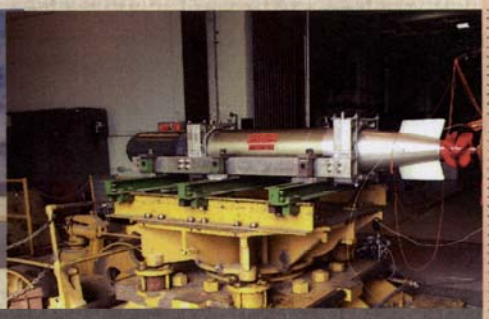
Test Resource Management Center

FY 2007 Annual Report



April 2008

Director's Foreword

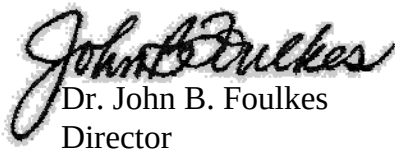
This is my second annual report, which covers the Test Resource Management Center (TRMC) FY2007 activities, and goals and objectives for FY2008. The TRMC achieved many notable accomplishments this past year. Some of these include: publication of the 2007 Strategic Plan for DoD Test and Evaluation Resources; successful certification of the Services' FY2008 T&E budgets; standup of the Joint Mission Environment Test Capability (JMETC) Program Office along with the completion of the first two successful JMETC distributed test events; establishment of the National Partnership for Aeronautical Testing with NASA; and the publication of DoD Directive 3200.11, *Major Range and Test Facility Base (MRTFB)*, to reflect the transfer of MRTFB oversight to TRMC and to update policies for the MRTFB.

Our mission also expanded in several areas in 2007. As a result, TRMC addressed sweeping changes proposed by the Air Force to consolidate and divest certain T&E capabilities within Air Force Materiel Command because of Service budget constraints. This assessment resulted in a Program Budget Decision to restore a significant amount of the funding initially cut from the Air Force budget to maintain essential T&E infrastructure; thereby, reducing the effects on testing essential weapon systems.

In 2007, the TRMC published its third Strategic Plan for DoD T&E Resources. While we assessed the current T&E infrastructure as healthy, the Plan identified some near-term T&E gaps. The Services are funding the T&E facilities and ranges in an appropriate manner to sustain our current workload. However, there are several "focus" areas, which require near term actions to support future testing of advanced weapon systems.

The TRMC's long-term goal is to guide the development of the infrastructure—not just facilities and property, but also the processes, workforce, and needed skill sets to fulfill both our current and future missions. As such, TRMC is the "steward of the T&E infrastructure."

I am encouraged by the recent joint Service proposal to work with the TRMC to better align the Department's T&E strategic planning processes. In 2008, I look forward to working with the Services in this important area in the spirit of continuous process improvement.



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1.0 Introduction: This report is the second annual presentation of accomplishments and pending actions by the Department of Defense (DoD) Test Resource Management Center (TRMC) to plan for and assess the adequacy of the Major Range and Test Facility Base (MRTFB); provide adequate testing in support of development, acquisition, fielding, and sustainment of defense systems; and, to maintain awareness of other test and evaluation (T&E) facilities and resources, within and outside the Department. This report provides an opportunity to demonstrate how the TRMC directly supports the research, development, and acquisition communities across DoD and, ultimately, the individual soldier, sailor, airman, and marine as they go into harm's way.

Title 10, United States Code, Section 196, and DoD Directive (DoDD) 5105.71 established the TRMC as a DoD field activity under the authority, direction, and control of the USD(AT&L) to: 1) review and provide oversight of proposed DoD budgets and expenditures for T&E facilities and resources; 2) develop a biennial Strategic Plan reflecting the needs of the DoD with respect to T&E facilities and resources; 3) review the Services' proposed T&E budgets for adequacy and certify that they are in compliance with the Strategic Plan; 4) administer the Central Test and Evaluation Investment Program (CTEIP), and the Test and Evaluation/Science and Technology (T&E/S&T) program.

Currently, the TRMC is organized into four divisions to support these congressional mandates (Figure 1).

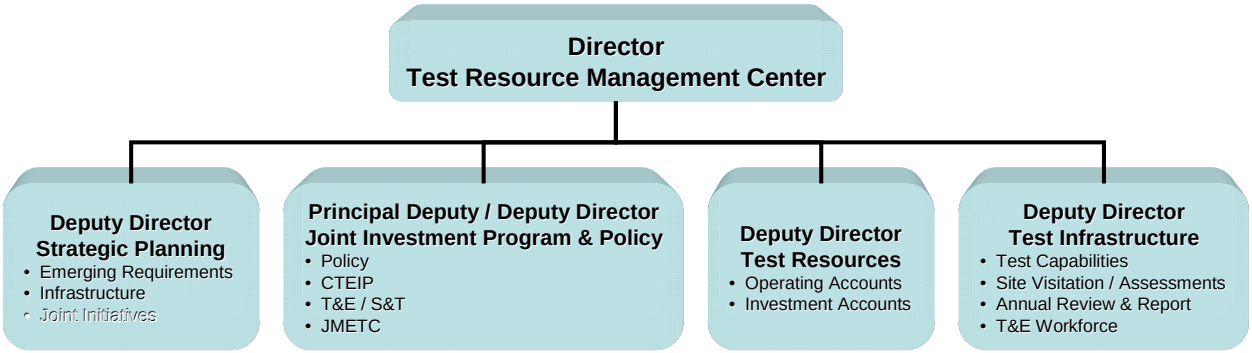

Figure 1. TRMC Organization and Functions

The Strategic Planning Division, Test Resources Division, Joint Investment Programs and Policy Division, and Test Infrastructure Division focus on the four core business areas comprising TRMC's mission. The Strategic Planning Division is the architect of the biennial Strategic Plan and the off-year addendum.

The Joint Investment Programs and Policy Division provides program management for CTEIP, T&E/S&T, and Joint Mission Environment Test Capability (JMETC) programs as well as the T&E infrastructure policy.

The Test Resources Division provides the annual certification of the Service's T&E budgets as well as a program of charge policy assessments designed to assist the Services and Defense Agencies in maintaining the T&E infrastructure.

The Test Infrastructure Division provides oversight of the overall T&E infrastructure to include: test capabilities, T&E workforce, and direct liaison with the MRTFB activities. For cross-division issues requiring a concentrated effort, the TRMC forms integrated teams drawing from various business areas and specialties.

The Congress recognized the need for T&E capabilities not just across the Military Departments, but also extending to the Defense Agencies and other entities outside the DoD. The goal is to have a healthy T&E infrastructure capable of supporting the development of complex weapon systems not only in a technical environment but also in a joint, operationally realistic environment. The infrastructure should be global in nature, adaptive to multiple missions, persistent across the acquisition lifecycle, integrated across the spectrum of Test Capability Areas (TCAs), and distributable among the various sites and locations required by our customers. With this principle in mind, the TRMC has set out to guide the development of the Department's T&E infrastructure—not just facilities and property, but also the processes, paradigms, workforce, and skill sets—required to fulfill our mission and vision. As such, the TRMC is the "steward of the T&E infrastructure."

2.0 Mission, Goals and Vision: The TRMC's mission, as stated in DoDD 5105.71, is to "plan for and assess the adequacy of the…MRTFB… [and] to provide adequate testing in support of development, acquisition, fielding, and sustainment of defense systems; and, maintain awareness of other T&E facilities and resources, within and outside the Department, and their impacts on DOD requirements."

From that mission, the Director established the TRMC's Vision and Goal, as outlined in last year's Report. These were updated in 2007 with some added objectives or more detailed outcomes, but overall are still directly linked to those goals set forth by the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) for the organization. The revised outcomes and objectives for 2007 are shown in Figure 2.

The TRMC continued making strides as noted in last year's Report in meeting these objectives. Notable accomplishments and progress in 2007 include: Publication of the 2007 Strategic Plan for DoD Test and Evaluation Resources, along with completing the alignment of the T&E/S&T and CTEIP programs with the Strategic Plan; successful certification of the Services' and Defense Agencies' FY2008 T&E budgets; standup of the JMETC Program Office, and the first two successful JMETC distributed test events; establishment of the National Partnership for Aeronautical Testing with NASA; and the development of a revised DoD Directive 3200.11, *Major Range and Test Facility Base*, revised to reflect the transfer of ownership to TRMC (published on December 27, 2007).

We continued to address the other challenges identified in last year's Report, although not yet fully realized or resolved, such as codifying a DoD-wide T&E Investment Review Process; establishing a performance measurement process with associated metrics to assess the health and viability of the MRTFB; completing the T&E workforce study; and developing a DoD-wide MRTFB capabilities database. TRMC also continued to address its manpower challenges. Although we have brought many new personnel on-board, other personnel departed or retired in critical areas such as Strategic Planning and Test Resources.

We did succeed in attaining last year's goal of obtaining full joint-duty credit for military officers, and we also succeeded in realigning the technical support contract to meet the Center's mission.

TRMC's workload also expanded in several unforeseen areas in 2007, mostly due to heightened congressional interest. We embarked upon an independent study—as well as a joint study with other OSD entities and the Air Force—of sweeping changes proposed by the Air Force in consolidating and divesting certain T&E capabilities within Air Force Materiel Command as a result of Service budget constraints. Congress directed these studies, tasked TRMC in the National Defense Authorization Act (NDAA) for 2007, and mandated that the Air Force take no action to implement the planned changes until completion of these studies. Likewise, Congress also noted when the Army proposed cutbacks to its High Energy Laser Systems Test Facility (HELSTF) capability. The Army approached TRMC with its plan and obtained its concurrence through a collaborative analysis. Finally, the (USD(AT&L) tasked TRMC to take on a new AT&L-level goal to achieve true interdependence between test and training capabilities.

***Vision*:** The DoD T&E ranges and facilities will be fully capable of supporting the Department with quality products and services in a responsive and affordable manner.

***Goal to Achieve the Vision*:** Robust and flexible T&E capabilities to support the Warfighter.

***Outcomes (Objectives)*:**

1. **Comprehensive cooperative strategic planning process for development and sustainment of future test capabilities:**
   a. Ensure that the two highest priority capability gaps identified in the FY2005 Strategic Plan are addressed in the FY2008 President's Budget.
   b. Develop and publish FY2007 Strategic Plan and develop a process for the off-year addendum to the FY2007 Strategic Plan.
   c. Refine strategic planning process to complete plan by June.
   d. Develop strategy to address gaps.
   e. Complete the analysis of test capabilities in support of the FY2007 NDAA.
   f. Complete Capabilities assessment and roadmap on Nuclear Weapons Effects.
   g. Conduct one study in a critical area (e.g. threat systems, nuclear weapons effects).
   h. Develop a method for capturing and documenting DoD T&E infrastructure.
2. **Effective oversight of the MRTFB and other T&E facilities within and outside of the DoD, and administration of T&E investment programs:**
   a. Develop and implement the FY2007 Program Plan for JMETC.
   b. Establish an agreement with the High Performance Computer Modernization Office (HPCMO) to create the JMETC VPN and complete initial planning to support the Single Integrated Air Picture (SIAP) test event scheduled for 2008.
   c. Enable MRTFB re-engineering effort
   d. Plan and execute the MRTFB Annual Review.
   e. Ensure S&T focus areas are addressing identified needs and continue to initiate and field CTEIP projects.
   f. Complete and publish DoD study on National Aeronautics and Space Administration (NASA) Aeronautics facilities.
   g. Establish initial steps to create DoD/NASA governance mechanism:
      - National Partnership for Aeronautical Testing (NPAT) MOU signed between TRMC and NASA.
      - First NPAT Council meeting held in June 2007; agenda in coordination for second meeting in February 2008.
   h. Conduct a DoD/NASA Aeronautics Facilities Users Meeting.
   i. Initiate 2 NPAT projects.

j. Begin Development of a capabilities database to track and monitor baseline capabilities in the MRTFB, and begin development of a process to provide a persistent liaison capability between the MRTFB and other related organizations.

3. **Better business practices ensuring sufficient investment to sustain critical test infrastructure:**
   a. Initiate a study to review the Financial Management Regulation (FMR) governing the charge policy mandate in the FY2003 NDAA to achieve consistent interpretation across T&E enterprise.
   b. Develop and publish FY2008 Budget Certification and other applicable reports to Congress.
   c. Conduct up to 6 assessments at MRTFB locations and develop lessons-learned for improving business processes and procedures in implementing the charge policy; begin work toward transferring oversight to appropriate audit agencies for continuing the assessment process.
   d. Align T&E/S&T and CTEIP programs with the 2007 Strategic Plan.
   e. Participate in Service and Defense Agency T&E Investment Reviews, and establish an annual DoD-wide T&E investment review process.
   f. Improve quality of data for T&E budget certification.
   g. Assess current T&E-related military construction (MILCON) projects and associated submission process to determine degree of TRMC involvement, and participate in the Chem/Bio T&E Executive Agent IPT.
   h. Develop performance metrics providing measures of effectiveness for T&E infrastructure to be used in FY2007 Strategic Plan; also for the Program Assessment Rating Tool (PART).

4. **An enduring, agile, multi-disciplinary T&E workforce:**
   a. Complete the demographic analysis and profile of the T&E workforce.
   b. Develop and initiate a plan to shape the T&E Workforce.
   c. Participate in the T&E Functional IPT, review new DAU curricula as appropriate, and participate in the DAU T&E courses and other T&E conferences.

5. **Improve integration of Test &Training capabilities, including range sustainment:**
   a. Establish a joint test and training CTEIP project that addresses joint airborne instrumentation requirements.
   b. Determine TRMC roles and responsibilities for oversight of range sustainment, and participate with the range sustainment community to ensure T&E community sustainability issues are addressed.
   c. Identify strategies for planning and governance of investments across the Department of Defense for distributed live, virtual and constructive architectures as they relate to ranges and other test, training and experimentation infrastructure.
   d. Develop options for extending the MRTFB charge policy to training customers.

6. **Effective TRMC organizational operations:**
   a. Establish a culture of performance management throughout the organization, and implement a seamless, effective transition into NSPS.
   b. Refine the internal manpower requirements, budget and financial management and tracking process.
   c. Fill all vacant government billets and identify needs and realign contractor support to best meet the mission of the organization.
   d. Sponsor 2 Rotational Training Assignment (RTA) personnel.
   e. Conduct a minimum of 2 dedicated Range visits.
   f. Plan and conduct the annual Test Week 2007 conference.
   g. Develop a working TRMC website.
   h. Prepare and publish the TRMC Annual Report, and develop and publish organizational tri-fold brochures and handouts.

Figure 2. TRMC Vision, Goal, and Outcomes (Objectives) for FY2007

3.0 State of the T&E Resources:

The 2007 Strategic Plan for DoD T&E Resources improves on previous plans as it expands the scope of assessment to include more than just technical deficiencies. Instead, the 2007 plan considers the Enterprise-view of Test and Evaluation and identifies shortfalls for each of the T&E resource components that are necessary to provide T&E capabilities. Figure 3 depicts the key elements of these T&E resources, and how they are utilized to produce T&E capabilities:

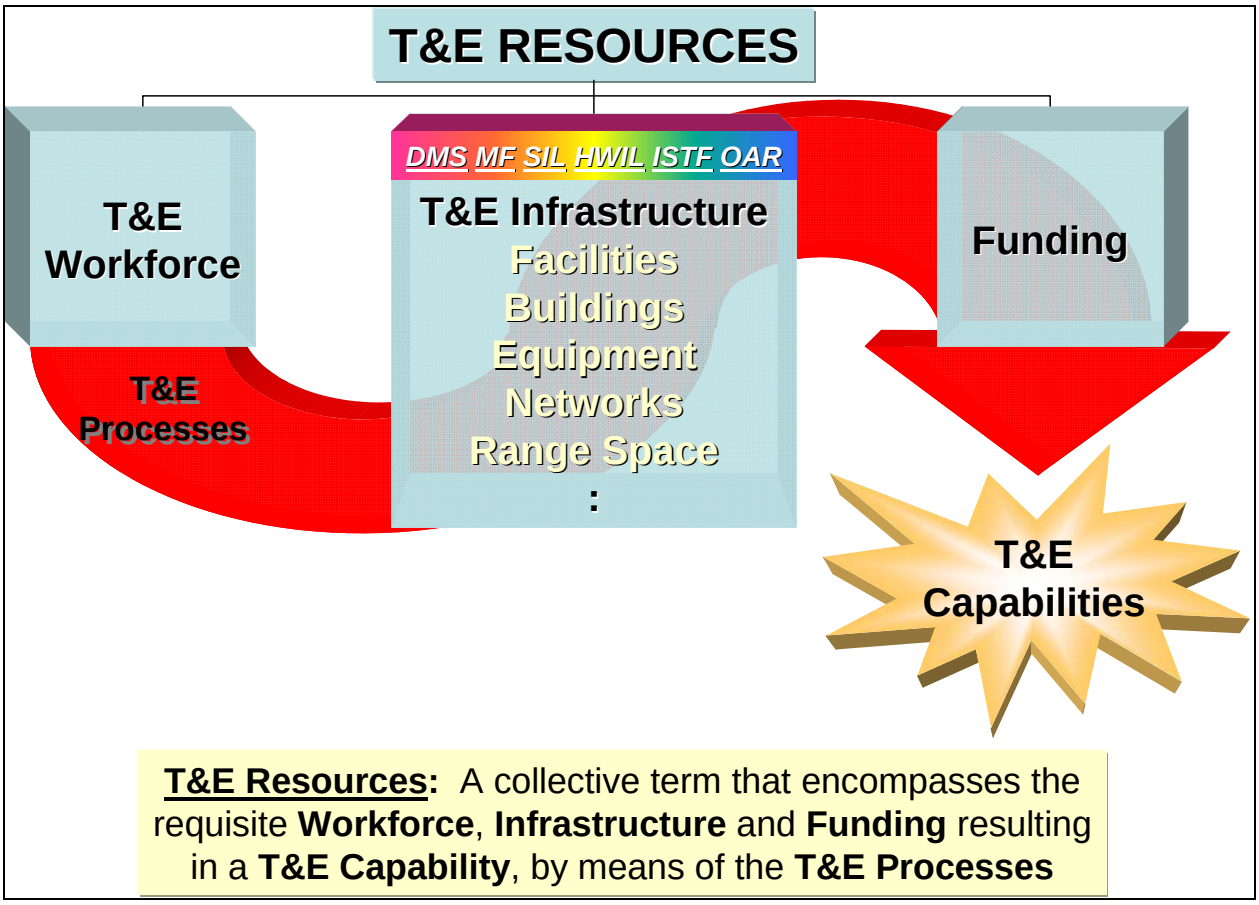

Figure 3. T&E Resources

NOTE: For the purpose of this report, TRMC used the following terms and definitions to explain the T&E resources relationship:

(1) T&E Workforce: Military, civilian, and contractor personnel who provide the expertise and skills necessary to operate, maintain, sustain, and improve the T&E infrastructure; who execute and expend funding; and who implement processes that provide T&E capabilities. (Source: Adapted from the DAU Glossary, 2005)

(2) T&E Infrastructure: The facilities, ranges, and all other physical assets such as: buildings, instrumentation, networks, range space and frequency spectrum, used to conduct DoD T&E. (Source: DoDD 3200.11, December 27, 2007), Example: NAWC-WD T&E facilities.

(3) T&E Funding: The combination of investments and operating funding to support and execute the Department of Defense (DoD) T&E mission. (Source: TRMC derived).

(4) T&E Processes: The methods and procedures used by the T&E workforce utilizing required infrastructure to provide T&E capabilities and associated data products. (Source: Adapted from the DAU Glossary, 2005). Example: Live-fire testing of Osprey).

(5) T&E Capabilities: An ability to conduct test and evaluation using T&E resources and processes to achieve T&E objectives. (Source: TRMC derived and in DoDD 3200.11, December 27, 2007). Example: Capabilities associated with Naval Air Warfare Center Weapons Division (NAWC-WD) Echo Range that provide electronic combat T&E capability.

(6) Test Infrastructure Categories: Broad categories of the types of T&E infrastructure used to support weapon system T&E. The six commonly accepted categories:

a. Digital Modeling and Simulation (DM&S)
b. Measurement Facilities (MF)
c. Integration Labs (IL)
d. Hardware-in-the-Loop (HITL)
e. Installed System Test Facility (ISTF)
f. Open Air Ranges (OAR) (Source: TRMC Strategic Plan)

Also different from the 2005 Strategic Plan is the concerted effort to move away from merely addressing tactical, short-term T&E requirements and begin looking beyond the Future Year Defense Plan (FYDP). In order to accomplish this, the 2007 Plan identifies seven major Focus Areas, which concentrate on the strategic investment needs of the Department. These areas are: Directed Energy, Nuclear Weapons Effects, Hypersonics, Distributed Test, Urban Environments, Unmanned and Autonomous Systems, and Improved Explosive Device (IED) defeat. These focus areas are driven by top-down strategic guidance, S&T trends that will affect long-range T&E requirements, and other more immediate concerns stemming from ongoing operating conditions (i.e., urban environments), which will likely impact the way we test weapon systems. Figure 4 depicts the process by which required T&E capabilities were determined in the 2007 Strategic Plan for DoD T&E Resources.

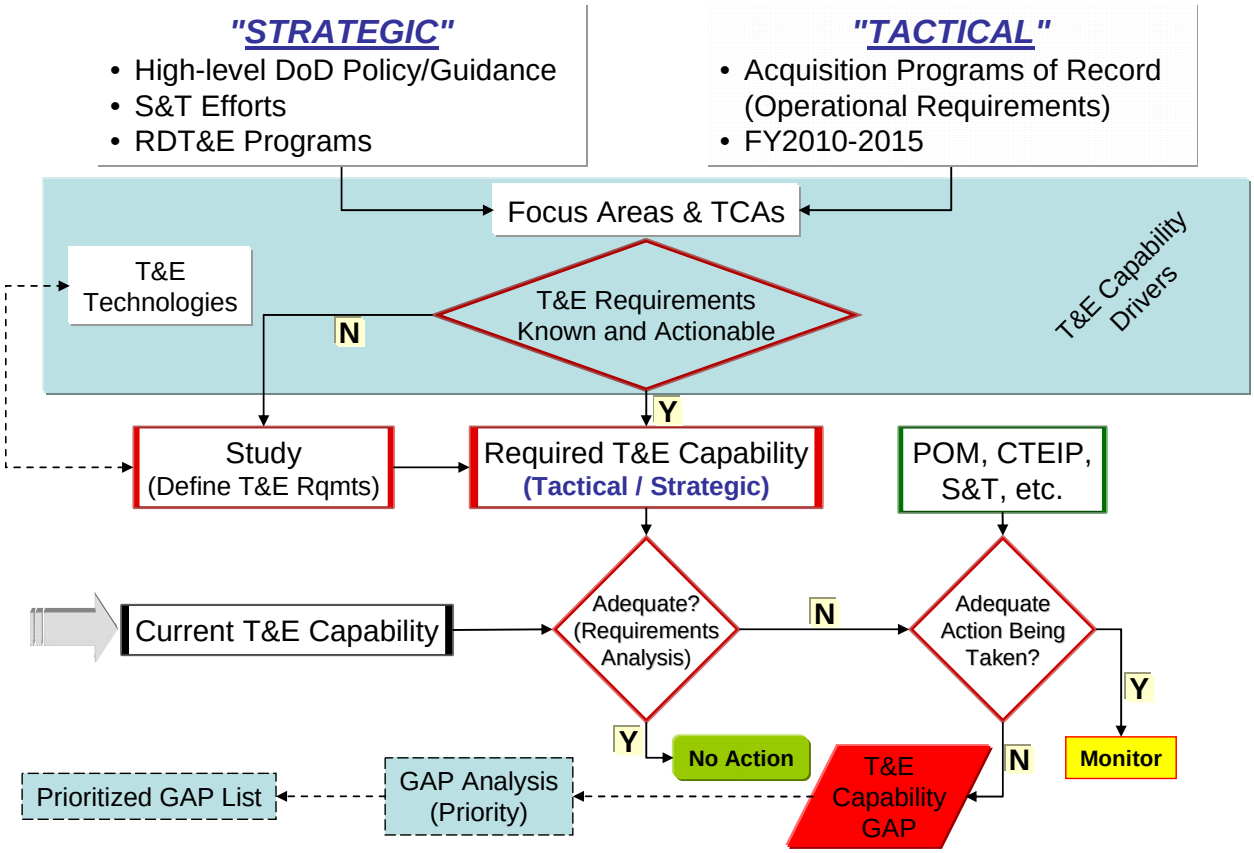

Figure 4. Process for Determining Needs

It is important to note that TRMC derived the T&E requirements identified in this plan from both tactical and strategic sources. Tactical requirements can generally be linked to acquisition programs of record, while strategic requirements typically stem from high-level policy/guidance, ongoing RDT&E programs, or promising S&T efforts. In this plan, TCA assessments were completed to evaluate planned Military Department investment activity within the FYDP and identify any known deficiencies. Likewise, Focus Area assessments were also completed in order to evaluate the ability of the T&E infrastructure to support longer-term, strategic requirements. As tactical and strategic T&E requirements arose from the assessment areas, a determination was made as to whether or not required T&E capabilities could be identified with enough fidelity to support such requirements. If the T&E requirement lacked such fidelity, a recommended action to pursue further definition and scope of the T&E requirement was generated. If however, the requirement could be scoped, the T&E capabilities required were compared with existing capabilities. An inability to support the requirement resulted in the identification of a T&E capability gap. Six T&E capability gaps and fifteen recommended actions were identified in this year's plan to support future test activities. These capability gaps and identified actions were assigned to the appropriate Service component and will be used as a basis for T&E budget certification for FY2010.

The next three sections of this report provide the TRMC assessment of T&E Resources and address the adequacy of the infrastructure, T&E workforce, and funding.

3.1 Infrastructure Assessment: While the 2007 Strategic Plan identified T&E shortfalls, it should be noted that these shortfalls alone will not necessarily drive the assessment of a Test Capability Area (TCA) to a higher risk level. Figure 5, below, represents a snapshot view of the current state of T&E across the DoD MRTFB and our ability to satisfy current T&E requirements for development and acquisition programs. The graphic depicts a red/yellow/green assessment for each Test Resource Category (TRC) within each of the TCAs that the Military Departments use to bin T&E requirements in the DoD. There are several long-term challenges facing the T&E community, however, this figure reflects DoD's ability to support current requirements and indicates the areas in which the gaps identified in this plan occur.

- **GREEN** assessment indicates that sufficient capabilities exist within a TRC for a corresponding TCA to meet current T&E requirements.
- **YELLOW** assessment indicates that sufficient capabilities do not exist within a TRC for a corresponding TCA; however, development and acquisition programs can conduct T&E in a less-than-efficient manner with resulting higher risks.
- **RED** assessment indicates that severe capability limitations exist within a TRC for a corresponding TCA and that major acquisition programs are absorbing high risks because of these deficiencies.

TRCs / *TCAs*	Digital Modeling & Simulation (DMS)	Measurement Facilities (MF)	Integration Laboratories (IL)	Hardware in-the-Loop Facilities (HITL)	Installed System Test Facilities (ISTF)	Open Air Ranges (OAR)
Air Combat						GAP #1
Land Combat						GAP #2
Sea Combat						GAP #3 GAP #4
Space Combat						
Electronic Combat						
C^4ISR						
Armaments / Munitions						
Targets and Threats		GAP #5				
Common Range Instrumentation						GAP #6
Test Environments						

Figure 5. State of Health of the MTRFB

The Focus Areas for the 2007 Strategic Plan evolved from examining the operational environment in which our forces fight, reviewing high-level Departmental guidance, and examining promising RDT&E efforts that will likely change our testing methodologies. The

implementation of focus area assessments in this year's Strategic Plan provides a longer-term view across the MRTFB for T&E infrastructure requirements. Figure 6, below, indicates focus area impacts on TCAs and the risk for meeting the associated challenges for the period FY2010-2019.

- **GREEN** indicates adequate actions are addressing what needs to be done; i.e., there are no challenges that this focus area has in this TCA.
- **YELLOW** indicates risks, that without some actions, the T&E capability requirements cannot meet the challenges from this focus area in this Test Capability Area.
- **GREY** indicates "not applicable."

Focus Areas / *TCAs*	Directed Energy	Nuclear Weapons Effects	Hypersonics	Distributed Test	Urban Test Environment	Unmanned Systems	IED Defeat
Air Combat							
Land Combat							
Sea Combat							
Space Combat							
Electronic Combat							
C^4ISR							
Armaments / Munitions							
Targets and Threats							
Common Range Instrumentation							
Test Environments							

Figure 6. Focus Area Impacts for TCAs

As a whole, the assessment of the current T&E infrastructure for the Department is healthy. While TRMC identified some near-term deficiencies as T&E capability gaps in this plan, the Military Departments are generally doing a commendable job in investing in T&E infrastructure to sustain our current workload. TRMC noted, however, from the focus area assessments, that there are several areas of concern in our ability to support future testing of advanced weapon systems. The key is to maintain the proper balance between sustaining current capabilities and investing to support future requirements. As our forces continue to move into the urban arena, infrastructure must be in place to support testing in this environment and long-range planning for consolidated/focused investment, maintenance, and sustainment of new capabilities must be undertaken. Likewise, we must address similar efforts for testing Improvised Explosive Device (IED) defeat systems. Investments in human interaction with unmanned autonomous systems need increased emphasis as we currently rely on these types of systems in theater, and it is increasingly likely we will find them even more integrated with our troops on the battlefield in

the near future. To cause further concern, the need to operate in a joint environment will pose significant challenges to the way we test systems today. Processes and methodologies for distributed testing must be developed and implemented to achieve a truly joint test environment. In this Plan, we identified fifteen actions in an effort to resolve future DoD test challenges. As a community, the T&E workforce must strive to implement these actions if we are to provide a robust T&E infrastructure capable of supporting our advanced weapon systems.

3.2 Workforce Assessment: Since 1996, there has been a steady decline in the size of MRTFB military and civilian personnel, and contractors continue to constitute a larger proportion of the T&E workforce (Figure 7, below). This is a cause for concern because it reflects that the resident government expertise is transitioning to the private sector. We highlight this as a significant problem in the Directed Energy and Hypersonic focus area analyses performed in this year's Plan. The future T&E workforce must have the necessary experience to provide T&E support to future weapon systems developments. Several approaches to help facilitate this are currently being sought including: implementing cooperative education programs, providing outreach to recruit young engineers and scientists from colleges and universities, incentive programs to pay down existing college debt, training programs to crossflow engineering disciplines, mentoring programs to facilitate transition of corporate knowledge. Without dedicated efforts such as these to support future testing, the Department will be lacking in the highly qualified scientists and engineers needed to maintain corporate knowledge and unbiased oversight of test and evaluation activities.

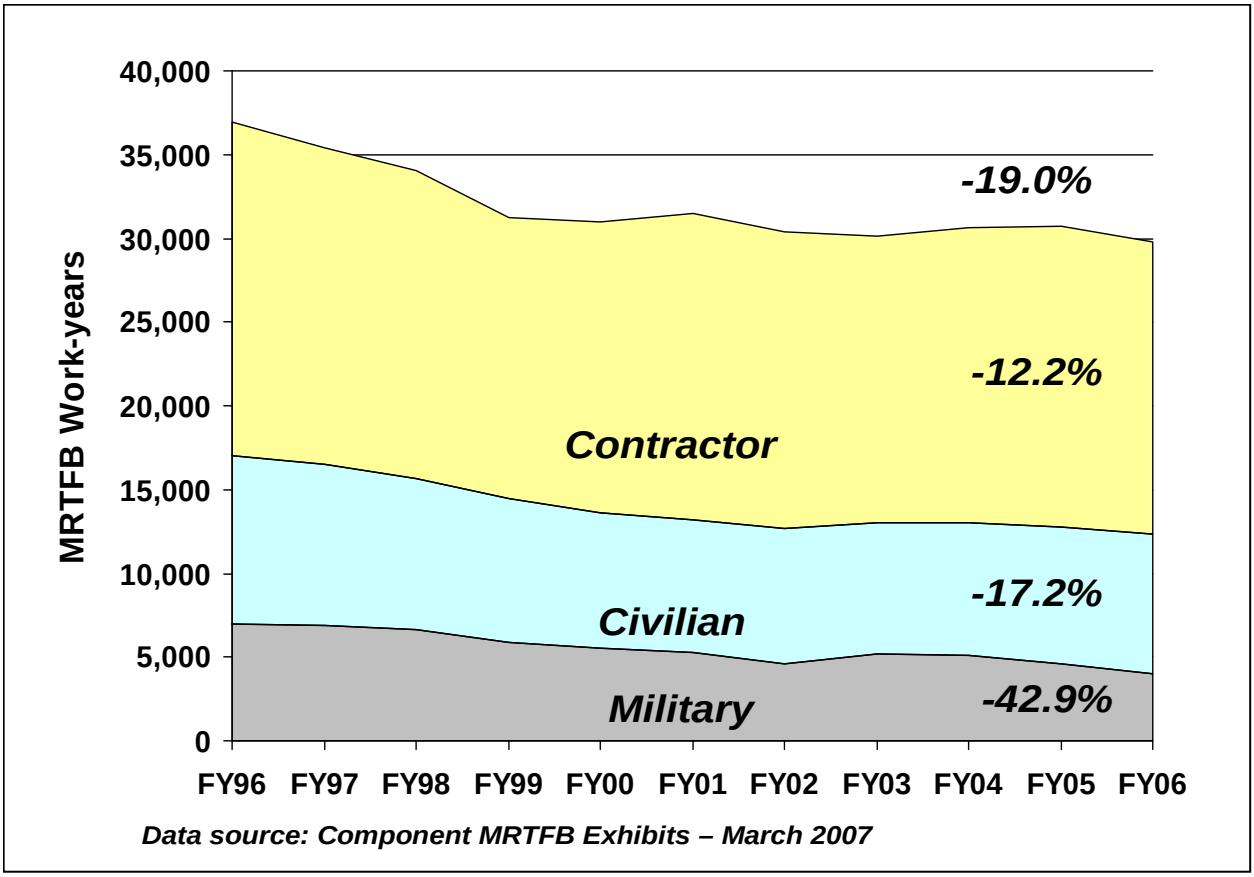

Figure 7. MRTFB Workforce Trend (FY1996 – FY2006)

3.3 Funding Assessment: For the past ten years, Investment and Modernization (I&M) funding for T&E has remained relatively constant and was sufficient to sustain current capabilities (Figure 8, below). The assessment of the T&E infrastructure further reinforced this, as there were very few deficiency areas identified. While funding to sustain current T&E capabilities was adequate, there is a need for additional investment to implement an infrastructure capable of supporting many of the future T&E needs identified in the focus areas of this plan. There is also a need for new facilities and equipment to support testing in the urban environment and advanced technologies such as directed energy and hypersonic weapon systems will drive new requirements for the T&E infrastructure. This will ultimately require either increasing the I&M budgets within the Military Departments or making some very difficult decisions regarding divesting T&E assets throughout the MRTFB.

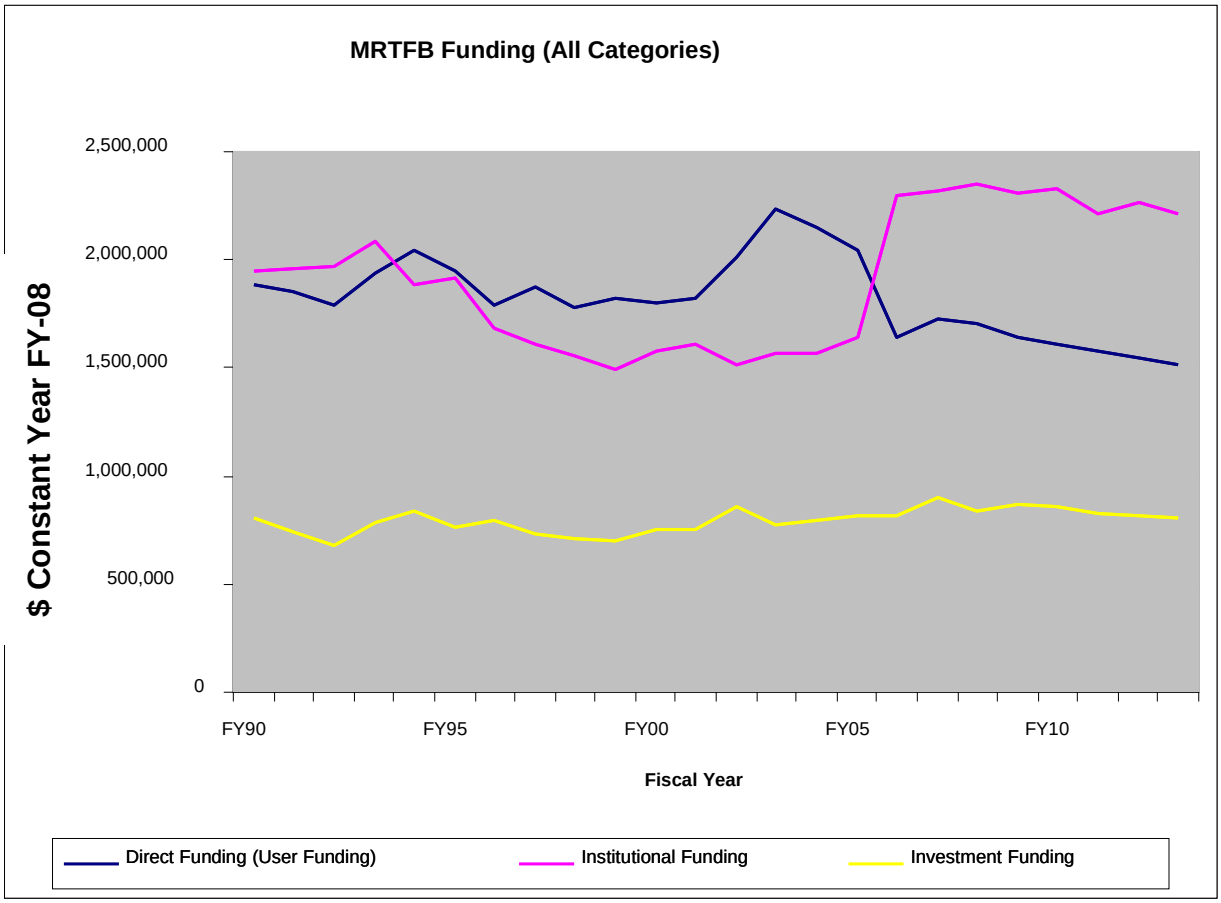

Figure 8. MRTFB Funding Adjusted to Base Year 2008

4.0 FY2007 Accomplishments and FY2008 Plans:

4.1 Strategic Planning: The 2007 Strategic Plan for DoD T&E Resources builds on the drivers, findings, and recommendations of the 2005 plan signed on September 30, 2005, and submitted to Congress. The TRMC used the T&E capability investment needs described in the 2005 plan as a basis of the 2008 T&E budget certification. The TRMC distributed an August 2006 Addendum to the Military Departments and Defense Agencies as an update to report progress toward addressing several of the T&E capability gaps identified in the 2005 Plan and

any changes in the overall capability of the MRTFB. The following provides an update and disposition of the results of the 2005 Strategic Plan for DoD T&E Resources and the August 2006 Addendum.

National and DoD guidance and initiatives; DoD transformation roadmaps; acquisition programs of record; S&T programs; and initiatives identified by the Military Departments, Defense Agencies, and DOT&E shaped the test resource requirements in the 2005 Strategic Plan. TRMC evaluated these drivers against existing capabilities and capacity of the T&E infrastructure to identify current and projected shortfalls in capabilities. High priority shortfalls for which there was no apparent action were identified as T&E capability gaps.

The T&E capability gaps that emerged from the 2005 Strategic Plan and subsequent 2006 Addendum form the basis for some of the seven T&E Focus Areas developed in this 2007 Plan. For example, the 2005 Strategic Plan identified T&E capability gaps for new or improved capabilities to test weapon systems with emerging or new technologies such as directed energy, nuclear weapons effects, and hypersonics. Additionally, the 2005 plan highlighted other emerging, minimally addressed T&E requirements, which have since taken on greater criticality. These resulted in the Focus Areas for the 2007 Strategic Plan and include urban warfare, unmanned systems, IED defeat, and the requirement to develop T&E infrastructure to support robust evaluations of weapon systems using a joint distributed testing approach. The 2006 Addendum added T&E capability drivers from the Base Closure and Realignment (BRAC) Commission, 2006 QDR, and Strategic Planning Guidance (SPG) for fiscal years 2008 – 2013. For the 2007 Strategic Plan, inputs were included from the 2006 DOT&E Annual Report; 2007 Defense Acquisition, Technology and Logistics Strategic Plan; 2007 DoD Research and Engineering Strategic Plan; and pertinent Defense Science Board reports. Of the sixteen T&E gaps originally identified in the 2005 plan, TRMC deemed four critical and recognized them as needing timely resolution during FY2008 budget preparation. An update for the gaps identified in the 2005 Strategic Plan and 2006 Addendum follows.

Live Agent Test Chamber: Subsequent to the publication of the 2005 Strategic Plan, the programs originally requiring this capability in the near-term were restructured. ARTEMIS, the chemical active standoff detector, was cancelled, and the Joint Biological Standoff Detector System (JBSDS) II was delayed until fiscal year 2012 - 2013 due to technical problems. The Chemical Biological Defense Program (CBDP) has programmed funding in the FY2008 budget for a live agent Biological (BIO) standoff chamber military construction (MILCON). In the meantime, the National Academy of Sciences has undertaken a study of the technical feasibility of building such a chamber, as well as alternative solutions including a modification of Baker Lab at Dugway Proving Ground to provide a smaller chamber with a window through which standoff Chemical/Biological detectors could view and characterize live agents.

Infrared (IR)/Ultraviolet (UV) End-to-End Testing: At present, the evaluation of installed system performance of Infrared Counter Measures (IRCM) systems is limited by the ability to realistically replicate all aspects of an end-to-end threat missile engagement during flight testing. Since testers are unable to fire live missiles at manned aircraft, T&E depends on a segmented testing approach using a broad spectrum of alternative test methodologies. Since 2005, the Services and OSD have made considerable progress in

reducing this capability gap. Several Service and OSD funded missile plume simulator developments are underway that will significantly improve DoD's near-term capability to evaluate the installed system performance of high-priority Missile Warning and IRCM systems like the Air Force Large Aircraft Infra-Red Counter Measures (LAIRCM). However, none of the simulators in development is capable of representing all the spectral, temporal, and spatial signature attributes needed to depict a dynamic threat missile fly-out from launch to endgame defeat. Additionally, next generation missile warning systems already under development are expected to incorporate threat discrimination algorithms that demand even greater missile simulator fidelity. To help bridge this gap, TRMC has initiated a comprehensive Infrared Countermeasures Test Resource Requirements Study to characterize future capability needs at each step of testing from the laboratory to open-air range testing. The schedule for this CTEIP-funded study calls for completion in early FY2008 and will deliver an IR/UV test capabilities road map that can be used to establish resource investment priorities for POM 2010.

Full-Scale Aerial Target (FSAT): DoD has made significant progress in eliminating this gap. Currently, the schedule for a 5th Generation Air Superiority Target study calls for its completion in FY2008. Additionally, FY2008 funding is available to develop and field a QF-4 replacement in time to avoid a projected test capability gap in the 2014 time frame. TRMC worked closely with the Military Departments and other OSD staff agencies to ensure that outcome. Due to competing funding priorities, the Air Force did not program FSAT development in their initial FY2008 budget submission. In response, TRMC and DOT&E co-sponsored a POM Issue Paper that favorably resolved the funding shortfall via a November 2006 Program Decision Memorandum. The Air Force subsequently completed its Air Superiority Target (AST) Analysis of Alternatives (AoA) study in March 2007, and the Air Force Requirements Oversight Council supported the recommendation to drone a former military fighter aircraft as the most cost effective design solution. The Air Force has tentatively selected the F-16A as the target air vehicle based on the existing and projected inventory of airframes and the availability of life-cycle logistics support. The Air Force is currently finalizing the AST program acquisition strategy and baseline development schedule. As a result, TRMC anticipates some changes to the AST funding profile in 2009. Additionally, DOT&E and AT&L will conduct a requirements and cost study to address the future long-term solution to the 5th generation air superiority requirement. They plan to complete the study in May 2008.

Supersonic Anti-Ship Cruise Missile (ASCM) Targets: The Department has reached agreement on an acceptable development strategy to resolve the Threat D ASCM test capability gap. Due to competing funding priorities, the Navy did not provide program funding for Threat D target development in their initial FY2008 budget submission. In response, TRMC and DOT&E co-sponsored a POM Issue Paper to address the funding shortfall. Following a senior level review, a November 2006 Program Decision Memorandum directed the Navy (in collaboration with OSD) to further assess alternative test capability options before a final funding decision was made in April 2007. The Navy's updated Threat D technical analysis confirmed the T&E community's position that existing test capabilities are not sufficient to resolve current and projected ship self defense system performance against Threat D credibly. The study also verified the need for some quantity of Threat D targets to evaluate the vulnerability of fleet combat systems against this hybrid

ASCM threat realistically. Upon further review of competing material development options, the Navy decided to pursue development of a two-stage target designed to closely represent all phases of a threat D mission profile to include its unique sub-sonic to supersonic transition. This target solution will offer a credible way to verify that the Navy's newest classes of ships can defend themselves against this proliferating ASCM threat. A true end-to-end live fire performance evaluation is also the best means to validate the M&S test beds used extensively for both developmental and operational test. The Navy has already initiated pre-contractual engineering development activities using available FY2007 funding and will fully fund the Threat D target program via a PR-2009 change request. The TRMC will continue to work closely with the Navy's Aerial Target Program office to explore opportunities to accelerate deliveries of test capable assets as soon as possible, commensurate with avoiding unacceptably high development risk.

4.2 Test Resources:

4.2.1 The Budget Certification Process: In addition to presenting the Congress with a Strategic Plan, the TRMC is also required to review the Services' and Defense Agencies' T&E budgets annually, and submit to the Secretary of Defense (SecDef) a report commenting on the adequacy of the proposed budgets, and whether they are balanced against the Strategic Plan. The TRMC used the T&E capability investment needs described in the 2005 Plan as a basis for the FY2008 T&E budget Certification. Based upon the review of the FY2008 budgets, the Director of the TRMC was able to report to the Secretary that the T&E budgets met the certification criteria of adequacy and balance against the 2005 Strategic Plan, and the 2006 Addendum to that Plan.

Adequacy criteria:

- T&E Infrastructure Investment Budgets: T&E infrastructure investment programs in the test capability areas contained in the 2005 Strategic Plan for the DoD T&E Resources, and the 2006 Addendum to the Strategic Plan for the DoD T&E Resources
- T&E Operating Budgets: Operations of the test range infrastructure in support of testing must be funded to allow full compliance with the Financial Management Regulation (FMR), DoD 7000.14R, while sustaining current T&E infrastructure capabilities

Balance criteria:

- Balanced: Test capability investment programs in the proposed T&E budgets address greater than 80% of the needs contained in the 2005 Strategic Plan and associated Addendum
- Balanced but Improvement Needed: Between 50% and 80% of the needs contained in the Strategic Plan and associated addenda are addressed by test capability investment programs in the proposed T&E budgets
- Not Balanced: Test capability investment programs in the proposed T&E budgets address less than 50% of the needs contained in the Strategic Plan and the associated Addendum

4.2.2 Assessments: In accordance with USC Title 10, Section 196(d), the Director of the TRMC certified in the January 2007 Budget Certification Report that the FY2008 T&E infrastructure investment and operating budgets were adequate and provide balanced support for the 2005 Strategic Plan. The Director further stated that the Test Capability Area, for Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C^4ISR), is balanced but needs improvement because only 67% of the needs in this area were addressed in the 2008 budget. This did not affect the adequacy certification because the two gaps identified in this area in the 2005 Strategic Plan did not require immediate resolution.

4.2.3 Investments: In FY2008, the Navy delayed five investment programs due to reduced funding, but the investments will be completed in time to support the slated acquisition programs. However, note that for FY2009, the Navy proposed T&E investment cuts that would result in funding shortfalls exceeding 40% in FY2010 and 30% in FY2011. These cuts would cancel at least seven new-start I&M projects and significantly delay other projects associated with modernization of the following capabilities. The TRMC is concerned that these cuts will impose unacceptable T&E infrastructure deficiencies. The TRMC is working closely with the Navy and OUSD Comptroller to resolve this concern.

4.2.4 Operating Budgets:

Army: The Army addressed significant shortfalls at the Army Kwajalein Missile Range, thus ensuring adequate funding for that site in FY2008. Efficiency assessments under the "Unit Business Efficiency Resourcing" (UBER) efforts continue, however, the proposed levels of "efficiency" reductions are not considered significant relative to the cost of Army T&E operations. In addition, the HELSTF was reduced to the minimum essential operating budget based on reduced customer workload and overall Army strategic planning.

Air Force: During formulation of the FY2008 President's Budget, the Air Force proposed program changes that resulted in the consolidation of key test activities and the elimination of MRTFB infrastructure at Eglin Air Force Base, as well as other T&E sites. Subsequently, the Air Force partially restored funds to the T&E activities pending the outcome of further studies as directed in the FY2007 Authorization and Appropriations Conference Reports. In response to concerns that insufficient funds were transferred into Air Force T&E accounts during the transition to the new customer charge policy in FY2006, the OUSD(C) directed the Air Force to ensure that it adequately funds the T&E facilities consistent with the policies prescribed in the current DoD FMR and also directed the Air Force fund any T&E facility shortfall that may emerge during execution. For FY2009, the TRMC is continuing to work with the Air Force and the OUSD Comptroller to ensure funds removed as part of the proposed consolidation are restored and/or cost saving efficiencies are clearly defined and demonstrated.

There were no significant operating budget issues for the **Navy** and the **OSD** operating accounts. However, note that the Defense Information System Agency account for the Joint Interoperability Test Command (JITC) decreased to account for BRAC savings associated with the consolidation of T&E activities within JITC.

Finally, the TRMC Director noted that due to increasing pressures upon the DoD budget, there is an increasing trend for the Military Departments, Defense Agencies, and other DoD components to propose budget reductions as "savings" possible through the anticipated realization of infrastructure and operating "efficiencies." While the TRMC understands that resource realignments are necessary to meet critical requirements as the components develop their budgets, and while the TRMC fully supports efforts to achieve efficiencies in the execution of those budgets, future budget certifications will require demonstrated realization of those "efficiency" or "savings" projections. To this end, the TRMC is concerned that there is continuing slow "erosion" of the MRTFB. To address this, the TRMC is taking a three-pronged approach, developing an MRTFB capabilities directory to identify existing capabilities, and establishing metrics to monitor budget, infrastructure and personnel. These three elements will enable the TRMC to identify longer-term trends in the overall health of the MRTFB that may not be readily identifiable from year to year.

4.3 Investment Programs:

The Central Test and Evaluation Investment Program (CTEIP): CTEIP was established in 1990 to improve the coordination and planning of investments in DoD's T&E facilities. The program invests in developmental T&E capabilities that will meet the test requirements of more than one Service. With an average budget of $136 million a year, CTEIP funds over 60 projects at any given time, all of which are in various stages of development. These projects range from quick assessments of new technologies to full-scale efforts to develop new test capabilities. Funding varies from several hundred thousand dollars to as much as $100 million over the life of the project. While CTEIP operates under the oversight of the TRMC, the Services and Defense Agencies propose and execute CTEIP projects. CTEIP provides a coordinated process for funding T&E investments that leverage Service investments and encourage joint development and use of new test capabilities.

During 2007, CTEIP again made significant progress in the development and deployment of test infrastructure capabilities. This year 25 Joint Improvement and Modernization (JIM) projects continued in execution, and a number of them successfully completed development and began supporting test activities across the MRTFB. Highlights of the 2007 CTEIP program are summarized below.

The Land and Sea Vulnerability Test Capability (LSVTC) became operational at Aberdeen Test Center, MD. The LSVTC provides unique capabilities to conduct lethality and vulnerability testing in both underwater and land/sea transition zone environments accurately and safely. This capability also enhances compliance with the National Environmental Policy Act (NEPA) by avoiding tests in marine areas that could affect aquatic life or the nation's coastlines.

In 2007, the CTEIP program completed work on improvements for the Joint Installed Systems Test Facilities (JISTF) located at Edwards Air Force Base, CA and Patuxent River Naval Air Station, MD. Aircraft tested in the anechoic chambers at these sites can now be immersed in high fidelity; full spectrum air and ground combat electromagnetic environments.

CTEIP's Directed Energy Test and Evaluation Capability (DETEC) addresses the need to test safely and accurately the effects of directed energy systems. Started in 2004, this project is currently developing eleven T&E capabilities divided into two categories: High Energy Laser (HEL) and High-Power Microwaves (HPM). In 2007, six of these capabilities were ready to support test events, including instrumentation to measure reflected HEL energy and target irradiance, as well as instrumentation to measure HPM characteristics and environmental effects.

In 2007, CTEIP also began an effort to exploit maturing technologies to develop a replacement to the Advanced Range Data System, which CTEIP had developed in the early 1990s to provide real-time, high-precision time-space-position information (TSPI). The Common Range Integrated Information System (CRIIS) project will meet the T&E needs of future weapon systems requiring sub-meter TSPI accuracy and increased data throughput. It will also provide a framework upon which future range data system improvements, common to testing and training, can be pursued. In doing so, CRIIS directly implements the September 7, 2006 memorandum entitled "Test and Training Interdependency Initiative," signed by the Under Secretary of Defense (Acquisition, Technology and Logistics), Under Secretary of Defense (Personnel and Readiness), and Director, Operational Test and Evaluation. This memorandum communicated their common vision for "interdependent" test and training solutions. Highlights from 2007 include approval of the CRIIS acquisition strategy to carry two contractors through technology risk reduction, with down select at the preliminary design review, and coordination with the Joint Program Executive Office Joint Tactical Radio System (JPEO JTRS) on use of JTRS technology in development of the CRIIS High Throughput Data Link capability.

CTEIP's continuing Advanced Instrumentation Data and Control System (AIDACS) project fielded two new capabilities in 2007--the Hypervelocity Launcher Data Acquisition and Control System (G-range) and the Re-entry Trans atmospheric Fly-The-Mission **(**High Enthalpy Ablation Test Cell H3). Both systems provide improved capabilities for data collection, data processing, data validation, and decision making to support integrated flight and ground testing at the Arnold Engineering and Development Center (AEDC) at Arnold AFB, TN.

In 2008, CTEIP will complete development of a suite of nine new capabilities under the Contamination Avoidance Detector Test Suite (CADTS) project. This capability will allow the realistic simulation of Chem/Bio threats in a test environment. The instrumentation will also be capable of establishing ground truth for Chem/Bio tests, thus making testing much more efficient and less costly. The CADTS project will result in a suite of state-of-the-art Chem/Bio instrumentation of higher fidelity, accuracy, and ease of calibration than anything that was available previously.

The Resource Enhancement Project (REP), the component of CTEIP that resolves short-term, emergent operational test shortfalls, had 19 subprojects in execution in 2007, of which four were new initiatives. Nine subprojects reached initial or full operational capability. One of them, the Advanced Capability Mobile Flight Mission Simulator (ACMFMS), provides a real-time hardware in the loop system exerciser that produces defined and repeatable radio frequency stimuli for evaluating the PATRIOT system performance under various loads and environments. ACMFMS will expand the capability of the current PATRIOT test bed, allowing for evaluation of the overall system performance in a battalion configuration. These test results will play a critical role in characterizing the PATRIOT system's intra-operability capabilities and will aid in

the identification of issues that impact theater-wide interoperability. Another REP subproject, the Shootable Remote Threat Ground Target (SRTGT), is providing maneuverable, low cost, live ground targets for a variety of weapons testing. A recent capability demonstration of SRTGT was held at the request of the Joint Direct Attack Munitions Program. During the demonstration, the SRTGT achieved a speed of 76 mph with lateral g forces above 0.5g—figures that were well above the threshold requirements. A REP subproject that also reached full operational capability in 2007 is the Command and Control Data Analysis Capability (C^2 DAC), which developed a capability to evaluate the net-centric warfare capabilities of command and control systems and to enhance test readiness and data analysis. Within its first three months of operation, C^2 DAC has been used to conduct 18 independent test events for ten systems including Theater Battle Management Core Systems, Tactical Air Control Party, Close Air Support System, Battle Control System-Fixed, and the National Capitol Region Integrated Air Defense System.

In 2008, REP will fund two new initiatives. One initiative is to improve the Self Defense Test Ship's unmanned operations. The Self Defense Test Ship is utilized by the Navy to conduct surface ship self-defense testing. Another initiative will provide the capability to assess Air and Space Operations Centers' distributed network capabilities. This initiative will provide automated test tools to evaluate tactical data link interoperability and compatibility in a live-fire environment. In doing so, it will provide a means to assess Command and Control systems ability to generate a coherent tactical picture in real-time.

Test & Evaluation/Science & Technology (T&E/S&T) Program: DoD launched the T&E/S&T Program in 2002 in recognition of U.S. development of advanced technology and transformational weapon systems, such as directed energy weapons and multi-/hyperspectral sensors and seekers, with no corresponding advances in test technologies. T&E/S&T technology development projects typically begin at Technology Readiness Level 3 and mature to Level 6; deliverables include test technology prototypes and demonstrations. As the Central Test and Evaluation Investment Program (CTEIP) and the Service Improvement and Modernization Programs are the primary users of T&E/S&T-developed technologies, T&E/S&T also provides risk reduction for development of test capabilities by these programs. The Program already achieved notable successes that are benefiting the test community. Within the TRMC, the T&E/S&T Program is aligned with the Strategic Plan for DoD T&E Resources. This alignment has and will continue to posture the T&E/S&T Program to provide the technological feed necessary to close successfully the test capability gaps identified in the Strategic Plan.

Funded at $38.84 million in FY2007, T&E/S&T made significant progress in 86 projects in six focus areas – Directed Energy Test, High Speed/Hypersonic Test, Multispectral Test, Netcentric Systems Test, Non-intrusive Instrumentation, and Spectrum Efficient Technology. The newly established Unmanned and Autonomous Systems Test focus area issued its first Broad Agency Announcement and selected five FY2007 new start projects.

Key among the 29 FY2007 new starts across the program are technologies to improve our abilities to: 1) measure high-energy laser (HEL) and high power microwave (HPM) energy on target; 2) provide high fidelity test environments for high speed/hypersonic systems; 3) conduct real-time, realistic end-to-end T&E of multi- and hyperspectral battlefield systems; 4) test Joint network centric warfare concepts using virtual equivalents of real-world networks; 5) provide non-intrusive sensors, data storage, and power sources for continuous, non-obtrusive T&E; and

6) assess the performance of tethered, semi-autonomous, and autonomous robotic systems. The Spectrum Efficient Technology (SET) Focus Area did not fund any FY2007 new starts because it is being structured to provide advanced technology developments needed by CTEIP's integrated Network Enhanced Telemetry (iNET) project. The iNET study has developed an architectural concept for a Telemetry Network System (TmNS) that addresses the needs of the test and evaluation, and training communities. However, the iNET architecture is not yet sufficiently defined to guide the selection and funding of SET projects. Accordingly, SET will temporarily phase out and stand up again in FY2009 after iNET is better defined. SET will complete its current, ongoing projects in FY2008 and issue a Broad Agency Announcement for FY2009 new starts.

In FY2007, the 16 technology transitions and completions included delivery of: 1) a Delivered Irradiance Assessment Tool to the CTEIP Directed Energy Test and Evaluation Capability (DETEC) Lead System Integrator to determine best estimate of irradiance on target; 2) Microelectromechanical System (MEMS) Fiber Optic Sensors to the Air Force Research Laboratory for scramjet testing; 3) Advanced Munitions Flight Test Instrumentation to both the Army Research Laboratory and the Army Missile and Armaments Command for testing advanced munitions like the Excalibur artillery round and the Extended Range Guided Munitions; 4) the Tactical Report Generation Test Bed to the CTEIP Interoperability Test and Evaluation Capability (InterTEC) Program and Joint Forces Command for automated netcentric test planning and scenario development derived from Joint mission plans and architectures; and 5) a Steerable Beam Antenna to the CTEIP iNET project for eliminating dual antenna interference.

In FY2008 the Program, funded at $62.89 million, will continue ongoing projects, and will launch 30-40 new technology developments including technologies for: 1) HEL and HPM beam diagnostics instrumentation; 2) non-intrusive flight diagnostics for high speed and hypersonic air vehicles; 3) testing systems that focus on detecting multi-spectral signatures of improvised explosive devices; 4) compact, high-capacity non-intrusive instrumentation power sources that harvest energy from the local environment 5) infrastructure and processes for conducting persistent joint mission testing in netcentric test environments; and 6) command and control test network for multiple unmanned air system platforms.

The Program expects to complete and transition up to 35 projects in FY2008 and initiate 30-40 new S&T developments in FY2009.

Joint Mission Environment Test Capability (JMETC): The JMETC Program originated in FY2005. USD(AT&L) assigned responsibility for execution to the Director, Test Resource Management Center. The JMETC Program Office was stood-up in October 2006 and in the past year has made great strides in establishing and executing the program. During its first year, the JMETC Program exceeded its initial goals by establishing and staffing the JMETC Program Office, establishing the JMETC Virtual Private Network (VPN), and supporting its first two test events, Integral Fire 07 and InterTEC Spiral 2, Build 1, both described below. These accomplishments were the result of the collaboration by the JMETC staff with the Services, Joint Staff, USJFCOM, and various T&E agencies.

Funded at $10.8 million in FY2007, JMETC is a DoD corporate approach for linking distributed facilities, enabling customers to more rapidly develop and test war-fighting capabilities in a joint context. A standout benefit of the JMETC program to the T&E and acquisition communities is the cost and timesavings in providing readily available, persistent connectivity with standing network security agreements.

The Program established the dedicated JMETC Virtual Private Network (VPN) on the Secure Defense Research Engineering Network (SDREN) in cooperation with the High Performance Computing Modernization Office (HPCMO). At the end of FY2007, the JMETC VPN stands ready to provide readily available, persistent connectivity for distributed joint testing. Two test events in FY2007 proved the JMETC capability.

In the first event, conducted in August 2007, the JMETC team, working closely with the AF-Integrated Collaborative Environment, JFCOM's Joint Systems Integration Command, and the Joint Test and Evaluation Methodology (JTEM) Joint Test and Evaluation (JT&E) project, successfully supporting the Integral Fire 07 distributed test with the first ever use of the JMETC VPN. JMETC provided significant assistance in the technical planning, network integration and, finally, event execution. JMETC connected 15 locations across three network enclaves, using the JNTC-sponsored aggregation router. The three network enclaves included the JFCOM JSIC enclave (four locations), the AF – ICE enclave (six locations) and the five locations that JMETC had established on the JMETC VPN. JMETC successfully met all of its objectives in Integral Fire 07. Those objectives were to stand up the JMETC Virtual Private Network (VPN), support the event customers and record lessons learned to improve future events. Additionally, JMETC successfully used the aggregation router to enable event participants to use the same network in the same timeframe, to meet their test objectives. The Program also provided nine "gateways" to translate the data from legacy simulations using the Distributed Interactive Simulation (DIS) protocol to the Test and Training Enabling Architecture (TENA) to exchange data among the 15 locations. As a result, JMETC was able to provide reliable and secure data transfer over the infrastructure for the three distributed test customers.

In the second use of the JMETC VPN for a distributed test event, JMETC supported the InterTEC Spiral 2, Build 1 test event at the end of September. InterTEC—the Interoperability T&E Capability—is an OSD-sponsored, Navy-led project under the Central T&E Investment Program (CTEIP) and is tasked to develop an accredited interoperability test capability to conduct joint interoperability certification and joint mission thread testing. The results of this InterTEC event show that the JMETC Program can rapidly reconfigure and reuse assets to support another customer with completely different objectives. JMETC reused four locations from their Integral Fires event and added three additional locations to support the InterTEC event. At the end of FY2007, JMETC has nine locations on the VPN readily available to support new customers.

In an effort to collaborate with the Service and Agency T&E communities, JMETC has held four JMETC Advisory Group meetings and two Users Group meetings. The Advisory Group consists of 06 / GS15-level members from the Services and Agencies. The Users Group consists of technical representatives from across the T&E community. The Users Group meetings had in excess of 140 attendees, demonstrating the high-level of community interest in the JMETC Program. Additionally, JMETC has devoted significant resources, to include a full-

time JFCOM liaison, to collaborate with the Training community. The objective of this collaboration is to achieve interdependency between test and training distributed event capabilities by synchronizing investments, preventing duplication, and ensuring compatibility between the two communities.

JMETC is working aggressively to identify potential customers and to support those already involved in the JMETC infrastructure. JMETC will work with new customers to identify LVC infrastructure needs as well as JMETC program support requirements. In 2008, we are currently planning events with InterTEC Spiral 2, Build 2; Single Integrated Air Picture (SIAP); Joint Combined Hardware-in-the-loop Event (JCHE) Phase 5; and the US Army Future Combat System, Combined Test Organization, which is planning a distributed event using the JTEM JT&E methods and processes.

The JMETC corporate approach for linking distributed facilities will enable T&E and acquisition community customers to evaluate new and legacy systems and capabilities in a Joint context. The JMETC Program Office is aggressively working with multiple programs to determine how we can meet their requirements. The TRMC appreciates the collaboration received from the Services and JFCOM for contributing to the accomplishments of this first year for the JMETC program.

4.4 Programs and Policy:

MRTFB Policy: Title 10 requires the Director of the TRMC to "review and provide oversight of proposed DoD budgets and expenditures for T&E facilities and resources of the MRTFB." In addition, the Secretary has assigned the USD(AT&L) and the TRMC additional responsibilities for the management of T&E resources and infrastructure. To satisfy these requirements, the TRMC, together with the Services and Defense Agencies, have been conducting a comprehensive review of the policies and procedures governing the MRTFB.

DoD Directive 3200.11 Update: In December 2007, DoD Directive 3200.11, *Major Range and Test Facility Base (MRTFB)* was published. This revision realigns responsibility for management of the MRTFB from the Director, Operational Evaluation and Test, to the Under Secretary of Defense (Acquisition, Technology, and Logistics), and assigns the TRMC as the lead oversight agency for the MRTFB. In addition, the Directive assigns to the Director, TRMC the authority to approve changes in the composition of the MRTFB.

DoD Instruction 3200.11: The TRMC staff has begun to draft a DoD Instruction on the MRTFB to accompany the recently approved Directive. The Instruction will implement procedures required to manage the composition and operation of the MRTFB. The Director of TRMC established a Work Group, composed of TRMC staff and Component MRTFB managers, to develop the Instruction. We anticipate issuing the final Instruction by April 2009.

4.5 Oversight of T&E Infrastructure:

Annual Review: In August, TRMC held its annual T&E Infrastructure Review. This review provided a forum for MRTFB members to identify and discuss their most important concerns affecting the T&E infrastructure. More than 150 people, representing the entire MRTFB, Service communities, and defense agencies, participated in the event. The agenda included an update of the progress on six key action items that emerged from the 2006 Review, as well as joint presentations from the Services.

A synopsis of the six key action items includes:

- Identify the need for, and possible development of, an Urban Test Environment (Army lead):
  - Urban warfare impact on C^4ISR cuts across all Test Capability Areas
  - Current focus is short term (i.e. IED defeat), need to think long term
  - Identified as a focus area in the 2007 Strategic Planning formulation
- Develop a set of metrics for measuring the status and growth of the MRTFB (Air Force lead):
  - Good background material assembled, good basic research done
  - Need to clarify the requirement, i.e. MRTFB resources vs. T&E infrastructure health vs. effectiveness
  - Performance metrics need to be enterprise wide
- Identify opportunities to improve the health of the T&E workforce (Navy lead):
  - Good background material assembled, good basic research done
  - Identify a "caretaker" for improving the health of the T&E workforce
  - Need to identify the workforce contribution that accrues to contractors
- Establish a study team to review the various interpretations of the FY2003 NDAA charge policy for the ranges and facilities (TRMC Resources Division lead):
  - On-going
- Develop a process for admission to and membership of a facility in the MRTFB (TRMC JIPP Division lead):
  - Reviewed and worked selected terms and definitions for the DoD Directive and instruction
  - Reviewed and made recommendations on criteria for membership in the MRTFB
  - Conducted a group exercise to develop proposed MRTFB entry and exit procedures
- Review and recommend changes to reporting of anticipated user income in MRTFB budget exhibits to the USD, Comptroller (USDI lead):
  - On-going

In addition to the discussion of the pending action items, several other new topics were presented. These included presentations on a Tri-Service approach to Strategic Planning, The DoD Chemical and Biological Defense Program, an update on Yuma Proving Ground capabilities, and a proposal for a Range Capabilities (Facilities) Directory.

Eleven action items resulted from the 2007 review. Those are listed below with the assigned lead and due date for completion:

- Continue to completion the demographics/workforce survey for aviation and weapons for all Services – Ongoing:
  - Make recommendation for Service leads to address follow-on studies consistent with pilot process (Tri-Service lead), February 2008
- Investigate and report on flexibility of Services to use project aircraft for mission support mission (Navy lead), December 2007
- Review current policies to determine if there are restrictions precluding data evaluation and reporting as chargeable to the customer (TRMC / Air Force lead), TRMC Annual Review 2008
- Investigate alternatives (e.g. T1s, contract cost reporting system, etc) to better show contractor T&E costs (TRMC and DOT&E lead in coordination w/Services), TRMC Annual Review 2008
- Identify Service POCs for Range Capabilities Directory (Service T&E HQ offices lead), October 2007
- Develop initial draft Range Capabilities Directory data matrix (TRMC lead), November 2007
- Continue activities of the performance metrics working level IPT (Air Force lead) – Ongoing
- Investigate impact and acceptability of moving Strategic Planning publication to fall of even years (TRMC lead), October 2007
- Set-up meeting with BoD(ES) and OSD executive leadership to discuss tri-Service proposal and address recommendations presented by Strategic Planning Breakout Group (Navy Lead), October 2007
- Issue POA&M to implement agreed upon RELIANCE reconfiguration (BoD(ES) lead), November 2007
- Form a working group of empowered representatives from the Services and OSD to develop criteria and a process for MRTFB entry and exit procedures (TRMC lead), October 2007

Facilities Directory: To support the mission of strategic planning, budget certification, and oversight of the MRTFB, TRMC began development of an enterprise-wide Range Capability Directory. The overall purpose of this effort is to establish a permanent corporate-level knowledge base that would provide a primary resource to TRMC activities, but would also be available to external customers who have need of such T&E infrastructure information.

Currently, multiple databases exist at different locations for data on T&E infrastructure costs, capabilities, and requirements. Often TRMC's mission requires repeated and sometimes inconvenient data "pulls" from the Services and other sources. TRMC is currently documenting the information requirements needed to perform its strategic planning, budget certification and oversight mission. TRMC is also reviewing the various budget submissions to assess how they integrate into this effort. Once these efforts are complete, TRMC will assess various information

gathering and presentation alternatives to best accomplish the task and develop an executable plan. The end goal remains a web-accessible directory that would allow TRMC and the extended T&E customer base to survey a near real-time listing of available range locations, and capabilities. TRMC's goal is to have a prototype Facilities Directory in place this fiscal year.

Range and Installation Sustainment: The TRMC is formally engaged with the various DoD offices and forums that work to assist DoD facilities and ranges to meet environmental, wildlife and species protection statutes, and to preserve mission capability at test ranges. TRMC is a member of the Sustainable Ranges Working Group, which is comprised of OSD and Service offices, and which reviews sustainable policies, practices and inputs for the Department. This group produces the two annual major Reports, which go to Congress: the Sustainable Ranges Report and the Readiness and Environmental Protection Initiative Report. These documents, for 2007, cover both training and test ranges. The TRMC Director, along with his peers in the OSD Readiness, Installations & Environment offices, and Director, Operational Test and Evaluation lead at the senior-level panel on range sustainability.

The TRMC is also working with the appropriate Service T&E offices to employ a variety of tactics, such as obtaining easements or investment in real property that preclude development in proximity to our installations.

The TRMC supports the Southeastern Regional Range Partnership and the formation of a Western Range Partnership. The purpose of these partnerships is to encourage Federal, state, and local agencies, and private entities to collaborate on agreements to manage local growth and mitigate its impact on area DoD installations and ranges.

Another focus area for the TRMC has been our active participation in the AT&L/I&E led Energy subgroup that is working with other Federal agencies to mitigate the impact of proposed new energy corridors, electric-generating windmill farms, and new offshore oil exploration leases on, through, or near existing air, land, and sea range spaces.

During the summer of FY2007, TRMC helped plan, sponsor, and partly fund the first biennial Conference on "Sustaining Military Readiness through conservation, compatible land use planning, and encroachment mitigation." A smaller conference is planned for the summer of 2008, followed by a repeat of a larger conference in 2009.

T&E Work Force Study: Consistent with the TRMC's responsibility to provide "an assessment of the current state of the test and evaluation facilities and resources of the Department," in FY2007, the Director, TRMC initiated a series of tasks to accomplish the following:

- Develop a demographic profile of the MRTFB Workforce to include: Census totals – military and civilian personnel by Service/Command; education and experience profile of military and civilian professionals; age and retirement eligibility demographics, and occupational composition
- Develop a plan to begin "Shaping the Workforce" to ensure that the T&E Workforce, an essential T&E resource, is properly configured in terms of size, military-civilian-contractor mix, and skills, to effectively address the Department's current and future testing needs

In FY2008, the TRMC will examine various Workforce Shaping initiatives to include:

- Support to Education & Training Programs to include: Survey, document, and catalog existing training programs to support common use by T&E community, survey college/university programs supporting advanced T&E education, and explore possibility of establishing cooperative agreement
- Central Recruiting Program consisting of surveying, assessing, and reporting on the effectiveness of various recruiting methods
- Assessment of methods for "Stemming Loss of Knowledge" to include a literature search and field survey of methods used by industry/non-DoD agencies to capture and transfer knowledge

Additionally, the MRTFB demographics database will be updated with FY2007 military and civilian personnel data, so that eventually TRMC can evaluate trends in workforce demographics.

Program Assessment Rating Tool (PART) / Performance metrics: The 2003 National Defense Authorization Act directed TRMC to "Identify performance measures associated with the successful achievement of test and evaluation objectives covered by the Strategic Plan." In this context, Measures of Performance (MoPs) address the important characteristics of the MRTFB to help TRMC judge its health, and determine if DoD or Service policies are causing the desired improvement. In addition, MoPs can help motivate desired behavior by measuring characteristics considered important.

The 2007 Strategic Plan focused on TRMC efforts to develop quantifiable performance measures that the TRMC can use to collect timely and credible performance information on MRTFB T&E resources. Additionally, these performance measures also support the Office of Management and Budget (OMB) requirement for the PART. The performance measures identified in the Strategic Plan support the enterprise. The TRMC recognized the need to establish links to key performance measures at the range level to provide applicability to budget needs, improved performance, and policy-making.

The TRMC has made progress this year developing candidate MoPs. Specifically, two MoPs will focus on critical T&E gaps and investments addressed in the Department FYDP, by other Departmental initiatives, or longer term through the T&E/S&T Program. Three MoPs help us baseline the current MRTFB workforce by providing the demographics needed to assess the required size to meet workload demands, and the appropriate training and qualifications necessary to execute current and future T&E missions. One MoP focuses on needed investments to sustain and modernize critical T&E infrastructure. Future efforts will concentrate on the following four areas:

- The voice of the customer to address how well the MRTFB is meeting known weapon systems acquisition requirements
- Whether we have the people, with the right qualifications and training, to meet their position requirements
- Do we have the right mix of capabilities within the MRTFB

- How well positioned are the MRTFB activities to accommodate the required DoD T&E workload

4.6 Modeling and Simulation (M&S): Digital models and simulations are a key test and evaluation resource for the T&E community. During FY2007, TRMC provided support to the Department's M&S community through active participation in both the Steering Committee and subordinate IPT. The TRMC also initiated activity to co-lead the development of the T&E community's M&S business plan. The plan has two key objectives: 1) to identify the current and evolving needs for models and simulations used in support of T&E and; 2) identify actions needed to acquire and apply M&S capabilities to meet those needs. The goal of this effort is to enable the increased use of modeling and simulations throughout the T&E community in support of weapon systems acquisition. The T&E community will continue its efforts to meet the objectives that will culminate in the completion of their business plan in FY2008. The results from the T&E community will feed into the Department's overall M&S Cross-cutting business plan, and serve as input to TRMC strategic planning.

4.7 Collaboration and Partnerships (Outreach):

4.7.1 NASA:

National Partnership for Aeronautical Testing: In January 2007, the DoD and NASA formally signed a Memorandum of Understanding establishing the National Partnership for Aeronautical Testing (NPAT) Council. The purpose of the NPAT is to expand cooperation between the parties and facilitate an integrated national strategy for the management of their respective aeronautical test facilities. The agreement provides for a high-level NPAT Council, co-chaired by the Director of the TRMC and NASA's Associate Administrator for the Aeronautics Research Mission Directorate, with representatives from each Military Department and the Director, Defense Research and Engineering, as well as key NASA aeronautics executives.

The NPAT Council convened for the first time in June 2007, and immediately began to address several high-priority issues affecting NASA and DoD aeronautical test facilities. They received an in-process briefing on the status of an assessment of the relative capabilities of several NASA and DoD transonic wind tunnels, and reviewed a proposal to develop a standard calibration model for use in transonic wind tunnels.

The NPAT Council expects to meet twice each year. The Council is already focused on its strategic vision, which is expected to include the sponsorship of additional interagency facility assessments covering other flight regimes.

Transonic Facilities Assessment: The purpose of the transonic facilities assessment was to ensure transonic ground test facilities remain adequate to meet the testing requirements of DoD and NASA future air-vehicle system development programs. The specific task consisted of a comparative analysis of government owned, mid-to-large transonic wind tunnels necessary to fulfill air-vehicle testing requirements. A second objective was to identify a primary suite of alternate transonic wind tunnels in the event that the Arnold Engineering Development Centers (AEDC) Transonic Propulsion Wind Tunnel 16T is occupied, out of service, or abandoned by the

US Air Force. Facility selection was based on the following capability criteria: 1) Mach 0.6 to 1.5, 2) test section size of 8' × 6' or greater, and 3) test medium of air. Four government facilities met the criteria and were selected for assessment: 1) Transonic Propulsion Wind Tunnel 16T located at the Arnold Air Force Base in Tennessee, 2) National Transonic Facility (NTF) at NASA Langley located in Virginia, 3) 11-Foot Unitary Plan Wind Tunnel located at NASA Ames in California, and 4) 8 × 6-Foot Supersonic Wind Tunnel located at NASA Glenn in Ohio.

This assessment identifies capabilities of these transonic facilities to conduct air-vehicle wind tunnel testing of four vehicle types: 1) aircraft which includes fighters, bombers and transports, 2) armaments which includes weapon and weapons separation performance and various types of internal and external stores, 3) missiles including interceptors, and 4) space systems such as the NASA Space Shuttle and the NASA Constellation. Each facility was evaluated based on key simulation parameters, robustness, flow quality, analytical and diagnostic capabilities, data uncertainty, staffing, productivity, available support, recent usage, and unique/related integral capabilities.

DoD-NASA Aeronautics Facilities Users' Meeting: In March 2007, the TRMC and NASA co-hosted a meeting of the users of their respective aeronautical test facilities. The meeting, held at the Institute for Defense Analyses, drew participants from multiple DoD and NASA activities as well as the aeronautics industry. The second in a series of such meetings, it provided a forum for the Federal Government to share information about its current and planned aeronautics activities, and receive informal feedback from the customers of its major aeronautical test facilities.

At the meeting, the Office of Science and Technology Policy provided a briefing on the new National Aeronautics Policy and the upcoming effort to develop a National Aeronautics Research and Development Plan, with an associated Research, Development, Test and Evaluation Infrastructure Plan. NASA gave a presentation on its Aeronautics Test Program and its priorities regarding the facilities in that program. The Arnold Engineering Development Center gave a briefing on its facility improvement initiatives and NASA provided a briefing on its capital investment program. The DoD explained its January 2007 *Report to Congress on the National Aeronautics and Space Administration (NASA) Aeronautics Test Facilities Critical to DoD*. The Arnold Engineering Development Center provided a status report on the reactivation of the National Full-Scale Aerodynamics Complex.

The meeting concluded with a structured feedback session that facilitated meaningful dialogue between the owners/managers of federal aeronautical test facilities and their customer base.

4.7.2 Collaboration with the Training Community: TRMC continued to promote DoD's strategic vision of achieving seamless, interdependent test and training range capabilities through major initiatives during FY2007.

Test and Training Planning Collaboration within OSD: On September 7, 2006, the Under Secretary of Defense (Acquisition, Technology and Logistics), the Under Secretary of Defense (Personnel and Readiness) and the Director, Operational Test and Evaluation signed a joint memorandum entitled "Test and Training Interdependency Initiative." This memorandum established their common vision for "interdependent" test and training solutions. The goal of

this initiative is to achieve a "single, more realistic operational environment," beginning with airborne instrumentation suitable for both test and training applications. The flagship project for this initiative is the CTEIP-funded Common Range Integrated Instrumentation System (CRIIS) project. CRIIS is an airborne range instrumentation system that will improve the accuracy of time space position information (TSPI) and non-TSPI (velocity, acceleration, etc.) data for airborne platforms while relaying that data to multiple participants in real-time. On April 6, 2007, the Air Force was named Lead Acquisition Agent for the project CRIIS represents a major step toward achieving common instrumentation across test and training venues. In FY2007, the CRIIS project finalized its acquisition strategy, which featured an initiative to incorporate DoD's Joint Tactical Radio System technology to enable it to operate either a radio communications waveform tailored for test range applications, or the training community's Range Instrumentation Waveform to make it compatible with the P5 Combat Training System. CRIIS will also support traditional training capabilities like real-time kill notification and will include sufficient processing resources to operate complex training simulations. Likewise, the CTEIP-developed Joint Mobile Infrared Countermeasures Test System (JMITS) began testing of its integrated autotracker / laser rangefinder, which will give it not only an enhanced test capability but provide flexibility to employ the asset to exercise aircraft response to simulated infrared missile threats in unscripted training scenarios. In the command and control arena, the Resource Enhancement Project funded subproject, the Command and Control Data Analysis Capability for Air and Space Operations Center (AOC) Systems and Tactical Datalink Networks, led to a flexible, interoperable capability to exercise AOC systems in either an operational test or training environment.

Collaboration with JFCOM: In FY2007, TRMC forged a structured management relationship for future collaboration with the Joint Forces Command (JFCOM) in developing interdependent and, in some cases, common, test and training capabilities. Under this framework, the two organizations will initiate a movement from a test and training centric infrastructure towards an enterprise centric infrastructure, optimizing development of capabilities applicable to either domain, and expanding cooperative use of the test, training, and experimentation infrastructure. The agreement also advances coordinated and vetted test and training system requirements to guide test and training investments and, wherever feasible, development of compatible capabilities and services. Finally, the agreement fosters coordination and improvement of planning, investment and budgetary processes and documentation to support these collaborative efforts.

Joint Infrastructure Enterprise Initiative (JIEI): TRMC is reaching out to all DoD stakeholders who have an interest in furthering the distributed live, virtual and constructive (LVC) Enterprise. These stakeholders come from the T&E, Training, and Acquisition Communities of Interest (COI); the Services; and the Joint Staff. These meetings serve to more broadly educate the audience regarding the current LVC initiatives and provide a continuation of the exchange of information on the capabilities and enablers of the DoD initiatives that integrate distributed LVC capabilities. The JIEI Forum objectives are: 1) Provide an understanding of ongoing LVC activities; 2) Discuss key issues affecting a more robust use of LVC environments; and, 3) Identify possible solutions to those issues along with possible courses of action.

In February 2006, the TRMC Director convened the first JIEI open forum. Since then, we have conducted eight meetings with thirty activities having made presentations. Programs that have made presentation include: virtually all networks and their governance body the Defense IA Security Accreditation Working Group (DSAWG); acquisition programs, such as CVN-21 and the Future Combat System (FCS); ten service/agency initiatives and ten joint initiatives.

The TRMC continues to challenge the participants to identify the key, crosscutting issues facing the distributed LVC community to bring to a senior advisory group's attention. One item has had some fruition in the form of an AT&L goal: "Achieve interdependency between test and training infrastructure investment." Other issues and concerns identified from the first eight JIEI meetings include: network peering; multi-level and multi-national security issues; common data standards; standards for software products; information assurance guidelines; event accreditation and documentation; oversight structure and business models which enable more efficient cross-functional utilization of test and training ranges; and common funding issues and common network solutions.

For FY2008, currently scheduled briefs include DDG1000 and JFCOM plans to brief its roadmap/study regarding the LVC architecture. From this point, TRMC plans to condense and summarize the key, crosscutting technical, governance, and budgetary challenges faced by the activities and distribute them to the appropriate forums for discussion and direction.

TRMC is also standing ready to support DOT&E's initiative put forth in their memo, Subject: Testing in a Joint Environment Roadmap, dated June 27, 2007. DOT&E's memo proposes to establish a new governance structure to oversee total effort, not just existing elements. It would provide a voice for stakeholders, permit effective user representation, and have authority to direct actions necessary to achieve roadmap goals.

Range Commanders Conference: During the course of the year, TRMC staff participated in two Range Commanders Conferences (RCC). The RCC is a forum in which the various test center and test range commanders come together to discuss topics and issues of common interest. The Electronic Proving Ground, Fort Huachuca, AZ, hosted the February meeting. At that Conference, TRMC briefed the Range Commanders on the TRMC mission, vision, and goal, TRMC organization, FY2006 highlights, and new FY2007 initiatives. The September meeting was held at the Naval Undersea Weapons Center, Newport, RI. TRMC briefed an update of activities to the Range Commanders focusing on the 2007 Strategic Plan, the 2007 Annual Review, and the status of DoDD and DoDI 3200.11. The Range Commanders provided feedback on specific challenges not captured in the Strategic Plan, and requested that TRMC consider including Net Centric Warfare as a focus area in the next DoD Strategic Plan for DoD T&E Resources.

Test Week 2007: Another very successful method of broadening communications among the T&E community, as well as the acquisition community, is the annual "Test Week" symposium sponsored by TRMC. This year's theme was "How to Make Test and Evaluation Relevant to the Joint Warfighter." This year's forum highlighted joint test technology challenges, international T&E capabilities, congressional perspective, and modernization plans for the MRTFB. Among the distinguished speakers were: the Deputy Commander, USJFCOM, and Vice Commander Joint War Fighting Center & Vice Director Joint Force Training, J-7, USJFCOM representing

the joint Warfighter; the Assistant Secretary of the Air force for Acquisition, and the USAF Deputy for Test Integration and Fielding, Missile Defense Agency from the acquisition community; the Director, Defense Information Systems Agency, the Commander, Joint Task Force-Global Network Operations; the Commanding General, US Army Test and Evaluation Command representing the T&E community. In addition to the featured speakers, several panels addressed such varied topics as "Joint Capabilities for the T&E Community", "Test and Evaluation in a Net-Centric Environment", "In Support of Acquisition: Is the T&E Community up to the Task?", and "Test and Training Range Opportunities." In addition to the panels, two mini-forums "Test and Evaluation Perspectives," and "the Enterprise Concept at Work: The Military Departments' T&E Roadmap" provided a great platform for live discussion among forum members and the audience.

Given that we are at war, the global war on terrorism in general and in heated conflicts in Iraq and Afghanistan in particular, there was major discussion on how the acquisition and T&E community could support the Warfighter in a rapid and efficient manner. Some key observations that the distinguished speakers made included: shortening the acquisition process could be accomplished in various manners from, buying off the shelf, bringing in the tester early and team with the operator, test to deployed requirements, test until the user is satisfied that the system is good enough, ground test to discover and flight test to verify, and integrate and field through testing. In a fast moving combat environment, adapt the testing process vice changing laws. When tested and /or certified by one, acceptance by all; the test community needs to play.

This also presents the Army's approach to testing given the current environment. While not forgetting the traditional T&E process or systems of record, the Army has adapted the process to handle the plethora of technologies and systems available as candidates for the rapid initiative program especially the counter IED systems. This approach focuses on rapid T&E with the test and evaluator engaged early in the process. It emphasizes doing a quick but comprehensive safety testing and limited field-testing scoped to the theater of war. It focuses on providing the soldier a safety confirmation and comprehensive capabilities and limitations report (CLR) with some follow on in-theater data collection to confirm the CLR.

The TRMC again plans to host another test week in 2008. The theme will be ***Test and Evaluation for the Future: What lies 10 – 15 Year's Ahead?***

5.0 Other Significant Activities:

5.1 NASA:

Study of NASA Aeronautics Facilities Critical to DoD: After review and analysis, a team of representatives of the DoD Components, under the leadership of the TRMC Principal Deputy Director, completed a report identifying the NASA aeronautics facilities that are critical to the accomplishment of the defense mission. The USD(AT&L), in January 2007, transmitted the *Report to Congress on the National Aeronautics and Space Administration (NASA) Aeronautics Test Facilities Critical to DoD*. In the report, the following 12 facilities were determined to be critical to the accomplishment of defense missions:

- Glenn Research Center 6 × 9-Foot Icing Tunnel

- Langley Research Center 20-Foot Vertical Spin Tunnel
- Ames Research Center 11-Foot Transonic Tunnel
- Langley Research Center National Transonic Facility
- Langley Research Center Transonic Dynamics Tunnel
- Langley Research Center 8-Foot High Temperature Tunnel
- Ames Research Center Vertical Motion Simulator
- Glenn Research Center Mechanical Drives Facility
- Glenn Research Center Turbine and Structural Seals Facility'
- Langley Research Center Impact Dynamics Research Facility
- Wallops Flight Facility Open Air Range
- Ames Research Center National Full-Scale Aerodynamics Complex

The report provided a description of the salient features and unique characteristics of each critical facility, and explained the basis on which each of those facilities was determined to be critical for weapon systems research, development, test and evaluation.

National Aeronautics RDT&E Infrastructure Plan: Together with NASA, the TRMC co-chairs an interagency coordinating group that is developing a national aeronautics Research, Development, Test and Evaluation (RDT&E) infrastructure plan. That plan is in response to the National Aeronautics Policy, prepared by the National Science and Technology Council, and Executive Order 13419, that the President signed in December 2006.

Beginning in April 2007, the RDT&E Infrastructure Coordinating Group conducted a series of interagency meetings, and participated in several outreach meetings with participants from industry and academia, in order to receive inputs for the aeronautics RDT&E Infrastructure Plan. In addition, the coordinating group solicited and received white papers from parties throughout the country that had an interest in the national aeronautics infrastructure. The infrastructure plan is being designed to support the National Aeronautics Research and Development Plan, which is concurrently being developed by five other interagency coordinating groups with responsibility for mobility, national security and homeland defense, aviation safety, aviation security, and energy and environment, respectively.

The RDT&E Infrastructure Coordinating Group began drafting a plan that addresses both experimental facilities and computational resources owned by the Federal Government. Because multiple federal departments and agencies, industry, academia, and other non-federal activities use many of those assets, the plan is designed to develop cost and usage policies that facilitate interagency cooperation and utilization as well as provide appropriate access for non-Federal users. It will also provide for federal departments and agencies to coordinate the construction, maintenance, modification, and termination of aeronautics RDT&E infrastructure assets, and include the needs of the broader community of users in that process.

A summary of the challenges that the Federal Government faces with respect to the aeronautics RDT&E infrastructure, as well as the goals and objectives associated with responding to those challenges, is in circulation for public comment. That summary of challenges, goals and objectives is on track for submission to the Director of the Office of Science and Technology Policy in December 2007.

5.2 Analysis of Air Force Test and Evaluation Reduction: In order to meet requirements for DoD-wide budget cuts for the 2007 President's Budget and Air Force budget reduction objectives for the 2008 Presidents Budget, the Air Force proposed a plan to achieve cost savings in AFMC Budget Activity 6 starting in FY2006 by:

1. Divesting six major test and evaluation (T&E) facilities at Eglin AFB, Moffet Field and Holloman AFB, and reducing capabilities and capacity of a seventh major T&E facility at Edwards AFB.
2. Consolidating air armaments T&E and F-15 operational flight program operations from the 46th Test Wing at Eglin AFB to the 412th Test Wing at Edwards AFB, including associated aircraft, flying hour program, maintenance functions, along with reduced Eglin range operations.
3. Reducing contractor, civilian, and military personnel at Eglin AFB, Holloman AFB, Edwards AFB, and Arnold AFB.

NDAA 2007 Conference Report language provided for the Air Force to cease implementation of the proposed or any alternative realignment or closure until joint analyses between the Secretary of the Air Force and the Under Secretary of Defense for Acquisition, Technology and Logistics, and an independent analysis by the Test Resource Management Center be performed and submitted to the congressional defense committee. It also called for joint statement regarding changes to the proposal, subsequent actions, and the criteria for evaluating the planned actions.

Analysis to date indicates that while parts of the Air Force proposal could provide some savings in AFMC Budget Activity 6, the costs that would accrue to other Air Force and DoD budget activities would exceed those savings over the Future Years Defense Program. Other impacts included:

- Reduced capabilities and capacities within the composition of the Major Range and Test Facility Base (MRTFB), and the DoD T&E process for developmental test and evaluation
- BRAC 2005 required actions to consolidate air armament Research, Development & Acquisition, and Test and Evaluation functions at Eglin AFB
- Radio frequency spectrum availability at the Edwards AFB and surrounding test and training ranges
- Human capital issues

5.3 High Energy Laser Systems Test Facility (HELSTF): The HELSTF is DoD's principal test and evaluation facility for demonstrating laser technologies and performing T&E in support of tactical laser weapon systems development. Owned and operated by the U.S. Army Space and Missile Defense Command, HELSTF is a component of the DOD Major Range and

Test Facility Base (MRTFB), and is wholly contained within the boundaries of the U.S. Army White Sands Missile Range, NM. Significant testing capabilities include the Mid-Infrared Advanced Chemical Laser (MIRACL), SeaLite Beam Director (SLBD), Solid State Heat Capacity Laser (SSHCL) Test Bed, Mobile Tactical High Energy Laser (MTHEL) Test Bed, Pulsed Laser Vulnerability Test System (PLVTS), Large Vacuum Chamber (LVC), Beam Diagnostic Instrumentation, and Hazardous Test Area (HTA). The combination of these capabilities, plus the fact that HELSTF is uniquely positioned to leverage WSMR missile testing capabilities / facilities, allows DOD to conduct a wide range of laser propagation, lethality, survivability, vulnerability, and dynamic engagement T&E activities, many of which involve full scale tactical and explosive targets.

During preparation of the FY2008 President's Budget request, the Army found that it could not establish a firm customer base that required use of MIRACL/SLBD capabilities. Based on this finding and expected continuation of constrained budget environments, the Army determined that it would be prudent to put both the MIRACL and SLBD in storage, and reduce HELSTF's operations and sustainment budget by approximately $13.5M per year beginning FY2008 and continuing until a firm customer base is established. TRMC concurred in this action and certified the Army's T&E budget request as adequate.

In the absence of any updates to out-year workload for MIRACL and SLBD, the TRMC concluded that the original Army plan to place these capabilities in renewable storage is the best course of action for the Army at this time. That said, all other HELSTF capabilities would remain intact and fully operational for continued support of DoD tactical laser weapon system development activities.

The 2008 NDAA, when signed by the president, will require the SecDef to submit to the congressional defense committees a report containing a cost-benefit analysis of the proposed reduction in Army research, development, test, and evaluation funding for the HELSTF. The report will include an evaluation of the impact of the proposed reduction in funding on each DoD organization or activity that utilizes the HELSTF.

6.0 Summary: The SecDef, commanders of all the combatant commands as well as the Congress have consistently called for increasing the priority given to maintaining a robust T&E program, which requires healthy and vibrant test centers and ranges across the entire DoD enterprise. This need for testing—particularly capabilities conducted over very long distances—requires the Department to maintain and modernize highly instrumented ranges and to manage the challenges of range encroachment. This report captures the highlights of the numerous activities accomplished by TRMC during FY2007 to improve our test capabilities. It also includes results of several special studies requested by Congress.

During FY2008, TRMC will continue to meet these challenges, championing the need for resources for T&E, as well as developing initiatives to increase T&E capabilities for DoD's acquisition programs. TRMC will collaborate with the Services to continue to upgrade essential capabilities to meet the challenges presented by the increasing technological sophistication of our

weapon systems and new operational concepts associated with DoD transformation efforts. Adequate investments in the T&E infrastructure will greatly enhance the ability of the acquisition process to deliver satisfactorily tested weapon systems to assure their effectiveness and suitability for our joint forces fighting in an increasingly complex environment.

In 2008, the Strategic Planning Division will work with the Services to better align the Department's T&E strategic planning processes that will result in an even-year publication and further mature the T&E focus areas identified in the 2007 Strategic Plan. The Test Resources Division will provide the annual certification of the Services' and Defense Agencies' T&E budgets. The CTEIP and T&E S&T investment programs will continue to improve coordination and planning of investments in DoD T&E capabilities, and provide the technological feeds necessary to close successfully the test capability gaps identified in the Strategic Plan. JMETC will continue to work diligently to identify potential customers and support those already involved in the JMETC infrastructure; thereby providing readily available, persistent connectivity for distributed testing. Policy efforts in 2008 will focus on developing T&E terms and definitions, defining MRTFB composition and criteria, and developing procedures required to manage the composition and operation of the MRTFB. Test Infrastructure Division will continue developing a methodology for capturing and documenting DoD Test and Evaluation infrastructure capabilities, examine various workforce shaping initiatives to ensure the T&E workforce is properly configured to address the Department's current and future testing needs, and continue performance metrics development to assess the health of the MRTFB.