FCC Regulations Concerning Orbital Debris Mitigation and Remote Sensing Systems

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FCC Rules adopted in 2004

- A debris mitigation plan must address collision risk, for both small and large objects, measures to avoid accidental explosions both during and after mission completion, and end-of-life disposal, including the “25 year” requirement.
- If a plan is inadequate, the FCC may require modification of the plan prior to licensing, impose conditions, or deny the license.
- FCC debris mitigation rules apply to all non-Federal satellites, including cubesats and other small satellites.

FCC 2020 update

- Updates to incorporate new assessment methods and criteria.
- Updates to codify licensing practices since 2004.
- Examine suitability of current criteria for large constellations.
The revisions to the Commission’s rules adopted in the April Report and Order reflect the FCC’s licensing experience over the past years and address new market and technological developments, also taking into consideration the revised U.S. Government Orbital Debris Mitigation Standard Practices (ODMSP). Most of the updates apply to satellites in non-geostationary orbits, but some apply to satellites in geostationary orbits.

The new rule updates improve the specificity and clarity of existing rules by adding numerical values to several existing requirements – including collision risk per satellite and casualty risk assessments. These values now included in the rules track those specified in the ODMSP:

- Large object collision risk less than .001 (1 in 1,000) over the satellite orbital lifetime
- Risk of small object collisions that would prevent post-mission disposal less than .01 (1 in 100)
- Probability of successful post-mission disposal no less than .9
- Re-entry casualty risk no greater than .0001 (1 in 10,000)
The revised rules require that applicants certify that upon receipt of a space situational awareness conjunction warning, the operator will review and take all possible steps to assess the collision risk and mitigate the collision risk if necessary.

There are new rules that require that applications include statements related to protecting inhabitable spacecraft, maneuverability, trackability and identification, and information sharing for space situational awareness.

Some other specific disclosures are addressed in the rule updates that are relevant to smaller subsets of satellite operations, including use of deployment devices, release of liquids that may persist in space, and proximity operations.

**STATUS:**

- Two rule updates became effective on September 24, 2020 (§ 25.271 – clarification on control of transmitting stations and § 25.282 – regarding coordination of orbit raising maneuvers for geostationary satellites).
- Other updates are subject to Paperwork Reduction Act requirements, and will become effective at a later date.
- Three petitions for reconsideration filed on September 24, 2020.
• The Further Notice of Proposed Rulemaking invited additional comment on:
  – orbital debris mitigation measures related to the probability of accidental explosions (propose to implement the ODMSP metric of .001)
  – approaches to addressing collision risk (related to ODMSP provisions on reliability of post-mission disposal) and casualty risk for satellite constellations on a system-wide basis
  – requiring maneuverability for space stations located above a certain altitude in the low earth orbit region and/or other possible limits on post-mission orbital lifetime.
  – adoption of an indemnification requirement similar to one used in some other countries and on the use of a surety bond tied to successful post-mission disposal.

• **Status:** Approximately 40 comments filed at the October 9, 2020 deadline. Reply comments are due November 9.
Remote Sensing Satellites

• Recognizing NOAA authority with respect to post remote sensing spacecraft, the FCC rules have included this provision:
  “Applicants for space stations to be used only for commercial remote sensing may, in lieu of submitting detailed post-mission disposal plans to the Commission, certify that they have submitted such plans to the National Oceanic and Atmospheric Administration or review.”

• Revised NOAA regulations provide for review of debris mitigation plans of remote sensing satellites by the FCC, in order to avoid duplication

• Federal Register Notice of May 20, 2020 addresses the statutory requirement that upon termination of operations under a remote sensing license, disposition of the satellite must be “in a manner satisfactory to the President” and states that, until further updates, the disposition manner satisfactory to the President is to follow the relevant FCC license.