



August 17, 2015

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

RE: Docket FAA-2015-2147 “Transponder Requirement for Gliders”

The Experimental Aircraft Association (EAA) is the world leader in recreational aviation. With an international membership of more than 190,000 people in over 100 nations, EAA brings together pilots, aircraft builders, owners, and aviation enthusiasts who are dedicated to sharing the *Spirit of Aviation* by promoting the continued growth of aviation, the preservation of its history and a commitment to its future.

EAA appreciates the opportunity to comment on this advanced notice of proposed rulemaking (ANPRM) regarding the elimination of the exemption currently afforded to gliders to operate without Mode C transponders,¹ and by 2020 ADS-B out equipment compliance with 14 CFR 91.227,² within 30 nautical miles of a Class B airport and between 10,000 and 18,000 feet.³ This same exemption applies to aircraft certificated without an engine-driven electrical system as well as balloons.

Use of specific collision avoidance equipment, if any, should depend on the circumstances of the operation. The nationwide soaring community is very diverse, and best practices for collision avoidance may change from one area to another based on factors such as geography, airspace, and traffic flow. Some of these best practices may very well be met by the use of Mode C transponders and/or ADS-B out equipment, but there is more innovative technology already in use by the soaring community. Additionally, the need for such equipment does not exist for operations in remote areas that occur far from heavily trafficked airspace. Therefore, EAA does not believe that a sweeping mandate for a specific device or devices adequately serves the best interests of the soaring community or indeed the users of the National Airspace System (NAS).

¹ 14 CFR 91.215(b)(3) and (5)

² 14 CFR 91.225(e)

³ This exemption does not apply within Class A, B, or C airspace, nor above the ceiling but within the lateral bounds of Class B or C airspace up to 10,000 feet.

Background

As referenced in the ANPRM, this action is largely the result of NTSB recommendations stemming from a single midair collision between a glider and a corporate jet on approach to Reno, Nevada at 16,000 feet near Minden in 2006. Several details of this accident bear mention.

Minden is known the world over as a hotbed of soaring activity, with heavy glider traffic in addition to other aircraft transiting the area. All pilots, glider or not, must take collision avoidance seriously and must take appropriate actions to mitigate the risk. As noted in the NTSB report⁴, most operations in the Minden area do highly recommend the use of transponders and other devices to aid the pilot in seeing other traffic and to be seen. These documents also point out where the heavily trafficked corridors are for transient traffic. The accident glider pilot, a visitor to Minden, was apparently unfamiliar with these areas – an unfortunate oversight but one that had little to do with equipment installed in the aircraft.

Perhaps more relevant to the effectiveness of removing the transponder exemption for gliders is that *the accident glider was transponder equipped*. The glider's owner (not the accident pilot), in accordance with the best practices previously mentioned, did indeed install a battery-powered Mode C unit. The NTSB report indicates the pilot chose not to use this unit because he was unsure of the battery charge. In doing so, he operated in violation of FAR 91.215(c), which mandates the use of a transponder if one is installed.

Therefore, adherence to community best practices *for this particular area* led the glider's owner to choose a Mode C transponder to mitigate collision avoidance risk. Further study of the operating area, a must for any pilot on any flight, and rules already on the FAA's books mandating use of installed equipment, would likely have prevented this accident without any further rulemaking. The circumstances of the accident are not congruent to the recommendation currently under discussion to mandate certain equipment for *all* operations.

With regards to the applicability of this issue to the overall safety of the NAS, the ANPRM states that between 1988 and October 2014 there were “approximately 45 reports of NMACs [near midair collisions] involving gliders in or near the excepted areas of § 91.215” reported in the Aviation Safety Reporting System (ASRS) database. A search of ASRS over the same period yields 8,782 such incidents reported in the NAS, meaning those 45 incidents (there is no indication whether these gliders in exempted airspace were actually unequipped) represent 0.51% of total near midair collisions. As mentioned previously, glider pilots have as much a role to play in collision avoidance as any user of the NAS, but this miniscule figure is not indicative of a need for rulemaking toward a specific mitigation strategy that may not be appropriate for all operators.

⁴ NTSB ID: LAX06FA277A

Review of Specific Equipment

Mode C Transponder

Altitude encoding transponders have two major collision avoidance functions – they enhance an aircraft’s visibility on air traffic control (ATC) radar and they can be picked up by other aircraft on traffic collision avoidance system (TCAS) equipment.

Both of these mitigations, however, are limited by voluntary compliance. For ATC traffic advisories a pilot must be talking to controllers. This is optional for VFR traffic in the airspace contemplated for a mandate under this ANPRM. TCAS can be an effective collision avoidance system, but its use is optional for most GA aircraft.⁵ TCAS also has inherent limitations in operation and may not be the most appropriate device for avoiding a maneuvering glider.

While Mode C transponders allow for visibility to radar and TCAS alerts for aircraft so equipped, they may not be the best mitigation strategy for all operations. A universal mandate is not appropriate.

ADS-B Out

Automatic dependant surveillance – broadcast (ADS-B) out equipment is mandated for adoption by the year 2020 for all aircraft flying in certain airspace. An exception to this mandate currently exists for gliders, balloons, and aircraft never certificated with an engine-driven electrical system, which is similar to the Mode C exception. This ANPRM asks if this exception should be reconsidered.

ADS-B, rather than relying on ground-based radar returns, reports an aircraft’s GPS position to a ground station. This data is then fed to ATC as well as other aircraft carrying ADS-B in equipment. Like Mode C transponders, the benefit of ADS-B is only realized by participation – either through voluntary communication with ATC by VFR traffic or through use of ADS-B in equipment.

ADS-B technology is still maturing. The cost of installation can still be quite high, particularly in standard category aircraft. EAA is involved in several efforts to address this problem, including the FAA/industry “Equip 2020” working group, but with the current state of the technology its cost and efficacy for use in gliders cannot be accurately evaluated at this time.

Traffic Awareness Beacon System

The ANPRM asks if mandating traffic awareness beacon system (TABS) for gliders is an appropriate alternative to a mandate for Mode C and/or ADS-B. While EAA applauds the FAA for its support of low cost collision avoidance equipment through the development of TSO C199,

⁵ 14 CFR 121.356

which sets a standard for TABS equipment, the TSO is still very new (published October 2014). As with ADS-B, TABS will need to mature before it can be fairly evaluated.

Community-Based Technology

The best solutions to a problem are often ones organically developed and embraced by the community facing the problem. The soaring community is acutely aware of midair collision risk, perhaps more so than other pilots thanks to routinely operating in close proximity to other gliders on busy days or during competitions. Recognizing the limitations of TCAS to accurately predict conflicts between maneuvering gliders, the community has turned to FLARM (**FL**ight **Ala**RM) technology to help mitigate the collision risk when soaring.

In addition to very accurately separating FLARM-equipped gliders, the new PowerFLARM equipment also includes ADS-B in capability. This makes the glider pilot aware of all ADS-B out equipped traffic, and if the FAA chooses to make Traffic Information Service – Broadcast (TIS-B) available to all traffic⁶, the PowerFLARM unit will see all targets picked up by ground-based radar via a datalink. Other forms of ADS-B in technology are rapidly becoming available to pilots, providing accurate traffic and weather information to pilots at very low cost.

FLARM, PowerFLARM, ADS-B in, and other technologies are examples of the aviation community rising to a challenge and solving it through ingenuity. It is likely that we will continue to see innovations in electronic traffic avoidance in the future. Any mandate requiring specific equipment will discourage development of new technology, as it will tie up the operator's resources in the mandated equipment.

Conclusion

Every pilot must take responsibility for a plethora of safety-of-flight factors. Avoiding collisions with other aircraft is part of this responsibility. Depending on the location and nature of the operation, glider pilots should consider all tools at their disposal for supplementing the “see and avoid” principle while operating in the vicinity of other traffic.

Glider operators nationwide, including the operator of the aircraft involved in the collision that ultimately led to this ANPRM, have indeed chosen to mitigate the collision risk by installing Mode C transponder equipment. An increasing number are installing ADS-B, and no doubt that if TSO C199 delivers on its promise, TABS equipment will be seen on gliders in the near future. Many are also using community-developed solutions such as FLARM, which this ANPRM does not even contemplate, quite effectively.

Specific equipment may not be appropriate nationwide to every circumstance. It is important that pilots everywhere understand the airspace and best practices for navigating that airspace,

⁶ Currently TIS-B is available only to ADS-B out equipped aircraft. EAA is encouraging the agency to make this vital safety information available to all pilots.

including any prudent equipment to carry. Given the massive variety of glider operations across the country, and given the incredibly low proportion of reported near-misses involving gliders in exempted airspace, EAA asks that no new equipment mandate be promulgated for the soaring community.

Respectfully,

A handwritten signature in black ink, appearing to read "Sean Elliott". The signature is fluid and cursive, with a large initial "S" and "E".

Sean Elliott

Vice President, Advocacy and Safety