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June 27, 2024

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street Northeast
Washington, DC

RE: Space Innovation; Mitigation of Orbital Debris in the New Space Age (IB Docket Nos. 22-271 and 18-313; FR ID 219983).

Dear Ms. Dortch:

On behalf of the Commercial Spaceflight Federation (CSF), the leading trade association for the commercial space industry, thank you for the opportunity to comment in response to the Federal Communications Commission (Commission) Space Bureau's Public Notice refreshing the record on "Space Innovation; Mitigation of Orbital Debris in the New Space Age" (IB Docket Nos. 22-271 and 18-313; FR ID 219983).

As these updated regulations related to space safety and orbital debris are considered, CSF strongly encourages the Commission to adopt rules that apply to all systems equally, rather than continuing the outdated conditions-based regulatory scheme designed for a previous era in space. The current outdated regulatory scheme creates regulatory confusion, inconsistency, and ultimately unequal treatment among operators that risks space sustainability. Technically-sound regulations that apply equally to all operators and include performance-based metrics will provide the certainty operators need in the new space age and will ensure continued advancements in this critical sector. This will be a welcome improvement over the current case-by-case approach. However, CSF reminds the Commission of the limited, and untested, authority to regulate non-spectrum aspects of satellite licensing. Continued deference to agencies with technical expertise and adherence to a limited role in orbital debris and space safety should guide the Commission's rulemaking.

In the Public Notice to refresh its orbital debris record and the underlying further notice, the Commission requests comment on several proposals related to operational sustainability of satellites, including ways to assess cumulative risk of satellite systems, whether to adopt a "safe harbor" approach to assessing collision risk, and a performance-based "object-years" limit to limit satellite failures and incentivize reliable satellite design. CSF recommends that the FCC further consult with expert agencies, such as NASA, as well as the commercial space industry prior to pursuing further actions relating to this Public Notice. This would ensure that any orbital debris rules are equitable, evidence-based, and harmonized with existing practices and requirements. Without agreement and harmonization in requirements among relevant federal agencies and the industry, the Commission should not seek to unilaterally impose new rules on the industry.

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The Commission asks whether it should analyze collision risks based on the entire system (i.e., an aggregate collision risk metric) or on individual satellites for non-geostationary orbit (NGSO) systems. The Commission should not adopt an aggregate collision metric. Just as in 2020, when the Commission followed the National Aeronautics and Space Administration's (NASA's) analysis by declining to adopt an aggregate collision risk methodology, no accepted aggregate collision probability standard or metric exists on which to base a standard today. As NASA found, too many variables related to untested systems remain unknown.[1] Unreliable or incomplete data sources make it impossible to accurately predict aggregate risk prior to launch. Moreover, without standard methodologies for assessing per-satellite risk—i.e., by calculating collision probability for the entire passive-decay time of a satellite or averaged across the solar cycle—an aggregate collision probability will invite gamesmanship that, when aggregated, could either dramatically overstate or understate collision probability, and would invariably lead to more contentious licensing dockets. An aggregate collision probability metric would not account for the cumulative impact of many smaller systems, including those that have not invested in maneuverability and collision avoidance technologies.

The further notice requests input on whether the Commission should adopt the U.S. Orbital Debris Mitigation Standard Practices' (ODMSP) 0.001 probability of collision metric as a threshold for identifying systems that may require additional review. Applying the ODMSP 0.001 probability of collision metric as a threshold for such multi-satellite systems would be inappropriate. That ODMSP metric is suitable for calculating the collision risk of an individual satellite, not of a multi-satellite system in the aggregate, and would not accurately convey the collision risk for a multi-satellite system. No expert agency has suggested that applying the aggregate limit to an entire constellation is appropriate—as no standard methodology or metric exists.[2] Applying a single-satellite metric to a multi-satellite system also fails to acknowledge many aspects of responsible operations—including maneuverability and automated collision avoidance—or the aggregated benefits associated with a single operator responsibly managing a multi-satellite system as compared to many smaller operators each responsible for a single or a few satellites.

The Commission should ensure that any future rules are technology-neutral and focused on outcomes rather than the means of accomplishing such outcomes. Doing so would best balance the public interest in space sustainability with the need to permit operators to continually improve their systems to align with evolving best practices. An approach that relies on case-by-case assessment and continual license modifications, by contrast, will stymie even good faith efforts to improve space sustainability and satellite design.

[1] ."NASA does not recommend applying this requirement in an aggregate manner for constellations but instead simply ensure that each launched satellite, whether in a constellation or not, conforms to the 0.001 lifetime collision risk against large objects requirements." U.S. National Aeronautics and Space Administration Human Exploration and Operations Mission Directorate, "NASA Letter on IB Docket No. 18-3-3, Mitigation of Orbital Debris in the New Space Age (P. 3)." April 4, 2019. Available here: https://www.fcc.gov/ecfs/document/104052918414240/1.
[2] "The Agency is just beginning to work these problems; and while there are promising leads, a fully-vetted solution ready for implementation at the Agency is unlikely to be available for some time." *Ibid*.

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CSF also notes that satellite designers, manufacturers, and operators require significant lead time to make changes to their designs. Designing spacecraft is a multi-year process, so new rules that impact satellite design choices must be adopted with an appropriate phase-in period. Without sufficient time to adapt, industry would be required to redirect substantial resources to immediate satellite redesign, a shift that has the potential to undermine U.S. innovation in the commercial space sector.

The Commission can further promote responsible operations in space by requiring operators to operate transparently—including by sharing contact information, propagated ephemerides on a regular basis, and realistic covariance data—at all stages of a satellite's life. Moreover, the Commission should require licensees to coordinate physical operations with other owner/operators and with expert agencies such as NASA to ensure that those operators are following best practices. The Commission should ensure that all operators are reporting on the ongoing health of their satellite systems through semi-annual reports. These steps will help promote space situational awareness and encourage information sharing which benefits not only on-orbit operations, but broader public policy decisions.

Thank you for the opportunity to comment on this proceeding. CSF looks forward to continuing to work with the Commission to support space sustainability and other matters.

Sincerely,

David Cavossa
President
Commercial Spaceflight Federation