Rendezvous & Proximity Operations (RPO) with Unprepared Satellites: Technical & Licensing Gates

Pillar: WA Servicing & Habitats | **Basis:** FCC / NOAA / NASA RPO Standards | **Primary Source:** FCC / NOAA / NASA | **As Of:** Active Nov 2026

Docking with or servicing an uncooperative or unprepared client satellite—the core capability tested by Starfish Space's Otter Pup 2 and Remora—triggers multi-agency RPO disclosures, non-interference RF rules, and NOAA imaging-of-space-objects review.

Documented Instrument & Engineering Record

• Why unprepared clients matter: Nearly all legacy LEO and GEO satellites launched before 2024 lack standardized grappling fixtures, fiducial markers, or refueling ports.

• Technical risk: Tumbling rates, plume impingement from servicer thrusters, and optical sensor glare complicate close-range capture.

• FCC licensing gate: RPO operators must disclose approach trajectories, abort/safe-mode corridors, and combined-stack disposal plans in their FCC Part 25 or Part 5 ODMP.

• NOAA Part 960 intersection: Optical cameras used for RPO navigation can trigger NOAA remote-sensing review when imaging other artificial space objects.

RPO Licensing & Engineering Gate Matrix

Gate	Governing Authority	Required Proof
Safe-Approach Trajectory	FCC Part 25 / Part 5	Passive-safe abort ellipse if thrusters fail
RPO Optical Sensors	NOAA 15 CFR Part 960	Non-Earth imaging / shutter-control clearance
Combined-Stack Disposal	FCC § 25.283 / NASA ODAR	Passivation & deorbit math for mated stack
Third-Party Liability	Commercial Contract / FAA	Client consent & cross-waiver of liability

Mission Designer, Compliance Lead & Founder Takeaways

• An RPO servicer cannot legally approach or capture a third-party satellite without explicit operator consent and U.S. government coordination.

• Designers should model the *combined* servicer-plus-client mass and cross-section for post-capture 5-year deorbit and 1:10,000 casualty risk.

• Starfish Space's Remora (Dec 2025) proved single-camera closed-loop RPO software, reducing hardware mass for future Otter missions.

Cross-Cluster Links & Primary Sources

• **Starfish Space Otter Servicing Record:** https://bcesg.org/wa-space-orbital-starfish-space-otter-servicing/

• **NOAA Part 960 & FCC Debris Handoff:** https://bcesg.org/wa-space-orbital-noaa-part-960-handoff/

• **In-Space Servicing Disclosure & Compliance:** https://bcesg.org/wa-in-space-servicing-disclosure-compliance/

• **eCFR: 47 CFR § 25.283:** https://www.ecfr.gov/current/title-47/chapter-I/subchapter-B/part-25/subpart-D/section-25.283

• **eCFR: 15 CFR Part 960:** https://www.ecfr.gov/current/title-15/subtitle-B/chapter-IX/subchapter-D/part-960

• **Starfish Space Official Site:** https://www.starfishspace.com/

Provenance Note: Regulatory gates verified against 47 CFR Part 25 and 15 CFR Part 960 as of 2026-11-16.