STATEMENT FOR THE RECORD

of

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Department of Homeland Security

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Good morning, Chairman Wu, Congressman Gingrey and distinguished members of the Sub-Committee. I am Robert Hooks, and I am the Director of the Transition Portfolio for the Science and Technology Directorate of the Department of Homeland Security, and I am pleased to appear before you today to discuss successes that the Department of Homeland Security's Science and Technology Directorate has achieved with respect to technology solutions on our borders.

As you are aware, Under Secretary Cohen is on travel and I am honored to appear before you in his place. Under Secretary Cohen asked me to express his appreciation and thanks to this committee, your staff, and the entire Congress, for the strong, bipartisan leadership and support you have given him and the men and women of the Science and Technology Directorate as we work to make the nation safer.

Introduction to the DHS S&T Organization

Nearly 14 months ago, with Congress' support, Under Secretary Cohen implemented a new organizational structure for the Science and Technology Directorate to make it customer focused and output oriented. Our customers are the operating components and directorates of DHS, and their stakeholders are the State, local and tribal governments, first responders and private sector entities. Our Science and Technology effort to deliver technology is primarily organized into three portfolios: Basic Research, Innovation, and Product Transition.

Introduction to the Basic Research Portfolio

The Basic Research portfolio addresses long-term research and development needs in support of DHS mission areas that will provide the Nation with an enduring capability in homeland security. This type of focused, long-term research investment has the potential to lead to paradigm shifts in the nation's homeland security capabilities.

In support of this objective for long-term research and development, we are in the process of establishing additional university-based Centers of Excellence in critical homeland security mission areas, including a Center for Excellence for Border Security and Immigration and a Center of Excellence for Maritime, Island, and Extreme/Remote Environment Security. These centers will provide fundamental research to support the DHS goals of strengthening border security, maritime security, and interior immigration enforcement. These centers will also establish education programs in homeland security relevant to their specific mission areas. This will provide learning opportunities to support the development of the next generation of homeland security leaders. We are currently in the selection phase and expect to announce the institutions for the new Centers of Excellence this month.

Tunnel Detection is an example of the type of focused, long-term research effort that we would tackle in the basic research area. As you are probably aware, the threats posed by clandestine underground tunneling along the border in order to smuggle persons and goods into the United States are a serious and growing

concern. Detection of these smuggling tunnels requires a combination of both direct and indirect methods to determine the shape, size, and position of the tunnel, geophysical characteristics, and understanding of the various detection methods. If funded in fiscal year 2009, we intend to study and characterize the geophysical characteristics of key border regions, examine the limitations of current detection methods, assist in advancing those detection methods, and examine the potential for new complementary detection methods. The basic research tunnel investment will directly support and be complementary to our Transition and Innovation efforts.

Introduction to the Innovation Portfolio

The Innovation portfolio – Homeland Security Advanced Research Project Agency (HSARPA) - supports a key goal of Under Secretary Cohen's to put advanced capabilities into the hands of our customers as soon as possible. Within the Innovation Portfolio, we have two overarching programs: High Impact Technology Solutions or HITS, and Homeland Innovative Prototypical Solutions or HIPS.

HITS are designed to provide proof-of-concept solutions within one to three years that could result in high-payoff technology breakthroughs. An example of a HITS is the tunnel detection effort. While we are in the process of awarding a contract as a result of a Broad Agency Announcement soliciting additional novel approaches to tunnel detection, we are also experimenting with UAV mounted digital electromagnetic gradiometers to determine effectiveness and reliability. If successful, this would provide a wide area search capability for rapid tunnel detection. This is high risk research, but if successful, can be a game-changer of

new operational capability to our component customers and will complement our Transition and Innovation efforts.

HIPS are designed to deliver prototype-level demonstrations of game-changing technologies within two to five years. An example within the HIPS portfolio is the SAFECON project which is focused on developing an advanced screening capability at ports of entry. Sensors mounted on a crane interrogate shipping containers as the crane engages and lifts the container off of the ship. The sensors detect and identify dangerous cargo without impact to the normal flow of commerce. Our goal is to detect and identify dangerous cargo within 45 seconds or less.

Introduction to the Product Transition Portfolio

The Product Transition Portfolio, for which I am the Director, is centered on 11, functional, customer led, Capstone Integrated Product Teams (IPTs), 3 of which are Maritime Security, Cargo Security, and Border Security. In the Capstone IPTs, DHS operational components and directorates are the chairs or co-chairs and they define and prioritize capability gaps, then S&T offers technical solutions, and the customers are the final approval on if the offered technical solution is appropriate.

Specific to border security, our Border Security Capstone IPT is co-chaired by David Aguilar, Chief of the Border Patrol, and Luke McCormack, Chief Information Officer of Immigration and Customs Enforcement (ICE). For Cargo Security, Jayson Ahern, Former Assistant Commissioner for CBP's Office of Field Operations (OFO), was the original

chair. His successor is Tom Winkowski, CBP's New Assistant Commissioner for Office of Field Operations. For Maritime Security, Rear Admiral Ron Hewitt, USCG, was the original chair. His successor is Rear Admiral Robert Parker, USCG, Assistant Commandant for Capability (CG-7).

While we have identified the principal stakeholders within the Capstone IPTs as chairs or co chairs, they are not the only customer representatives to the IPTs. All DHS operational components and directorates are invited as customers to any Capstone IPT relevant to their mission. As an example, because of the interrelationship within their respective geographic areas of responsibility, Coast Guard has representation on the Borders IPT, TSA, and DHS Policy office have representation on the Cargo IPT, and, CBP and ICE have representation on the Maritime Security IPT. Directed by the priorities of the Border, Cargo, and Maritime Security Capstone IPTs, we are developing technologies that can be delivered to the components in 3 years or less to assist in securing our maritime and land borders, and protect our Customs and Border Protection and Coast Guard law enforcement officers.

Introduction to the Borders and Maritime Security Division

The Borders and Maritime Security Division oversees the delivery of technologies to provide advanced detection, identification, apprehension and enforcement capabilities along land and maritime borders, and provide advanced technology spiral-development "injections" into the following program areas: Secure Border

Initiative Network (SBI Net), Command 21, Secure Freight Initiative, Container Security Initiative, and Customs Trade Partnership Against Terrorism (C-TPAT).

Borders and Maritime Technologies Programs

A number of our programs focus on developing Detection, Classification, and Localization (DCL) sensor technologies to monitor illegal border activity with a wider range and greater accuracy than present-day technologies; command and control systems that deliver a much broader amount of information about current events to different levels of law enforcement; communications systems that provide connectivity to law enforcement officers working in remote locations; and modeling and simulation tools to help border enforcement agencies make informed improvements in immigration and border security policy and operations, as well as investments in technology, complex systems and infrastructure. These technologies and systems will help to ensure that maritime and border security assets are used efficiently and effectively and enable law enforcement to have access to robust and reliable intelligence when they need it.

Unmanned Aircraft for Border and Maritime Security Missions

We are continuing to actively develop technologies that will permit routine operation of UAVs for border and maritime security missions within the National Airspace System. In conjunction with the FAA and the DoD, we are developing an FAA-validated simulation that will be used, starting in FY09, to evaluate automated sense and avoid systems, the key enabler for safe and routine unmanned aircraft flight. DHS S&T is also partnering with DoD in the ongoing Global Observer Joint Concept and Technology Demonstration

(JCTD), which offers the potential for DHS to provide persistent, airborne, wide area surveillance along our borders and coasts.

In cooperation with Customs and Border Protection and the Coast Guard, S&T is planning a demonstration for employing maritime radar on an unmanned aircraft to detect and help prosecute drug running boats off the Florida coast. We are actively pursuing, both outside DHS with the Departments of Commerce, Defense, and Transportation and inside DHS with CBP and the Coast Guard, the increased use of unmanned aircraft to secure our nation's borders and provide airborne capabilities for requirements that require extended station times.

Border Officer Tools Program

The officer tools and safety effort is developing and delivering technologies that will enable border security and Coast Guard members to perform their current tasks more efficiency, effectively, and with a higher level of safety. Development of these tools in many cases is leveraged from the initial investments of other government agencies, and then adapted to fit the operational environment and functions of several DHS security components. Where possible, technology is leveraged to support multiple DHS components. For example, the program will provide Coast Guard boarding officers with tools they carry onto vessels to perform inspections, which could be applied to CBP searches of over-the-road transportation. We are also developing tools that can be used by multiple DHS components to rapidly search vessels or vehicles, locate any hidden compartments, discriminate legitimate cargo from contraband, and remotely attain a positive

identification of a person. We have recently developed and are not testing a pre-acquisition prototype of a repeater-based communications system that permits communication among boarding team members, no matter where they are in a ship. Repeaters are small transmission devices that are deployed like breadcrumbs as boarding officers enter and search a ship. The repeaters provide 100-percent connectivity between boarding team members in areas that previously allowed less than 50-percent connectivity without repeaters. In the future, we plan to make available a deployable communications repeater for boarding teams.

Cargo Security Efforts and Programs

Through our SAFECON (safe container) HIPS project, we are researching ways to quickly screen cargo at ports of entry. As a complement, we are also looking to improve supply chain security and thus decrease screening frequency and simultaneously increasing our probability of detection of dangerous contraband. Using a system-of-systems approach, we are developing advanced sensor and communication technologies within a security architecture that encompasses the world's supply chain. Some technologies developed in this program will enable CBP officers to identify tampering events and their location, track shipping containers, and ensure that alarm data is communicated reliably and securely. Most of these technologies will be commercialized, purchased by industry and adopted as an international standard that will meet DHS's core security requirements. Current project activities include the Advanced Container Security Device (ACSD), an in-container sensor to detect and warn of intrusion on any six sides, door openings or the presence of human cargo; Container Security Device (CSD), a small, low-cost sensor mounted within a

container to detect and warn of the opening or removal of a container door; Marine Asset Tag Tracking System (MATTS), a remote and adaptive multi-modal global communications and tracking tag for transmitting security alert information from ISO shipping containers; Hybrid Composite Container, a potential next-generation, ISO approved, shipping container with embedded security sensors to detect intrusions that is more than 15 percent lighter than existing ISO steel containers and more durable; Advanced Screening and Targeting, a project that develops computer algorithms and software that will automatically collect, combine, analyze and find suspicious patterns in the shipping information of containers; and Supply Chain Security Architecture (SCSA), a framework for how near-term and future container-security technologies that will be incorporated by industry into supply chain security operations and how information can be communicated securely to CBP officer.

Technology Transition Process: Customer Focused and Output Oriented

As we develop these technologies, we recognize we need a disciplined process to ensure the technology is turned into widely distributed and utilized products and capabilities. Once the Capstone IPTs approve technical solutions, project level IPTs – S&T program managers working with component-customer program managers – are established to turn the proposed technical solutions into deliverable technology that is affordable and meets the customer's schedule and performance requirements. Through signed Technology Transition Agreements, S&T and our customers define and agree on schedule, performance requirements, transition paths, organizational responsibilities, integration strategy, technology transition

readiness level, and estimated procurement, operating and support cost up front. This way, if initial procurement is too expensive, or operating costs are prohibitive, the decision to look for a new technology solution can be made early – before large buy acquisition programs are initiated and before federal, state, local, and tribal entities expend their precious resources.

Conclusion

In summary, DHS S&T is dedicated to being a customer focused, output oriented organization. Through the Capstone IPT process, our customers prioritize and decide on the incremental technology improvements most important to them. Informed by the Capstone IPTs, our basic research and innovation efforts provide the focused, protracted research and high impact advanced research for longer term game changing technology solutions. We are dedicated to providing our customers - the DHS components and directorates, State, local and tribal governments, first responders and private sector entities - the technology necessary to succeed at their mission and protect our nation. That concludes my statement for the record. On behalf of Undersecretary Cohen, thank you for your support of the Science and Technology Directorate, and I welcome your questions. Thank you.