



AFPC Capitol Hill Briefing - Mitigating Known Orbital Space Threats: Understanding Orbital Debris Remediation and Economic Opportunity

September 13, 2023

Related Categories: Science and Technology; SPACE; NASA; United States

Related Expert: Peter Garretson, Richard M. Harrison

On September 13th, the American Foreign Policy Council's (AFPC) Space Policy Initiative (SPI) hosted a closed-door briefing for congressional staff on Mitigating Known Orbital Space Threats: Understanding Orbital Debris Remediation and Economic Opportunity. The session was organized and chaired by Richard M. Harrison, AFPC Vice President of Operations and SPI co-director. The event featured presentations by Jim Shell, former Chief Scientist, Air Force Space Command; Peter Garretson, AFPC Senior Fellow in Defense Studies and SPI co-director; and a discussion of recommendations for Congress by Dr. Tom Cooley, former Chief Scientist, Air Force Research Laboratory Space Vehicles. A summary of the speakers' remarks follows:

In the realm of outer space, a silent but alarming danger looms—orbital debris. NASA defines orbital debris as any human-made object in orbit about the Earth that no longer serves any useful purpose. The issue of orbital debris has escalated in recent years due to the rapid expansion of space activities. With numerous countries launching satellites and conducting space missions, the number of objects orbiting our planet has increased significantly. Unfortunately, not all of these objects remain functional or are safely de-orbited after fulfilling their purpose. Consequently, a vast cloud of debris has formed, posing a significant threat to active satellites, spacecraft, and even astronauts. As humans continue to explore and exploit space for scientific, commercial, and military purposes, the accumulation of defunct satellites, spent rocket stages, and other debris has reached a critical point. According to NASA there are over 100 million pieces of space junk over 1mm in size that can collide with space objects traveling faster than 10 times the speed of a bullet. Given its significant investment in space technology, the United States has a vested interest in addressing the orbital debris problem.

What's up with Orbital Debris?

Jim Shell

The rapid diffusion of relatively cheap and effective satellite technology has allowed numerous countries to launch satellites and conduct space missions. With the recent growth in satellite launches and space-based missions, the number of objects orbiting our planet has increased significantly. Not all these objects remain functional, and they often persist in orbit indefinitely. This debris poses a significant challenge to American objectives in space. While in orbit, even relatively small objects pose a lethal threat to crewed space flights and operational satellites. Public and private organizations are attempting to mitigate this threat, but several challenges hamper these attempts. For instance, private corporations lack the appropriate economic incentives to adequately develop technological applications for space debris removal. The United States must be an international leader in this endeavor. Given the country's significant investment in space technology and exploration, the United States has a vested interest in addressing this problem. Without a concerted effort, humankind's and America's long-term ability to leverage space and prosper from the benefits it provides are endangered. Acting now will ensure that future costs are reduced, American interests are protected, and the threat of space debris is effectively mitigated.

U.S. Economy and Industry

Peter Garretson

The economic opportunities offered by a Cislunar economy are immense, but the growth of space debris threatens to undermine all aspects of this developing engine of economic prosperity. Space debris threatens all aspects of our economy. Today, our livelihood and commercial industries rely on space-based assets. Effectively controlling and mitigating the growing threat of space debris ensures these systems are effectively managed and protected. The United States believes that space is a crucial economic domain. The US needs to clean up its own debris if we expect others to do the same. An obvious place to start is in the crowded and important Sun-synchronous orbit. The US private sector is developing all aspects of the necessary technology, and companies are already established. But their progress is limited by the lack of government customers to fund early demonstrations and kickstart the market for space debris removal. The US must be vigilant not to lose leadership in this emerging market, as the technology is dual-use and broadly enables in-space servicing, assembly and manufacture (ISAM) and space mobility and logistics (SML).

Recommendations for Congress

Tom Cooley

Tom Cooley reviewed the imperatives driving the need for a renewed space debris removal and mitigation strategy. He provided an overview of the efforts by leading private corporations, other countries and followed by providing recommendations to secure U.S. interests and mitigate the given threats. He specifically provided five recommendations that Congress should undertake. These recommendations included:

1. Congress should express its sense that the U.S. should lead and codify the responsibilities of the President to promote a domestic active debris removal (ADR) industry and to lead in establishing an international program.
2. We recommend that the HASC and SASC allocate no less than \$600M over the FYDP be allocated to USSF R&D to develop multiple demonstration missions (PE 1206616SF) in partnership with commercial industry and private capital.
3. Recommend the House Strategic Forces Subcommittee and the SASC consider providing no less than \$600M from FY26-30 for USSF to develop prototype systems for active debris remediation in partnership with industry.
4. The Committee on Science, Space, and Technology Create a Program Element (PE) specific to NASA to fund future research, initiatives, space demonstration missions addressing orbital debris for NASA and Department of Commerce and provide no less than \$250M over the FYDP be allocated to NASA for maturing ADR technology.
5. The Senate Commerce, Science and Transportation committee should assess the structure by which optimal allocation of costs would be assigned and review the policies associated with US flagged satellites' responsibility to remove or dispose of their system at end-of-life or face fines and penalties.

Participant Bios:

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