

## **Closed Sessions**

### **U.S. DEPARTMENT OF HOMELAND SECURITY**

#### **Homeland Security Science and Technology**

#### **Advisory Committee (HSSTAC)**

**February 23-24, 2005**

**Arlington, VA**

The HSSTAC convened its fifth meeting on Wednesday, February 23, 2005, in Arlington, VA. The Committee met in closed session pursuant to the provisions of 5 U.S.C. § 552b(c)(2) and (9)(B).

The Designated Federal Official, Dr. Ronald D. Taylor, called the meeting to order and, per the Committee's charter, turned the conduct of the meeting to the Chairman, General Larry D. Welch, USAF (Ret.). General Welch reviewed the objectives of this quarterly meeting as announced in the *Federal Register* (Vol. 70, No. 19, January 31, 2005); the objectives of this quarterly meeting were to: (1) conduct annual administrative sessions (ethics and security briefings, membership updates); (2) receive detailed briefings on future Department and Directorate priorities; (3) identify special issues that the HSSTAC should pursue in 2005; (4) identify special challenges (and resulting responses by) as well as major changes or initiatives facing the Directorate and its operating units for the coming year; (5) receive Subcommittee updates; and (6) receive briefings on activities, programs, and accomplishments of the Office of Research & Development (ORD), the Homeland Security Advanced Projects Research Agency (HSARPA), and the Office of Systems Engineering and Development (SED).

#### **Summary of Administrative Session**

Mr. Mike Taylor, Acting Chief of the Classification Management Branch in the Department of Homeland Security (DHS) Office of Security, briefed Committee members on the Department's security and classified information procedures; and Mr. Robert E. Coyle, DHS Advisor for Ethics in the Office of General Counsel, briefed on government ethics requirements. These two briefings satisfy the annual requirements for security and ethics briefings for the Committee.

#### **Under Secretary for Science and Technology**

Dr. Charles E. McQueary, Under Secretary for Science and Technology (S&T), then welcomed the Committee. Dr. McQueary noted that in less than one week DHS would mark its second anniversary. During the previous week, Dr. McQueary testified before the House Committee on Science, chaired by Representative Sherwood Boehlert of New York, on the federal research and development (R&D) budget for fiscal year (FY) 2006.

Since the last HSSTAC meeting in November, S&T made steady progress in its efforts to provide research, development, testing and evaluation (RDT&E) expertise in support of the

homeland security mission. The fourth Center of Excellence was announced for the University of Maryland in College Park. The mission of the Center will be to explore the social and behavioral aspects of terrorism and counterterrorism. The S&T Directorate commenced the planning of the Domestic Nuclear Detection Office to extend the national capabilities in detecting nuclear and radiological threats. S&T held an initial, organizing meeting of federal managers to undertake the task of developing the annual National Plan for Critical Infrastructure Protection. The Directorate launched the BioWatch enhancement initiative in New York, Chicago, Los Angeles and the National Capital Region to boost our existing capabilities to safeguard against biological releases in approximately 30 urban areas. S&T also held another organizing meeting that convened influential industry decision makers as a first step in developing a common, national architecture for the process controls systems that underpin the nation's critical infrastructures.

HSARPA has released five Broad Agency Announcements (BAAs) since December. Recently released BAAs seek technologies or systems for detecting instantaneous bio-aerosol releases, toxic chemicals with low vapor pressure, biological threats in our food supply, and improvised explosive devices that are in vehicles, carried by suicide bombers, or left behind in packages. The fifth BAA seeks to develop advanced spectroscopic portal monitors to improve the capability to address the threat of a radiological dispersal device (or dirty bomb), an improvised nuclear device, or a nuclear weapon being used by terrorists within our borders.

The Department's Strategic Plan produced last year identifies seven overarching strategic goals for the Department and 33 objectives that provide the underpinnings for those goals. Five of the goals pertain to threats and attacks against the United States and revolve around awareness, prevention, protection, response and recovery. Service to the public in facilitating lawful trade, travel and immigration is a sixth goal. The seventh goal pertains to organizational excellence with emphasis on creating a culture that values the individuals who comprise the Department's vast workforce and implement its protective mission.

S&T is currently working on several fronts in their strategic planning efforts. The FY 2006 internal strategic plan has been completed. The FY 2007 internal strategic plan will be prepared as part of the planning, programming and budgeting cycle for FY 2007-2011. The S&T Strategic Plan for industry is undergoing final editing and will go through S&T clearance shortly. Finally, the National Strategic Plan — required by section 302(2) of the Homeland Security Act of 2002 — is being updated and revised and should be ready for distribution in the next few months.

For FY 2006, the President has put forth a budget request of \$41.1 billion for the Department. S&T's allocation is three percent of that amount, or \$1.4 billion. This is an increase of \$253 million over the enacted budget for this fiscal year. The Department has identified five budgetary themes for the next fiscal year: revolutionizing the borders, strengthening law enforcement, improving national preparedness and response, leveraging technology, and creating a 21<sup>st</sup> century department.

The S&T budget request includes funding for the requirements review and construction planning for the National Bio- and Agro-defense Facility (NBAF), the development of a Low-Volatility Agent Warning System, the Radiological/Nuclear Countermeasures Testing and Evaluation Complex, additional development of Counter-Man-Portable-Air-Defense Systems (C-MANPADS), and the consolidation of the Department's RDT&E activities.

S&T continues to emphasize the Directorate's role in interacting with other Federal departments and agencies. Over the last year, S&T has worked with the Office of Science and Technology Policy, the Homeland Security Council, the National Security Council, the Office of Management and Budget, and the Office of the Vice President to begin a government-wide effort to coordinate homeland security R&D efforts, as Congress directed in the Homeland Security Act of 2002.

The S&T Directorate has been, and continues to be, an active participant in several ongoing interagency working groups related to homeland security, and in most cases has taken a leadership role. These avenues foster an active exchange of information and assist each participating agency in identifying related needs and requirements, conducting R&D of mutual benefit, and avoiding duplication of effort.

This year the S&T Directorate is beginning to develop and take a systems engineering approach to RDT&E challenges in homeland security. The approach should identify how DHS can best apply a logical and efficient program that integrates the threat, countermeasures, production and distribution of anti-terrorist activities through one effort that supports the President's initiatives and best defends our country.

Another area of focus is technology deployment. HSARPA has released 15 solicitations to date that have resulted in numerous projects, systems and technologies that are in various stages of development. Many of these will begin to emerge from the pipeline. It is vital that they lead to important protective measures that ultimately are placed to safeguard the Nation's citizens and key infrastructures.

Dr. McQueary closed by thanking the HSSTAC members for their efforts with the S&T Directorate and for their service to the nation.

### **Plans, Programs and Budgets**

Dr. Larry Morgan, Director of Comparative Studies, briefed the Committee on the status, recent accomplishments and future activities of the Office of Plans, Programs and Budgets of the S&T Directorate.

Recent accomplishments cited by Dr. Morgan included the following:

- Developed and documented a robust RDT&E process that includes risk-based planning for the S&T Directorate's programs and initiatives.
- Continued daily operation, maintenance and deployment of BioWatch, a biological agent detection system, to protect the nation's major population centers from the

threat and ramifications of a bioterrorist attack. BioWatch also provided support during the G8, Democratic National Convention and Republican National Convention.

- Selected four cities for the deployment of a new pilot program entitled the “Regional Technology Integration” initiative (formerly “Safe Cities”). The selected cities include: Memphis, TN; Anaheim, CA; Cincinnati, OH; and Seattle, WA. RTI provides an integrated urban all-hazards detection and emergency response system.
- Established a dedicated National Bioforensics Center (NBFAC) to support ongoing Federal Bureau of Investigation (FBI) and other law enforcement investigations.
- Established the National Visualization and Analytics Center and the Biological Knowledge Center (BKC) to improve the analysis of information and close knowledge gaps.
- Initiated a test and evaluation capability for Radiological/Nuclear Countermeasures at the Nevada Test Site.
- Selected over 100 undergraduate and graduate students, in the Fall of 2004, for grants to assist in the study of science and technology issues that support the homeland security mission.
- Launched four Homeland Security Centers of Excellence to date and released a solicitation for the fifth Center.
- Issued 10 major R&D solicitations to industry and academia through the first 20 months and awarded more than 200 contracts for research work to date.
- Collaborated with and assisted other components of the Department to enhance their abilities to meet their missions and become active contributors in interagency working groups.
- Awarded four Safety Act designations and certifications, received and responded to 72 full applications and 166 pre-applications, and worked to streamline the process.
- Stood up the Department’s Office of Interoperability and Compatibility to address a wide range of public safety interoperability programs and efforts currently spread across Homeland Security.
- Improved RapidCom incident-level, interoperable emergency communications in 10 high-threat urban areas by helping establish command-level interoperability within an hour or less.
- Completed Phase I of the C-MANPADS program and initiated Phase II which will advance the studies initiated in Phase I, build system prototypes and conduct effectiveness testing.

Dr. Morgan then outlined in detail the status of the planning, programming, budgeting, and executing activities for FY 2005, FY 2006, and FY 2007-2011. Initiatives for FY 2006 include establishing the NBAF, the Radiological and Nuclear Countermeasures Test and Evaluation Complex, and furthering C-MANPADS. Other major projects include efforts to consolidate the RDT&E process; preparing the National Strategic Plan, Industry Priorities Document, and FY 2007 S&T Strategic Plan; and achieving full utilization of the Homeland Security Institute (HSI) for independent studies and analyses.

Discussion following the briefing focused predominantly on how the S&T Directorate set program priorities as well as the role of threat and vulnerability assessments in this process, and the roles of HSI, a federally funded research and development center (FFRDC), and the University Centers of Excellence in supporting the Directorate.

### **Office of Research and Development**

Dr. Maureen McCarthy, Director of ORD, briefed the Committee on the status, recent accomplishments and future activities of that office.

Dr. McCarthy first discussed ORD's goals: (1) to make S&T the force multiplier in the Department by providing actionable information, technologies, systems, and technical expertise to enhance current operations to integrate countermeasures to protect the nation against chemical/biological/radiological/nuclear (CBRN) attacks; (2) to integrate DHS federal RDT&E assets into a Networked Homeland Security Complex to provide the Department with an enduring capability to meet current and future missions; (3) to construct and manage unique laboratories and facilities required to protect the nation from CBRN attacks; (4) to engage the academic community in innovative mission-related research and education to foster generations of homeland security experts and to encourage multidisciplinary cross-cutting approaches to address homeland security challenges; and, (5) to expand strategic partnerships with other government agencies to enhance the US government's ability to leverage and integrate programs, infrastructure, and expertise directed at homeland security-related missions.

Dr. McCarthy then discussed the challenges facing ORD: (1) effectively integrating technologies and systems to protect the nation from CBRN attacks into the complex operational environments of federal, state and local end-users; (2) developing and deploying innovative tools and approaches to assess large quantities of information to support law enforcement and intelligence assessments, while protecting privacy and safeguarding information sources; (3) encouraging open scientific research on mission-related areas without compromising national security; (4) establishing effective mechanisms within the Department that allow S&T to address more effectively the near-term and long-term needs of the other Directorates; and, (5) implementing innovative interagency and public/private partnerships that allow the government to access more effectively the nation's expertise base and enter into strategic partnerships with other government agencies.

Dr. McCarthy then described ORD's accomplishments relating to the following areas: (1) making S&T a force multiplier for enhancing operations against CBRN attacks, (2) integrating a networked homeland security federal RDT&E complex, (3) managing laboratories and facilities, (4) engaging the academic community, and, (5) expanding strategic partnerships. Dr. McCarthy cited selected FY 2004 accomplishments:

- Developed a systematic Biothreat Risk Analysis Process.
- Established the BKC.
- Integrated the management of Plum Island Animal Disease Center (PIADC), National Biodefense Analysis & Countermeasures Center (NBACC),

Environmental Measurements Laboratory (EML) and Homeland Security offices at the national laboratories.

- Developed a strategic vision for Networked Homeland Security Complex.
- Completed the Environmental Impact Study for NBACC facility construction.
- Established an Interim National Bioforensics Laboratory at USAMRIID.
- Sponsored a second class of DHS Scholars/Fellows.
- Established three Homeland Security Centers of Excellence.
- Initiated management of Integrated Network of Homeland Security Centers.
- Established the National Laboratory Coordination Council (with DHS and the Department of Energy (DOE)).
- Co-chaired the Radiological/Nuclear Attribution Working Group (with the FBI) for the National Security Council/Homeland Security Council.
- Partnered with the FBI for bioforensics (through NBFAC) and DOE for radiological/nuclear forensics.
- Conducted material threat determinations in support of Bioshield acquisition.

Dr. McCarthy then described the targets for FY 2005. Such objectives included: (1) focusing on providing direct support to Border and Transportation Security Directorate; (2) expanding the Knowledge Center to include all weapons of mass destruction knowledge integration and discovery; (3) integrating other DHS RDT&E assets into a Networked Homeland Security Complex as part of Department's functional integration of RDT&E; (4) expand the Scholars & Fellows program; (5) initiating a postdoctoral program; (6) establishing three additional Homeland Security Centers of Excellence and managing the Homeland Security Network; (7) integrating more effectively the Homeland Security Centers of Excellence into DHS strategic planning and program activities throughout the Department, (8) pursuing outreach and education programs through Museums of Science; (9) focusing on building strategic partnerships with the FBI and the Department of Health and Human Services (HHS); and, (10) implementing HSSTAC recommendations for advancing DHS engagement of the national laboratories.

Following the briefing, discussion focused predominantly on the issues – legal, technical, budgetary, multi-agency involvement – and role of the NBAF as a potential replacement for PIADC. Committee members also discussed the use of the University Centers of Excellence and how the research agendas are both set and carried out while considering the need to balance the protection of secure information versus preferred openness of Academic research, as well as how research priorities are set within the Directorate.

### **Systems Engineering and Development**

Mr. John Kubricky, Director of SED, briefed the Committee on the status, recent accomplishments and future activities of that office.

Mr. Kubricky explained SED's mission to achieve a scaleable, seamless progression from product development to product deployment so that state, local, and federal homeland security customers are equipped with the tools and technologies they need to protect our Nation and preserve our freedom.

Mr. Kubricky then discussed SED's goals which included: pilot development and field trial, production readiness, improving mission success, testing and integration, interoperability and compatibility, forming strategic partnerships and promoting productive relationships with DHS S&T stakeholders. In addition, he discussed how SED executes projects from initiation (based on an assessment of needs, inclusion in the Strategic Plan, and project definition) through the concept development, planning and requirements analysis phase; to systems development, testing and operational demonstration; and finally transitioning to production, initial deployment and full-scale production and deployment to the customer. Mr. Kubricky went on to explain SED's core business operations focus on SED's ability to conduct efficient, disciplined full-scale development and deployment; define the framework for production and support; and maintain strong customer relationships throughout program transitions.

SED's accomplishments over the previous year included: (1) provided operational support for multiple National Security Special Events (NSSE); (2) operated bio-aerosol monitoring in numerous cities around-the-clock with zero false alarms; (3) accelerated standards development for public safety communications interoperability; (4) established operational test and evaluation for radiological/nuclear, explosives, and transportation security; (5) continued adapting military countermeasures to protect commercial airlines from MANPADS; (6) instituted program transition procedures within the S&T RDT&E process, (7) standardized assessment of technical maturity by developing a Technology Readiness Level Program Management Model; (8) created "playbook" documents for both the BioWatch program and BioWatch NSSE support; and, (9) integrated with Process Management Team and S&T RDT&E process.

Following the briefing, discussion focused predominantly on difficulties associated with implementing interoperability, the existence of means for enforcing standards, concepts of operations for BioWatch, and how SED handles issues associated with transferring technology (and systems) to operational end-users.

### **Homeland Security Advanced Research Projects Agency**

Dr. Jane Alexander, Deputy Director of HSARPA, briefed the Committee on the status, recent accomplishments and future activities of that office.

Dr. Alexander stated the mission of HSARPA is to engage the private sector in R&D in order to satisfy DHS operational requirements, conduct rapid prototyping and commercial adaptation, and conduct research and development of revolutionary options. HSARPA supports each of the Directorate's portfolios.

In support of the Biological Countermeasures portfolio, HSARPA released BAAs for Bio-agent Autonomous Networked Detectors, Rapid Automated Biological Identification System, Instantaneous Bio-Aerosol Detection, Bio-informatics and Assay Development, Deployable Aerosol Collection Systems, and Food Biological Agent Detection System.

In support of the Chemical Countermeasures, HSARPA is developing Portable High Throughput Integrated Laboratory Identification System, Autonomous Rapid Facility Chemical

Agent Monitor, Lightweight Autonomous Chemical Identification System, and Low Vapor Pressure Chemical Detection System.

In support of the Radiological and Nuclear Countermeasures portfolio, HSARPA released BAAs for Advanced Spectroscopic Portal Program, Human Portable Radiological and Nuclear Detection System, Advanced Passive Detection Components Program, Radiological and Nuclear Countermeasures Systems Architecture Program, Advanced Active Imaging and Screening System, and Advanced Radiography for Parcels and Cargo.

In support of the Explosives Countermeasures portfolio, BAAs include Countering Improvised Explosive Devices and Suicide Bombers Program, Improvised Explosive Device Detection, and Innovative Techniques for Concealed Weapons or Explosive Detection. The BAAs pertaining to Critical Infrastructure Protection include the Protective Securities Technology Program, Automated Scene Understanding, Surety Studies, Process Control Systems Forum, and Fast Simulation and Modeling of the US Electrical Grid.

In support of Conventional Missions, HSARPA has issued BAAs for the U.S. Coast Guard R&D Portfolio for the Maritime Domain Awareness Program, Wide Area Surveillance, and Sector Surveillance Center Operations. For the U.S. Secret Service R&D Portfolio, HSARPA issued BAAs for Emerging Threats Analysis; Tagging, Tracking and Locating; and the Forensic Analysis Program. Dr. Alexander described additional efforts for Border and Transportation Security; Emergency Preparedness and Response; Threat and Vulnerability, Testing and Assessment; Emerging Threats; Rapid Prototyping; and Cyber Security.

Following discussion of HSARPA's support of the various S&T portfolios, Dr. Alexander presented the priorities and challenges for FY 2005. Priorities include developing the best possible CBRN explosives detectors, filling the immediate operational needs of DHS internal customers and first responders, and moving to improved architectures and systems across the board. Challenges include improving HSARPA's capability to get research funding in place reliably and as quickly as possible, solving the transition planning puzzle one development at a time until experience accumulates to provide guidance, and developing a process to support revolutionary research.

Following the briefing, discussion focused predominantly on how research priorities are set within the Directorate, how user requirements are reflected in the process, and how HSARPA determines and executes its research strategy.

### **Subcommittee Reports**

Each of the four Subcommittee chairs then reported on activities since the last plenary. It was noted that the Committee's report had been issued to the Under Secretary and sent to Congress on January 25, 2005.

Dr. Rich Roca, Chair of the Mission & Operations Subcommittee, briefed the Committee on his meeting with Mr. Vayl Oxford, Acting Director of HSARPA, and representatives from HSI on February 8, 2005. Dr. Roca was accompanied by fellow Subcommittee member



Mr. Vincent Vitto in these two meetings. Based on these discussions, the Subcommittee viewed the recommendations contained in the full report as on target but in need of attention. HSI representatives briefed Dr. Roca and Mr. Vitto on their efforts to establish a procedure for prioritizing DHS program expenditures. The Subcommittee found the HSI's approach to threat prioritization appropriate -- the approach offers an opportunity to bring S&T and operators together to better synchronize efforts.

Dr. Larry Papay, Chair of the Resources & Organization Subcommittee, briefed the Committee on the Subcommittee's proposed activity for the upcoming year. Dr. Papay suggested that the Subcommittee focus its attention on evaluating the strategic (or operational) plans and organizational constructs of the Directorate's labs/FFRDCs; specifically, PIADC, NBAF, NBACC, HSI, EML, and the Transportation Security Laboratory. In the analysis, the Subcommittee also will consider the criteria to measure what these labs/FFRDCs are doing or will do, and any strategic changes that are envisioned.

Dr. Will Happer, Chair of the Programs Subcommittee, briefed the Committee on their January 12, 2005, meeting. The Subcommittee met with Lance Brooks, DHS S&T; Dr. William Raub, Principal Deputy Assistant Secretary, Office of Public Health Emergency Service, HHS; Dr. John Loonsk, Director, Information Resource Management, Organization, HHS; Dr. Mitch Cohen, Director, Coordinating Center for Infectious Disease, Center for Disease Control; Dr. Lester Crawford, Commissioner, Food and Drug Administration (FDA); Ms. Maggie Glavin, Assistant Commissioner, Office of Counterterrorism Policy and Planning, FDA; and Ms. Ellen Morrison, Director, Office of Crisis Management, FDA.

The preliminary discussions by the Programs Subcommittee suggested S&T should use a systems approach to prevention, response and restoration in its program definitions. In designing the most effective programs, DHS might consider National Institutes of Health-like consensus panels and laboratory-based threat analysis. The Subcommittee also discussed the necessity of the nation's operators (whether law enforcement or healthcare providers) having appropriate standards by which to judge activities and equipment being purchased. The Subcommittee raised the issue of DHS S&T involvement in "operational" activities and how such involvement readily consumes most of S&T's budget and personnel and discussed the topic of multi-agency coordination and communication, especially focused on research and development activities.

Dr. Russ Bessette, Chair of the Outreach Subcommittee, briefed the Committee on the Subcommittee's 2004 findings and recommendations and discussed plans for 2005. He identified one near-term event -- TOPOFF 3 -- which the Subcommittee could participate in as an observer.

## **Summary**

The Chairman discussed the Committee's 2005 goals and assignments. Whereas 2004 was spent gathering information so that the Committee could address its charge and offer advice to the Under Secretary, many questions remained.

In general, the Committee is still having difficulty understanding exactly where the S&T Directorate fits in the overall Department mission. The Chairman instructed the Resources and Organization Subcommittee to address this issue.

He then discussed the S&T Directorate's involvement in operations, noting that it is important to determine S&T's proper roles and responsibilities versus those of other DHS Directorates and entities to ensure that operational responsibilities do not adversely impact RDT&E responsibilities. He asked the Programs Subcommittee to analyze how the S&T Directorate's priorities are determined – specifically, who are the customers and how are program connected to the overall strategic objectives of the Department. He noted that S&T needs an operational construct and strategic vision to make investment decisions.

The Chairman asked the Mission and Operations Subcommittee to formulate/evaluate the strategic vision for each threat sector, such as biological, chemical and nuclear countermeasures.

Finally, he asked the Outreach Subcommittee to advise the Directorate on the appropriate public communication methods for consequence management.

Following this discussion, Under Secretary McQueary requested the Committee examine S&T's implementation of the Safety Act. [Note: General Welch recused himself from this action or future consideration.]

The meeting adjourned at 12:00, February 24, 2005.



Larry D. Welch  
General, USAF (Ret.)  
Chairman

Attachments:

1. Agenda
2. Attendees
3. Acronyms