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HOUSE COMMITTEE
ON ARMED SERVICES

STATEMENT OF

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BEFORE THE

HOUSE ARMED SERVICES COMMITTEE

SUBCOMMITTEE ON TACTICAL AIR AND LAND FORCES

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Post Iraq and Afghanistan: Current and Future Roles for UAS and the Fiscal Year 2014 Budget Request

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Good morning Mr. Chairman, Congressman Sanchez, and Members of the Committee. Thank you for the opportunity to appear before you today to discuss current Department of Defense (DoD) unmanned aircraft system (UAS) acquisition programs and their role post Iraq and Afghanistan. I am also pleased to address the related Fiscal Year (FY) 2014 President's Budget (PB) request and the Department's activities related to the integration of DoD unmanned aircraft (UA) into the National Airspace System (NAS).

Unmanned Aircraft Systems (UAS) Overview

The Department operates a wide range of UAS with varying missions and capabilities. Table 1 depicts the broad diversity of the types of DoD UAS supporting a wide range of warfighter needs. Table 2 is a summary of fielded DoD UAS, and Table 3 is a summary of annual flight hours flown by DoD UA, excluding those of the Group 1 systems. Upon review, it is apparent that the majority of UAS are Group 1 systems; and that UA flight hours grew rapidly starting in 2001, but are now beginning to decline as operations in Iraq have completed and Afghanistan operations have stabilized. The Department's ongoing efforts to integrate UAS operations in the NAS will enhance the

ability for DoD to develop, train, and operate at home, as our forces return from Afghanistan.

UAS Category	Max. Gross Takeoff Weight (lbs)	Normal Operating Altitude (ft)	Speed (KIAS[1])
Group 1	0-20	< 1200 AGL[2]	100
Group 2	21-55	< 3,500 AGL	<250
Group 3	<1320	< 18,000 MSL[3]	Any
Group 4	>1320		
Group 5		> 18,000 MSL	

Table 1: Joint UAS CONOPS UAS Categories[4]

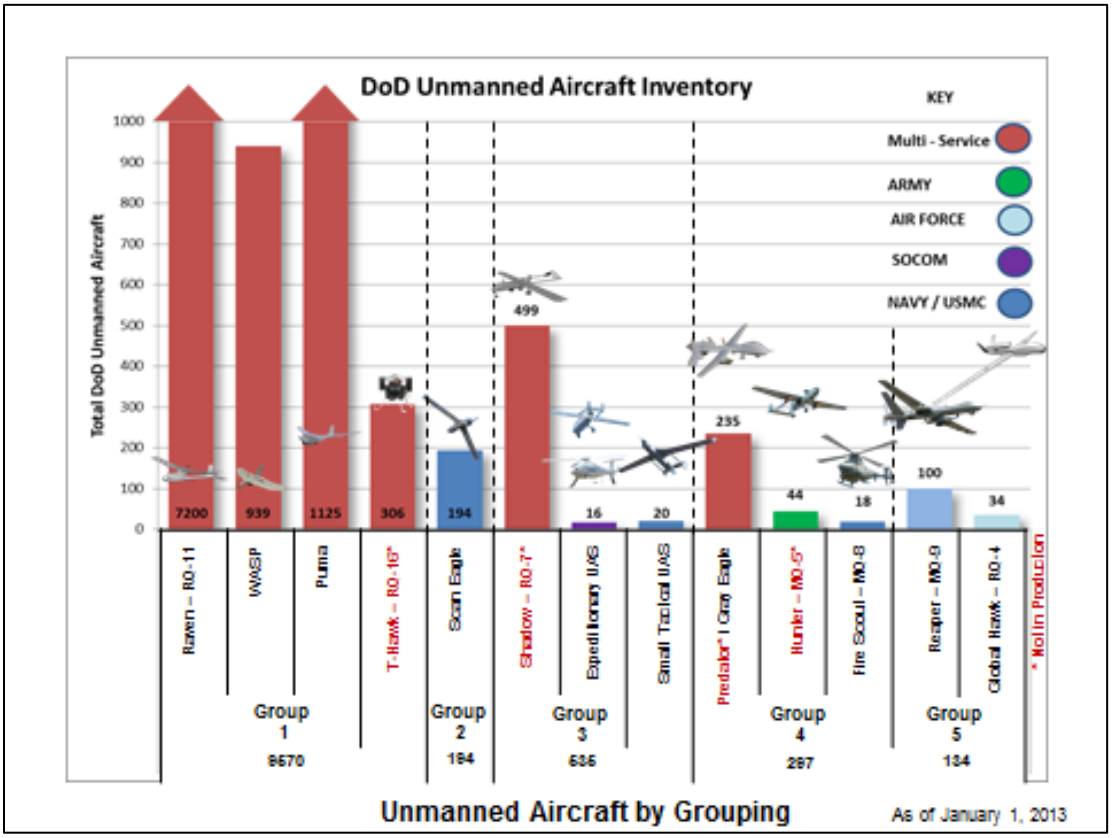

Table 2: UAS Inventory Summary

In addition to the UAS programs shown in Table 2, the Unmanned Carrier

[1] Knots (Nautical Miles per Hour) Indicated Airspeed
[2] Above Ground Level
[3] Mean Sea Level
[4] Lighter than air vehicles are classified by the highest of their operating attributes.

Launched Airborne Surveillance and Strike (UCLASS) system is in the Materiel Solution Analysis acquisition phase.

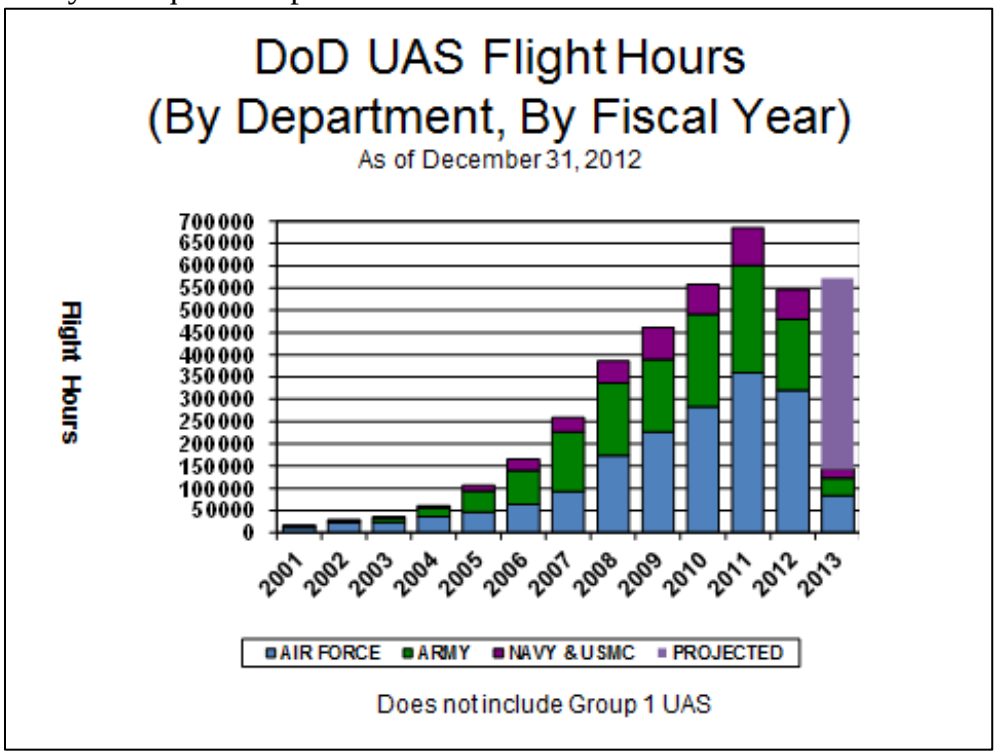

Table 3: UAS Flight Hour Summary

UAS Post Iraq and Afghanistan

As we draw down our forces in Afghanistan, the Department will intelligently shape an Intelligence, Surveillance, and Reconnaissance (ISR) and UAS portfolio that meets DoD requirements and is affordable. Given that we cannot predict how the future strategic environment will develop, we need to maintain an ISR enterprise capable of supporting full spectrum military operations anywhere in the world.

Systems returning home will provide for a more normalized training environment, enabling the training pipeline to recover from years of high operational usage. In all cases, the current budgetary climate dictates that we proceed smartly in terms of how we

acquire and apportion ISR systems, including UAS, to best deal with an evolving strategic environment.

The future roles of UAS are likely to be similar to those UAS perform today. In addition to ISR, UAS can also provide communications relay; logistics resupply and limited strike capabilities**.** UAS capabilities are based on the Combatant Commanders' prioritized needs, and the Department's UAS portfolio will continue to be based on those needs within the fiscal environment.

Fiscal Year 2014 President's Budget

The FY 2014 President's Budget (PB) includes $1,447 million for UAS Research, Development, Test and Evaluation (RDT&E) and $1,191 million for UAS Procurement. Compared to the FY 2013 PB, this is a decrease of $732.3 million (34%) for RDT&E and $624.6 million (34%) for Procurement. The FY 2014 budget request funds the Air Force's MQ-9 Reaper and RQ-4B Global Hawk Block 40; the Navy's MQ-4C Triton, MQ-8C Fire Scout Rapid Deployment Capability, RQ-21 Small Tactical UAS, and UCLASS; the Army's MQ-1C Gray Eagle; and the multi-Service small hand-launched UAS programs (Raven, Wasp, and Puma). Additionally, the budget funds the U.S. commitment to the NATO Alliance Ground Surveillance (AGS) system, and sustainment and improvements for the fielded Air Force MQ-1B Predator, and the Army and Marine Corps RQ-7 Shadow systems. Highlights of the President's FY 2014 budget request are summarized below.

RQ-4 Global Hawk / MQ-4C Triton / NATO AGS

The Air Force RQ-4, Navy MQ-4C, and NATO AGS UAS programs provide high-altitude, long-endurance ISR capabilities. The RQ-4 Block 20 includes a communications relay payload; the Block 30 includes a multi-intelligence suite for imagery and signals intelligence (SIGINT) collection; and the Block 40 includes multi-platform radar technology for synthetic-aperture radar (SAR) imaging and moving target (MT) detection and tracking. All Block 20 aircraft are operational, the Block 30 operational capability will be sustained through December 31, 2014, and the final two Block 40 AF RQ-4s will be delivered in FY 2014. The Navy MQ-4C Triton will provide the Navy a persistent maritime ISR capability. Mission systems include inverse-SAR/Maritime MT, electro-optical/infra-red full motion video (FMV), Electronic Support Measures (ESM), an Automatic Identification System (AIS), a basic communications relay capability, and Link-16. The five NATO AGS aircraft, similar to the Air Force Block 40s, are being procured and developed over the next several years and will complete deliveries by mid-FY 2017. All Global Hawk variants support both Line-of-Sight (LOS) and Beyond-Line-of-Sight (BLOS) capability.

Missions: The AF and NATO AGS RQ-4 systems perform high-altitude, long-range, near-real-time, high-resolution ISR collection, while the Navy MQ-4C provides tactical persistent maritime ISR. Both AF and Navy systems support Joint and Combatant Commander Requirements, while the Navy MQ-4C also supports the numbered Fleet commanders from five planned worldwide sites.

FY 2014 Budget Request: The budget funds the AF development efforts for the Block 40 and the Multi-Platform Radar Technology Insertion Program; the U.S. contribution to the NATO AGS; and the Navy MQ-4C Triton engineering and manufacturing development effort and advance procurement for three Low Rate Initial Production systems.

Prime Contractor: Northrop Grumman; Rancho Bernardo, CA & Bethpage, NY

MQ-9 Reaper

The MQ-9 Reaper UAS is comprised of an aircraft configured with an array of sensors to include multi-spectral targeting payloads (electro-optical (EO), infra-red (IR), laser designator, and IR illuminator) providing real-time day/night FMV, SIGINT, and SAR/MT payloads; and weapons. The ground control segments support both LOS and BLOS operations.

Mission: This single-engine, turbo-prop, unmanned armed reconnaissance aircraft is designed to operate over-the-horizon at medium altitude for long endurance. The primary mission is "hunter-killer" for reconnaissance and strike against time-critical targets.

FY 2014 Budget Request: The budget funds continued development, including improvements in endurance, production and fielding of Reaper aircraft and ground stations to support the Department's goal to field and sustain 65 Combat Air Patrols (CAP)/orbits. The FY 2014 request supports the procurement of 12 aircraft and 12 fixed ground control stations.

Prime Contractor: General Atomics–Aeronautical Systems Inc., San Diego, CA

MQ-1B Predator / MQ-1C Gray Eagle

The AF Predator and Army Gray Eagle systems are comprised of aircraft configured with multi-spectral targeting payloads (EO, IR, laser designator, and IR illuminator) providing real-time FMV, weapons, and ground control stations with communications equipment providing LOS and BLOS control.

Missions: Both systems include single-engine, propeller-driven unmanned aircraft that operate over-the-horizon at medium altitude for long endurance to provide real-time ISR, target acquisition, and strike capability to aggressively prosecute time-sensitive targets. The Army MQ-1C Gray Eagle also adds SAR/MT, a communications relay capability, a heavy fuel engine, de-icing, tactical common data link, and a greater weapons capability.

FY 2014 Budget Request: For Predator, the budget funds development and fielding of AF and U.S. Special Operations Command (SOCOM) critical modifications to the airframe and ground station elements. For Gray Eagle, the budget funds continued development and integration of the Universal Ground Control Station, a ground-based sense-and-avoid (SAA) system, and a SIGINT capability; and procurement of 15 aircraft and three modular platoon sets of equipment.

Prime Contractor: General Atomics–Aeronautical Systems Inc., San Diego, CA

RQ-7 Shadow / RQ-11 Raven / RQ-21 STUAS

The RQ-7, RQ-11, and RQ-21 systems provide organic day/night FMV reconnaissance, surveillance and target acquisition (RSTA) LOS capabilities embedded

in maneuver formations, and are capable of providing crucial information to the ground commander.

Missions: The Army/USMC RQ-7 Shadow and the USMC/Navy RQ-21 STUAS systems provide the tactical maneuver commander near real-time, 24 hour RSTA and force protection in benign and limited adverse weather conditions. The multi-sensor RQ-21 is runway-independent, requiring minimal space for take-off and recovery from unimproved expeditionary and urban environments, as well as from all air capable Navy ships. The multi-Service RQ-11 is an "over-the-hill" rucksack-portable, day/night, limited adverse weather, UAS that supports combat battalions (and below) as well as selected combat support units.

FY 2014 Budget Request: For RQ-7, the budget funds upgrades to system hardware and performance based logistics support. For RQ-11, the budget procures upgrades and provides training and contractor logistics support. For RQ-21, it procures 25 aircraft, conducts test and evaluation, and provides contractor logistics support.

Prime Contractors: Shadow - AAI Corporation, Hunt Valley, MD; Raven - AeroVironment, Monrovia, CA; RQ-21- INSITU, Inc, Bingen, WA

UAS Airspace Integration

The Department is addressing major issues to enable DoD UAS integration into the NAS through a joint, unified effort led by the DoD UAS Task Force. The UAS Task Force serves as the DoD advocate for shaping regulatory policies, procedures, certification standards, and technology development activities that are critical to the integration of DoD UAS into the NAS. Table 4 depicts the classes of airspace within the

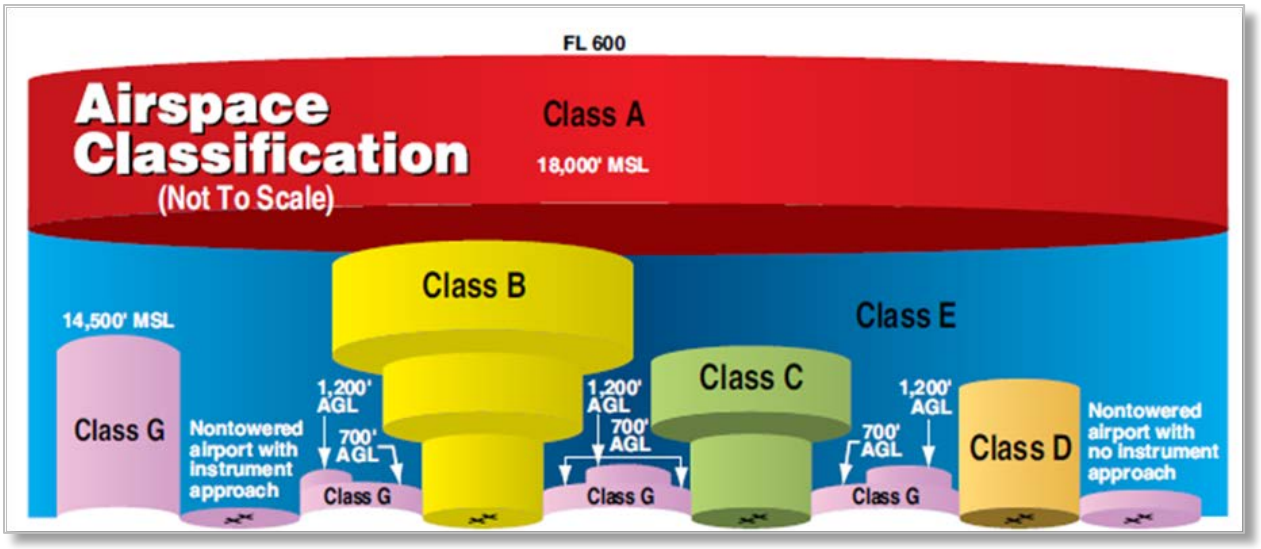

Table 4 National Airspace System Airspace Classes

NAS. The UAS Task Force leadership, in partnership with the DoD Policy Board on Federal Aviation, also serves and supports the congressionally directed, multi-agency UAS Executive Committee (ExCom). One of the UAS ExCom's key goals is to coordinate and align efforts among FAA, DoD, Department of Homeland Security (DHS), and the National Aeronautics and Space Administration (NASA) to ultimately achieve safe and routine access for Federal agencies to operate UAS in the NAS. In October 2010, the UAS ExCom developed and provided the congressional committees a "National Airspace System Access Plan for Federal Public Unmanned Aircraft Systems," which identified needs, challenges, and an incremental approach to the challenges. The plan also provided specific recommendations in the areas of policy, regulations, procedures, and technology for increasing public UAS access to the NAS.

Progress in Integrating UAS into the NAS

In 2011, the DoD UAS Task Force published the "Unmanned Aircraft System Airspace Integration Plan"[5] and "Joint Concept of Operations for Unmanned Aircraft Systems Airspace Integration," both of which focus DoD's incremental efforts and resources to safely increase UAS access to the NAS. These documents leverage policy, procedures, and technologies to improve access in the near term until appropriate SAA technologies can be developed to safely allow UAS routine access to the NAS. The UAS Task Force airspace integration effort, outlined in these documents, includes short-term and long-term activities. As part of the short-term activity, DoD worked with the FAA through the UAS ExCom to simplify the application and approval process for Certificates of Waiver or Authorization (COA), the current FAA process to gain access to the NAS outside of restricted and warning areas. This effort resulted in improved COA process transparency, established and expedited the timelines and priorities, clarified application language, and established a feedback system. DoD and FAA also completed an agreement on sharing UAS mishap data and to date DoD has passed 8 years of data to the FAA to support their analysis. DoD, FAA, DHS, and NASA also began working the more challenging issues identified in the ExCom-developed "NAS Access Plan" by establishing focused ExCom working groups.

In 2012, solid progress was made in incrementally improving DoD access to the NAS. DoD signed a memorandum of understanding with FAA, allowing transition of an

[5]DoD *Unmanned Aircraft System Airspace Integration Plan* and *Unmanned Systems Integrated Roadmap, 2011-2036*" are available at http://www.acq.osd.mil/sts/organization/uw.shtml

unmanned aircraft from a DoD Class D facility to adjoining restricted and warning areas without an additional COA. Also, FAA published new policy guidance extending COA expirations up to 24 months. A UAS ExCom working group completed an analysis of existing DoD risk mitigation procedures for multiple unmanned and manned aircraft operations in DoD controlled Class D airspace and their applicability to other locations. Another UAS ExCom working group completed the refinement and live demonstrations of risk mitigation procedures to increase access for small UAS in Class G airspace.

DoD was also actively involved in providing inputs to FAA on its consolidation of UAS operational approval guidance into a single FAA Notice (N8900.207) published in January 2013. The Notice provides clear guidance on the application process for COAs and UAS operations in the NAS, and acknowledges DoD and other public agencies' authorities regarding training and airworthiness standards. DoD and FAA are also in final coordination of an update to the "DOD-FAA Memorandum of Agreement (MOA) Concerning Operation of DoD UAS in the NAS" that allows increased access for small UAS and operations in DoD controlled Class D airspace. Many of the issues that DoD has been discussing with the FAA for the last few years will see significant improvement with the new policy and guidance.

DoD's long-term goal is to reduce and ultimately eliminate the need for an FAA issued COA for the vast majority of DoD UAS operations. DoD has a number of activities underway to achieve that goal, including development of sense and avoid (SAA) capabilities. Over the past 3 years, DoD has made significant investments in

ground-based and airborne SAA technologies to enable broader access to the NAS for DoD UAS.

DoD has been actively engaged in developing a clear path to accelerate UAS access to the NAS to support the growing need for training and operational missions. While progress has been slower than DoD would prefer, short-term policy and procedural changes have improved UAS access, and continued improvements are in progress. The DoD UAS Task Force will continue to lead the efforts outlined in the "DoD UAS Airspace Integration Plan" to accelerate UAS airspace access through short-term and long-term activities. DoD will also continue to work through the UAS ExCom, establishing priorities and identifying paths forward for incremental improvements and eventually the long-term goal of routine UAS access to the NAS.

Conclusion

UAS in the future will continue to provide the critical enabling capabilities that they do today, to include ISR, communications relay, and strike. The future presents opportunities to expand the role played by UAS in support of the Combatant Commanders. The FY 2014 budget request funds the current Combatant Commanders' needs.

Integration of DoD UAS into the NAS will enhance the ability for DoD UAS pilots and operators to train at home, as more systems return from overseas. The ability to maintain combat readiness, support ongoing operations and provide disaster relief, if called on, requires improved NAS access for UAS. The Department's airspace

integration activities are critical to this improved access and are resourced in the FY 2014 budget request.