

turbine-powered airplanes weighing 33,000 lbs. MCTOW or less, and all 121 and 125 piston-powered airplanes would require at least a TCAS I, or equivalent. We proposed that part 129 turbine-powered airplanes weighing 33,000 lbs. MCTOW or less would require TCAS I, or equivalent.

Comments

Two commenters request that we except some airplanes from the collision avoidance rule. According to one of these commenters, older, piston-powered, large aircraft conducting all-cargo operations do not have the performance necessary for rapid climbs. He states that passenger aircraft already equipped with TCAS can more safely maneuver to avoid an aircraft in steady-state flight. He states that this rule is not in the public interest and will put small air cargo operators with these airplanes out of business.

The second commenter, Northern Air Cargo, agrees that its B727-100 aircraft should be TCAS II-equipped, but it requests that we except ADS-B-equipped DC-6 aircraft operating under the Capstone project within the State of Alaska. The commenter states that its DC-6 aircraft cruise at much lower altitudes and airspeeds and do not fly among other TCAS-equipped aircraft during most phases of flight. It adds that most of its DC-6 aircraft are Capstone-equipped and operate solely within the State of Alaska and, occasionally, into remote areas of Canada and the lower 48 states.

ALPA, on the other hand, suggests that the proposal could be more restrictive. It asserts that some turbine-powered airplanes weighing less than 33,000 lbs. MCTOW, and some piston-powered airplanes, could respond to TCAS II RAs. It does not agree that certain airplanes operated under part 129 are too small to operate practically with collision avoidance. It states that the same type of piston-powered airplanes could be operating in the same airspace under part 121, 125, or 129, but the piston-powered, part 129 airplane would not be required to have TCAS I. It believes that we should use only a performance threshold to capture all airplanes in parts 121, 125, and 129 uniformly.

Eurocontrol provides a preliminary study demonstrating that light airplanes can respond to RAs. Eurocontrol recommends that we require TCAS II version 7.0 for all airplanes, including those that we proposed to use TCAS I, or equivalent.

FAA's Response

The FAA has decided not to include cargo airplanes weighing 33,000 lbs. or less in this final rule. This is a change from the NPRM, in which we proposed collision avoidance requirements for all airplanes weighing 33,000 lbs. MCTOW or less. We made this decision to reduce a burden on the operators of these airplanes. However, the FAA did maintain the proposed TCAS I (or equivalent) requirement for piston-powered airplanes weighing more than 33,000 lbs.

We have already reduced the burden for the older piston-powered airplanes weighing more than 33,000 lbs. MCTOW. We proposed and will require only TCAS I, or equivalent, for those airplanes. Part 129 already excepts piston-powered airplanes from collision avoidance requirements. The FAA proposed to continue that exception and we have decided to adopt the rule as proposed.

The FAA received comments from ALPA and Eurocontrol requesting that we expand the scope of the proposal. The FAA did not propose TCAS II requirements for piston-powered airplanes because of the lack of performance capabilities for those airplanes. Although the commenters contend that there may be piston-powered airplanes that can effectively use TCAS II, they did not provide any specific make and model airplanes that they feel could safely respond to RAs. In further telephone discussion with ALPA, the FAA determined that the primary intent of the comment was to point out inconsistencies between the proposal and the existing passenger-carrying TCAS rule. ALPA wants "one level of safety."

The minimum rate of climb required to respond to a TCAS II RA is 1,500 feet per minute (f/m), with the ability to increase the rate to 2,500 f/m. The FAA did not conduct a study on the performance capabilities of piston-powered airplanes. However, the FAA does have extensive knowledge of and experience with piston-powered airplanes currently operating under part 121, weighing more than 33,000 lbs. MCTOW. (Most of those airplanes were manufactured in the 1940's and 1950's.) Based on that information, the FAA determined that those airplanes were not capable of meeting the performance standards to respond to a TCAS II RA under the worst-case situation for climb performance, *i.e.*, maximum gross weight, high temperature, high pressure altitude.

Further, the equipment and labor to install TCAS II can, in some cases,

approach the value of the airplane. Most of those piston-powered airplanes are operated by small entities. For example, the conservative value of a DC-6 is approximately \$500,000; whereas, the cost of installing TCAS II on that airplane could reach \$180,000. That cost does not include down-time and training. This final rule provides a safe and economical solution for piston-powered airplanes weighing more than 33,000 lbs. MCTOW. The FAA has determined that it cannot justify including in this rule installation of TCAS II (or equivalent) on piston-powered cargo airplanes weighing more than 33,000 lbs. MCTOW and has adopted the rule as proposed.

Because the FAA will not include airplanes weighing 33,000 lbs. or less in this rule, we will maintain the existing passenger-seating rule language for any passenger-carrying airplanes other than those with more than 30 seats. As proposed, we updated the collision avoidance requirement for passenger-carrying airplanes to allow for collision avoidance systems equivalent to TCAS.

Eurocontrol advocates TCAS II for all airplanes, but recognizes that there could be operational differences between the United States and Europe that could support a need for TCAS I. In reference to the Eurocontrol study, the FAA appreciates Eurocontrol providing this preliminary study, which is in its beginning stages. We found the study interesting but are not convinced that these airplanes have the performance capability to respond to RAs as necessary. The FAA developed two levels of TCAS (TCAS I and TCAS II) since the 1980's for the sole purpose of relieving small airplanes from purchasing equipment that may not be more useful or safer for them. Many countries do not yet mandate TCAS at all, but those that do require TCAS II and only require it on those airplanes equivalent to our part 121 airplanes with more than 30 seats. In Europe, the first TCAS mandate for their largest airplanes did not occur until the year 2000. The next stage of the mandate occurs in 2005 when airplanes with more than 19 seats will be required to have TCAS II. They have not mandated anything for "light" aircraft. They are able to mandate ACAS II (TCAS II, version 7.0) for airplanes with more than 30 passenger seats (2000) and more than 19 passenger seats (2005) without a retrofit because it is the initial mandate in both cases.

Compared to Europe, the United States has a large community of smaller commercial airplanes transporting passengers and cargo. This rule to add cargo airplanes weighing more than