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Chairwoman McSally, Ranking Member Vela, and distinguished Members of the Committee. It is a pleasure to appear before you today on behalf of U.S. Customs and Border Protection (CBP) to discuss the acquisition and deployment of border security technology between our Nation's ports of entry (POE).

Along the more than 5,000 miles of border with Canada, 1,900 miles of border with Mexico, and approximately 95,000 miles of shoreline, CBP secures our borders and associated airspace and maritime approaches to prevent illegal entry of people and goods into the United States. The border environment in which CBP works is dynamic and requires continual adaptation to respond to emerging threats and changing conditions. We appreciate the partnership and support we have received from this Committee, whose commitment to the security of the American people has enabled the continued deployment of advanced technology assets needed to secure the border.

In the acquisition and deployment of border security technology, CBP ensures that investments are effective and that procurement processes are efficient, transparent, and compliant with Federal law and Department of Homeland Security (DHS) policy. With all our programs, operations, and activities, we welcome oversight and embrace our responsibility as stewards of American taxpayer resources.

When CBP was formed in 2003, it was an organization comprised of components that had different approaches, methods, and policies regarding acquisition and management activities. Although our operations had been integrated under one mission, CBP, and in a broader context DHS, lacked a standardized and unified acquisition structure, including governance and oversight, strong requirements development process, and centralized resource allocation. In order to strengthen and streamline acquisition management throughout the Department, Secretary Johnson launched the Unity of Effort initiative, which established a more collaborative process for decision-making, including those that shape acquisition and resource allocation.

A key element of the Unity of Effort initiative is the establishment of the Joint Requirements Council (JRC), designed to improve the quality and validity of the Department's requirements generation and oversight process. The JRC creates a stronger focus earlier in the investment life cycle – at the requirements development stage – to better position DHS components, including CBP, to effectively and efficiently execute acquisition strategies and budgets that ultimately close capability gaps.

As part of this initiative, CBP is the sponsoring component for DHS Joint Task Force West and a participating component in Joint Task Force East and Joint Task Force for Investigations. These Joint Task Forces are conducting the DHS Southern Border and Approaches Campaign Plan (SBAC), launched in early 2015, which put the assets and personnel of the Department to use in a combined and strategic way to collaboratively plan and execute multi-component DHS operations to better protect the border. Aimed at leveraging the range of unique Department roles, responsibilities, and capabilities, the Campaign enhances our operational capability to address comprehensive threat environments in a unified way. Together, the DHS Unity of Effort initiative and the Campaign will drive border security investments and direct DHS resources in a much more collaborative fashion to address the range of threats and challenges, including illegal migration, smuggling of illegal drugs, human and arms trafficking, the illicit financing of such operations, and threat of terrorist exploitation of border vulnerabilities.

Our testimony today will discuss CBP's technology investments between the POEs, highlight some of CBP's deployed border technology assets, and describe the Agency's path forward to ensure that CBP's acquisition strategies and structure is in place to meet the challenge of a dynamic border threat environment.

Technology Investments between Ports of Entry

For CBP, the use of technology in the border environment is an invaluable force multiplier to increase situational awareness. Thanks to the support of Congress, CBP continues to deploy proven, effective technology to strengthen border security operations between the POEs — in the land, air, and maritime environments. With enhanced surveillance capabilities, CBP can improve its situational awareness remotely, direct a response team to the best interdiction location, and warn the team of any additional danger otherwise unknown along the way. As a result, these investments increase CBP's visibility on the border, operational capabilities, and the safety of frontline law enforcement personnel.

It is imperative that DHS and CBP promote operational agility by leveraging technological advances and innovative practices. A key element of CBP's acquisition strategy, innovation is not simply the process of buying the newest technology; rather, it is the product of a collaborative culture that supports creativity, optimizes resource allocation and pursues the greatest return on investment and delivery of prioritized operational capabilities.

This Committee is familiar with the outcome of CBP's *SBI_{net}* program, an earlier component of the DHS Secure Border Initiative (SBI) that was designed as a comprehensive and integrated technology program to provide persistent surveillance across U.S. borders. The program experienced significant schedule delays and cost overruns because it did not allow necessary flexibility to adapt to differing needs in the various regions of the border. *SBI_{net}* eventually delivered systems to two Areas of Responsibility (AORs) in Arizona that continue to operate successfully. Nevertheless, DHS cancelled *SBI_{net}* on January 14, 2011, because it was too costly and the idea of one, all-encompassing program was unnecessarily complex for border technology.

Since 2011, DHS and CBP have approached our border technology requirements, ranging from small to large, simple to complex, in more manageable pieces tailored to specific regions on the border. For example, CBP's Arizona Technology Plan (ATP), which focuses on technology that specifically meets the needs of border conditions in Arizona, is the first of many phases in a multi-year effort to provide a cost-effective mix of fixed and mobile technology across the Southwest border. The ATP acquisition strategy leverages "non-developmental" technology to the greatest extent possible, providing more flexible, less risky, and less costly procurements and deployments. Using the non-developmental approach, most of the programs within the ATP are on contract and many systems have already been deployed. Although it is too early to declare complete success, the early indications of the acquisition strategy are quite positive and, in some cases, far exceed our expectations.

There is no one-size-fits-all approach to border security technology acquisition. CBP's Office of Technology Innovation and Acquisition (OTIA) works collaboratively with the U.S. Border Patrol (USBP) and Air and Marine Operations (AMO) to develop requirements, test and evaluate technology, and deploy effective technology in support of CBP's border security mission.

Fixed, Persistent Surveillance

Integrated Fixed Tower (IFT) systems are one of the technologies that are in the process of being acquired and deployed to the Southwest border in Arizona as part of the ATP. IFTs are fixed surveillance assets that provide long-range persistent surveillance. These systems cover very large areas and incorporate a Common Operating Picture (COP), a central hub that receives data from one or multiple tower units. The tower systems automatically detect and track items of interest, and provide the COP operator(s) with the data, video and geospatial location of selected items of interest to identify and classify them. In February of this year, the USBP conditionally accepted the IFT system and is currently looking to develop improvements for the already deployed system.

Remote Video Surveillance Systems (RVSS) are another fixed technology asset used in select areas along the Southwest and Northern borders. These systems provide short-, medium-, and long-range persistent surveillance mounted on stand-alone towers, or other structures. The RVSS uses cameras, radio and microwave transmitters to send video to a control room and enables a control room operator to remotely detect, identify, classify and track targets using the video feed.

Without fixed-system technology such as IFT and RVSS, the Border Patrol's ability to detect, identify, classify, and track illicit activity would be decreased. Fixed systems provide line-of-sight surveillance coverage to efficiently detect incursions in flat terrain. The Border Patrol integrates mobile and portable systems to address areas where rugged terrain and dense ground cover may allow adversaries to penetrate through blind spots or avoid the coverage areas of fixed systems.

Mobile Capabilities

The border environment between the ports of entry is dynamic. Working in conjunction with fixed surveillance assets, CBP's mobile technology assets provide flexibility and agility to adapt to changing border conditions and threats. Mobile technologies are deployed in California, Arizona, New Mexico, and Texas as well as several Northern border locations. Along the Southwest border, Mobile Surveillance Capability (MSC) systems provide long-range mobile surveillance and consist of a suite of radar and camera sensors mounted on Border Patrol vehicles. An agent deploys with the vehicle to operate the system, which automatically detects and tracks items of interest and provides the agent/operator with data and video of the observed subject.

Mobile Vehicle Surveillance Systems (MVSS) provide short- and medium-range mobile surveillance equipment mounted on telescoping masts and consist of a suite of camera sensors mounted on Border Patrol vehicles. An agent deploys with the system, which detects, tracks, identifies, and classifies items of interest using the video feed. The agent/operator observes activity on the video monitor to detect intrusions and assist agents/officers in responding to those intrusions.

Another system, which does not need to be mounted to a vehicle, is the Agent Portable Surveillance System (APSS). These systems provide medium-range mobile surveillance, and are transported by two or three agents and mounted on a tripod. Two agents remain on-site, one to operate the system, which automatically detects and tracks items of interest and provides the agent/operator with data and video of selected items of interest.

In some areas along the Southwest border, CBP also uses Unattended Ground Sensors (UGS), which provide short-range persistent surveillance. These sensors support our capability to detect, and to a limited extent, track and identify subjects. Sensor capabilities include seismic, passive infrared, acoustic, contact closure, and magnetic, although these capabilities are not necessarily available in all deployed UGS. When a ground sensor is activated, an alarm is communicated to a data decoder that translates the sensor's activation data to a centralized computer system in an operations center. Some UGS are used in conjunction with Imaging Sensors (IS). The UGS/IS include an imaging capability to transmit images or video back to the operations center. As with UGS, UGS/IS are monitored in a centralized system and geospatially tracked.

CBP's Tactical Aerostats and Re-locatable Towers program, originally part of the Department of Defense (DOD) Re-use program, uses a mix of aerostats, towers, cameras, and radars to provide Border Patrol with increased situational awareness through an advanced surveillance capability over a wide area. This capability has proven to be a vital asset in increasing CBP's ability to detect, identify, classify, and track activity.

The absence of mobile surveillance technology would limit the Border Patrol's ability to detect, identify, classify, track, and rapidly respond to illicit activity. These technologies not only provide significant security benefits and multiply the capabilities of law enforcement personnel to detect, identify, and respond to suspicious activity, but they also assist with public safety along the border. Mobile surveillance technology systems enable agents to position the technology where it is needed at a specific moment, extend our observational capabilities, and increase the accuracy and speed of our response.

Technology is critical to border security operations. A tailored blend of fixed, mobile, and portable surveillance systems that complement one another increases the Border Patrol's effectiveness in targeting a response to high-risk areas, enabling rapid response strategies to maximize limited manpower, and adjusting to seasonal/periodic traffic patterns.

Air and Marine Capabilities

AMO increases CBP's situational awareness, enhances its detection and interdiction capabilities, and extends our border security zones, offering greater capacity to stop threats prior to reaching the Nation's shores. Through the use of coordinated and integrated surveillance capabilities – including aviation, marine, tethered aerostats and integrated ground-based radars – AMO detects, interdicts, and prevents acts of terrorism and the unlawful movement of people, illegal drugs, and other contraband toward or across the borders of the United States. These assets provide multi-domain awareness for our partners across the Department, as well as critical aerial and maritime surveillance, interdiction, and operational assistance to our ground personnel.

AMO's maritime assets are tailored to the conditions of the threat environment in which we operate, and equipped with the capabilities required to interdict attempted illicit smuggling of drugs and undocumented aliens. Often there is little time to interdict inbound suspect vessels and AMO has honed its maritime border security response capability around rapid and effective interception, pursuit, and interdiction of these craft. AMO employs high speed Coastal Interceptor Vessels (CIV) that are specifically designed and engineered with the speed, maneuverability, integrity and endurance to intercept and engage a variety of suspect non-compliant vessels in offshore waters, as well as the Great Lakes on the Northern border.

CBP's aerial surveillance capabilities are enhanced through recent investments and deployments of Multi-Role Enforcement Aircraft (MEA). The MEA has a multi-mode radar for use over water and land, an electro-optical/infrared camera system, and a satellite communications system. The MEA replaces several older, single-mission assets and remains the only asset customized to provide maritime support in the near-shore customs waters. With its sophisticated technology systems, the MEA is a highly capable, twin-engine aircraft and a critical investment in CBP's maritime, land, and aerial surveillance capabilities.

P-3 Long Range Trackers and Airborne Early Warning Aircraft provide critical detection and interdiction capability in both the air and marine environment. Sophisticated sensors and high endurance capability greatly increase CBP's range to counter illicit trafficking. AMO P-3s are an integral part of the successful counter-narcotic missions operating in coordination with the Joint Interagency Task Force - South. The P-3s patrol in a 42 million square mile area that includes more than 41 nations, the Pacific Ocean, Gulf of Mexico, Caribbean Sea, and seaboard approaches to the United States. In Fiscal Year 2015, CBP's P-3s operational efforts led to the total seizure or disruption of more than 204,464 pounds of cocaine with an estimated street value of \$15.3 billion.

Another important asset is the DHC-8 Maritime Patrol Aircraft (MPA). It bridges the gap between the strategic P-3 and Unmanned Aircraft System (UAS) assets and the smaller assets providing support in the littoral waters. This tool allows AMO an unprecedented level of situational awareness in the Gulf of Mexico and the Caribbean.

AMO's tactical resources have also received a number of technological upgrades to add to their utility. The AS-350 helicopter has received avionics upgrades to allow the operators to focus more of their attention on the mission, making them more effective. AMO has also added detection technology to its fixed wing light observation aircraft, greatly increasing its tactical capabilities.

Additionally, UAS are increasingly instrumental in CBP's layered and integrated approach to border security. The UAS consists of an unmanned aircraft, sensors, communication packages, pilots, and ground control operators. UAS are used to meet surveillance and other mission requirements along the Southwest border, Northern border, Southeast coastal area, and in the drug source and transit zones. Four of CBP's UAS are equipped with Vehicle and Dismount Exploitation Radar (VADER) sensor systems, which are capable of detecting human movement along the ground and increase CBP aerial surveillance, enforcement, and security to prevent potential threats from illegally entering the United States. Since 2012, VADER has detected over 40,000 people moving across the Southwest border. Since 2006, this versatile platform has been credited with interdicting/disrupting 13,144 pounds of cocaine and 321,330 pounds of marijuana worth an estimated \$1.8 billion. The UAS program has achieved over 35,900 flight hours since program inception in FY 2006.

UAS and P-3 aircraft are equipped with technology that provides full-motion video capture and provides real time and forensic analysis. This advanced detection and communication system enables CBP to disseminate images and other sensor data to operational users in real-time, increasing response effectiveness and speed.

Perhaps the most important advancements come in the area of data integration and exploitation. Downlink technology, paired with the BigPipe system, allows AMO to provide a video feed and situational awareness to its law enforcement partners in real-time. In addition, the Minotaur mission integration system will allow multiple aircraft to share information from multiple sources, providing a never before seen level of air, land, and sea domain awareness. As the Minotaur system evolves, it will provide even greater awareness for a greater number of users.

AMO also combats airborne and maritime smuggling with an integrated long-range radar architecture comprised of ground-based radars and elevated radars deployed on tethered aerostats. AMO, in partnership with DOD, operates and maintains a large network of terrestrial radars to establish and maintain wide-area, persistent surveillance of commercial and non-commercial aircraft flying toward, arriving at, or passing through our borders. With the awareness generated by this sensor network, CBP can detect and respond to air and maritime movement anomalies that could pose a threat to our homeland, including trafficking organizations attempting to deliver contraband across the border by flying beneath the radar field of view of our ground-based radars.

AMO's Tethered Aerostat Radar System (TARS) monitors the low-altitude approaches to the United States and denies this airspace for illicit smuggling. With eight aerostat sites – six along the southwest border, one in the Florida Keys, and one in Puerto Rico – the TARS' elevated sensor mitigates the effect of the curvature of the earth and terrain-masking limitations associated with ground-based radars, enabling maximum long-range radar detection capabilities. In FYs 2014 and 2015 TARS recorded nearly 1,000 suspected cross-border attempts, approximately 85 percent of all southwest border radar detections.

A vital component of DHS's domain awareness capabilities, CBP's Air and Marine Operations Center (AMOC) integrates surveillance capabilities and coordinates with other CBP operational components, including the USBP, Federal and international partners¹ to detect, identify, track and support interdiction of suspect aviation and maritime activity in the approaches to U.S. borders, at the borders, and within the interior of the United States. Coordinating with extensive law enforcement and intelligence databases and communication networks, AMOC's command and control operational system, the Air and Marine Operations Surveillance System (AMOSS), provides a single display that is capable of processing up to 700 individual sensor feeds and tracking over 50,000 individual targets simultaneously. The eight TARS sites represent approximately two percent of the total available radars in AMOSS, yet were able to account for detecting 53 percent of all suspect target detections.

As we continue to deploy border surveillance technology, particularly along the Southwest border, these investments in fixed and mobile technology, as well as enhancements of domain awareness capabilities provided by the AMOC allow CBP the flexibility to shift more officers and agents from detection duties to interdiction of illegal activities on our borders.

¹ AMOC partners include the Federal Aviation Administration (FAA), the Department of Defense (including the North American Aerospace Defense Command (NORAD)), and the governments of Mexico, Canada, and the Bahamas.

CBP's Acquisition Strategy and Realignment

Since its establishment in 2010, OTIA has led CBP's acquisition oversight and coordination efforts and has been recognized as the primary point of contact for CBP acquisition activities. While CBP's intent was for all mission offices' acquisition program management, requirement development, and oversight to be integrated and consolidated under OTIA, because of the broad scope of CBP's mission and diversity of operating environments, the management of several of CBP's large acquisition programs were not migrated to OTIA. However, in the past five years, OTIA has aligned CBP's acquisition policies, procedures, and practices with DHS Department standards, consolidated CBP's acquisition governance and accountability structure, brought multiple high-impact programs back on track, and has contracted, deployed and sustained critical border security technology assets.

In 2015, as part of ongoing headquarters realignment efforts, CBP Commissioner R. Gil Kerlikowske engaged the Defense Acquisition University (DAU) to provide a review and recommendations of the state of CBP acquisition management. The key DAU alignment-related findings and recommendations included clarifying and strengthening the Component Acquisition Executive (CAE) independent oversight authority on behalf of the Commissioner; separating OTIA's key roles of oversight, requirements, and program management; and aligning programs and accountability with operational offices. To ensure that these recommended improvements are possible, and to ensure CBP's acquisition construct aligns with the DHS acquisition oversight framework, CBP is in the process of redirecting acquisition, program, and requirements management responsibilities.

This realignment is the next step forward in building off the achievements OTIA has made possible, including the standardization of acquisition policies, processes, and oversight and the development of acquisition expertise in the CBP workforce. The separation and redistribution of CBP's acquisition functions – including requirements development and program management – from OTIA to other areas within CBP's operational structure, increases acquisition effectiveness and efficiency, and strengthens Agency oversight of acquisition activities. CBP's requirements function will be managed under the Operational Support (OS) division, where technical experts will work directly with frontline operators in the execution of a holistic, strategy-led requirements development program. The execution of acquisition programs will be aligned directly under CBP's operational components – USBP, AMO, and the Office of Field Operations – to tighten the link between acquisition programs, users, and funding. Acquisition program oversight, policy and procedures promulgation, and acquisition workforce management – under the leadership of the Chief Acquisition Officer – will be part of CBP's Enterprise Services (ES) division to create an even stronger alignment with the DHS acquisition framework. The realignment will result in stronger management much earlier in the acquisition investment life cycle, increased oversight, as well as better integration of CBP personnel and operational expertise.

CBP works closely with other elements of DHS headquarters and fellow Department components to ensure strategy-led, operationally-informed requirements development. In coordination with the DHS joint requirements process, the USBP and AMO will continue to use the Capability Gap Analysis Process (CGAP) to conduct mission analysis and identify capability gaps. From this analysis, OS will work with USBP and AMO to identify and plan operational requirements over the short, mid, and long-term and to identify potential solutions, which may (or may not) include fencing, roads, or other solutions depending on the nature, scope, severity, and geographic location

of a given capability gap. AMO began CGAP in October 2015 using best practices and lessons learned from the USBP process. The AMO process examines aviation and maritime mission spaces and capabilities, while taking advantage of the analytical models and processes the USBP has established. AMO and USBP gap analyses inform the OS-led requirements process and are prioritized and linked to Department activities and strategies. With all technology, CBP works closely with agents on the ground to develop operational requirements, conduct testing and evaluation, and obtain user feedback to ensure that the right tool is applied to the right capability gap. Terrain, threat, socio-economic, and political considerations vary greatly across sectors and regions, making a “one size fits all” approach ineffective.

CBP works closely with the DHS Science & Technology (S&T) Directorate to identify and develop technology to improve our surveillance and detection capabilities along our land and maritime borders. This includes investments in tunnel detection and tunnel activity monitoring technology; tactical communication upgrades, Small Unmanned Aircraft Systems (SUAS); low-flying aircraft detection and tracking systems, land and maritime data integration/data fusion capabilities, and border surveillance tools tailored to the Southwest and Northern border, including unattended ground sensors/tripwires, upgrades for mobile Surveillance Systems, slash camera poles, and wide-area surveillance.

In addition to collaboration with our DHS partners, as part of CBP’s efforts to seek innovative ways to acquire and use technology, CBP formed a partnership with DOD to identify and reuse excess DOD technology. To date, CBP has acquired several types of technology, including thermal imaging equipment, night vision equipment, and tactical aerostat systems, which increase CBP’s situational awareness and operational flexibility in responding to border threats. We will continue to pursue additional opportunities to leverage DOD excess equipment. We will do this in a sustainable way by considering the full life-cycle costs of the DOD equipment we are considering before acquiring it.

Conclusion

Technology is a primary driver of all land, maritime, and air domain awareness. The information obtained from fixed and mobile surveillance systems, ground sensors, imaging systems, and other advanced technologies enhances domain awareness, informs situational awareness, and better enables CBP to monitor, detect, identify, and appropriately respond to threats in the Nation’s border regions.

As we look to sustain and recapitalize our border security technology assets, we will look to the DHS joint requirement process to validate our mission requirements and the strengthened DHS budget and acquisition processes to ensure we have the funding and sustainment to operate existing equipment to maximum capacity and that we receive new assets with the capabilities we require on time and on budget.

While there is always more work to do, CBP has made significant strides to improve acquisition planning, management, and execution. These efforts have produced more effective governance and significant improvements to current and future acquisitions. Going forward, CBP will work with its DHS management partners to improve oversight; develop and increase our acquisition workforce; and improve the quality, timeliness, and transparency of CBP contracting processes.

Knit together by the DHS SBAC and the joint requirements processes, CBP's acquisition and rapid deployment of technology allows us to achieve our strategic and operational objectives in effectively and efficiently securing U.S. borders and the approaches.

Chairwoman McSally, Ranking Member Vela, thank you for the opportunity to testify today. We look forward to your questions.