

Statement for the Record

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Committee on Homeland Security
Subcommittee on Emerging Threats, Cybersecurity and
Science & Technology

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INTRODUCTION

Good Morning, Chairwoman Clarke, Ranking Member Lungren, and distinguished Members of the Committee. I am honored to appear before you today to update you on the progress of the Department of Homeland Security's (DHS) Science and Technology Directorate (S&T Directorate) and discuss the Fiscal Year 2010 President's Budget Request. This request keeps us on track to provide future technological capabilities to both the operating components of DHS and our Nation's first responders.

I am grateful for the immediate and strong leadership of Secretary Napolitano and Deputy Secretary Lute. They are committed to the mission of the Department: protecting the Nation from all threats and promoting a culture of preparedness. The Secretary has also testified to the importance of greater use of science and technology in improving our capabilities to accomplish that mission. I am pleased to report that the S&T Directorate has been successful in improving our Nation's capabilities across the extremely diverse homeland security mission set.

I am also very appreciative of the leadership of the Congress and its bipartisan support of the Directorate's endeavors. I am grateful for the engaged and positive relationship we enjoy. The informed counsel of Committee Members and that of their staffs has been invaluable to the Department's efforts to position the S&T Directorate for accountability, tangible results, and success – both today and for the future.

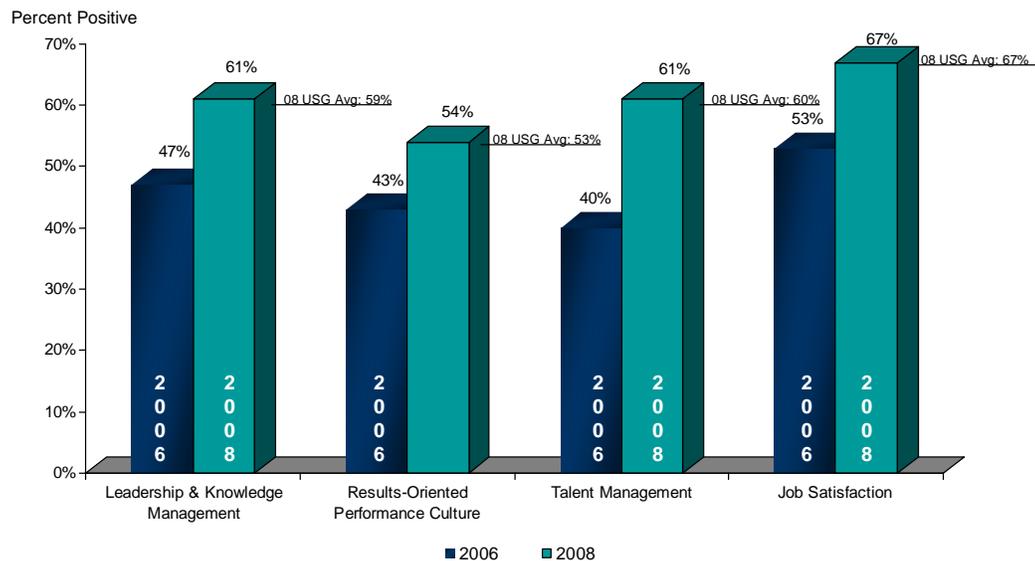
The Committee is familiar with the Directorate's efforts over the past two years to reorganize its structure, research portfolio, and business operations in order to expedite the delivery of cutting-edge technology. I am proud to report that these efforts have been successful and that the S&T Directorate is fully focused on fulfilling both near-term and long-term technological capability needs. I will update the Committee on the status of the S&T Directorate's personnel and processes and then highlight the major initiatives of the President's FY 2010 budget request.

SUCCESSFUL TURNAROUND – PEOPLE & PROCESS

People

I am honored to serve with the many talented scientists, engineers, and other professionals who work to develop technologies that secure our homeland and defend our freedoms. The S&T Directorate has seen significant improvement in workforce morale over the past two years. This is best highlighted by the results of the 2008 Federal Human Capital Survey, which indicate the progress we have made to improve the Directorate's management and performance. The 2008 results demonstrate dramatic improvement for S&T since the 2006 survey, and indicate that the S&T Directorate is in line with the Federal government as a whole.

2008 Federal Human Capital Survey DHS Science & Technology



I am pleased with the results of our efforts over the past two years, and I remain committed to further improvement.

Process

Basic Research. The S&T Directorate’s basic research portfolio addresses long-term research and development needs in support of DHS mission areas. This research has the potential to lead to paradigm shifts in the nation’s homeland security capabilities through investment in our universities, government laboratories, and the private sector. Basic Research is 23 percent of the S&T Directorate’s budget request.

Innovation. Responsible for funding the research and development of homeland security technologies to “support basic and applied homeland security research to promote revolutionary changes in technologies that would promote homeland security; advance the development, testing and evaluation, and deployment of critical homeland security technologies; and accelerate the prototyping and deployment of technologies that would address homeland security vulnerabilities,” the Directorate’s Homeland Security Advanced Research Programs Agency (HSARPA) has implemented a transparent process for identifying, prioritizing, and selecting new projects, and has used this process in selecting the FY 2010 “new start” projects. The \$11 million increase in the FY 2010 request over last year’s enacted appropriation will allow us to fund these new starts, and I hope the Committee will support this priority.

During the past year, HSARPA completed several demonstrations of prototypes that had been developed over the previous two years. Those demonstrations included:

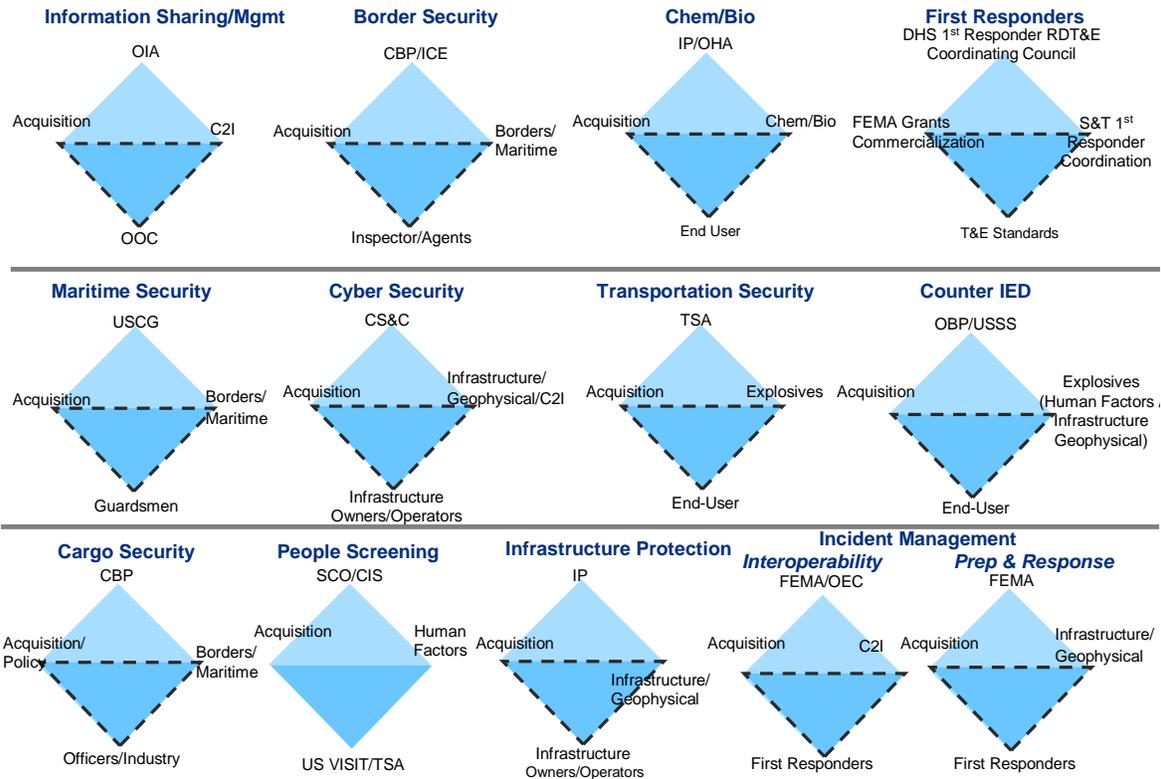
- Future Attributes Screening Technology (FAST).
- Magnetic Visibility (MAGVIZ)
- Resilient Electric Grid (REG)
- Levee Strengthening and Damage Mitigation
- Tunnel Detection
- Biometric Detector
- Resilient Tunnel

The most important process that the Directorate uses is the one that puts us in direct contact with our customers: the Capstone Integrated Product Team (IPT) process. It ensures that we are identifying our customers' highest priority needs and providing near-term capabilities to address them. These Capstone IPTs engage DHS customers, acquisition partners, S&T Division Heads, and end users to align our research, development and product transition activities to their requirements and acquisition activities. The science and technology solutions that are the outcome of this process, referred to as Enabling Homeland Capabilities, draw upon technologies that can be developed and delivered to our customer acquisition programs within three years. As with the Innovation Portfolio, the Under Secretary presents recommended new start programs to the DHS Technology Oversight Group (TOG), chaired by the Deputy Secretary, for approval.

Our experience over the last year has led us to maintain 12 Capstone IPT areas – Information Sharing/Management; Border Security; Chemical Defense; Biological/Agricultural Defense; Maritime Security; Cyber Security; Transportation Security; Counter IED; Cargo Security; People Screening; Infrastructure Protection; and Incident Management – and add a thirteenth to directly support first responders.

DHS S&T Capstone IPTs

Gathering Mechanism for Customer Requirements:



The S&T Directorate officially announced the 13th Capstone IPT in February 2009 at the DHS S&T West Coast Stakeholder Conference in Bellevue, Washington, which focused on First Responder technology needs and existing technological gaps.

Within the various First Responder communities there are several mechanisms currently employed to research and identify First Responder technical requirements. The Capstone IPT will help formalize these requirements while leveraging the relationships that the S&T Directorate has developed with the International Community, within the Interagency, and at our Universities.

In order to accomplish this, the IPT will formally establish an Emergency Services Sector Research, Development, Test, and Evaluation (RDT&E) Working Group comprised of representatives from the National Protection Programs Directorate (NPPD), the Office of Infrastructure Protection (OIP), the Emergency Services Sector Coordinating Council (SCC) and the Emergency Service Sector Government Coordinating Council (GCC). This group will serve as the primary engine for identifying technology gaps in the Law Enforcement, Fire, Emergency Management, and Emergency Medical Services areas. Because Federal Advisory Committee Act (FACA) rules apply when communicating RDT&E requirements to the Capstone IPT, a government-only unit comprised of members from the Assistant Secretary for State and Local Law Enforcement, the Office of Health Affairs, the Fire Administrator, and the GCC will officially represent the First Responder community to the IPT.

The Capstone IPT process for First Responders is similar to that of the other twelve IPTs. As technology gaps or technology needs are identified by the RDT&E Working Group, the S&T Directorate will first examine the DHS S&T and FEMA investment portfolio to determine if the requested technology already exists or if R&D is currently underway in the interest area. The S&T Directorate requested \$12 million to develop technologies to address capability gaps identified by the First Responder IPT. This program will test technologies, assess them for usability, and commercialize them to make the technology solutions available across all First Responder communities.

PRODUCT IS JOB ONE

Delivery of technological capabilities to our customers is the reason the S&T Directorate exists. In the past year, the S&T Directorate has had numerous products which we have transitioned to our customers in the Capstone IPT capability areas, and we are on track to continue this performance in the future.

Program, Project, and Activity (PPA)	FY 2009 (E)		FY 2010 (PB)		Delta	
	FTP	\$000	FTP	\$000	FTP	\$000
Management and Administration	257	132,100	274	142,200	17	10,100
Borders and Maritime		33,050		40,181		7,131
Chemical and Biological		200,408		206,800		6,392
Command, Control and Interoperability		74,890		80,264		5,374
Explosives		96,149		120,809		24,660
Human Factors		12,460		15,087		2,627
Infrastructure and Geophysical		75,816		44,742		(31,074)
Innovation		33,000		44,000		11,000
Laboratory Facilities	124	161,940	130	154,500	6	(7,440)
Test and Evaluations, Standards		28,674		28,674		0
Transition		28,830		45,134		16,304
University Programs		50,270		46,000		(4,270)
Homeland Security Institute		5,000		-		(5,000)
Research, Development, Acquisition and Operations	124	800,487	130	826,191	6	25,704
S&T Total	381	932,587	404	968,391	23	35,804

The FY 2010 President’s Budget Request (PBR) (\$968 million) represents a 3.8 percent increase over the FY 2009 Enacted (\$933 million) to support the following R&D initiatives:

Command Control and Interoperability: DHS requested a \$5.4 million increase to Cyber Security research and development applied towards cyber security priorities identified in the Comprehensive National Cybersecurity Initiative (CNCI). Specifically, this effort will develop enduring leap-ahead technologies to secure the Nation’s critical information infrastructure (energy, transportation, telecommunications, banking and finance, and others) and networks.

Innovation: The S&T Directorate requested an \$11 million increase to fund homeland security R&D that could lead to significant technology breakthroughs that would greatly enhance DHS operations including technologies for protecting levees, mass transit tunnels, and the electric grid in Manhattan, NY; detecting and distinguishing between harmful and benign liquids at airport

checkpoints; and detecting a person's intent to cause harm based on physiological and behavioral cues.

Transition: DHS proposed an increase of \$16.3 million to the Transition PPA. Within this increase \$12 million is dedicated to develop and design technologies to address capability gaps identified by Federal, State, local and Tribal First Responders in the First Responder Capstone Integrated Product Team (IPT). This program will test technologies, assess them for usability, and commercialize them to make the technology solutions available across all First Responder communities.

Explosives: The S&T Directorate requested an increase of \$24.7 million, to address critical capability gaps in detecting, interdicting, and lessening the impacts of non-nuclear explosives used in terrorist attacks against mass transit, civil aviation, and critical infrastructure. Of that increase, \$10 million will develop high-throughput cargo screening technology through automated, more efficient equipment. An additional increase of \$14.7 million will build on FY 2009 efforts to counter the threat of hand-carried improvised explosive devices to mass transit systems by detecting all types of explosive threats such as homemade, commercial, and military explosives.

Border and Maritime: DHS proposed an increase of \$5 million to fund a new basic research effort to develop the foundations for technologies to provide advanced detection, identification, apprehension, and enforcement capabilities along borders, increasing the security of the border and lower the risk of a successful terrorist attack. An additional increase of \$2.1 million is proposed to fund programs identified in Maritime Security IPT that will provide technologies to the United States Coast Guard (USCG), Customs and Border Protection (CBP), Immigration and Customs Enforcement (ICE), and other components operating in the Maritime environment.

UNIFYING DHS

The S&T Directorate, by virtue of our role supporting operating components across the Department, is in a unique position to help accelerate the maturation and unification of the Department. The S&T Directorate provides Department-wide services that help DHS operate better as one Department.

Test & Evaluation

The S&T Directorate established the Test and Evaluation and Standards Division (TSD) in FY 2007 to develop Department-wide test and evaluation (T&E) policy and provide T&E oversight of the major acquisition programs. TSD has worked closely with DHS Under Secretary for Management and all DHS components to develop and implement a robust department-wide T&E policy that will be fully integrated into the Department's Acquisition process framework. We have created an interim T&E Directive that complements the new DHS Acquisition Directive (Management Directive 102-01). Together these policies will provide the appropriate component review and DHS oversight for test planning, execution and reporting. The T&E policy requires components to participate in development and approval of the Test and Evaluation Master Plan (TEMP) that will describe the necessary Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E) that must be conducted in order to determine system technical performance, operational effectiveness, and suitability

throughout the development process. The S&T Directorate established the Director, Operational Test and Evaluation (DOT&E) in FY 2008 as the principal advisor on operational test and evaluation to the Office of the Secretary and component heads. The Secretary formally delegated authority to DOT&E in FY 2009.

TSD and DOT&E are currently providing oversight to major acquisition programs by participating in T&E working groups, approving TEMPs, approving Operational Test Plans, participating in Operational Test Readiness Reviews, observing testing, and participating in Acquisition Review Boards. Over the past year, we have:

- Established a **T&E Council** to advise the senior DHS management in matters relating to T&E. This Council includes participation by all components in promoting T&E best practices and lessons learned, ensuring adequate T&E infrastructure, and establishing consistent T&E policy and processes for use in acquisition programs throughout the Department.
- Provided **T&E oversight** on critical acquisition programs throughout the Department, including Advanced Spectroscopic Portal (Cargo) ASP(C), BioWatch Generation 3, Secure Border Initiative network (SBIInet), Air/Sea Exit, National Cyber Security Program (NCSP), U.S. Visit, Western Hemisphere Traveler Initiative (WHTI), Secure Flight, Transformation and Systems Consolidation (TASC), USCIS Transformation, Transportation Worker Identification Card (TWIC), and Automated Commercial Environment (ACE)
- Partnered with the United States Navy (USN), NIST and DOJ to develop an **initial set of standard test methodologies** applicable to small unmanned aerial systems (sUAS) in support of law enforcement and urban search and rescue missions.

Standards

The S&T Directorate is the Standards Executive for the Department, with responsibility for coordination of standards activities for DHS as prescribed in OMB Circular A119 and the National Technology Transfer and Advancement Act (PL 104 -113). S&T works with DHS components to develop performance specifications, documentary standards, measurement standards and process standards as well as interoperability and safety standards. The Office of Standards within TSD has three main functions: 1) coordination of standards within the Department, 2) outreach to the private sector standards development community, and 3) management of a program to develop critical standards for homeland security applications.

The Office manages the processes for formal adoption of standards as *DHS National Standards*. The Office also coordinates with private sector Standards Development Organizations (SDOs) that address the homeland security community, ensuring that the standards produced meet the requirements of the DHS components as well as state, local and tribal users of equipment and processes. The Office also manages an investment of funds in development of standards to meet mission needs. This includes evaluating standards needs; participation in standards development planning; coordinating standards development efforts with DHS components and other state and federal agencies and appropriate SDOs; and supporting activities at NIST, NIOSH, DOD and the DOE National Laboratories and other partners in standards related technology development. Over the last year, we have:

- Private Sector Preparedness - Established an **intra-agency accreditation and certification program** with FEMA, the DHS Private Sector Office, the DHS OIP, the DHS Office of Emergency Communications and the DHS Office of General Counsel (OGC) to help ensure emergency preparedness and business continuity in the private sector.
- Coordinated within DHS and with SDOs to complete the development of standards for homeland security and first responder equipment:
 - Biometrics equipment and credentialing standards
 - Explosives detection standards for bulk and trace detection systems, explosives reference materials and a pilot program for homemade explosives detection
 - Personal protective equipment standards for law enforcement, respiratory protection standards for first responders
 - Performance standards for robotics: Urban Search and Rescue & Bomb Squad applications

Commercialization and Private Sector Engagement

The S&T Commercialization Office and the Office of SAFETY Act Implementation (OSAI) have both contributed to expand upon and improve the Directorate's relationship with business and industry. The Commercialization Office establishes and fosters working relationships with the private sector to facilitate cost-effective and efficient product/service development efforts.

In the past year, OSAI has been responsible for coordinating 179 applications from industry partners seeking Federal protection for their technology under the Support Anti-Terrorism by Fostering Effective Technologies Act of 2002 (SAFETY Act). This office links the private sector with not only the S&T Directorate but also other members of the Federal government

The S&T Directorate officially established the Commercialization Office in 2008 to develop and execute programs and processes that identify, evaluate and commercialize widely-distributed products or services that meet the operational requirements of the Department of Homeland Security's operating components, first responder community, critical infrastructure/key resources owners and operators and other Department users. It is committed to conducting outreach with the private sector in order to engage and leverage the expertise, skills and resources of the private sector. This outreach includes a concerted effort to engage small, minority, disadvantaged and HUB Zone groups. As a result of these efforts, the Commercialization Office has compiled a listing of well-over 300 companies, outlining over 2,000 technologies, products and/or services that may possess alignment to DHS needs. Information has also been compiled to show the number of small, medium and large businesses with whom the Commercialization Office has interfaced. A majority of those companies are small businesses.

Since its inception, the Office has published a number of materials, including briefs, books and articles that outline the major activities of the Commercialization Office and provide readers with easy-to-understand guides to execute effective detailed operational requirements documents (ORDs) and the newly created and implemented commercialization process. Furthermore, the Office has published three popular books to assist in the development of detailed operational requirements. These books serve as a useful resource to explain the critical role of detailed

requirements to cost-effective and efficient product development as well as an easy-to-use guide to aid in the articulation of requirements.

The Office also works with the private sector through its System Efficacy through Commercialization, Utilization, Relevance and Evaluation (SECURE) Program, an innovative public-private partnership in which DHS leverages the skills, expertise, and resources of industry to develop products or services aligned to DHS ORDs. Additionally, the newly introduced FutureTECH program, which is similar to SECURE, focuses on delivering TRL-6 technologies through cooperation with the university, national lab and private sector R&D communities. For example, in the SECURE Program, DHS posts detailed ORDs on its web portal (http://www.dhs.gov/xres/programs/gc_1211996620526.shtm), along with a conservative estimate of the potential available market (PAM) of a given product/service and invites the private sector to use this information to formulate a business case to pursue potential sales opportunities found within DHS operating components and its many ancillary markets including first responders and CI/KR owners and operators. This program has been well received by the private sector, which had requested that DHS provide more information on the detailed needs and requirements of its stakeholders.

LABORATORY FACILITIES

The S&T Directorate has focused on the alignment between the DOE National Laboratories and the S&T divisions to establish a coordinated network to help deliver critical homeland security capabilities. The laboratory alignment provides strategic partnerships between the S&T divisions and S&T and DOE National Laboratories to leverage capabilities for basic research programs and portfolios. . The aligned laboratories continue to be engaged by S&T on matters associated with the planning and execution of basic research as well as with other Federal partners. For example, the Pacific Northwest National Laboratory (PNNL) Capability Replacement Laboratory construction project is scheduled to be operational in FY 2011. The project is a joint investment between DHS and DOE to assure the enduring capabilities (radiation detection and analysis; information analysis; and test, evaluation and certification) continue in these mission-critical areas.

NBAF

After a rigorous 3 year competitive site selection process, DHS selected a parcel of real property in Manhattan, Kansas as the site upon which DHS plans to build and operate the National Bio and Agro-defense Facility (NBAF). The NBAF will be a world class state-of-the-art bio-containment level 3 and 4 laboratory that will research and develop diagnostic capabilities for high-consequence foreign animal and zoonotic diseases in livestock to protect the country's agricultural and public health against agricultural threats for the coming decades. Until the NBAF comes on line (anticipated during 2015), upgrades and enhancements will be completed for the Plum Island Animal Disease Center to enable that facility to continue to safely operate as the front line of the nation's defense against foreign animal diseases and continue to fulfill DHS and USDA research and operational requirements.

Pursuant to Public Law 110-329 (DHS FY 09 Appropriations Act), Congress directed DHS to conduct "a risk assessment of whether foot-and-mouth disease work can be done safely on the United States mainland." It also directed GAO to review DHS's risk assessment. I understand

that the GAO plans to release a draft written report to Congress on June 15. I am confident that the risk assessment, environmental assessment, and security assessment DHS conducted for the proposed NBAF operations, which included confirmation from FMD experts and risk modeling experts, was thorough and appropriate. I appreciate the independent review being conducted by GAO and look forward to reviewing the report and its recommendations as we move forward with the design and construction of this important National facility.

Sale of Plum Island Animal Disease Center (PIADC)

Pursuant to the release of the National Bio Agro-Defense Facility (NBAF) Record of Decision (ROD) in mid-January 2009, and in accordance with the FY 2009 Appropriations language, Section 540, S&T is working with the Under Secretary for Management to engage the services of the General Services Administration (GSA) for the liquidation of all Plum Island Animal Disease Center (PIADC) real and personal property. As our agent for the liquidation, the GSA, following the release of the ROD, created a team of property, environmental and legal professionals who toured Plum Island and spoke with laboratory personnel. GSA, along with DHS experts, has begun outlining strategies for the sale of the property to allow the greatest return while minimizing risk to the Department and impact to PIADC operations and personnel. GSA expects to put Plum Island on the market in FY 2010 with a final sale and closing date expected in FY 2011. The sale proceeds will offset the future appropriation for NBAF construction and all other associated costs including Plum Island environmental remediation. The S&T Directorate will request this appropriation in the FY 2011 President's Budget. Depending upon the terms of the sale and when the sale is actually completed, S&T anticipates that it will continue to occupy PIADC and pay the new owner rent until the NBAF is ready for full operations in 2017. This would allow the new owner time to finalize its plans for the island's use and to begin the early design and preparatory activities for occupation. The sale of Plum Island purchase agreement would allow current operations to continue during NBAF construction and eventually transfer upon completion of the new NBAF facility.

In addition to planning and constructing new laboratories, the S&T Directorate continues to operate its laboratories to provide homeland security research, test and evaluation, and technology transition capabilities to its customers. The Transportation Security Laboratory (TSL) protects America's skies through its research, development, test and validation of solutions to detect and mitigate the threat of improvised explosive devices. Based on increased requirements to perform explosives testing, a Capital Investment Plan is being developed for TSL to provide additional laboratory facility space. The Chemical Security Analysis Center (CSAC) provides a scientific basis for the awareness of chemical threats and the attribution of their use against the nation. It is a part of the interagency Sample Receipt Facility (SRF) and expected to be fully operational by the end of FY 2009. The Environmental Measurements Laboratory (EML) seeks to improve the science and technology required for preventing and responding to homeland security threats, especially in the areas of radiological and nuclear threats.

UNIVERSITY PROGRAMS

Likewise, the S&T Directorate continues to solidify its relationship with academia through the university-based Centers of Excellence (COE) Program. This program identifies partner institutions to conduct research and develop technologies to improve homeland security-related capabilities. In doing so, we not only gain access to the best cutting-edge research and development but we also help develop the next generation of American scientists. Moreover, by supporting Minority Serving Institutions (MSIs), this program implements our commitment ensuring that a representative science and technology workforce is fully developed, and that the MSIs that are leading the development of this workforce are rewarded for their efforts. In the past two years, the Directorate made ten new MSI Scientific Leadership Awards and named four MSIs as COE co-lead institutions.

CONCLUSION

I am glad to report that the Department of Homeland Security Science and Technology Directorate has made significant progress over the past year, enabling DHS to better protect our Nation. I look forward to working with the Committee to ensure continued success in both the near and long-term future.

Members of the Committee, I thank you for the opportunity to meet with you today and look forward to answering your questions.