House Committee on Science and Technology
Subcommittee on Space and Aeronautics
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Introduction

Chairwoman Giffords, Ranking Member Olson and distinguished members of the committee, thank you for holding this important hearing on space debris and space environment safety. I appreciate the opportunity to submit this testimony for the record.

I represent the Aerospace Industries Association – we are an association of nearly 300 aerospace manufacturing companies and the 657,000 highly-skilled employees who make the satellites, space sensors, spacecraft, launch vehicles, and the ground support systems employed by NASA, NOAA, and the DoD. I welcome the opportunity to provide testimony on the major challenges and risks associated with debris in the space environment.

First, let me thank the committee for its foresight and dedication needed to ensure the U.S. maintains our leadership in space, and we are grateful for your recognition of the role our nation's space programs play in both our economic strength and national security. The stimulus package was an excellent first step in providing the necessary support our space and aeronautics programs need to keep up with the demands of space exploration, aeronautics research and development, Earth observation, scientific research, and critically important manufacturing technology programs.

Current Threats Facing Our Crowded Space Environment

Just recently astronauts aboard the space shuttle Discovery and International Space Station (ISS) were forced to engage in maneuvers to avoid a small piece of debris that put their lives at risk. Crew aboard the ISS have also taken shelter in their Soyuz spacecraft as a precaution against possible collisions several times in the past. These incidents highlight a stark reality: space is becoming increasingly crowded. Over 60 nations are engaged in space efforts, and tens of thousands of man-made objects – including debris – orbit the Earth. As the number of nations placing objects in space grows, risks to U.S. space systems and our ability to operate in space also increases. Space technology is a critical infrastructure that contributes to a strong and secure America. It needs to be adequately protected. This includes additional funding for space protection and space situational awareness efforts, better data-sharing with our international allies to limit space debris and maintain a safe environment, and improvements to government-industry partnerships.

From the early days of the Space Age, space systems have grown to become critical components of the modern U.S. economy, our national defense, and our preeminence in science. Today, U.S. satellites provide early warning when nations like Iran or North Korea launch a missile. They allow secure global communications and provide bandwidth for unmanned aerial vehicles used by our troops in isolated battlefields like Afghanistan. NASA's Science Directorate provides a better understanding of our Earth, and the universe. NASA's Aeronautics Research and Development endeavors tie the use of space systems into the completion of the NextGen air transportation modernization program and continued efforts to reduce aviation's environmental impact. Weather satellites give us warnings of storm fronts, deep freezes, and hurricanes. Space systems are also an important part of the modern U.S. economy; providing business communications, navigation through GPS handsets, remote sensing, and digital television and music for millions of consumers. In 2008 space system industry sales topped $33 billion providing thousands of high-wage, middle class jobs.

Yet we are not adequately protecting or ensuring the safety of our space assets. The Defense Department currently acts as the de facto Federal Aviation Administration (FAA) for space – responsible for providing space situational awareness for over 18,000 man-made objects in the Earth's orbit. This is no easy task. Remember, it's not just military satellites the Pentagon has to worry about; multiple systems from NASA, the intelligence community, commercial providers, and international assets are all circling the Earth at speeds of thousands of miles per hour.

Debris is a major concern. When an airplane accident occurs here on Earth, the associated debris does not impact future flights. In space however, debris can orbit the Earth for years, decades, or even centuries. If debris interacts with additional man-made objects, the problem can be compounded and result in the creation of even larger debris fields. In January 2007, a Chinese ballistic missile destroyed an aging weather satellite, which created a massive debris field that will orbit the Earth well into the future. In February 2009, the Pentagon's job became even more difficult when a commercial U.S. satellite and a defunct Russian satellite collided. Recent reports by NASA have detailed multiple debris threats to the space shuttle and ISS – endangering lives and billions of dollars of space infrastructure. Since we don't yet have the ability to clean up space, debris fields present a very real impediment for future uses of space by the U.S. and our international allies.

With its current minimal budget for space situational awareness, the Defense Department is forced to prioritize what objects it tracks. Limited resources force it to track space objects that could interfere with humans in space or military satellites as its top priorities. Tracking of commercial assets gets an even lower priority. To its credit, the Defense Department recently created, along with the National Reconnaissance Office, a Space Protection Program that supports interagency collaboration on space threat assessments and collaboration on space protection strategy. This is an important step forward for the military and intelligence community. Yet when compared with the FAA, which is provided billions every year for air traffic control and safety, our national space situational awareness efforts are lagging far behind.

Investment in Space Protection and Space Situational Awareness is Critical

Given our reliance upon military, intelligence, civil, and commercial space systems, and growing threats including debris and other satellites, the U.S. needs to provide robust funding for space situational awareness and the protection of our space assets. This funding should not only maintain current capabilities, but advance them towards significant improvement. This includes funding modernization programs for space systems to harden satellites from attack, and establishing contingency plans to ensure redundancy of space capabilities. Important initiatives like Operationally Responsive Space seek to develop systems that can be rapidly deployed and help improve space system redundancy, but with more systems in orbit we will need to increase the fidelity of tracking items in space. We also need to do a better job of sharing information with our international partners and between government and industry.

Space systems are no longer the dreams of rocket scientists of the early 20th Century; they have arrived and are part of our way of life. The space industry supports thousands of high-tech jobs and billions of dollars in economic activity. But without increasing resources for the protection of our space systems, we are putting our security and economic competitiveness at significant risk. Now, as the Administration puts the final touches on its Fiscal Year 2010 budget, is the right time to make the right investment in this critical infrastructure by providing significant resources to space protection and space situational awareness. Interagency partnerships and government partnerships with industry should be strengthened to provide robust protection of our critical space assets. It will also be important to take the steps necessary to work with our international allies to prevent additional collisions and the proliferation of debris in the global space environment.

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