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**HEARING ON  
THE NEW SPACE RACE:  
ENSURING U.S. GLOBAL LEADERSHIP ON THE FINAL FRONTIER**

**BEFORE THE  
COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION  
UNITED STATES SENATE**

**March 13, 2019**

Thank you, Chairman Wicker, Ranking Member Cantwell, and members of the Committee. I am pleased to testify before you today along with Administrator Bridenstine on how to advance U.S. space leadership in a complex global environment. The perspective that I offer is drawn from my time as the Director of the Office of Space Commerce within the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA), as well as from my 25 years of work on policy, market, and security issues related to commercial remote sensing.

**Creating a Highly Competitive U.S. Policy and Regulatory Framework**

American space companies confront an extremely complex and competitive landscape. As the global space economy grows, countries are trying to find ways to gain advantage, protect nascent industries, and capture market share. Countries with mature regulatory systems find themselves needing to urgently modernize policy and regulatory environments, while countries with newer systems struggle with understanding the best ways to regulate commercial space activities. U.S. companies confront a wide range of unfair practices in the market, including subsidies, dumping of space products, unfair provision of space services, and other anti-competitive tactics.

The Trump Administration's emphasis on space, starting with the re-establishment of the National Space Council, recognizes the highly competitive nature of the global space environment and the need for the United States to become more agile in order to compete and retain preeminence. Space Policy Directive-2 explicitly recognizes the need to undertake broad regulatory reform to enable space commerce to flourish. The President made clear that Executive Branch regulations across agencies must "promote economic growth; minimize uncertainty for taxpayers, investors, and private industry; protect national security, public safety, and foreign policy interests; and encourage American leadership in space commerce."

One specific mandate of SPD-2 calls for the reorganization of the Department of Commerce for the specific purpose of encouraging U.S. space commerce. It was a long-held U.S. Government vision dating back over four decades that the Department would play a significant role in America's space commerce pursuits as an advocate for industry, a source of economic and commercial information to fuel national, state, local, and commercial efforts, and sometimes as a counterbalance to security concerns about space commercialization. Yet the position that I currently occupy was empty for more than a decade. This industry is so important to the nation's economic and national security future that such disregard should never be allowed to happen again.

In 2018, the Administration proposed elevating the Office of Space Commerce to the bureau-level within the Department of Commerce so that it can permanently leverage the entire set of knowledge and skills within the Department on behalf of the U.S. commercial space industry.

Presently, many agencies have discrete requirements and statutory responsibilities on key issues to space commerce, including separate efforts on export controls, remote sensing, spectrum management, payload review, and launch. As the Department executes its duty to foster conditions for the economic growth and technological advancement of the United States space commerce industry, I see great opportunity to work across agencies to align and simplify these regulations in a manner that reflects the President's policy to speed U.S. space commerce growth and make the United States the "flag of choice" for responsible space innovation, investment, and operation.

The Department's efforts have provided some key policy insights on how to grow U.S. space commerce with a revitalized regulatory approach. U.S. space regulation must create an incentive for companies to responsibly invest, innovate, and operate in space. Moreover, any regulations for space operators must be easily navigated and consolidated when possible. Regulations for space operations should be performance-based, allowing flexibility for meeting baseline standards, to properly accommodate the rapidly-evolving commercial space industry. Some key elements of a commercial space regulation must include reasonable timelines, transparency between government and industry, and collaborative pre-consultation processes. Regulations should be designed in a manner that advances investment in the commercial space industry and serves to advance innovation by allowing for previously unseen business models and technologies to be licensed rapidly and bring their services to market.

In addition, as countries try to gain market share of their own in the global space economy, there is a risk of dual regulation that will hinder American businesses. We will need to work carefully with international partners to reconcile regulatory differences among nations.

Beyond its interagency work to shape regulations to reflect Executive Branch policy on space commerce, the Department has taken on considerable new responsibility under Space Policy

Directive-3, the nation's first comprehensive policy on space traffic management (STM). Specifically, in partnership with the Department of Defense, the Department of Commerce will assume, no later than 2024, responsibilities to provide conjunction analysis (that is, two or more objects coming together at the same or nearly the same point in time and space) and other basic space flight safety-related data and services to civil and commercial users. A key aspect of the Department's efforts is to create an open architecture data repository, essentially a cloud-based environment for more precise warnings of safety hazards as well as experimentation with new sensors, analytic tools, visualization platforms and other emerging capabilities. We see the value of international partnerships and intend to invite allied and like-minded civil and private sector partners to participate in this architecture. This is another reflection of American space leadership that is consistent with our rich history and our plans for the future

The Department of Commerce cannot perform this task in isolation. We are finalizing a Request for Information to address:

- 1) specific capabilities which commercial and other private sector entities might provide to enhance the space situational awareness (SSA) data and the space traffic management services the U.S. Government currently provides through an open architecture data repository to the public;
- 2) SSA, STM, and orbital debris mitigation best practices; and
- 3) perspectives on the appropriate regulatory structures which the Department should adopt to drive the development and responsible use of such SSA and STM enhancements to protect national interests and further encourage U.S. commercial space investment.

Private sector input on these key questions will help guide our path on the SSA/STM open architecture.

### **International Space Efforts within the Department of Commerce**

Just as Administrator Bridenstine has commented on NASA's international partnerships, please allow me to comment on some closer to home. The mission of the Department of Commerce is global in nature and is reflected in the strong international presence of the International Trade Administration (ITA), including ITA's Foreign Commercial Service, the Bureau of Industry and Security, and the National Telecommunications and Information Administration. NOAA is also no stranger to space partnerships. For more than two decades, NOAA has acknowledged that, to remain a leader in operational Earth Observation, it needed to evolve from an era where it only operated government-owned systems to a world where the commercial sector and international partnerships offer significant contributions. NOAA recognizes that successful partnerships allow us to meet our mission cost-effectively, increase overall system resiliency, and to be more responsive to the needs of our users and stakeholders. Nations can no longer afford to launch and operate the full suite of satellites and instruments necessary to support evolving applications. NOAA continues to uphold its commitment to act as a good partner seeking to improve services to operational users worldwide. Our domestic partnerships with NASA, the Department of State,

the Department of Defense, and the U.S. Geological Survey (USGS) have been re-affirmed, while our international partnerships continue to be strengthened to include Europe, Japan, Canada, and Taiwan.

Further, the United States continues to provide invaluable leadership in a number of multilateral fora in which NOAA, NASA, and USGS participate. NOAA continues to strengthen our role as a global leader, promoting an integrated global Earth observing system by maintaining leadership roles in multilateral coordinating groups and advocating for data sharing and harmonization across platforms and partners. These international groups include strategic engagement in the Group on Earth Observations, the Committee on Earth Observation Satellites, the Coordination Group for Meteorological Satellites, and the World Meteorological Organization.

### **Challenges to Space Primacy**

Leadership in commercial space requires both strong partnerships and a commitment to protecting U.S. opportunities in space. In addition to the domestic challenges involved with maintaining American competitiveness in space, foreign competitors, in particular China, are making concerted efforts to become space powers. The Department is aware of China's initiatives that should merit our careful attention, and we welcome China's support for an international regime that is favorable to commercial space activity. However, we are also concerned that China is trying to create unfair advantage by undercutting prices in order to capture market share. China also has a track record of making space commitments to developing nations in order to gain access to those nations' geography and technology. For example, China is working to build a "Belt and Road Spatial Information Corridor" that aspires to boost the space capabilities of developing nations while also enhancing Beijing's global space reach and broadening its own international footprint. There is a mounting body of evidence that partner countries are recognizing possible dual-use concerns of hosting Chinese infrastructure and researchers.

China is also attempting to stifle U.S. space commerce access to spectrum in international forums such as the International Telecommunication Union's World Radio Conference (WRC). Given this threat, the Administration's efforts to establish the United States as first in 5G also must support its concurrent efforts to ensure U.S. leadership in space. Satellite systems need a stable and predictable spectrum environment given their long-lasting nature, mission-critical uses, and far-reaching scientific and economic benefits. The United States leadership at the 2019 WRC and beyond will seek to achieve these policy objectives.

We cannot allow the undermining of U.S. technology investments and development. According to one recent U.S. study<sup>1</sup>, China is using foreign investment as a means for licit and illicit

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<sup>1</sup> Michael Brown and Pavneet Singh, "China's Technology Transfer Strategy: How Chinese Investment in Emerging Technology Enable a Strategic Competitor to Access the Crown Jewels of U.S. Innovation." Defense Innovation Unit Experimental. January 2018.

technology transfer assessed at approximately \$300 billion per year. Strong protection of U.S. intellectual property rights for cutting edge space technology is vital. In addition, the United States will continue to use its trade laws to identify and address unfair trade practices. In order for the U.S. to be a strong partner to its allies, it must also establish healthy boundaries that allow U.S. commercial space to flourish.

### **Conclusion**

Mr. Chairman and members of the Committee, thank you for your consideration of my ideas. From my early time at the Department of Commerce, I can say that the world is actively watching with interest our new-found interest in harnessing the power of the U.S. commercial space industry. But here, America first does not mean America alone: U.S. space leadership will depend vitally on both traditional and new space partners across government and commercial sectors. Thank you.