Testimony of

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Chairman Donovan, Chairman Katko, Ranking Member Payne, Ranking Member Watson Coleman, and distinguished members of the committees, thank you for inviting DHS to speak with you today. I appreciate the opportunity to discuss the Department of Homeland Security (DHS) Science and Technology Directorate's (S&T) work in assisting surface transportation agencies, as well as how S&T works collaboratively with the Transportation Security Administration (TSA) in this mission area.

I have been the Surface Transportation Explosive Threat Detection (STETD) program manager since the program's inception in Fiscal Year 2011, and have been with the Department since 2006. Prior to my time at DHS, I was a research, development test and evaluation program manager for special programs within DoD focusing on Army aviation and missile systems, and have worked to develop technology addressing critical operational gaps from idea to fielding throughout my entire career.

S&T's Explosive Division enjoys a close working relationship with TSA's Intermodal Division to ensure the security of our nation's transportation systems. The Implementing Recommendations Section 1409 of the 9/11 Commission Act of 2007, Pub. L. 110-53, (codified at 6 U.S.C. 1138) requires the DHS Secretary to carry out an R&D program through the S&T Homeland Security Advanced Research Projects Agency (HSARPA) and in consultation with Transportation Security Administration (TSA) for the purpose of improving the security of public transportation systems. S&T appreciates the continued support of this Committee and its Members, as we carry this vital security mission, and are grateful for the opportunity to foster a stronger constructive relationship in the future

The U.S. surface transportation network is immense, consisting of buses, passenger and freight railroads, and ferries. DHS has been working diligently with public and private sector partners to address security gaps in the nation's transportation network. The challenge is how to address a decentralized, diffuse, complex, and evolving terrorist threat in the context of an inherently open and diverse surface transportation system. The two competing challenges of this need are the ability to provide credible, real-time detection capabilities without interrupting the rapid movement of passengers.

Public safety officials have little to no capability to detect threats being carried into surface transportation venues. They must rely on intelligence reports before an attack or public reporting of events already underway. There is often no awareness until after an attack has already occurred.

DHS S&T has a number of programs/pilots underway to address the identified security needs in the surface transportation sector. The DHS S&T Surface Transportation Explosive Threat Detection (STETD) program was designed to develop a layered detection system consisting of a suite of sensors capable of identifying person-borne threat items, with a high probability of detection and low probability of false alarm. The DHS S&T role is to develop such technology through Developmental Test and Evaluation (DT&E) and then work with TSA's Office of Requirements and Capabilities Analysis (ORCA) Intermodal Division to move into Operational Test and Evaluation (OT&E), and ultimately transition to a commercial partner.

The STETD program began in fiscal year (FY) 2011 working with the TSA by defining site-specific requirements through surface transportation venue assessments, and identifying capability gaps captured via Homeland Security Enterprise organizations. After visiting several surface transit venues of varying sizes (large, medium, and small), meeting with owners/operators and security personnel, surveying commercial technologies, and reviewing technology development efforts across government agencies and the national laboratories, it was determined there was no existing solution meeting the requirements posed by this very challenging environment.

The unique challenges of an open system with no fixed checkpoints, extremely high passenger throughput, the need to maintain traveler privacy, and the physical safety of both the traveling public and system operators, and an unalterable existing infrastructure within which technologies for threat detection must fit, necessitates a dedicated program focused specifically on this

significant capability gap. Therefore, DHS created a technology development pathway specific to the challenge.

The program is developing prototype stand-off detection sensors, with the vision of providing "curb to platform" layered threat detection distributed throughout a surface transportation venue. The STETD program is also advancing research and development of Intelligent Video/Video Analytics (IV/VA) algorithms to improve detection of leave behind bags and quickly highlight the surrounding circumstances of how the bag was left to provide actionable situational awareness of a potential threat. The Forensic Video Exploitation and Analysis (FOVEA) analytics tool suite, developed within the STETD program, enables the operators to save resources on response call-outs; compress long durations of surveillance video into much shorter clips reducing review effort from days to hours; and helps operators follow individuals of interest across multiple camera views. The system is currently in use at Washington Metropolitan Area Transit Authority (WMATA) Special Operations Center, and S&T is planning to transition the capability to the broader nationwide end user community through a commercial partner by FY 2019.

In addition to technology solutions, DHS S&T's Detection canine program has also undertaken an effort to focus on the Person Borne Improvised Explosive Device (PBIED) detection canine. Canines are the most versatile mobile detection tools that we have to protect the homeland today, and S&T's PBIED canine initiative was created to assess the strengths and limits of canines specially trained to detect threats being carried by people, either on their person or in bags, in mass transit and large crowd event venues. This type of parametric study and testing had not

previously been undertaken in the global detection canine community. S&T has taken the lead to conduct this type of parametric study and testing, which is critical to understanding the limits of performance for the canine detection teams in these types of search applications.

Chairman Donovan, Chairman Katko, Ranking Member Payne, Ranking Member Watson Coleman, and distinguished members of the committees, thank you again for your attention to this important mission and for the opportunity to discuss S&T's support to TSA and surface transportation agencies. I look forward to answering your questions.