

**Before the
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Silver Spring, MD 20910**

In the Matter of)	
)	
Licensing of Private Remote Sensing Space)	RIN 0648-BA15
Systems – Advance Notice of Proposed)	
Rulemaking)	
)	

**COMMENTS OF THE CONSORTIUM FOR THE EXECUTION OF RENDEZVOUS
AND SERVICING OPERATIONS**

I. Introduction to CONFERS and our interest in remote sensing space systems

The Consortium for Execution of Rendezvous and Servicing Operations (“CONFERS”) is an industry-led initiative that advocates globally for commercial On-Orbit Servicing (OOS) as an integral part of a robust space economy. As an essential underpinning of that advocacy, CONFERS aims to leverage best practices from government and industry to research, develop, and publish non-binding, consensus-derived principles, practices, and technical and operations standards for OOS and Rendezvous and Proximity Operations (RPO). These standards would provide the foundation for a new commercial repertoire of robust space-based capabilities and a future in-space economy.

CONFERS has been developed by a team of private sector organizations with initial funding from the Defense Advanced Research Projects Agency (DARPA). Advanced Technology International (ATI) is providing overall program management. Technical expertise and project execution support is being provided by the Secure World Foundation (SWF), the University of Southern California’s Space Engineering Research Center (SERC), and the Space Infrastructure Foundation (SIF).

To fulfill its mission, CONFERS is recruiting a broad array of members from satellite equipment manufacturers, satellite operators, service providers, developers of RPO simulation, planning and safety tools, and insurers; interacting with standards development organizations; and engaging other stakeholders from industry, academia, and governments. CONFERS currently has 28 industry members from the United States and abroad. The process is fully collaborative and includes dedicated outreach activities to the global commercial satellite and space community.

We appreciate the efforts of the Trump Administration, the Department of Commerce, and the National Oceanic and Atmospheric Administration (NOAA) to modernize the regulatory framework for commercial space activities¹ and in particular to provide a clear and streamlined licensing path for new types of commercial space activities that include OOS and RPO. To that end, we offer the following comments in response to the advance Notice of Proposed Rulemaking on Licensing Private Remote Sensing Space Systems recently issued by NOAA.²

II. The Importance of a Clear and Streamlined Licensing Framework

Our members are developing a variety of new commercial technologies, capabilities, and services that do not fit cleanly within the existing remote sensing or broader licensing framework. These include commercial on-orbit space situational awareness (SSA) capabilities to track orbital debris, characterize space objects, and perform close inspections of satellites to help resolve on-orbit anomalies and monitor the impact of the space environment on satellite hardware. Our members are also working on commercial technologies and capabilities for on-orbit life-extension, repair, refueling, manufacturing, assembly, and end-of-life disposal of satellites that could help usher in a new era of innovative space activities and improve the sustainability space the space environment. All these activities require a certain degree of non-Earth imaging (NEI) – using cameras and other remote sensing equipment on a satellite to observe another space object.

Over the past few years, the NOAA Commercial Remote Sensing Regulatory Affairs (CRSRA) office has worked diligently to find innovative ways to use their existing authorities and mechanisms to license NEI for some of our members. However, successfully navigating the interagency process and receiving the licenses took an exceedingly long time, upwards of 18 months in one case, because of the new nature of the commercial NEI activities and the ability of the U.S. government to “stop the clock”. It was also uncertain if the companies would even be able to receive permission to perform some of the NEI or RPO activities that were critical to the

¹ “*Space Policy Directive 3: National Space Traffic Management Policy*,” White House, June 18, 2018, retrieved from <https://www.whitehouse.gov/presidential-actions/space-policy-directive-3-national-space-traffic-management-policy/>

²*Licensing Private Remote Sensing Space Systems*, Advance Notice of Proposed Rulemaking, RIN 0648–BA15, 83 Fed Reg. No. 126 (Jun. 29, 2018)

success of their business model. The delays and uncertainty created challenges in securing investors and clients.

Thus, we applaud the effort being made in the current NPRM to streamline and provide improved transparency of the overall licensing process, particularly for commercial NEI to support RPO and OOS technologies and applications. We endorse the proposed shortening of the license review window to 90 days, removal of the language allowing for “clock stoppages” and specification of a written notification process for informing licensees why a license was denied. These steps will dramatically improve the process to the benefit of commercial space activities.

III. Specific Concerns with the NPRM

A. Non-Earth Imagery restrictions will hamper new in-orbit activities

While there are large parts of the proposed rulemaking that would benefit the commercial satellite servicing industry, there are other aspects that have generated significant concern among our members. Specifically, the significant conditions (i.e. restrictions) placed on NEI are a major obstacle to the growth and development of the commercial satellite servicing industry. Imposing such restrictions on U.S. industry runs the risk of repeating mistakes that were made in previous decades with licensing of the commercial Earth remote sensing (CRS).

The previous two decades of imposing restrictions on CRS showed that placing restrictions on the quality of data products and prohibiting specific types of data from being collected had negative impacts on U.S. satellite remote sensing industry. CRS restrictions reduced commercial sales of satellite imagery products and limited the operation of licensed satellite systems in modes that were already substantively employed on-orbit. CRS restrictions were harmful to the competitiveness of U.S. satellite industry and helped fuel the development of international alternatives. For example, historical restrictions on U.S. commercial satellite radar imagery help create a vibrant global marketplace for non-U.S. companies to offer what U.S. companies could not.

We foresee similar potential negative impacts from the proposed restrictions on NEI for the U.S. commercial satellite servicing industry and point to the fact that U.S. ground-based systems already performing NEI do not have licensing restrictions. The proposed requirement for obtaining prior approval from the Secretary of Commerce 30 days before conducting a commercial NEI operation impacts the ability to provide quick-response commercial on-orbit inspection and SSA services to help resolve on-orbit anomalies and mishaps for both commercial and government customers. The ban on collecting any NEI data outside of 370 – 900 nanometers severely limits the ability to use radar or other non-optical imaging and ranging technologies to

improve the safety and accuracy of RPO and docking activities and the ability to provide non-visible data products to help with anomaly resolution.

The proposed rule also restricts the ability to retain or distribute NEI data if the licensee does not receive permission from the owner of the space object being sensed or if the data does not correlate to an object in the public satellite catalog maintained by the U.S. military. For most operational satellites and other large space objects this is not a concern, but for small objects and many orbital debris it is extremely difficult or impossible to determine the owner and thus receive permission. The Space Track website maintained by the U.S. military lists more than 19,700 cataloged space objects currently in Earth orbit,³ out of the several hundred thousand space objects known to exist. According to the online index maintained by the United Nations Office of Outer Space Affairs, roughly 5,100 space objects have been placed on a National Registry,⁴ leaving many thousands of space objects in orbit without a clearly identified owner or government of jurisdiction. The proposed rules makes no exemptions for NEI or tracking of small pieces of orbital debris, which are treated the same as large functional satellites.

The proposed NEI restrictions place considerable barriers to commercial innovation on SSA. The restrictions severely limit the ability of U.S. licensees to perform space-based SSA to support scientific studies of the orbital debris population, assist with tracking and identifying newly-launched objects, tracking fragments from new breakups and collisions, helping diagnose and resolve on-orbit anomalies, conduct safe rendezvous and proximity operations, and contribute to monitoring or reinforcing norms of behavior on orbit to support current U.S. national policy goals.⁵ They also limit the ability of commercial on-orbit SSA providers to develop enhanced SSA data products and services that will be essential for commercial RPO and satellite servicing to be conducted in a safe and efficient manner.

We believe the proposed restrictions on NEI will also stifle development of commercial on-orbit satellite servicing capabilities and place U.S. companies at a disadvantage relative to their international competitors. The proposed restrictions limit the ability of U.S.-licensed operators to experiment and test technologies and concepts of operations (CONOPS) to make these new capabilities and services feasible and explore business models. The proposed restrictions also place the commercial on-orbit SSA providers at a significant disadvantage to their ground-based competitors who do not need any license at all. There are also a growing number of international companies who are developing similar on-orbit NEI capabilities and services, and who are not encumbered by the proposed restrictions as U.S. companies would be.

³ Retrieved from the Space Track public catalog maintained by the US military and available online at <https://space-track.org>

⁴ The Online Index of Objects Launched into Outer Space can is maintained by UNOOSA here: <http://www.unoosa.org/oosa/osoindex/index.jsp>

⁵ White House, "National Space Policy of the United States of America," June 28, 2010, retrieved from http://obamawhitehouse.archives.gov/sites/default/files/national_space_policy_6-28-10.pdf

Recommendation: We strongly believe that the U.S. government should declare the space domain as a public space and the ability to conduct NEI as the equivalent of taking photos of public activities on a public street. This is already the policy position for ground-based telescopes and radars that can look up into space and observe, track, and characterize space objects.

While we understand the desire of the national security community to try and protect information about some of its on-orbit space capabilities and activities, we believe the harm to U.S. national security from restricting commercial innovation outweighs any short-term benefits. Potential adversaries are already developing their own national security capabilities to collect intelligence on U.S. space capabilities⁶ and such efforts will not be hindered by restrictions on U.S. companies. Even backyard hobbyists are able to collect increasingly sophisticated imagery of classified U.S. space objects.⁷

If the Department of Commerce, in consultation with other departments and agencies, ultimately concludes that some restrictions must be imposed on commercial NEI, we recommend making the following alterations to the proposed rules:

- Specify the process and timeline for a licensee to request a waiver for the 30-day prior approval, along with a timeline for when the government will respond to the request
- Specify the process and timeline for a licensee to request approval to disseminate uncorrelated tracking data, along with a timeline for when the government will respond to the request
- Engage with the commercial satellite servicing industry on the need for wavelength restrictions on NEI and the impact of such restrictions on rendezvous and characterization CONOPS.
- Waive the requirement to obtain prior owner/operator or government consent before conducting resolved NEI for space objects identified in the public catalog as space debris or spent rocket stages.

B. There is a lack of interagency harmonization regarding orbital debris mitigation requirements

The NPRM states that the Department of Commerce is proposing a standard licensing condition “requiring licensees to comply with the latest version of the Orbital Debris Mitigation Standard

⁶ Brian Weeden and Victoria Samson, “Global Counterspace Capabilities: An Open Source Report”,

⁷ For an example of what is possible by an accomplished hobbyist, see the work of Thierry Legault available online at: <http://www.astrophoto.fr/satellites.html>

Practices (ODMSP) issued by the U.S. Government”. This is a necessary element of licensing satellite operations. However, both the Federal Communications Commission (FCC) and Federal Aviation Administration (FAA) have their own variants of debris mitigation content in their commercial space licensing processes. The FCC, in particular, is devising updated rules on the topic and recently had a public comment period of its own.⁸ There is a risk that Commerce’s orbital debris mitigation license requirements will not be synchronized with the FCC or FAA, which would create additional burdens on applicants who require licensing through more than one U.S. regulator.

Recommendation: The Department of Commerce should work through the appropriate interagency processes to ensure orbital debris mitigation requirements are harmonized across all U.S. commercial space licensing authorities.

C. Restrictions on commercial remote sensing outside of Earth-orbit are unnecessary.

The NPRM proposes changing the definition of “remote sensing space system” to include missions that conduct remote sensing from an orbit of any celestial body. We appreciate the added certainty such a change would make to allowing commercial remote sensing to take place beyond Earth orbit but are concerned that putting such activities in the “high risk” category places unnecessary burdens on them.

Building a trillion-dollar space economy will involve multiple types of commercial remote sensing and NEI outside of Earth orbit, including characterization of asteroids for valuable materials, understanding future landing and settlement sites on the Moon and Mars, and conducting servicing operations in cislunar orbit or en-route to Mars. The main purpose of the conditions applied to high-risk activities is to protect U.S. national security and foreign policy interests. But the existing prohibitions in international law on military activities on the Moon and other celestial bodies eliminate any potential concern about commercial remote sensing of military bases or operations on celestial bodies, and remote sensing from outside Earth orbit will be too distant to provide any meaningful impact on terrestrial military operations.

Recommendation: If the Department of Commerce expands its authority to include commercial remote sensing missions outside of Earth’s orbit, it should categorize such activities as low-risk and/or waive conditions derived from national security impacts for such missions.

D. Foreign involvement should not necessarily deem an application “high-risk”

⁸ “*Mitigation of Orbital Debris in the New Space Age*”, FCC IB Docket 18-313,

The NPRM describes operations as high-risk if they have any foreign involvement, whether that be ownership interest or management. While there is a national security rationale for reviewing foreign control during the licensing process, the Department of Commerce should enable a path for a low-risk application review if foreign entities involved are close allies who subscribe to similar national security protections as the United States. Commerce clearly wants to attract foreign space companies to the United States through the SelectUSA program.⁹ However, applying a blanket “high-risk” category to any and all foreign involvement in U.S. commercial remote sensing risks the opposite effect. U.S. national security interests would be better served by a narrower restriction that either a “white list” of allies and partners or a “black list” of specific countries of concern.

Recommendation: The Department of Commerce should either specify a narrower list of countries that would trigger a “high risk” rating or create exemptions for U.S. allies and international partners.

Respectfully submitted,

/signed/

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July 15, 2019

⁹ <https://www.selectusa.gov>