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U.S. Department of Transportation
1200 New Jersey Avenue SE
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Washington, DC 20590-0001

RE: Association for Uncrewed Vehicle Systems International (AUVSI) Cascade Chapter
Comments Concerning the Notice of Proposed Rulemaking for Normalizing Unmanned
Aircraft Systems (UAS) Beyond Visual Line of Sight (BVLOS) Operation (FAA-2025-
1908, RIN 2120-AL82)

Dear Administrator Bedford:

Please include these comments on behalf of Cascade AUVSI in the record of the above NPRM. Cascade AUVSI appreciates the opportunity to provide these comments on the Federal Aviation Administration (FAA) and Transportation Security Administration (TSA) Notice of Proposed Rulemaking (NPRM) concerning Normalizing Unmanned Aircraft Systems (UAS) Beyond Visual Line of Sight (BVLOS) Operations. Cascade applauds FAA for developing and publishing the proposed regulatory framework for BVLOS missions. Cascade recognizes that the NPRM is a critically important step to enable BVLOS missions to operate safely, at scale. However, Cascade is concerned that the proposed rule as proposed cannot achieve that purpose. Therefore, Cascade offers the below suggestions for modification of the ultimate rule, to better support BVLOS missions to enable them to operate safely, at scale.

Cascade AUVSI's Interest

These comments are submitted on behalf of Cascade AUVSI. Cascade is a chartered chapter of AUVSI.¹ Cascade represents the uncrewed industry in the states of Oregon and Washington, which two states proudly host one of the largest industry clusters of uncrewed vehicles in the United States and home to two of the most important UAS test ranges in the United States – the Pendleton UAS Test Range and the Tillamook UAS Test Range. While

¹ AUVSI is the world's largest nonprofit organization dedicated to advancing uncrewed systems, autonomy, and robotics. It's more than 8,000 members include UAS manufacturers, operators, public safety agencies, logistics providers, network and software companies, and academic institutions. Members collectively operate tens of thousands of aircraft across varied environments and routinely coordinate with state, local, and tribal partners. Cascade fully supports the comments submitted by AUVSI on the proposed NPRM.

Cascade's individual members will submit their own comments, these comments are designed to reflect the chapter's interests as a whole, based upon significant feedback from Cascade AUVSI members. Please accept these comments in the constructive spirit in which they are submitted.

Cascade AUVSI Recommendations

1. Cascade's Comments on Proposed Amendment to 14 C.F.R. § 107.205(32) (FR 38363)

Cascade is concerned with the proposed amendment to 14 C.F.R. § 107.205(32) that would eliminate the FAA's longstanding authority to approve waivers of § 107.31 (Visual Line of Sight) for Part 107 operations. Cascade respectfully recommends that this proposed amendment be rejected and that the FAA's authority to issue BVLOS waivers under Part 107 be preserved.

For years, the FAA has successfully issued waivers to Part 107 certificated remote pilots using a risk-based evaluation process that is well understood and demonstrably safe. Through this process, the agency has carefully authorized specific BVLOS operations based on the risk profile of the mission, the equipment used, and the mitigations proposed. This flexible, data-driven waiver pathway has enabled the safe integration of innovative BVLOS operations into the NAS, advancing both public and commercial benefits. Cascade urges the FAA not to discard this proven mechanism.

Respectfully, the Part 108 proposal is cost-prohibitive and operationally unrealistic for small business operators, particularly in the agricultural sector where BVLOS operations can deliver substantial efficiency and public benefit with little to no added safety risk. For example, low-altitude BVLOS flights in rural agricultural settings present negligible risk to the NAS, yet under the proposed framework such operations may be foreclosed entirely. Rather than enabling scalability of BVLOS, the proposal risks constraining it, reducing—not expanding—the diversity and reach of UAS operations in the United States.

Cascade is aware of no risk-based justification for categorically denying the agency authority to continue issuing BVLOS waivers under Part 107. Respectfully, the effect of such a denial would be to move industry backwards—removing an established, safe, and adaptable waiver pathway without a clear safety rationale. This approach also appears inconsistent with executive department directives to federal agencies to foster technological advancement and reduce unnecessary regulatory burdens.

Accordingly, Cascade recommends that the proposed amendment to § 107.205(32)—removing waiver authority under subsections (a), (c), and (h)—be rejected in the final rule. Instead, Cascade suggests that FAA build upon the lessons learned from its waiver experience by standardizing and streamlining the waiver approval framework for BVLOS operations under Part 107. Specifically, FAA could reduce its workload while improving transparency and predictability by issuing standardized criteria for:

- Evaluating and rating acceptable risks;
- Training requirements for remote pilots; and
- Equipage requirements appropriate to varying risk environments.

Such a standardized framework would strike the right balance: ensuring safety while preserving a flexible, accessible waiver pathway that allows small businesses and innovators to continue operating safely beyond visual line of sight.

2. Continuity of Existing Authorizations Under 49 U.S.C. § 44807, Parts 91, 135, and 108

Many of Cascade’s members currently conduct important BVLOS missions pursuant to exemptions granted under 49 U.S.C. § 44807, as well as authorizations under 14 C.F.R. Parts 91, 135, and 108. Cascade notes that agricultural operators also rely heavily on authorizations issued under Part 137 (Agricultural Aircraft Operations). These approvals include BVLOS authorizations tied to pesticide application, crop monitoring, and related missions in rural areas. The proposed rule should ensure continuity for Part 137 operators as well, as these approvals were granted following rigorous FAA review and often involve unique equipage and operational mitigations tailored to agricultural contexts. Extinguishing or forcing re-application of these authorizations would impose unnecessary costs and risks on an essential sector. These authorizations have not been lightly obtained; rather, they represent the culmination of substantial resource expenditures by small and medium-sized enterprises, including modification of business models, acquisition of advanced equipage, and establishment of fixed bases of operation tied to particular locations and markets.

The proposed rule should be amended to ensure continuity of these existing authorizations. Cascade is aware of no risk-based rationale to extinguish rights and investments lawfully granted under these authorities. Indeed, FAA retains ample discretion to adapt those authorizations to reflect evolving operational rules—such as updated right-of-way provisions under the proposed Part 108 framework—without nullifying the underlying authority or requiring operators to re-litigate settled approvals.

Congress has expressly authorized the FAA to use risk-based decision-making in integrating UAS into the national airspace. Under 49 U.S.C. § 44807, the Administrator “may determine that certain unmanned aircraft systems may operate safely in the national airspace system,” even if they do not fully comply with existing airworthiness requirements. That congressional mandate provides clear statutory authority to grandfather or transition existing BVLOS authorizations without imposing duplicative burdens on operators who have already satisfied rigorous FAA review.

Moreover, Executive Orders 12866 and 13563 require that agencies “tailor regulations to impose the least burden on society, including businesses of differing sizes” and “use the least burdensome tools” consistent with safety and statutory objectives. EO 13610 further directs agencies to “reduce unjustified regulatory burdens and costs” with special consideration for small businesses. These directives reinforce that FAA should preserve and transition—rather

than extinguish—existing BVLOS approvals that have already been shown, through a risk-based framework, to operate safely.

For these reasons, Cascade strongly recommends that the final rule explicitly retain and provide continuity for existing authorizations issued under § 44807, Part 91, Part 135, 137, and Part 108. FAA should confirm that such authorizations will remain valid—subject only to necessary adjustments for new operational requirements—so as not to undermine prior investments, disrupt ongoing operations, or impose duplicative costs without corresponding safety justification.

3. Concerns About Proposed Strategic Deconfliction Provisions

The NPRM requires strategic deconfliction in controlled airspace and over Category 3+ population densities and adds a “target average conformance” requirement — but does not provide binding, operator-usable definitions, metrics, or audit rules.

Moreover, it is respectfully submitted that the proposed rules impose an outsized burden on small entities. Mandatory reliance on Automated Data Service Providers (to be certificated under Part 146) creates recurring subscription, integration, and connectivity burdens that are disproportionate for low-risk rural/ag BVLOS missions.

(1) Ambiguity impedes compliance

The preamble ties mandatory strategic deconfliction to controlled airspace and Category 3 population density and introduces a second requirement to meet a “target average conformance” with the operational intent. But the rule text and record do not set a numeric conformance threshold, averaging window, tolerance bands, or a single authoritative geospatial reference for Category 3 — making it difficult for small operators to design training, equipage, and QA systems or to plan routes at suburban/exurban edges.

The NPRM cites modeling (e.g., APL/JHU and ASTM workgroup) showing benefits of strategic deconfliction at scale, but those sources don’t translate into operator-usable compliance criteria (e.g., 99.9% conformance over N flights) or binding map layers for population categories.

(2) Disproportionate burden for low-risk use cases

Strategic deconfliction (plus conformance monitoring in controlled airspace) effectively necessitates participation in automated data services regulated under Part 146. For many agricultural and linear-inspection BVLOS operations at ≤ 400 ft AGL in rural areas, the incremental safety benefit is limited, yet the subscription, integration, and connectivity costs are material and recurring.

FAA acknowledges that service networks can “block” time/space and may cause non-equitable treatment; the NPRM defers guardrails to later guidance rather than the rule text. (The Part 146 discussion confirms heavy dependence on third-party services.) FR 38242.

Accordingly, FAA’s own discussion of the service model acknowledges risks of “blocking” and non-equitable treatment when multiple providers reserve time/space. The mitigation is deferred to advisory material and later Part 146 processes rather than enforceable text in Part 108, leaving small entities without clear recourse.

Cascade’s Request

Cascade supports FAA’s safety intent in the proposed strategic deconfliction methodology but suggests that FAA should clarify, narrowly tailor, and right-size the strategic deconfliction and conformance requirements. Cascade proposes adjustments below that FAA could consider implementing for a more equitable outcome, that maintains safety but codifies clearer triggers and metrics, adds low-risk safe harbors (≤ 400 ft AGL, rural corridors), publishes authoritative map layers with safe harbors, provides a non-subscription compliance path, and grandfathers existing authorizations with targeted updates for any new right-of-way rules. Accordingly, and in the spirit of collaboration, Cascade suggests the following:

A. Definitions — § 108.5

Add: “Population Density Category Map (PDC Map)” — A machine-readable FAA geospatial dataset that delineates Categories 1–5 using LandScan USA cells and any time-of-day modifiers adopted in the rule. Reliance in good faith on the current PDC Map constitutes a compliance safe harbor for determining population density category for pre-flight planning.

Add: “Target Average Conformance (TAC)” — The percentage of flight time (or waypoints) during which the unmanned aircraft remains within its accepted operational intent, measured over a specified rolling window and computed by the operator’s automated data service or FAA-approved operator tool.

Add: “Low-Risk BVLOS” — BVLOS operations conducted at or below 400 ft AGL wholly outside Category 4–5 areas and not within the lateral limits of Class B/C/D airspace, or within those limits only where the route segment is ≥ 0.5 NM from published traffic patterns and runways, as depicted on FAA VFR charts. [NOTE: This proposed risk tailoring is intended to be consistent with the NPRM’s focus on ground/air risk scaling.]

B. Strategic Deconfliction & Conformance — Subpart C (proposed revisions to §§ 108.190–108.195)

§ 108.190 Strategic Deconfliction — Applicability and Safe Harbors

(a) Applicability. Except as provided in paragraphs (c) and (d), strategic deconfliction is required when operating:

(1) In controlled airspace; or

(2) Over Category 3 or higher population density areas as depicted on the PDC Map.

- (b) Good-faith reliance safe harbor. An operator who conducts operations using the current published PDC Map covering the date of the mission and who retains the pre-flight record is deemed compliant with paragraph (a) notwithstanding later map updates.
- (c) Low-Risk BVLOS safe harbor. Low-Risk BVLOS operations are exempt from paragraph (a)(2). Operators may voluntarily use strategic deconfliction. NOTE: The safety rationale for this is the NPRM's own analyses and narrative recognize risk scales with population density; the idea is to establish carve-outs that reduce unnecessary burden where risk is already low.]
- (d) Connectivity exception. Where reliable network connectivity is not reasonably available, the requirement to use a third-party automated data service is satisfied by either:
 - (1) Pre-flight deconfliction using an FAA-published tool and filing the operational intent to an FAA gateway prior to takeoff; or
 - (2) Filing the operational intent post-flight within 24 hours for data-collection missions outside Category 4–5 areas. [NOTE: Creates a non-subscription path for low-risk missions while preserving traceability.]

§ 108.192 Strategic Deconfliction — Performance

- (a) The operator must obtain a conflict-free operational intent prior to takeoff via:
 - (1) An automated data service certificated under Part 146; or
 - (2) The FAA gateway under § 108.190(d).
- (b) Conflict resolution rules. When multiple services generate conflicting outcomes, the operator may rely on the first-accepted conflict-free plan time-stamped by the service used. Services shall not block airspace/time without publishing an objective policy consistent with FAA standards; inter-service reconciliation rules shall be maintained and auditable under Part 146. (Moves equity guardrails into the rule text.)

§ 108.194 Conformance Monitoring — Scope and Metric

- (a) Where required. Conformance monitoring is required only in controlled airspace and when using strategic deconfliction.
- (b) Metric. Operators must maintain TAC $\geq$ 99.5% measured over the last 20 flight hours or 50 flights, whichever is greater. FAA may verify by inspection of operator-retained records and by audit of the associated automated data service under Part 146. (Codifies the NPRM's "target average conformance" as an auditable metric.)

- (c) Attribution and tolerance. Deviations caused by service outages or documented environmental anomalies (e.g., GNSS disruptions) recorded by the service do not count against TAC; operators must document detected anomalies and mitigation.

§ 108.195 Records, Audit, and Protection

- (a) Operators shall retain operational intent and TAC records for 12 months.
- (b) Where a third-party service is used, the service must provide operators with exportable records in an FAA-specified open format. (Prevents vendor lock-in and supports transparent oversight under Part 146.)

C. Transition / Grandfathering — § 108.399 (new)

- (a) Continuity of existing approvals. Existing approvals, exemptions, or authorizations issued under 49 U.S.C. § 44807, Part 91, or Part 135 remain valid for their term. FAA may impose targeted updates limited to right-of-way and any directly applicable safety mitigations adopted in this rule; duplicative re-applications are not required absent a specific safety finding. [NOTE: this is intended to align with Congress’s risk-based mandate in § 44807.]
- (b) Phased applicability. Strategic deconfliction and conformance monitoring requirements become applicable to grandfathered approvals 12 months after the effective date unless FAA specifies otherwise by notice.

5. TSA Level 3 Threat Assessment - Objection to § 108.335 Security Threat Assessment (STA) Level 3

In summary, Cascade objects to the NPRM’s proposal to require up to a Level 3 Security Threat Assessment (STA) for broad categories of personnel involved in Part 108 BVLOS operations. Cascade respectfully submits that as drafted, § 108.335 is overinclusive, costly, and not risk-tailored to the operations and roles it covers. FAA (we understand under TSA’s recommendation) proposes Level 3 STA vetting for “covered persons” including operations supervisors, flight coordinators, and anyone with unescorted access to the UAS, cargo, or the control/flightpath—a sweep that would capture numerous low-risk workers in rural/agricultural and other small-entity contexts without evidence that Level 3 vetting materially improves safety or security for those use cases. It is respectfully submitted that FAA should narrow the scope, calibrate vetting levels to operational risk, recognize equivalent vetting, and phase implementation.

- What the NPRM Requires

At FR 38262, the NPRM preamble states: “Pursuant to TSA recommendation, FAA proposes in § 108.335 to require that certain covered persons who are engaged in BVLOS operations undergo up to a Level 3 security threat assessment (STA) conducted by TSA.”

Cascade notes that the covered persons are extremely broad and includes operations supervisors, flight coordinators, and persons with unescorted access to the UAS, its cargo, or its control/flightpath. A Level 3 STA includes checks of criminal history, immigration, and intelligence-related databases and watchlists under 49 CFR 1572.103–.107, with enrollment and redress procedures in 49 CFR 1572.9–.11 and 49 CFR part 1515. (Printed FR p. 38263; *see* proposed § 108.335.)

The fees and costs of such a burdensome - TSA is required by law to collect full cost-recovery fees for STA vetting. Industry analyses peg Level 3 STA fees around \$244 per individual, plus travel/time to an enrollment center—costs that scale with workforce size and turnover.

- The Required Threat Assessment is Overly Burdensome and Unnecessary

The threat assessment is proposed to apply to overbroad populations—sweeps in low-risk roles and missions. “Unescorted access” to the aircraft or flightpath can include field technicians, seasonal ag workers, and third-party contractors who never handle hazardous payloads, never enter controlled airspace, and operate ≤400 ft AGL over rural land with minimal third-party exposure. It is respectfully submitted that requiring Level 3 vetting for these categories lacks a risk-based nexus and will deter small businesses from scaling lawful operations. NOTE: that the NPRM acknowledges the diversity of operations and personnel under Part 108.]

The proposed threat assessment requirement will have a disproportionate impact on small business. Level 3 STAs impose per-person fees, enrollment travel/time, and ongoing management overhead. For small agricultural, civic-interest, or linear-inspection operators, staffing includes seasonal and part-time workers; recurring vetting has enormous cumulative costs compared with marginal security benefit in low-density, low-risk environments. Cascade notes that Executive Orders 12866/13563/13610 instruct agencies to minimize burden and use least-burdensome tools, especially for small businesses—which Cascade respectfully submits that this blanket approach does not.

Cascade is concerned that there is no demonstrated incremental security benefit for low-risk use cases. We greatly appreciate that the preamble invites comment but wish to point out that it does not present data showing that Level 3 vetting (as opposed to a narrower vetting or employer controls) reduces security risk for low-risk agricultural or inspection missions, making it difficult to understand the rationale for the threat assessment requirement. FAA already proposes multiple technical/operational mitigations under Part 108 (e.g., right-of-way, airworthiness acceptance, operational authorizations). It is respectfully submitted that layering Level 3 vetting for broad worker categories risks stacking duplicative mitigations without a reasonably tailored safety and security case.

Cascade is concerned that the threat assessment requirements under the proposed rule will add unnecessary administrative friction and disruptive workforce churns. The NPRM anticipates enrollment at TSA centers, which means that rural operators will face long drives and

schedule delays, thus undermining seasonal operations and emergency response work. The rule also contemplates possible expansion to owners controlling corporate entities for the BVLOS missions but also without a risk-tiering framework), compounding the potential significant burden the proposed rule would impose on BVLOS operations without a corresponding reasonable expectation of benefit. (Printed FR p. 38263.)

Thus, for example a rural agriculture operation (low density, ≤ 400 ft AGL) such as a co-op with 12 seasonal field techs to launch/recover BVLOS mapping flights on private farmland. None access controlled airspace; and they do not handle hazardous payloads. However, requiring all 12 to obtain Level 3 STA each season (fees + travel to enrollment) adds thousands in costs and scheduling friction, with negligible incremental security value. Another example might be a small utility inspection (exurban corridor - Category 2–3 population density areas along transportation/utility routes at the metro fringe) in which two-person firm inspects distribution lines at dawn. The tech who swaps batteries and checks propeller torque has “unescorted access to the UAS.” Under § 108.335 as drafted, that tech triggers Level 3 vetting despite no authority over the flight path and minimal operational exposure. Finally, please consider an example of civic interest mapping (tribal/rural lands) in which community college students supporting a permitted BVLOS mapping program would all need Level 3 vetting before touching the aircraft—chilling educational pipeline programs that Part 108 otherwise seeks to enable.

In light of Cascade’s concerns, Cascade suggests revisions along the lines that follow:

- Narrow “covered persons” and limit Level 3 STA to: (a) individuals with direct command authority over flightpath or C2 systems (e.g., flight coordinators with positive control), and (b) persons with unescorted access to hazardous payloads or secured facilities. Exclude purely mechanical/ground-handling roles absent hazardous cargo or controlled-airspace operations. (Revise § 108.335(b).)
- Tier the vetting to operational risk by adopting a graduated STA approach along the following lines:
 - No STA (employer background check only) for low-risk BVLOS (≤ 400 ft AGL, outside Category 4–5 population density, outside B/C/D surface area – i.e. airspace areas);
- Name-based / Level 1–2 checks for moderate-risk;
- The rules should only require a Level 3 threat assessment for higher-risk operations (dense areas, controlled airspace with strategic deconfliction, hazardous payloads).
- Cascade suggests that the final rule recognize equivalent vetting by other agencies. The rule should state that existing TSA determinations (e.g., current TWIC or HME STAs) or DoD/DOE/State CJIS clearances, satisfy § 108.335 for

the duration of that credential, avoiding duplicative fees and processing. (Add an equivalency paragraph to § 108.335.)

- Cascade suggests that FAA require TSA to provide remote/field enrollment options or mobile centers for rural areas and phase in any new vetting over a period of at least 24 months, prioritized by operation risk class and personnel role.
- Cascade suggests that the rule provide small-entity accommodations such as for permit-level operations under Subpart D, allow employer attestation with basic checks in lieu of Level 3 threat assessments except where hazardous payloads or controlled airspace is involved. Cascade suggests that FAA reserve Level 3 for certificated operations under Subpart E that are at a higher risk/scale. Legal/Policy Basis to Right-Size the Requirement

In summary, the STA program is authorized and administered by TSA (DHS), but FAA chooses the scope in § 108.335. The preamble explicitly invites comment on reducing or narrowing the “affected population” or “breadth of the STA” (Printed FR p. 38262-63). The final rules should be adjusted as Cascade proposes, to calibrate burden to risk. Executive Orders 12866/13563/13610 and OMB Circular A-4 emphasize least burdensome approaches and sensitivity to small-entity impacts. It is respectfully submitted that a targeted, tiered STA better satisfies those directives and the purposes of the Pt 108 rules, than the proposed across-the-board Level 3 mandate.

5. Right of Way

Cascade generally supports the proposed right of way rules. However, Cascade suggests the following modest adjustments be considered.

Concerning safety and clarity, the NPRM’s proposed right-of-way framework (§ 91.113(h)) would give uncrewed aircraft right-of-way over non-broadcasting crewed aircraft, except in certain defined environments (e.g., Class B/C, Category 5 population density, arrivals/departures). Cascade suggests that an explicit, bright-line override for emergency response aircraft (e.g., medevac, firefighting, law enforcement, search-and-rescue) for all phases of flight (i.e. taxi, takeoff, cruise, approach, landing) in a safe manner. Cascade suggests that this is necessary because many such emergency aircraft operate without ADS-B Out or other electronic conspicuity. As such, the proposed rule as written risks ambiguity in the very circumstances where clarity matters most. FAA should add a clear, uniform emergency override and require a single emergency information channel. This would make compliance simpler and safer for all parties.

Cascade further recommends that FAA provide a free FAA API/web map for emergency right-of-way broadcasts and designate a good-faith reliance safe-harbor for operators who query and monitor it. This would spare small entities from subscription lock-in while still delivering responder priorities, consistent with the NPRM’s performance-based approach.

Finally, Cascade suggests that the proposed rule explicitly recognizing emergency priority to avoid ambiguity when helicopters are unequipped or when temporary landing zones (TLZs) pop up near incidents. A uniform, codified rule ensures uncrewed operators know exactly what to do, and responders can count on the airspace being clear when they need it during emergencies.

6. Simplified User Interaction Concerns: the Proposed Rule’s Default Toward Removing Humans from the Loop Is Overbroad and Risky

The NPRM repeatedly emphasizes a future operating model in which the flight coordinator “may not require consistent action” and in which the UAS is expected to autonomously handle both normal and emergency operations. (See discussion of simplified user interaction and full automation in the NPRM preamble.) Such a design privileges full autonomy by default, removing a critical layer of human judgement and intervention in complex, dynamic, or degraded scenarios. Cascade submits that this default preference is inappropriate for many BVLOS missions — especially in mixed environments, emergency contexts, or where network/infrastructure degradation may occur. Cascade submits that FAA should explicitly preserve a human-in-the-loop (HITL) operational path for operators who wish to maintain human oversight, command override capability, and intervention authority.

1. In Subpart C — Establish optional HITL supervisory mode

§ 108.310 (new). Human-in-the-Loop (HITL) Mode

- (a) As an alternative to fully autonomous operation, the operator may designate a Human-in-the-Loop (HITL) mode in which a flight coordinator maintains supervisory control and retains authority to intervene, command adjustments, or terminate the flight.
- (b) The operator must specify a maximum intervention latency, appropriate to the operational risk environment, e.g. ≤ 2 s from command to UA response, and demonstrate in the operational authorization that the coordinator and UA control interface meet that latency.
- (c) For HITL operation, the operator may designate a 1:N ratio (e.g. one coordinator per N UAS) based on mission risk (population density, airspace class, environmental complexity) subject to FAA approval.

2. In Subparts G/H — Require human override interface

§ 108.745 / § 108.755 (add): Human Override Interface

The UAS must provide a documented and tested human override command interface (API or UI) enabling the operator to issue takeover commands (e.g., immediate landing, course/altitude change, return-to-home) and suspend autonomy within the approved operating envelope in degraded or emergency conditions.

3. Adjust strategic deconfliction / conformance sections to allow HITL compliance alternative

§ 108.190 / § 108.194 (add optional HITL path).

In addition to the automated strategic deconfliction / conformance path, operators conducting Low-Risk BVLOS missions (e.g. ≤400 ft AGL outside high population zones and outside controlled airspace) may use HITL monitoring, intervention buffers, and procedural mitigations (e.g. lateral/vertical stand-offs, human supervisory intervention) in lieu of full automation.

7. Objection to Proposed Airworthiness Testing Requirements (§§ 108.930 & 108.935): No Practical, Lawful Path to Perform Required Flight Tests at Scale

Cascade is concerned that the NPRM would require manufacturers to (i) conduct developmental testing “in an operationally representative environment and throughout the flight envelope” (§ 108.930(a)) and (ii) complete at least 150 failure-free flight-test hours per make/model/configuration to demonstrate function and reliability (§ 108.935(b)), with those tests also performed in an operationally representative environment (§ 108.935(c)). Yet the only proposed lawful mechanism to fly pre-acceptance aircraft for these tests is a Part 108 flight test permit (§ 108.470). That permit is limited to Category 1 population density areas and is only available to manufacturers qualified under Subpart G or accredited educational institutions. As a practical matter, there is nowhere to perform the required testing, at the scale demanded, that is both legal and representative of many intended operations (e.g., linear infrastructure corridors, mixed-density edges, or locales with necessary RF/terrain features). The current alternatives (individual COAs, designated test sites/ranges) are not scalable and do not reliably match the “operationally representative environment” standard the NPRM itself requires. The final rule should add realistic, lawful test venues and pathways—or revise the testing construct—to avoid an implementation dead-end.

Specifically, the proposed NPRM requires developmental testing “in an operationally representative environment and throughout the flight envelope.” (§ 108.930(a)). The NPRM allows simulation/analysis only if validated by an FAA-accepted Means of Compliance or MOC; otherwise flight testing remains required. (§ 108.930(b)).

Concerning function & reliability testing: each make/model/configuration, the proposed rule requires that the UAS must complete ≥ 150 failure-free flight-test hours; events like loss of control, UTM non-conformance, loss of safe distance, or unplanned landing reset the count. Testing must also be in an operationally representative environment. (§ 108.935(b)–(c)).

The NPRM specifies that the only lawful pathway to fly pre-accepted aircraft for those tests is: a § 108.470 flight test permit, which (i) bars anyone other than a qualified manufacturer (Subpart G) or an accredited educational institution from conducting such tests, and (ii) limits operations to Category 1 population density areas, unless otherwise authorized.

In a word, the proposal for airworthiness is simply unworkable and will not result in UAS BVLOS missions at scale. Instead, it risks whether they can happen at all.

“Operationally representative” missions simply cannot occur in Category 1 one areas and so Category 1 cannot be the default. Many intended BVLOS use cases (e.g., utility corridors at exurban edges; ag logistics near Class E surface extensions; civic mapping in Category 2–3 locales) cannot be faithfully replicated in Category 1-only test areas. The rule simultaneously demands representative environments (for validity) and forbids testing in them where those exist (via § 108.470(c)), creating a Catch-22 that blocks compliance.

Similarly, the proposed requirement for 150 failure-free hours per configuration is a large flight-hour demand with no scalable, lawful venue in which to test. For even a modest portfolio (airframe variants, payload configurations), 150 hours per configuration in the NAS quickly becomes thousands of hours—but pre-acceptance aircraft can only fly under § 108.470 permits in Category 1 areas and only if the entity is a Subpart G qualified manufacturer or accredited school. This excludes integrators, small contractors, and many start-ups that do real-world development and reliability work today. This is contrary to the Presidents Executive Orders and the FAA reauthorization Act requirements because it imposes red tape requirements that serve no known purpose that effectively block BVLOS at scale.

The only current alternatives (COAs, FAA UAS test sites/ranges) are neither practical nor scalable for all testing. Project-by-project COAs or limited test-range windows do not match the continuous, iterative flight hours required to accumulate 150 failure-free hours across multiple configurations, in settings that meet the “operationally representative” standard (RF, terrain, density, airspace features). The NPRM provides no durable, streamlined path to secure such venues at national scale. (General NPRM framework discussion).

The proposal introduces a circularity risk with MOC and simulation. This is because while § 108.930(b) allows analysis/simulation with FAA-accepted MOC, the NPRM expects consensus standards bodies to propose such MOCs—not yet widely available—and still requires flight testing. This leaves manufacturers forced back into the same bottleneck: they need lawful, representative airspace to validate, but the only mechanism there is restricts the airspace and the eligible testers.

Cascade strongly suggests the following adjustments to the final rules to address these concerns.

- A.) FAA Should broaden lawful test venues while preserving safety -Modify § 108.470(c) (Category limit). Instead, the final rule should allow Category 2–3 test operations if the operator implements published separation buffers and emergency-yield procedures. FAA can retain Category 1 as the default but must authorize a means for routine approvals for Category 2–3 in specified corridors/blocks.

Cascade strongly encourages that FAA create FAA-designated “BVLOS Test Corridors.” In this regard, Cascade suggests that FA add a new § 108.472 authorizing

FAA to designate corridors/blocks (including along linear infrastructure) where pre-acceptance testing may occur under a standing NOTAM/TFR-like construct, with standardized constraints (altitudes, buffers, time-of-day). This gives manufacturers a lawful, schedulable way to accumulate hours in representative airspace.

Cascade also strongly suggests that FAA expand eligibility beyond Subpart G manufacturers. In this regard, Cascade suggests that FAA revise § 108.470(b) to include operators/integrators under a manufacturer's QA/oversight (or under an accredited program). Many reliability hours are accumulated by integrators and service providers—excluding them is counter-productive. Cascade suggests that the NPRM allow a contractor or operator to fly test hours under the manufacturer's QA program (using the manufacturer's manuals, conformity checks, and reporting chain). As such, the manufacturer would remain the responsible certificate holder but would be allowed to delegate test flying to partners, provided those flights are logged, reported, and reviewed within the QA/oversight system.

- B.)** FAA should right-size the testing burden without compromising safety. Manufacturers should be able to get credit for structured ground/simulation testing. The final rule should amend § 108.935(b) to allow up to 50% credit toward the 150-hour requirement from validated simulation and instrumented ground-test cycles (hardware-in-the-loop), when conducted under an FAA-accepted MOC (cross-reference § 108.930(b)).

Cascade also suggests that FAA allow family-of-configurations pooling, in which permit hour pooling across a defined family (i.e. the same airframe/control system; limited payload/propulsion variations) with delta testing for changes, rather than restarting 150 hours per micro-variant. Codify in § 108.935(b) notes.

Cascade further suggests that FAA allow the use of shielded areas & special use airspace. In this regard, FAA should expressly recognize in the final rule, shielded operations (near structures/terrain) and special use airspace (SUAs) as acceptable test venues for a portion of hours, provided the environment matches the operational hazard profile.

- C.)** Cascade suggests that the rule improve the administration & transparency of airworthiness testing rules. In this regard, FAA should require that it publish an FAA Test-Venue Gateway in a free FAA API/web portal listing current test corridors, SUA windows, and Category maps, and provide a good-faith reliance safe harbor for operators who plan/record against those layers.

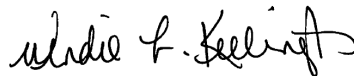
Cascade also suggests time-boxed permit processing & template conditions. For example, Cascade suggests that the final rule set service levels for § 108.470 permits (e.g., 30-day target) and publish template permit conditions to accelerate repeat approvals and create national consistency.

In summary, Cascade is concerned that as drafted, manufacturers cannot practically comply with §§ 108.930 and 108.935 because the NPRM's only lawful pre-acceptance flight-test pathway (§ 108.470) restricts who may test and where—in tension with the NPRM's own demand for operationally representative environments and large volumes of failure-free flight hours. The final rule should (1) broaden lawful test venues (with safeguards), (2) credit structured non-flight testing under accepted MOCs, and (3) expand eligibility for flight test permits to reflect how reliability hours are accumulated in the real world. Otherwise, the airworthiness acceptance program risks no practical means of execution and risks the entire BVLOS at scale purpose of the proposed rule.

8. Conclusion

Cascade very much appreciates FAA's efforts to create a BVLOS ecosystem that unleashes drone technology at scale. Our comments are intended to assist the agency to achieve that aim and we remain open to discussing these concerns with you to flesh them out further as you may wish. Thank you for your consideration.

Very truly yours,



Wendie L. Kellington
President, AUVSI Cascade

WLK:wlk

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