50 F St. NW, Suite 750
Washington, D.C. 20001

T. 202-737-7950
F. 202-273-7951

www.aopa.org

July 2, 2019

U.S. Department of Transportation
Docket Operations, M–30
1200 New Jersey Avenue SE
West Building Ground Floor, Room W12–140
Washington, DC 20590–0001

Re: Docket Number FAA–2019–0229 and Notice Number 19–01; Notice of Proposed Rulemaking for the Streamlined Launch and Reentry Licensing Requirements

To Whom It May Concern:

The Aircraft Owners and Pilots Association (AOPA) submits the following comments regarding the Notice of Proposed Rulemaking (NPRM) for the streamlined launch and reentry licensing requirements. Commercial space launches and reentry activity are undeniably increasing, heightening the need for policies and procedures that integrate these emergent operators with existing general aviation flights in a safe and efficient manner. AOPA, the world's largest aviation membership association, represents members who collectively own, lease, and operate over 85% of all general aviation aircraft in the United States.

This NPRM is an important step in reorganizing, streamlining, and modifying the regulations that govern a user community that has a significant impact on general aviation and the National Airspace System (NAS). We support the FAA's transition to performance-based criteria, but this move cannot be at the risk of decreasing public safety or at the detriment of another operator's ability to efficiently traverse the NAS. Defining an equivalent level of safety for commercial space operators has been challenging and we do not believe the FAA has adequately accounted for VFR general aviation operations in their risk management strategy. There continues to be a lack of awareness of general aviation operations and accounting for the impact launches have on this long-established user of the NAS. In our comments below, we outline our concerns with the FAA's risk level calculations, inconsistent protections afforded to civil operators, issues with airspace utilization, a lack of environmental assessment transparency, and the need for advanced public notification of space activity.

Air Traffic Organization Acceptable Level of Risk formula incomplete

It is critical non-participating aircraft operations are not exposed to unacceptable risk should a catastrophic event occur with a launching or returning space vehicle. AOPA agrees safety must always come first, and general aviation has respected the need for Temporary Flight Restrictions (TFR) during space launch activity as outlined in 14 C.F.R. § 91.143. Protection, i.e., airspace segregation, from hazards like falling debris is essential, and we support the use of the established 1×10^{-6} risk contour identified in 14 C.F.R. § 450.101; however, we do not believe the FAA's current operational safety strategy fully accounts for general aviation operations, nor does it provide the operational flexibility that is necessary as commercial space launches become a regular and increasing influence in the NAS.

The FAA's Air Traffic Organization (ATO) utilizes dissimilar safety standards from the FAA Office of Commercial Space Transportation (AST) as far as public safety risk acceptance criteria. This disparity is

apparent when comparing ATO's 1×10^{-9} probability of a catastrophic event to AST's 1×10^{-6} probability of an aircraft being impacted by debris capable of causing a casualty. Both of these "do not exceed" thresholds relate to Aircraft Hazard Areas (AHA), which are areas of airspace protected to ensure non-participating aircraft are not exposed to unacceptable risk. Harmonizing these two different probability calculations has created concern for general aviation.

The ATO's Acceptable Level of Risk effort intended to address this difference between AST and ATO calculations. The determination was 1×10^{-6} would apply to the AHA and air traffic services would not be provided to airports between the 1×10^{-6} and 1×10^{-7} risk contours. However, the FAA utilized a calculation considering 14 C.F.R. § 121 commercial air carriers, the most risk-sensitive operator in the NAS, and applied this value to all of aviation, even to those who do not use air traffic services. In so doing, the FAA has indicated they will be expanding the size of TFRs and exacerbating the impacts of commercial space activity on both Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) general aviation.

By applying the most conservative risk level to all operations, including to general aviation flying under 14 C.F.R. § 91, the FAA ignores the risk continuum, and unnecessarily and onerously impacts recreational operators. In terms of aircraft certification, pilot training, aircraft equipment requirements, etc., general aviation operators have a very different risk profile from commercial air carriers and so should be evaluated separately. The risk to general aviation aircraft, pilots, and passengers is fully mitigated by the TFR segregating the 1×10^{-6} AHA. Applying the 1×10^{-7} conservative risk contour for 14 C.F.R. § 91 operations will increase the size of TFRs and shut down surrounding general aviation airports and flight paths unnecessarily.

Many spaceports are established in areas where there is a significant amount of VFR general aviation traffic, such as Florida and California. Many of these general aviation operators do not utilize air traffic services when flying VFR. AOPA contends it is onerous to apply the strictest safety threshold to VFR general aviation when these operators are fully protected by the AHA, which is implemented by TFR applicable to the 1×10^{-6} contour. AOPA supports the FAA applying the 1×10^{-6} risk threshold to all launches for defining the AHA, and we believe the aircraft risk identified in 14 C.F.R. § 450.101 should equate to a 14 C.F.R. § 91.143 TFR.

The use of a stationary Altitude Reservation (ALTRV) would be a better airspace tool than a TFR if it is necessary for ATO to protect between the 1×10^{-6} and 1×10^{-7} contours. The FAA should look at methods to reduce the NAS interruption caused by commercial space, not increase it. We do not believe it is appropriate for ATO to apply a risk criterion to operators it was not envisioned for, nor is discussed in the regulations. AOPA encourages the FAA to leverage the industry recommendations being made in the Airspace Access Priorities Aviation Rulemaking Committee (ARC) and Spaceport Categorization ARC to ensure commercial space transportation occurs seamlessly within the NAS.

Considering many of the proposed launch vehicles will simply be altered versions of certified aircraft, the FAA could reasonably provide standard separation services for non-participating aircraft. Additionally, depending on the risk contour, manned aircraft may be able to safely transit a TFR by maintaining a minimum speed or by flying a set route, minimizing exposure to the hazard while mitigating the adverse effects of the TFR. It is important the FAA leverage the consensus recommendations being made in the ARCs to find effective solutions for all airspace users.

Inconsistent AHA protection among launch sites must be corrected

It is described in FAA safety documentation, 14 C.F.R. § 417.107, and the proposed 14 C.F.R. § 450.101, that AHAs are to be established for the 1×10^{-6} risk area. This airspace area should be segregated through

the issuance of a 14 C.F.R. § 91.143 TFR; however, we have noticed an inconsistency between launch sites as to whether a TFR is issued at all. For example, the Mid-Atlantic Regional Spaceport at Wallops Island, Virginia, receives a TFR for the AHA but Vandenberg Air Force Base at Lompoc, California, only issues an ALTRV. We have found numerous examples of these differences. For both locations, the existing Restricted Areas do not entirely enclose the AHA so additional temporary protection is necessary. The necessary protection for the AHA must be a TFR as VFR aircraft can fly through an ALTRV or a Warning Area.

An ALTRV or Warning Area does not prevent VFR general aviation from flying in that airspace, and the established Restricted Areas do not fully encompass the AHA. Restricted Areas R-2516 and R-2517 at Vandenberg only extend 3 NMs off the coast, an identical distance for R-6604 at Wallops. The AHA for most launches go well beyond 3 NMs from the coast. We understand that a VFR general aviation aircraft flying through an AHA would result in a launch cancellation, which occurred several times at Wallops Island before TFRs were issued, which can adversely affect the launch proponent. Our primary concern is safety should something catastrophic occur and debris result. Pilots today are not always told they would be flying into an AHA nor that a launch is occurring.

General aviation regularly flies the coast and it is likely a pilot may fly through the Warning Areas or an ALTRV and, unbeknownst to the pilot, through the AHA. This practice of inconsistently protecting the AHA from non-participating aircraft is highly concerning. The ALTRV NOTAM itself is vague about the activity taking place and the dimensions are difficult for a pilot to plot. AOPA's 2019 Special Use Airspace (SUA) survey revealed 71% of general aviation pilots participating in the survey were not at all familiar or have never heard of an ALTRV. Only 26% of IFR pilots participating in the survey regularly review ALTRV NOTAMs. The lack of guidance for pilots on this type of airspace and activity must be corrected.

TFRs extending 12 NM or more from the coast should have standardized language for U.S. pilots

Another inconsistency that has become apparent regards the issuance of 14 C.F.R. § 91.143 TFRs for space launches applicable beyond the United States' 12 NM coastal limit. A person operating a civil aircraft of U.S. registry would have to comply with the provisions of the TFR beyond the 12 NM coastal limit, as stated in 14 C.F.R. § 91.703. Most Cape Canaveral and Wallops Island 14 C.F.R. § 91.143 TFRs state this requirement explicitly but other TFRs are not as clear. TFRs effective for coastal airspace beyond 12 NMs should include standardized language notifying the public that FAA certificated pilots and U.S. registered aircraft must comply with the stated restrictions.

Airspace Access Priorities ARC recommendations will succeed if given FAA funding

The FAA's impact evaluation for commercial space activity does not adequately assess the effect of the launch or reentry on general aviation. The ATO's operational impact determination included in the Airspace Management Plan (AMP) is tailored to calculating commercial air carrier reroute mileage and delay time. The FAA's AMPs must carefully consider the economic and access impact caused by commercial space activity. General aviation operators—in addition to commercial carriers—should be considered when approving launch times and calculating the overall impact to the NAS.

As a member of the Airspace Access Priorities ARC, we have been advocating for consensus-driven recommendations that would optimize airspace operations and that would move us away from the need for airspace segregation. With improved support tools and automation systems, air traffic controllers would be able to leverage real-time information and data to reduce the negative effects of commercial space activity. One of these tools is the Space Data Integrator which would facilitate improved awareness

for air traffic controllers but has yet to be fielded. The FAA should fund and prioritize the Airspace Access Priorities ARC recommendations that will move the NAS closer to optimized operations.

An important mechanism for mitigating the impact of commercial space activity is establishing a collaborative dialogue that includes data sharing between the launch proponent, the FAA, and aviation stakeholders like general aviation. Within this framework, advanced schedule information could be shared and other aviation events could be precoordinated for deconfliction, such as the Sun 'n Fun Aerospace Expo with Cape Canaveral launches. The May 21 aviation industry letter to Acting Administrator Elwell highlights the need for conversations and engagement between these parties. The Commercial Space Transportation Advisory Committee (COMSTAC) does not include general aviation representation, nor did the Streamlined Launch and Reentry Licensing Requirements ARC. The general aviation user community is significantly affected by segregated airspace. Collaborative dialogue would be valuable for mitigating interruption of the NAS by agreeing to more inclusive representation for these activities.

Environmental review important for transparency of impacts

The FAA's mission is to provide the safest, most efficient airspace system in the world, and to protect the public's right of transit through the airspace. According to 49 U.S.C. § 40103, the FAA has the sole authority to regulate the use of the NAS. In this role, the FAA is tasked with considering all airspace user needs, including those engaged with national defense, commercial operations, or general aviation.

In certain instances, the FAA must segregate airspace from the public's use by implementing SUA. Permanent SUA is normally enacted by the FAA to support military training and testing activity, and to segregate non-hazardous and hazardous military activity from non-participating NAS operators. Implementing SUA that restricts general aviation operations has significant environmental consequences on the communities, businesses, and airports that this airspace overlies and on the aircraft operators themselves. Adverse consequences include economic disruption, increasing costs, shifting of aircraft routes, and limitations on the public's freedom to fly.

In accordance with the National Environmental Policy Act (NEPA) and the 2004 ruling by the U.S. Court of Appeals for the 5th Circuit (Davis Mountains Trans-Pecos Heritage Association v. FAA; No. 02-60288), environmental studies conducted under NEPA for SUA establishment must include discussion regarding the full impact to general aviation. The ruling states airspace actions that have an aeronautical impact consequently affect quality of life and have an environmental impact that requires evaluation and, sometimes, mitigation. It is required by NEPA that SUA actions are evaluated for their impact on general aviation and that the airspace proponent acknowledge and address these impacts in their documentation.

We are concerned that existing SUA is being activated for purposes that may not be in accordance with the original environmental determinations that led to approval of the airspace's use. The environmental process for SUA establishment includes detailed study of the intended activity, its frequency, and its effect on the public. Many of the SUAs activated in support of commercial space activity originally underwent environmental review and approval on the assumption it was supporting military or governmental activity, not commercial civil space operators. The FAA should review the records of decision and environmental documentation for the SUA being activated for civil space flight companies to ensure this utilization was considered and the impact documented.

AOPA is also concerned that recent environmental actions, such as the draft Programmatic Environmental Assessment (PEA) for Spaceport Colorado, do not adequately assess the airspace impacts that commercial space launches will have on general aviation flight operations. It is challenging for airspace users to comment on launch site operator licenses when the utilization of that launch site is not articulated.

Without the knowledge of airspace requirements and utilization frequency, the public cannot identify potential impacts. Spaceport Colorado is a good example as the draft PEA did not reveal the specifics of the flight operations in the large 50-by-100-mile Reusable Launch Vehicle (RLV) operating area, nor what type of airspace restrictions nonparticipating operators can anticipate if they want to fly in this same area. The RLVs overlie multiple general aviation airports, IFR and VFR flight routes, instrument approaches, and aircraft practice areas.

There would be an excessive economic hardship for those who need to detour, delay, or divert due to airspace restrictions that are as large and as frequent as what is proposed for the RLV operating area at Spaceport Colorado. The FAA must take great care to ensure the environmental documentation for commercial space operations is complete and affords the public a transparent look at the impact of this activity. We believe it is important that commercial space activity not infringe on general aviation's ability to access and transit the NAS. AOPA supports the NEPA process and the proposed 14 C.F.R. § 450.47 as we believe it is important for the public to be able to comment on the proposed changes that could impact the environment in which we fly. The environmental process ensures the adverse impacts to a proposal are documented and communicated to the authorities making the decisions. It is important for general aviation pilots to be able to have their voices heard and weigh in on a specific proposal.

The FAA should prioritize the Aeronautical Information Management Modernization program

It is important the FAA integrate commercial space operations into the NAS and take care to not give one commercial operator priority access to the airspace over all other NAS users. The Airspace Access Priorities ARC offers numerous opportunities for the FAA to facilitate civil aviation operations in proximity to commercial space activity. AOPA contends that the establishment of commercial spaceports and subsequent commercial space launches should not lead to onerous temporary or permanent airspace restrictions, including when governmental launch facilities are utilized.

AOPA does not oppose the thoughtful and purposeful utilization of SUA for space activity so long as that SUA was designed and established specifically with that mission in mind. The activation of SUA that was established for other purposes, such as military and governmental space and rocket activity, or even non-space related military operations, may include dimensions not suited for the AHAs determined to be needed for a commercial launch. We see this negatively affect the public when an AHA may be smaller than the Restricted Area or Warning Area; however, as Restricted Areas and Warning Areas have static dimensions, an unnecessarily large amount of airspace may be denied to civil use. It appears the use of established SUA is out of convenience when different mechanisms may be more appropriate.

AOPA's 2003 Policy and Issue Survey of its members showed that a full 73% of the general aviation pilot population deviates around Military Operations Areas (MOA), in part because of the inability to get accurate "real-time" status information on that airspace. In fact, our members ranked the ability to receive "real-time" status of SUA as the second most important airspace issue facing general aviation. The results of AOPA's 2019 SUA survey, conducted over 15 years later, show nearly identical numbers, except "real-time" SUA status is now the highest ranked improvement request. Deviations around SUA can drastically increase flying time and in turn economically affect operators who are forced to increase operating costs to avoid the airspace area.

As larger SUA complexes are created to support military, government, and civil space operations, it is important a standardized, robust system for displaying real-time SUA status be developed. Such a system would benefit general aviation and mitigate the adverse effect of increasing numbers of launch activity. The FAA should prioritize funding and work on the implementation of the Aeronautical Information

Management Modernization program, which supports the needs of users for "real-time" airspace information.

NOTAM agreement should include minimum time requirement

It is common for the FAA to set a minimum advanced notice requirement when forewarning the public about activation of different airspace. For example, 14 C.F.R. § 91.145 TFRs issued for the "management of aircraft operations in the vicinity of aerial demonstrations and major sporting events" must be issued at least 30 days in advance of the activity taking place. For charted SUA, JO 7400.2, para. 21-2-4, notes NOTAMs should be issued at least 4 hours prior to the activation time, and JO 7610.4, para. 9-2-3, states the NOTAM for MOA activity must be issued at least 2 hours prior to the beginning of the planned activity.

As commercial space AHAs are dynamic, large, and not charted, we believe a 72-hour minimum advanced publication time requirement for the NOTAM should be incorporated into the new 14 C.F.R. § 450.147. This amount of time allows operators to plan around the airspace which will greatly mitigate the impact. This amount of time, 72 hours, is in line with the FAA's guidance for creating a launch/reentry Letter of Agreement recently proposed to be incorporated in the JO 7210.3. Therefore, we propose the FAA modify 14 C.F.R. § 450.147(a)(3) to read:

> *Agreements for notices to airmen*. Unless otherwise addressed in agreements with the site operator, the FAA Air Traffic Organization or other applicable air navigation authority to establish procedures for the issuance of a Notice to Airmen **a minimum of 72-hours** prior to a launch or reentry, for closing of air routes during the respective launch and reentry windows, and for other measures necessary to protect public health and safety

The FAA should provide the public an authoritative source of flight hazard area information

AOPA supports the proposed 14 C.F.R. § 450.133 which ensures airspace hazard volumes are part of the flight hazard area calculation. Airspace hazard volumes are calculated by determining the area required for 97% probability of containment of debris capable of causing a casualty. This threshold is important for protecting the flying public and ensuring a very large area of airspace is not overprotected.

The requirement listed in 14 C.F.R. § 450.101(f) to notify the public of calculated flight hazard areas requires greater discussion. These airspace hazard volumes are not communicated in a standardized manner today, nor are pilots educated about what they are expected to do with this information, if anything. The public does not receive AHA graphics, nor do we have insight into their times of activation, same with airspace hazard volumes. A publicly accessible, authoritative source for launch information would greatly increase awareness and mitigate the current adverse impacts caused by the relatively short notice announcements of launches (i.e., TFR publication). The perspective users of the system, like general aviation pilots, should be part of this capability's development process to help shape this resource. The FAA needs to provide a better explanation about the goal of commercial space operators sharing this information with the public and how the public can leverage it.

Conclusion

AOPA appreciates the FAA's progress on commercial space integration, and their data-driven and collaborative approach to the issues. Continued engagement and collaboration by all airspace users is important for achieving success. Data sharing between commercial space operators and the rest of the aviation industry is a recommendation of the Airspace Access Priorities ARC that we fully support. Better

information, delivered promptly, can more effectively mitigate space activity's impact on general aviation.

Of foremost importance is safety, which must be reflected in all manner of flight operations. AOPA contends the consistent application of agreed upon and established risk thresholds will ensure general aviation is afforded the necessary protection. The ATO and AST must ensure they are harmonizing efforts and creating procedures that account for the wide range of operations taking place in the NAS. We encourage the FAA to enforce a uniform application of their regulations and to review their current procedures for activation of SUA in support of commercial space activity.

We look forward to continuing to work with the FAA and our industry partners to ensure the safe and efficient integration of commercial space operations into the NAS. Please feel free to contact me at 202-509-9515 if you have any questions.

Sincerely,

Rune Duke
Senior Director, Airspace and Air Traffic