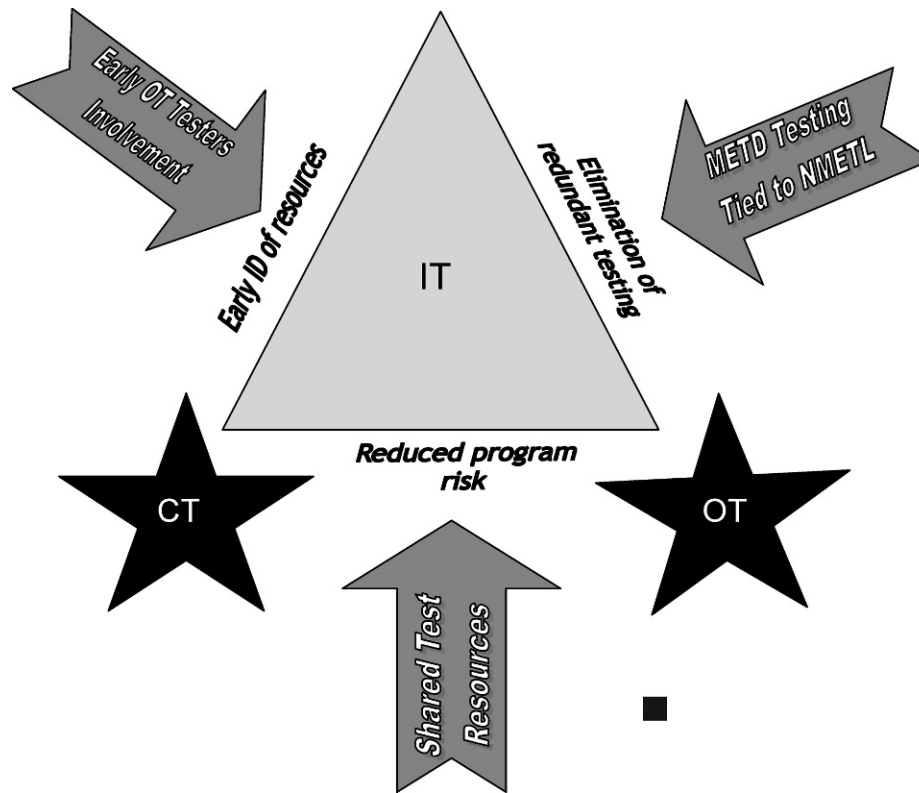


Figure 3. Integrated test

### Mission-based test design (MBTD)

MBTD is a detailed and disciplined systems engineering approach to test design. Test design is done early in the acquisition life cycle (prior to MS B if possible). Simply put, the methods and processes we have developed utilize existing measures, the Universal Joint Tasks Lists (UJTS) and the Navy Mission Essential Task Lists (NMETLS) to collect data on the system and the operators' capability to execute the mission. The foundation document produced from this process, known as the OT framework, provides the groundwork for all subsequent detailed test plans. In fact, the OT framework contains enough detail itself to serve as a test plan. Test size is based on the conditions which impact the system and warfighter in their environment. Statistical methods known as *Factorial Designs* and *Design of Experiment* produce permutations of the tasks based upon the number of conditions.

Tasks are broken into logical executable segments called vignettes. Vignettes can be as small as a maintenance demonstration or as large as an end-to-end exercise. The end product out of the MBTD, the OT framework, contains a detailed description of test vignettes, conditions in which the test is to be conducted, the measures of success and a robust, detailed list of resources needed to execute. The resource list can then be fed into the T&E Master Plan.

### Integrated testing

The May 2003 version of the DoD Directive on Defense Systems Acquisition specifically states "Test and evaluation shall be integrated throughout the defense acquisition process." What has been lacking until recently is the answer to the question "What does that mean?" For the Navy, that means, and I quote from the Navy's T&E Board of Directors, "Integrated testing 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 developmental (both contractor when appropriate and government) and operational test communities." (See Figure 3) A policy memo is expected out soon on this subject.

We are also working with DOT&E and USD (AT&L) in revising the format for T&E Master Plans to reflect a more integrated approach.

### How do we proceed?

All of this raises some very challenging questions. What is the impact of these initiatives on the industry? How does it affect the acquisition community and the total test community? How will it affect the government/industry relationship? Are there statutory or regulatory barriers to succeeding in these initiatives?

All good and valid questions, do we have the answers? No. Can we work together to come up with the answers? That's the whole point, collaboration. Meaningful and open dialogue and action about what we all know needs to be done but have avoided because it's believed too difficult. It is difficult, but not impossible. Government and industry have different agendas. Admit it, understand it, and move on. We once again are in a time when we are faced with significant challenges. This time let's look at these challenges as opportunities to move beyond our parochial stove piped interests and really do what we say: Support the warfighter. □

*REAR ADMIRAL (RDML) STEVE VOETSCH was born in Fort Lewis, Washington. He received his commission in 1979 from the United States Naval Academy and was designated a naval flight officer in 1980.*

*After initial F-4 Phantom training in VF-171 he was assigned to VF-74 where he completed his first deployment to the Indian Ocean on board USS Forrestal (CV 59), in the last East Coast F-4 Phantom squadron. In 1983 he transitioned to the F-14 Tomcat and completed a follow-on deployment on board USS Saratoga (CV 60) with VF-74, deploying to the Mediterranean Sea.*

*After a brief shore tour, he was assigned to VF-143 embarked in USS Dwight D. Eisenhower (CVN 69). From 1988-1991, RDML Voetsch served as the operations and maintenance officer in VF-41, operating from USS Theodore Roosevelt (CVN 71), flying numerous combat missions over Iraq and Kuwait during Operations Desert Shield/Storm and Provide Comfort. Assuming command of the "Fighting Diamondbacks" of VF-102 in September 1995, RDML Voetsch was directly responsible for leading the squadron toward earning the Battle "E", Safety "S", the coveted Clifton Award, Grand Slam Award, Tactical Air Reconnaissance POD System (TARPS) Award, and the NAS Oceana Athletic Award. RDML Voetsch commanded the "Grim Reapers" of VF-101 from July 1998 to December 1999. In July 2000 he reported as deputy commander, Carrier Air Wing One and assumed duties as commander, Carrier Air Wing One in July 2001.*

*Serving ashore, RDML Voetsch was assigned as a fighter instructor in VF-101. Other shore assignments include the Armed Forces Staff College and assistant Washington placement officer in the Bureau of Naval Personnel; aide/flag lieutenant to the chief of naval personnel, Admiral Ronald J. Zlatoper; two tours as executive assistant to the commander, North American Aerospace Defense Command and United States Northern Command. RDML Voetsch served as the deputy chief of staff for operations, training and readiness (N3/N7) on the staff of commander, U.S.*

*Pacific Fleet from July 2005 to May 2007. On May 24, 2007, RDML Voetsch assumed command of Operational Test and Evaluation Force in Norfolk, Virginia.*

*STEVEN K. WHITEHEAD currently serves as the executive director to the Commander, Operational Test and Evaluation Force (COMOPTEVFOR), U.S. Department of the Navy. He was selected to a senior level (SL) position as a senior executive on June 17 2001. He enlisted in the U.S. Navy out of high school in 1975 as a surface electronic warfare technician and continued to serve the Navy as a civilian while attending the University of Rhode Island, earning an undergraduate degree in electrical engineering. He transferred to the Naval Warfare Assessment Center (NWAC), Corona, California where he served in a variety of engineering and weapon systems analysis positions from 1985 to 1991. His experience includes weapon system and missile flight analysis in the Surface Weapons Department, Flight Analysis Division, Point Defense Systems Branch, performing engineering evaluations of Point Defense (RIM-7E, &H, &M and RAM) surface missile firings and weapon system exercises; project leader in the Systems Analysis Division, Special Projects Branch for the Vertical Launch ASROC weapon System, the Mk 116 Mod 0 Vertical Launching System, and the TRIDENT II (D5) Strategic Weapon System (SWS). The latter two projects directly supported DEPCOMOPTEVFOR, Pacific and COMOPTEVFOR, respectively. For the TOMAHAWK SEARA Branch, he continued his duties as NWAC project lead in support of OPTEVFOR for the TRIDENT II (D5) SWS, and was assigned the duties of TOMAHAWK quality assurance service test representative to the Cruise Missile Program Office, San Diego, California. He also served on the department staff, Surface Weapons Department, coordinating the establishment of an antisubmarine warfare division.*

*In May 1991, he transferred to OPTEVFOR Headquarters, Norfolk, Virginia, as an operations research analyst. He was selected as the deputy assistant chief of staff for C4I Systems in October of the same year and held that position until June 1996 at which time he was selected to assume the duties as the technical director. In November 2007, his duties were realigned to better support the commander and his position was designated as the executive director.*

*Steven Whitehead received his bachelor's degree in electrical engineering from the University of Rhode Island. He also holds a master's degree in management from Troy University and is a 1994 graduate of the Naval War College. His awards include the Navy Civilian Superior Service Medal, Navy Civilian Meritorious Service Medal, two Sustained Superior Performance awards, Special Mission Support award, and three Letters of Commendation.*