

**DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration**

Twin Engine Large Agricultural Restricted Category Airplane Certification Basis
Proposal – AT-2002 Project

AGENCY: Federal Aviation Administration (FAA), DOT

ACTION: Notice, disposition of comments received on subject request for comment, published in Federal Register dated May 11, 2004 (69 FR 26206ff)

SUMMARY: The referenced notice requested comments on three particular topics concerning certification criteria for three different large airplane design proposals for restricted category aircraft to be used for agricultural and firefighting missions.

- (1) Certification criteria for a large twin engine restricted category agricultural airplane to be used for firefighting that does not impose all the transport category airplane airworthiness standards that are contained in 14 Code of Federal Regulations (CFR) part 25;
- (2) Consideration of the safety benefits for a large single engine restricted category agricultural airplane due to the characteristics of the airplane's usage in aerial application and firefighting;
- (3) Appropriate structural design criteria (particularly maximum weight and maximum limit maneuvering load factor) for a large single engine restricted category agricultural airplane.

NOTE: Subsequent to publishing the request for comment, FAA has elected to use the term "aerial dispensing of liquids" to describe its evaluation of equipment provisions for aircraft intended to be used for firefighting under the restricted category special purpose operation of forest and wildlife conservation (14 CFR §21.25(b)(2)). This is intended to avoid confusion over who approves firefighting operations. US Forest Service, Bureau of Land Management, and state forestry agencies approve firefighting operations and each has the final responsibility for its own firefighting operations. FAA approves the aircraft only for the dispensing function. The aircraft must be evaluated in its mission operating environment to ensure that "no feature or characteristic makes it unsafe." The language in this notice retains the terminology that was used in the original subject request for comments.

Summary of FAA Response to Comments on the Proposal

Certification Criteria for a Twin-Engine Large Agricultural Restricted Category Airplane – The FAA had proposed that the criteria be applicable to airplane design projects with maximum weight greater than 19,000 pounds. The FAA is changing this limit to airplane design projects with maximum weight greater than 22,000 pounds. The intention for this change is to permit use of Part 23 airworthiness standards for airplane design projects with approximately 1000 gallon payloads.

Safety Benefits for Large Single-Engine Restricted Category Agricultural and Firefighting Airplanes – The FAA intends to permit single-engine turboprop airplanes for these restricted category special purpose operations to weigh as much as 30,000 pounds. The FAA believes that turboprop engine reliability with respect to piston engines justifies this for restricted category airplanes. This is unchanged from the proposal.

Appropriate Limit Maneuver Load Factor Criteria for Large Agricultural Restricted Category Airplanes – Part 23 Subpart C – Structures airworthiness standards are acceptable for airplanes up to 22,000 pounds maximum weight, except that limit maneuver load factor is +3.3g with damage tolerance assessment, or +4.4g if fatigue substantiation does not use damage tolerance methodologies. Structural substantiation (static strength and fatigue) must address the maximum weight to be permitted in operation. Rational analysis to develop structural loads for Part 23 design load conditions will be required. Variances from Part 23 Subpart B – Flight airworthiness standards are permitted for maximum weight operations. Also, the maximum weight is not the required structural design condition for the emergency landing airplane turnover analysis, and for the airplane braking kinetic energy absorption requirements. These changes from the original FAA proposal are intended to simplify the design and certification of safe agricultural airplane design projects with approximately 1000 gallon payloads.

DATES: Air Tractor, Inc., has not submitted an application to the FAA for this design concept. As stated in the original proposal, the reference date for the comparison of airworthiness standards was December 29, 2000. This means that the comparisons were made to Part 23 to Amendment 23-54, effective 12/13/2000 and to Part 25 to Amendment 25-100, effective 12/13/2000. An application for a twin engine large agricultural restricted category airplane will need to consider the applicability of subsequent amendments to Part 23 and Part 25 as possible adjustments to this proposal.

FOR FURTHER INFORMATION CONTACT: Mr. Steve Flanagan, Certification Procedures Branch, AIR-110, Aircraft Engineering Division, Aircraft Certification Service, Federal Aviation Administration, 800 Independence Avenue, SW., Room 815 Washington, DC 20591, telephone (202) 267-3549; fax (202) 267-5340; E-mail: steve.flanagan@faa.gov.

SUPPLEMENTARY INFORMATION: For reference, the original proposal can be found in the FAA's Regulations and Guidance Library as proposed Part 21 policy. See PS-AIR100-2004-TELResCat Twin Engine Large Agricultural Restricted Category Airplane Certification Basis Proposal. The comment period for the proposals closed July 2, 2004. You may examine comments received on the proposal before and after the closing date, in Room 815, FAA Headquarters Building (FOB-10A), 800 Independence Avenue, SW., Washington, DC 20591, weekdays except Federal holidays, between 8:30 a.m. and 4:30 p.m.

Comments Received

The FAA received two written comments on the subject of the twin engine large agricultural restricted category airplane certification basis proposal.

Large Twin Engine Restricted Category Airplane

Basically, the proposal presented a “hybrid” certification basis, using a combination of Part 23 and Part 25 airworthiness standards. The trade association had participated with the FAA and one of the manufacturers (the applicant) in developing the hybrid proposal. The trade association believes that twin engine airplanes are not likely to be used for aerial applications for row crops, but may be appropriate for firefighting or wide area spraying operations.

The manufacturer that had worked with the FAA to develop the hybrid proposal (the applicant) agreed with its use for twin engine airplanes, but disagreed with the FAA’s statement that the criteria should be used for single engine airplanes weighing more than 19,000 pounds. The FAA addresses this applicant’s position in the discussion concerning structural design criteria for large single engine restricted category agricultural airplanes. That discussion is contained in the document “Large Agricultural Restricted Category Airplane Certification Topics, including Single Engine Airplane Certification Basis.” This can be found in the FAA’s Regulations and Guidance Library as Part 21 policy. See PS-AIR100-2005-9-27-05-LResCat Large Agricultural Restricted Category Airplane Certification Basis Topics, including Large Single Engine Airplane Certification Basis.

Other than the manufacturer’s comment noted above, no comments were received concerning the limitations in the FAA’s proposal for the applicability of the hybrid proposal.

Safety Benefits for Single Engine Restricted Category Agricultural and Firefighting Airplanes

Refer to the discussion contained in the document “Large Agricultural Restricted Category Airplane Certification Topics, including Single Engine Airplane Certification Basis.”

Appropriate Criteria for 19,000 Pound (approximately 1,000 Gallon Payload) Single Engine Agricultural Airplane Design Proposals

Refer to the discussion contained in the document “Large Agricultural Restricted Category Airplane Certification Topics, including Single Engine Airplane Certification Basis.”

Conclusion

Certification Criteria for a Twin-Engine Large Agricultural Restricted Category Airplane – No comments requesting change were received concerning these criteria. If FAA receives an application for a type certificate for a restricted category airplane design meeting the applicability criteria for the proposal, FAA will use the proposal as

the starting point in the development of an appropriate certification basis. Internal review of the originally published document disclosed some internal inconsistencies. However, the FAA will not expend further resources on revising the proposal until someone expresses interest in obtaining a Restricted Category Type Certificate for this design concept. The threshold weight for applicability of the proposal was revised to simplify the certification criteria for a 1000 gallon payload single engine airplane criteria. The comparison of Part 23 and Part 25 airworthiness requirements for this twin engine design proposal was a basis for allowing the use of Part 23 airworthiness standards for certification of a 1000 gallon single engine large agricultural restricted category airplane. As revised, the FAA believes that the criteria in the twin engine airplane proposal would be appropriate for a Restricted Category Type Certificate for an unpressurized airplane weighing greater than 22,000 pounds and less than 60,000 pounds, with a maximum speed less than 260 knots, and airplane wing span and fuselage length no larger than the dimensions of the early DC-3 series airplane (95 foot wing span and 65 foot fuselage length. Refer to [PS-AIR100-2004-TELResCat Twin Engine Large Agricultural Restricted Category Airplane Certification Basis Proposal](#), posted on the FAA's [Regulations and Guidance Library](#) as proposed Part 21 policy to see the original proposal.

Issued in Washington, D.C. on September 27, 2005.

(signed by)

David W. Hempe

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