December 22, 2023

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Federal Aviation Administration
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Federal Aviation Administration
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Dear Mr. Roberts and Mr. Vincent,

The undersigned associations appreciate the Federal Aviation Administration (FAA) hosting stakeholders in a Listening Session on October 11 to present the concepts under consideration by the agency for an upcoming Beyond Visual Line of Sight (BVLOS) rulemaking. Industry also appreciates that the agency has continued the dialogue with stakeholders through subsequent one-on-one meetings about certain components of BVLOS during meetings hosted by Standards Development Organizations following the Listening Session.

Stakeholders from both the UAS aviation community and the traditional aviation community have stated that they 'fundamentally support the safe enabling of BVLOS operations in the U.S. National Airspace System (NAS) and are working to ensure the future success of this segment of the aerospace community.'[1]

In addressing this rapidly evolving landscape, especially in the realm of Advanced Air Mobility (AAM) technologies like Unmanned Aircraft Systems (UAS) and electric Vertical Take-Off and Landing (eVTOL) aircraft, it's essential to acknowledge that our associations, representing both traditional and emerging aviation operations, support the safe introduction and integrations of UAS and eVTOL operators. Our integration mindset reflects a commitment first and foremost to safety, as well as efficiency, and highlights the diverse and forward-thinking nature of our nation's plans for future operations. Driven by this intent and versatility, our members, encompassing a wide range of aviation operations, are uniquely positioned to contribute significantly to the industry's growth.

All of the undersigned organizations represent traditional aviation members, and some also have active members working in the emerging UAS industry. This letter provides input on topics about which the FAA sought further input during the Listening Session and the undersigned organizations' perspective:

<u>TOPIC 1: Right of Way Rule:</u> The foundational responsibility of complying with the 14 CFR 91.113 Right-of-way regulation does not change because the aircraft is being operated remotely instead of by a pilot occupying a cockpit.

In aviation safety, the principle that a pilot must be able to 'see' an aircraft is fundamental to satisfying the 'see and avoid' requirement. This implies that an aircraft, regardless of its type, needs to be visible to

[1] BVLOS ARC Coalition of Aviation Associations, March 3, 2022

be seen and avoided. The MOSAIC Notice of Proposed Rule Making (NPRM) reinforces this, stating, 'The aircraft must provide pilots with sufficient visibility to readily identify other aircraft... and aid the pilot in complying with other regulatory requirements including § 91.113, "Right-of-way rules: Except water operations," ... while in flight.' [2] This highlights the necessity of ensuring that all aircraft are sufficiently visible for safe operation in the airspace.

Further emphasizing the need for clarity in regulatory language, the NPRM notes, 'By explicitly naming specific categories of aircraft, the current § 91.113(d)(2) and (3) do not provide information for how operators of other categories of aircraft not listed in § 91.113 are expected to comply with the intent of the rule. This may lead to confusion, especially for those operators of aircraft that are not explicitly included in the current § 91.113.' This statement underscores a critical gap in the existing regulations, where certain aircraft categories are not explicitly mentioned, leading to potential ambiguities in compliance.

Therefore, it is imperative that the concept of "detect and avoid" is also applied comprehensively. Just as pilots rely on visual cues for the 'see and avoid' practice, systems or technologies used for "detect and avoid" must ensure the detectability of all aircraft types, including those not explicitly named in current regulations. This universal applicability is essential for maintaining safety standards in the airspace, ensuring that all aircraft, whether piloted or unmanned, are detectable and can be appropriately avoided to maintain the safety of all airspace users and comply with the regulatory intent.

The current rules state:

> ***General.*** When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to **see and avoid other aircraft**. When a rule of this section gives another **aircraft the right-of-way**, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.

Stakeholders support the introduction of "detect" to complement the existing requirement in (b) to "see and avoid other aircraft" as an enabler for the introduction of UAS BVLOS operations.

Stakeholders note that the FAA has already communicated its position about certain technologies when granting BVLOS exemptions[3] earlier this year.

Stakeholders also recommend that the FAA amend the right-of-way rule's hierarchy section (*e.g.*, (d) and (e)) to fully consider the role of UAS conducting BVLOS operations.

The stakeholders agree that UAS are aircraft and, where "aircraft" are identified in the right-of-way rule, the FAA must make clear that BVLOS UAS operators must be able to comply with the requirements identified. Stakeholders recommend that the FAA, as part of rulemaking, amend the hierarchy section of the rule (*i.e.*, (c), (d), and (e)) to fully consider the responsibility and performance of UAS in the context of other aircraft.

[2] 88 FR 47672

[3] FAA Dockets 2023-1256, 2019-0628, and 2020-0499

To support compliance with the right-of-way regulations for all operators, **UAS conducting BVLOS operations must have a mechanism to make themselves visible to other aircraft, specifically including piloted aircraft, to enable pilots of non-UAS aircraft to meet their see and avoid responsibilities.** This could be accomplished by the installation of strobe lights or other FAA-accepted technology on the UAS. UAS shall meet reasonable performance-based standards for visual conspicuity in order to support this objective. The rulemaking for Part 89 [4] included a discussion of similar recommendations for conspicuity, and the rationale for adjudication should not be considered as valid for the purposes of enabling BVLOS operations.

TOPIC 2: Equipage on Other Non-UAS Aircraft: Incentives versus Mandate: Stakeholders strongly oppose imposing or expanding any existing aircraft equipage mandate in order to enable BVLOS UAS operations as part of this rulemaking.

The undersigned aviation organizations continue to encourage the voluntary aircraft equipage with ADS-B Out, including the FAA providing additional and new incentives for the voluntary equipage with ADS-B Out.

We recommend the FAA take advantage of its on-going dialogue with stakeholders about BVLOS to provide improved clarity about which UAS and which types of UAS operations may and may not equip with ADS-B Out.

TOPIC 3: Detect And Avoid (DAA) Technologies: BVLOS UAS should be equipped with sufficient DAA technology.

The aviation industry embraced the development of DAA technologies as one of two priorities when RTCA Special Committee (SC) 228 was established at the request from the FAA's UAS Integration Office in 2013. As noted in the SC-228 Terms of Reference "*In order to safely and seamlessly integrate [UAS] into non-segregated airspace, both robust Detect and Avoid (DAA) and robust and secure Command and Control (C2) Data Link capability need to be established.*" Industry has worked with the FAA over the past decade to advance DAA with this objective in mind.

Significant work is underway between FAA and industry to develop industry standards, build operational experience, and gather the needed supporting data for the FAA to identify acceptable airborne, ground-based and combined airborne/ground-based systems that would support a "detect" function.

All UAS conducting BVLOS operations must have a DAA capability that meets an industry standard or set of standards accepted by the FAA. This stakeholder position is also complementary to the proposed amendment to 14 CFR 91.113 endorsed by the stakeholders earlier in this letter. The undersigned, as part of this letter, do not provide any perspective about the expected FAA acceptance of specific DAA technologies, standards published by SDOs, or proprietary DAA technologies.

However, in a general sense, DAA technologies that are acceptable to the FAA are expected to be those that consider both ADS-B Out equipped and non-ADS-B Out equipped aircraft, in recognition that not all

[4] https://www.federalregister.gov/d/2020-28948/p-250

aircraft are equipped with ADS-B Out when operating in uncontrolled airspace below 400 feet, and outside of the Mode C/ADS-B veil.

TOPIC 4: Airspace Considerations for Initial BVLOS Rulemaking: Below 400 Feet AGL

Significant work is underway to more broadly integrate UAS operations into the U.S. National Airspace System. The FAA, however, bounded the work of the BVLOS ARC to "low-altitude airspace, outside of areas designated for positive air traffic control" [5] when chartering the committee.

The rule's primary focus should be on uncontrolled airspace below 400 feet AGL, with consideration for low-altitude operations, particularly helicopters, light sport aircraft, and agricultural aircraft.

TOPIC 5: Shielded Operations: Industry stakeholders have expressed a unified concern regarding the ambiguity in the BVLOS Aviation Rulemaking Committee (ARC) recommendations pertaining to shielded operations.

The current use of terms like "critical infrastructure" or "an obstacle" in the ARC report leads to an overbroad and indeterminate delineation of areas, hindering safe and practical application. Furthermore, the ARC's recommendation for "shielded operations" is problematic, particularly in light of the ARC's recommendation to amend 14 CFR Part 91.113. This amendment suggests prioritizing UAS over other aircraft in designated zones and introduces a critical safety concern by potentially exempting UAS from the foundational aviation principle of 'see, or detect, and avoid.' This exemption creates a discordance in aviation safety protocols, potentially leading to hazardous situations in national airspace.

The stakeholders maintain that the existing right of way hierarchy, fundamentally based on maneuverability, should continue. However, in light of the ongoing MOSAIC rulemaking efforts, which propose alterations to this hierarchy, there remains an unaddressed gap regarding the extremes of maneuverability, notably tethered aircraft (which possess minimal maneuverability) and smaller, less visible aircraft under Part 107 (weighing less than 55lbs). It is imperative that these considerations be integrated into the regulatory framework to ensure comprehensive and safe integration of UAS.

While there is consensus among stakeholders on the consideration of "shielded areas" in future rulemaking, this should not be based on the ARC's definition. Instead, the definition of" shielded areas" should be grounded in the tangible, physical shielding of a UAS operating within these zones, rather than a mere proximity to undefined obstacles.

Additionally, stakeholders agree that the establishment of officially designated "shielded areas" should be administered by local flight standards offices. This approach could follow the protocols established for congested area plans in parts 133 and 137 of aviation operations.

This process may benefit from inclusion in aeronautical charting of shielded areas to mitigate potential safety risks to aviation, thereby ensuring a consistent and secure integration of UAS into the national airspace. The approach to any charting of shielded operations should be worked through collaborative

[5] Aviation Rulemaking Committee Charter, UAS Beyond Visual Line-of-Sight Operations Aviation Rulemaking Committee, 6/8/2021, 4. TASK OF THE ARC, C. ii.

forums such as the FAA-hosted Aeronautical Charting Meeting (ACM) group[6] to ensure an optimal approach for charting with considerations of the risk of chart clutter.

We believe these recommendations will significantly contribute to the safety and efficacy of UAS integration into national airspace. Our collaborative effort reflects a shared commitment to innovation and regulatory evolution.

Sincerely,

Aircraft Electronics Association

Aircraft Owners and Pilots Association

Experimental Aircraft Association

General Aviation Manufacturers Association

Helicopter Association International

National Agricultural Aviation Association

National Business Aviation Association

[6] Order 7910.5E