House Committee on Foreign Affairs
Subcommittee on Europe

April 29, 2026 – 10 am
Orbits of Influence: Emerging Threats to U.S. Space Security and Foreign Policy Implications

Statement for the Record
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Chairman Self, Ranking Member Keating, and distinguished members of this Subcommittee. Thank you for holding this important hearing.

The space domain is of increasing importance to U.S. national security, the economy, and U.S. foreign policy interests. In light of on-going military operations, disruptive technologies, and shifting balances of power, this is a timely opportunity to consider the American space enterprise – and in particular, the role of diplomacy and the U.S. State Department in service to national interests.

Personal Perspective
My perspective on these issues is informed by decades of experience at the intersection of space technology and foreign policy. I worked at the Department of Commerce during the George H.W. Bush Administration, during which time the State Department was an important partner in reforming post-Cold War export controls and shaping new commercial remote sensing licensing rules.

During the Clinton Administration, I was a contractor for the Office of Science and Technology Policy (OSTP) during the time Russia joined the International Space Station and the first dedicated policy on the Global Positioning System (GPS) was issued. Between 1997 and 2007, I served on several U.S. delegations to the International Telecommunications Union to protect the radio spectrum used by Global Navigation Satellite Systems.

While at university after leaving NASA in 2008, I served as a private sector advisor to the U.S. delegation to the UN Committee on the Peaceful Uses of Outer Space during which time guidelines for the long-term sustainability of space activities were negotiated.

More recently, from 2017 to 2021, I had the privilege of serving the President and Vice President as the Executive Secretary of the National Space Council, which saw the creation of the Artemis program to return Americans to the Moon, the first international signatories to the Artemis Accords, and the stand-up of the U.S. Space Force.

First, throughout these various administrations, it was always apparent that U.S. national security, economic, scientific, and international interests were deeply intertwined. While

agencies and regulations might be siloed, the elements of U.S. space power were deeply connected.

Second, it was clear that it was not just machines and astronauts that traveled to space. Our activities carried our nation's values into space as well.

Finally, space is a unique domain where those who "show up"—who build, operate, and lead—write the rules and establish the norms of the domain. Today, we find ourselves in a "New Era" of space exploration and development where the competition to shape these norms is intense and more consequential than at any point since the beginning of the space age.

A Changing Strategic Landscape

These experiences inform how I see today's challenges. The geopolitical context for space activities has shifted fundamentally from both the Cold War and immediate Post-Cold War eras. We have moved from a bipolar contest between the United States and the Soviet Union to a crowded field defined by globalization, democratization, and the rise of "New Space". The U.S. Space Forces envisions its future operating environment as being a heteropolar world order—a global system defined by uneven concentrations of capability where the United States and China hold dominant but asymmetric influence.[1] In this environment, China is our "pacing challenge," seeking to reach space power parity with the United States by 2040 and full-spectrum dominance by 2049. Unlike the Soviet Union, China utilizes a strategy of military-civil fusion, structurally binding its commercial firms to the People's Liberation Army (PLA) to accelerate technological breakthroughs in AI, quantum communications, and autonomous systems.

Russia, while struggling with demographic and economic stagnation, remains an acute threat. Its strategy focuses on "force-multiplier" technologies and asymmetric counterspace capabilities designed to disrupt U.S. and NATO command and control. Most concerningly, recent intelligence indicates Russia may be developing a space-based nuclear-armed anti-satellite weapon, a direct violation of the Outer Space Treaty that would threaten the vital communications and critical infrastructures upon which the entire world depends.

The character of conflict in space is evolving toward what the Space Force terms Unrestricted Spectrum Warfare (USW).[2] This is an integrated approach that blurs the lines between kinetic, electronic, and cyber military actions.

- *Spectrum as Critical Terrain:* The electromagnetic spectrum (EMS) is more than an instrument of other domains. By 2040, every frequency and signal will be contested terrain. Adversaries are already using AI-enabled systems to identify spectrum

[1] *Future Operating Environment 2040* (U.S. Space Force, 2026), https://www.spaceforce.mil/Portals/2/Documents/SAF_2026/Future_Operating_Environment_2040.pdf.
[2] Ibid

vulnerabilities in real-time, generating waveforms to bypass defensive filters faster than human operators can respond.

- *Cyber Vulnerabilities:* The operation of satellites now relies on internet-based networks, effectively making space assets "devices on the internet of things". The 2022 Viasat hack, which disrupted communications across Europe at the start of the Ukraine war, was a harbinger of how cyber operations can degrade both military and civilian capabilities without kinetic weapons.
- *The High-Altitude Threat*: China is increasingly committed to dominance in high-altitude platforms (HAPs), including balloons and stratospheric airships. Operating between 60,000 and 120,000 feet, these platforms offer a potentially inexpensive way to reconstitute space-like services or launch mobile kinetic and electronic attacks against U.S. space systems.

The Artemis Program

Since the beginning of U.S. efforts, there has been a distinction between civil and commercial programs and national security programs. The distinction was made for practical and diplomatic reasons, with public space efforts being part of the image the United States showed the world during the Cold War. Reflecting this duality, the Artemis program is not a military effort, but it is a geopolitical instrument of national security and diplomacy. It signals that the United States intends to lead an international and commercial coalition built on transparency, shared expectations, and sustainable presence.

There is a clear contrast between the U.S. and Chinese models of lunar exploration. The Chinese program is centrally directed, controlled, and hierarchical. The U.S.-led Artemis program, conversely, is intentionally open, allowing international and commercial partners to operate within a shared framework for exploration and resource use. This "openness" is a strategic choice: by creating attractive projects, we encourage other nations to align their space activities with us. This in turn builds a community of “like-minded” countries for international standards, interoperability, and norms of behavior. The creation of lunar infrastructure (e.g., transportation, communications, power, navigation, etc.) for exploration and science, as well as the ability to monitor activities in and around the Moon has dual-use implications for U.S. security and diplomacy.

The competition with China is more than a short-term race for prestige as in the Cold War. Rather, it is part of a long-term competition to shape the norms of international order. There is a potential for contested “safety zones" where adversaries may use scientific missions and operational requirements (e.g., landing zones, nuclear power sources) to establish *de facto* exclusion zones over lunar terrain. In this regard, interest in the Moon's south pole is an immediate operational challenge. As more actors converge on potentially resource-rich regions, the interpretation of how to operate with "due regard" under the Outer Space Treaty moves from an abstract legal debate to a tactical reality. International space competition extends to

the electromagnetic spectrum as well, with commercial filings for lunar spectrum now outpacing government filings for the first time.[3]

The International Telecommunications Union

One of the most overlooked competitive arenas for space security is the International Telecommunication Union (ITU). While the ITU is recognized as crucial to commercial communications on the Earth and in space, it is also crucial to government space systems that also rely on access to radio spectrum. The upcoming 2027 World Radiocommunication Conference (WRC-27) in Shanghai will be the site of critical international negotiations.

Over 80% of the WRC-27 agenda is dedicated to space-related issues, including regulatory frameworks for lunar communications and the integration of direct-to-device satellite services. Spectrum for lunar communications and other space services is critical to both the Artemis program and Chinese efforts to create their own information infrastructures in space. With China as the 2027 host, there is a risk that Beijing will use regional and ITU processes to advance technical standards that challenge U.S. leadership and block U.S. innovators.

Updating U.S. Space and Missile Technology Export Controls

To maintain our competitive endurance, we must overhaul our twentieth-century industrial models. For decades, the U.S. interpretation of the Missile Technology Control Regime (MTCR) enforced a "policy of denial" that treated commercial space launch vehicles as identical to weapons of mass destruction delivery systems. This strict interpretation locked in a strategic disadvantage, encouraging allies like South Korea to rely on Russian suppliers for space technologies. I commend the recent paradigm shift toward increased flexibility for case-by-case reviews of MTCR Category I systems for vetted partners.[4] We must now follow through by aligning our domestic regulations—specifically ITAR and Commerce controls—with this shift to ensure U.S. industry can compete globally while strengthening our defense industrial base.

Reforming the regulatory interpretation of our MTCR commitments and associated export controls will benefit the U.S. industrial base and national security:

- *Revitalizing Production and Capacity:* Recent years have revealed clear shortfalls in the U.S. defense industrial base, including inadequate production capacity for solid rocket motors and insecure supply chains. Reforms allow for deeper integration with allied defense bases, enabling greater burden-sharing through co-development, coproduction, and expanded licensed production of U.S. systems.
- *Enhancing Global Competitiveness:* Strict controls have placed U.S. providers of synthetic aperture radar (SAR), radiofrequency, and infrared data at a competitive disadvantage. Today, U.S. SAR providers are often restricted to exporting technology

[3] Oliver Hawkins and Peggy Hollinger, "The Race to Claim the Moon's Airwaves," *Financial Times*, January 9, 2025, https://www.ft.com/content/4de3dce6-f94e-4b1b-b4a0-380386b5836c?syn-25a6b1a6=1.

[4] Sean Wilson, "Missile Technology Control Regime Reform: Key Changes and Next Steps," Commentary, Center for Strategic and International Studies, January 30, 2025, https://www.csis.org/analysis/missile-technology-control-regime-reform-key-changes-and-next-steps.

two generations behind what is already available globally. Easing these regulations would allow U.S. industry to compete in markets currently dominated by foreign competitors.

- *Strengthening Alliances and Partnerships*: Aligning export controls with national objectives—such as the AUKUS partnership and the U.S.-India Initiative on Critical and Emerging Technology—facilitates the transfer of technology to vetted partners, reducing their dependence on rival space suppliers.

Recommendations

The Department of State is the central actor in the use of foreign policy to translate U.S. space power into durable international advantages. To meet the demands of a new strategic landscape in space, I offer the following recommendations:

Support the Bureau of Emerging Threats (ET) - The newly established Bureau of Emerging Threats can close the gaps in our response to how adversaries weaponize technological change. ET should lead diplomatic efforts to mitigate the adversarial exploitation of space assets and in particular, counter China's use of space-enabling infrastructure in third countries.

Strengthen "T" and "E" Family Coordination - The recent reorganization that merged arms control and nonproliferation into the Bureau of Arms Control and Nonproliferation (ACN) is a logical one. Disarmament and nonproliferation are two sides of the same coin; aligning these functions allows the Department to act more efficiently to address threats from weapons of mass destruction, including those that may use the space domain. This should not neglect the civil side of space, as represented by the Office of Space Affairs in the "E" family, and the role played by multilateral institutions such as the UN Committee on the Peaceful Uses of Outer Space. Civil, security, and economic interests are all important to U.S. foreign policy.

Focus on the ITU and WRC-27 - The Department must take an assertive lead on ITU matters, speaking with a unified voice for the administration to balance the equities of both government and the private sector. The WRC team needs to be fully resourced and engage early with regional blocs (like CITEL, APT and CEPT) to enter WRC-27 with a coalition that can defend rules-based spectrum governance.

Complete Space Export Control Reforms - The State Department should finalize the space export control reform regulations released for public comment in late 2024, ensuring industry feedback is incorporated. It is crucial that foreign commercial availability is evaluated on the front end of the process so that U.S. firms are not restricted from selling technology that is already accessible on the global market. Building on recent successes, the Bureau of Political-Military Affairs should continue to overhaul the list of items restricted to government-to-

government transfers—which was reduced by nearly a third—and narrow controls to only the most sensitive sub-systems.[5]

Strengthen Allied Space Security Dialogues – The United States should move beyond episodic consultations to include space security in annualized dialogues with priority allies in the Indo-Pacific region such as Japan, Australia, India, and South Korea. These dialogues should explicitly integrate space into broader defense and deterrence conversations, aligning threat perceptions and pre-negotiating crisis response procedures.

Lead a Coalition on Responsible Behavior in Space - State, with other space-related agencies, should launch a sustained diplomatic campaign to codify norms of responsible behavior in space, focusing on observable conduct, such as stigmatizing debris-creating ASAT tests, prohibiting unsafe proximity operations, and protecting essential satellite services from harmful interference.

Expand Space-Literate Diplomatic Cadre - The Department should develop and maintain a cadre of space-literate diplomats who can serve as resident experts in key embassies and multilateral missions. This expertise can draw on other agencies, such as NASA and the Department of War, who have representatives at U.S. embassies. We need "whole of government" representation at our embassies—one team, one fight—to ensure our commercial and security space interests are embedded in our diplomatic engagements.

Conclusion

In conclusion, in today's strategic environment, space activities touch all aspects of our national life. The rules of this new frontier will be made by those who show up. If the United States and its partners lead, we can ensure that the space environment remains safe, stable, and conducive to our values: liberty, democracy, the rule of law, and free-market principles. If humanity does have a future in space, it should be one in which space is the home of free people. That should be a guiding goal of U.S. space diplomacy.

Thank you for your time, and I look forward to your questions.

[5] "Arms Control and Transforming International Security Functions at the State Department," with Thomas G. DiNanno, Hearing before the U.S. Senate Foreign Relations Committee, Washington, DC, March 24, 2026, https://www.foreign.senate.gov/imo/media/doc/daa11f4d-c3ae-f188-0c3d-2f737eb12f85/032426_DiNanno_Testimony.pdf.