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March 3, 2022

Ms. Eileen Lockhart, BVLOS ARC Co-Chair  
Director of Emerging Markets  
Air Methods

Mr. Sean Cassidy, BVLOS ARC Co-Chair  
Director, Safety, Flight Ops and Regulatory Affairs  
Amazon Prime Air

**Re: AOPA Statement of Non-Concurrence to the BVLOS ARC Final Report**

Dear Ms. Lockhart and Mr. Cassidy,

The Aircraft Owners and Pilots Association (AOPA) is the world's largest aviation membership association representing individuals who collectively operate 85% of all general aviation aircraft in the United States, as well as tens of thousands of members who fly drones, including several thousand members who solely pilot drones both professionally and recreationally. AOPA respectfully submits this statement of non-concurrence in response to the Beyond Visual Line of Sight (BVLOS) Aviation Rulemaking Committee (ARC) final report.

Since 1939, AOPA's mission has been to protect the freedom to fly while keeping aviation safe, fun, and affordable. While AOPA's mission has traditionally served the interests of general aviation owners and operators, with the rapid growth and interest in drones, we realize the importance of supporting the development and safe integration of the BVLOS drone industry. Integration of BVLOS drones will enable humanitarian, public safety, and commercial applications of this technology. This will, in turn, create many future career opportunities for the next generation of pilots and other aviation professionals who are inspired by flight early in their lives. Whether traditional aircraft or drones, our mission remains the same: to advocate for policies and rules that grow and protect the freedom to fly.

With the rapid growth of BVLOS drones and its planned safe integration into the National Airspace System (NAS) with traditional aircraft, comes the necessity of new policies, rules, and technology to maintain an equivalent level of safety without restricting access or creating undue economic burdens to incumbent operators. While this BVLOS ARC report offers some recommendations to the FAA that will promote the expansion of BVLOS drone operations while maintaining the safety of all users of the airspace, AOPA has considerable concerns about certain recommendations that will reduce the safety of airspace users, and in the long term, will slow the drone industry's effort to fully utilize the benefits of BVLOS operations.

## I. SIGNIFICANT ISSUES OF CONCERN

AOPA supports the development and implementation of BVLOS drone operations. However, with the integration of any new technology and operation, how it is implemented to achieve its goals is most important to the stakeholders and public it will impact. AOPA, representing over 300,000 of these individual stakeholders, has the following concerns of the BVLOS ARC report and recommendations:

**Issue 1:**                    **Changing Right of Way Rules Based on Equipage or Shielded Operations Will Place Unsafe Burdens and Unfeasible Requirements on Crewed Aircraft**

**Recommendation:**   Recommendations FR 2.2, 2.3, and 2.4, (and all other related recommendations, charts, and rationale) should be removed and replaced with language that requires equal responsibility of uncrewed aircraft to see (detect) and avoid other aircraft, and when required to give another aircraft the right-of-way, is done so based on aircraft maneuverability.

In recommendations FR 2.2, 2.3, and 2.4, the BVLOS ARC leadership effectively proposes that drones operating under BVLOS rules would have 1) complete right-of-way over all crewed aircraft not equipped with either ADS-B or TABS, and 2) right-of-way over all crewed aircraft that are operating in what is being proposed as “shielded areas.”

The BVLOS ARC leadership supports these recommendations by offering research evidencing a pilot’s limitations with seeing and avoiding other aircraft, such as blocked field of views or the need to divert attention elsewhere. Based on this evidence, they argue, the current see and avoid requirement between crewed aircraft<sup>1</sup> is not the primary mitigation tool for avoiding collisions. Rather, it is suggested the mitigation of avoiding collisions is a result of operating merely in airspace environments where there is very “little GA traffic.” Using this “big sky” theory, ARC leadership promotes a recommendation that gives drones a blanket right-of-way over all crewed aircraft not equipped with ADS-B or TABS, including all crewed aircraft operating in “shielded areas” regardless of equipage, with the rationale that very few aircraft operate at those lower altitudes and “shielded areas,” and therefore the risk of a collision is very low.

These radical recommendations proposing to change the fundamental responsibility of avoiding other aircraft, and right-of-way rules based on maneuverability, fails to recognize the **reality of aircraft operations at lower altitudes**, and the **unsafe** and **unfeasible** requirements it will place on crewed aircraft.

**Aircraft operations at lower altitudes:** Currently, 14 CFR 91.119 effectively allows for aircraft operation at any altitude, with limitations and considerations necessary for power unit failures, congested areas, and areas other than congested areas. In addition, helicopters, powered parachutes, and weight-shift-control aircraft can go below these minimum altitudes. All this to say, fixed wing, rotorcraft, lighter than air, powered parachutes, ultralights, antique, agricultural operations, and others operate safely, routinely, and legally at the exact altitudes, geographical

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<sup>1</sup> 14 CFR 91.113(b)

areas, and near obstacles/structures, envisioned in these recommendations. Consideration should also be given to the wide-open areas many of these aircraft can take off and land at, including over 14,000 published private use and 5,000 public use airports in the United States. AOPA strongly disagrees with the ARC leadership's characterization that very few aircraft operate at these lower altitudes. In fact, the FAA recognized the realities of aircraft operations at lower altitudes in a recent DronePro Update:

“The risk of midair collisions between drones and traditional aircraft is greatest when they both share the same airspace. The belief that traditional aircraft only operate at altitudes above 500 feet is a common misconception among drone pilots. The regulation that establishes the minimum flying altitude for traditional aircraft is published in 14 CFR 91.119. Except for takeoff and landing, most fixed-wing aircraft typically operate above 500 feet. However, this is not the case with helicopters. Helicopters often fly below 400 feet and routinely share the same airspace as their drone counterparts.” (March 1, 2022)

It is unfortunate the BVLOS ARC leadership failed to recognize the reality of shared aircraft operations at lower altitudes, but we hope the FAA will carefully take this important reality into consideration during its BVLOS rulemaking.

**Unsafe and unfeasible reliance on electronic conspicuity:** While more than 108,000 aircraft in the general aviation fleet is ADS-B compliant, that number has remained relatively steady since the January 1, 2020 ADS-B mandate.<sup>2</sup> For the remaining non-equipped general aviation fleet, many may never find the need to equip with ADS-B as the majority of the NAS below 10,000 feet does not require ADS-B.<sup>3</sup> In addition, the FAA ADS-B equipage rates do not take into consideration other aircraft that mostly operate in lower altitudes, such as experimental, Light Sport Aircraft, lighter than air, powered parachutes, and ultralights, most of which cannot safely or feasibly install such devices whether technologically (e.g., no electrical system) or operationally (e.g., weight and balance).

ADS-B as a technology also has its shortcomings: ADS-B units can fail, coverage and spectrum issues continue to exist, and some operations have authorization to turn their ADS-B off.<sup>4</sup> The BVLOS ARC leadership's reliance to rely on ADS-B as a tool for collision avoidance and justification for changes to right-of-way rules is misplaced. Overreliance on a technology that is unfeasible for many lower altitude aircraft, was not originally designed for what is being proposed, and cannot be completely relied upon, should raise significant concerns for the safety of the NAS.

AOPA is supportive of low cost, voluntary safety equipment (e.g., Non-Required Safety Enhancing Equipment). And although AOPA is familiar with TABS, the BVLOS ARC report provides little to no background or explanation of the technology, its benefits, or its limitations, and how it might specifically provide a pathway to justify a change in right-of-way rules.

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<sup>2</sup> [https://www.faa.gov/nextgen/equipadsb/installation/current\\_equipage\\_levels/](https://www.faa.gov/nextgen/equipadsb/installation/current_equipage_levels/)

<sup>3</sup> 14 CFR 91.225

<sup>4</sup> 14 CFR 91.225(f)

Finally, reliance on electronic conspicuity to alter see (detect) and avoid and right-of-way rules completely eviscerates the safety considerations for basing right-of-way rules on maneuverability. Would a less maneuverable drone be required to give way to a highly maneuverable crewed aircraft with ADS-B? Would a balloon without an ADS-B or TABS device be expected to give way to a drone? Between two BVLOS drones, who would have the right-of-way? If the rationale for imposing these new right-of-way rules is that the risk is so low for a collision at lower altitudes, then why have right-of-way rules to begin with? If right-of-way rules becomes a function of conspicuity rather than maneuverability (or the fundamental principle to avoid another aircraft), then arguably a transport category aircraft with ADS-B would have right-of-way over a balloon without ADS-B or TABS. AOPA does not believe this is an outcome the FAA nor the aviation industry should adopt for the interest of safety or the public benefit.

## **Solutions**

AOPA and other ARC member's positions has been that all users have a **shared** responsibility to avoid other aircraft. Unfortunately, these recommendations intend to distribute the collision avoidance responsibilities through changes to right-of-way flight rules in both low altitude and near obstacles/structures. This is not shared responsibility. These recommendations inappropriately attempt to remove a fundamental safety mitigation of avoiding other aircraft (right-of-way) relative to other aircraft who safely and legally operate in areas where the technology proposed by this report (i.e., ADS-B, TABS) is not required nor designed for collision avoidance purposes. This proposal merely shifts risk to an unwilling/unknowing party, who are safely and legally operating.

AOPA recommends the FAA require uncrewed aircraft have some form of detect and avoid capability (e.g., onboard, ground, hybrid, etc.) for BVLOS operations<sup>5</sup> that meets FAA performance requirements (in conjunction with industry consensus standards) to meet a shared responsibility to see (detect) and avoid other aircraft (both crewed and uncrewed).

AOPA recommends maintaining right-of-way rules based on maneuverability, with no blanket right-of-way rules for BVLOS drones over crewed aircraft without ADS-B or TABS equipment, nor over crewed aircraft operating in the proposed definition of "shielded areas."

Adopting the recommendations above will provide for a more direct path to integrate uncrewed BVLOS aircraft into the entire NAS without airspace segregation, the opportunity to leverage current right-of-way rules, and to maintain the safety of the entire NAS.

## **Issue 2: The BVLOS ARC Recommendations and Report Fails to Recognize and Accurately Capture the Opinions of its Members**

While having to work with one of the largest ARCs, under extreme time pressure, and what seemed like continuous expansion in the scope of its charter, AOPA appreciates all the hard work and time put in by ARC leadership.

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<sup>5</sup> AOPA is not suggesting such requirements be applied to VLOS or Extended VLOS operations, as those operations would have some form of ability to maintain situational awareness of the airspace and air traffic to avoid other aircraft (e.g., visual observer).

Unfortunately, AOPA (along with other ARC members) have raised concerns regarding the process of recording, adjudicating, and accurately characterizing the opinions of the ARC membership, and transparency of ARC leadership decisions. AOPA's concerns to these issues have been raised in prior communication throughout the BVLOS ARC process and is most recently highlighted in a joint statement of non-concurrence with several ARC members (see enclosed).

Individually, AOPA wishes to raise one specific example where transparency and process were neglected. A tactical subgroup was established under subgroup 2.5 (Flight Rules) with participants that cut across multiple subgroups, including AOPA. The creation of this tactical group was done with the knowledge of ARC leadership. This tactical group deliberated and came to consensus on many hot button issues on shared collision avoidance responsibilities, shielded operations and areas, and right-of-way rules. Although not perfect, it was a consensus driven report, which was then submitted to the full 2.5 subgroup and approved. When presented to the full ARC leadership, it was summarily dismissed in lieu of alternative recommendations developed internally by ARC leadership not part of subgroup 2.5's deliberations. Those recommendations are what we now see in the final BVLOS ARC report. The blatant disregard and lack of adjudication of the recommendations created by the tactical group was disappointing and further evidences the broader transparency concerns raised by ARC members throughout the ARC process.

AOPA highly recommends the FAA take time to review the submitted comments by all ARC members and each subgroup's work product to obtain the widest view of opinions shared.

## **II. AREAS OF SUPPORT**

AOPA supports and appreciates the efforts by the BVLOS ARC and the broader uncrewed industry to help educate its operators and members on the importance of safety and culture in the aviation industry. It is then appropriate we support recommendation AG 2.4 emphasizing voluntary safety reporting within the Aviation Safety Reporting System.

In addition, AOPA continues its strong and absolute opposition to unfunded equipage mandates on crewed general aviation aircraft to facilitate the safe integration of uncrewed aircraft. Consequently, we appreciate the ARC's recognition and recommendation to not support a mandated equipage requirement for crewed aircraft, nor mandatory participation in UTM/Third Party Services.

## **III. ADDITIONAL COMMENTS**

AOPA has raised other areas of concern in the BVLOS ARC report not included in this non-concurrence, therefore we ask the FAA review the comments submitted throughout the BVLOS ARC process to obtain a better picture of the various concerns shared by AOPA and the ARC membership.

Again, AOPA appreciates and supports the hard work and dedication of the BVLOS ARC towards the safe integration of drones into the NAS, and we look forward to continued work with you and the entire aviation industry on this important rulemaking project. Please feel free to contact me at 202-737-7950 if you have any questions.

Sincerely,



Christopher J. Cooper  
Senior Director, Regulatory Affairs

Enclosure: BVLOS ARC Coalition of Aviation Associations Statement of Non-Concurrence

The Aircraft Owners and Pilots Association (AOPA) is a not-for-profit individual membership organization of General Aviation and Drone Pilots and Aircraft Owners. AOPA's mission is to effectively serve the interests of its members and establish, maintain and articulate positions of leadership to promote the economy, safety, utility, and popularity of flight in General Aviation aircraft and drones. Representing two-thirds of all pilots in the United States including several thousand drone operators, AOPA is the largest civil aviation organization in the world.



## **BVLOS ARC Coalition of Aviation Associations Statement of Non-Concurrence**

March 3, 2022

Ms. Eileen Lockhart, BVLOS ARC Co-Chair  
Director of Emerging Markets  
Air Methods

Mr. Sean Cassidy, BVLOS ARC Co-Chair  
Director, Safety, Flight Ops and Regulatory Affairs  
Amazon Prime Air

Dear Ms. Lockhart, Mr. Cassidy and the BVLOS ARC membership,

After having the opportunity to review the final Beyond Visual Line of Sight (BVLOS) Aviation Rulemaking Committee (ARC) report and its recommendations, the undersigned members of the ARC write this Statement of Non-Concurrence to declare our joint dissent to several recommendations and to renew our continued concerns related to the substance and quality of the report, as well as the processes followed during the report development.

**We fundamentally support the safe enabling of BVLOS operations in the U.S. National Airspace System (NAS) and are all working to ensure the future success of this segment of the aerospace community.**

However, after reviewing the final report and considering the challenges observed in the past seven months to accurately characterize the positions of the 89 ARC members, the final report could have substantial negative impacts on the safe and efficient integration of BVLOS operations and the safety of NAS users. For these reasons, we non-concur with specific concerns about the following recommendations:

- Target levels of safety and comparison with Light Sport Aircraft (LSA) including the reference to the safety continuum (AG 2.1);
- Change in right of way and see and avoid responsibilities (FR 2.1- 2.4);
- Shielded Operations and Areas and their related definitions (FR 2.2- 2.4);
- Operating requirements proposed to govern Remote Air Carrier and Remote Operating certificate holders (OQ 2.10-2.13);
- Changes in U.S. Air Carrier ownership requirements (GP 2.11);
- Lacking justification in context of safety continuum related to aircraft Size (*i.e.*, 800k ft/lbs limit) (AS 2.1);
- HAZMAT carriage (AG 2.5, OQ 2.19); and
- General lack of defined airspace scope with the BVLOS ARC report and misunderstanding of airspace separation



In addition, the final report possesses neither a coherent structure nor clear guidance upon which the Federal Aviation Administration (FAA) can be reasonably expected to act. Furthermore, there are significant misrepresentations throughout the narrative that inaccurately reflect (or completely neglect to mention) the disagreements and dissent of stakeholders across the ARC membership.

Finally, we must also highlight our ongoing concerns of procedure since the start of the BVLOS ARC. In particular, the lack of transparency and fairness offered to ARC membership. Verbal and written comments and dissents have been ignored, not offered full plenary discussion and adjudication, or given inaccurate representation. This has resulted in certain recommendations appearing as preconceived notions that are not expected to enable safe and fair BVLOS operations. Unfortunately, the above concerns are not new. In fact, all these issues have been brought up in subgroups, comments in response to earlier draft reports, directly in discussions with ARC leadership, and during plenaries.

We understand the historical nature and complexity of past ARCs that have attempted to advance uncrewed operations. We remain committed to continue our work to improve the BVLOS ARC recommendations before and after they are submitted to the FAA. Thank you all for your continued leadership in this very important step towards safely enabling BVLOS operations.

Sincerely,

Aerospace Industries Association  
Aircraft Owners and Pilots Association  
Air Line Pilots Association  
General Aviation Manufacturers Association  
Helicopter Association International  
Praxis Aerospace Concepts



**FAA BEYOND VISUAL LINE OF SIGHT (BVLOS) Aviation Rulemaking Committee  
(ARC)  
Statement of Non-Concurrence**

Voting Member Name	Christopher Cooper, Sr. Director, Regulatory Affairs
Voting Member Organization	Aircraft Owners and Pilots Association (AOPA)

As a voting member and full participant of the FAA BVLOS ARC, I hereby acknowledge that I have reviewed the *BVLOS ARC Recommendations Final Report* and make the following declaration regarding the Report:

**1. ~~Concur with the Final Document as written~~**

**Voting Member Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**2. ~~Concur with the Final Document as written with the following exception(s):~~** ~~(Fully explain the areas of exception below, providing specific page and line number. Submission of separate paper is acceptable).~~

**Voting Member Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**3. Non-Concur with the Final Document as written. Letter of Dissent must be provided.**

**Voting Member Signature:**  **Date:** 3/3/22

*Attached: AOPA Statement of Non-Concurrence*