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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 21

[Docket No. FAA–2010–0218; Amdt. No. 21–95]

RIN 2120–AJ56

Function and Reliability Flight Testing for Turbine-Powered Airplanes Weighing 6,000 Pounds or Less

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is revising the applicability of the function and reliability flight testing requirements to include all part 23 turbine-powered airplanes weighing 6,000 pounds or less. Revising the applicability is necessary because advancements in aviation technology have invalidated the reasons for excluding these airplanes. This revision is intended to improve aviation safety for these airplanes.

DATES: This rule becomes effective December 19, 2011.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The Federal Aviation Administration’s (FAA) authority to issue rules on aviation safety is found in Title 49 of the United States Code. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes the scope of the FAA Administrator’s authority.

This rulemaking is promulgated under the authority described in subtitle VII, part A, subpart III, chapter 447, section 44701. Under that section, Congress charges the FAA with promoting the safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the FAA Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it will prescribe new flight test requirements for certain turbine-powered airplanes.

I. Background

This rulemaking will only change the applicability portion of Title 14, Code of Federal Regulations (14 CFR), 21.35(b)(2) by removing the 6,000 pound weight exclusion for part 23 turbine-powered airplanes because of advancements in technology, as discussed in the notice of proposed rulemaking (NPRM). This rulemaking does not change existing function and reliability (F & R) flight testing requirements in §21.35.

The FAA issued “Proposed Notification Regarding Function and Reliability Testing for Turbofan-Powered Airplanes of 6,000 Pounds or Less Maximum Certified Weight.” (See 69 FR 5239, February 3, 2004.) In that notice, we announced our intention to require F & R flight testing by special conditions for future part 23 type certification (TC) projects. Eclipse Aviation Corporation (Eclipse) was excluded from the proposal as an ongoing TC project. We issued special conditions requiring F & R flight testing for the Cirrus Design Corporation Model SF50 airplane. (See 75 FR 18134, April 9, 2010.) In that NPRM, we proposed changes to the applicability of F & R flight testing procedures for part 23 airplanes. In general, we proposed to expand the applicability of F & R flight testing requirements to all part 23 turbine-powered airplanes that weigh 6,000 pounds or less to be certificated under part 23. However, the exception for gliders and reciprocating-engine powered airplanes weighing 6,000 pounds or less that are type certified under part 23 will remain.

The original decision to exclude certain airplanes weighing 6,000 pounds or less from F & R flight testing was based on the state of technology existing in 1950. At that time, airplanes weighing 6,000 pounds or less were expected to be used mainly as personal airplanes. Such civil airplanes developed between the years of 1945 and 1955 were typically single, reciprocating-engine powered airplanes weighing 3,000 pounds or less with engine output of less than 300 horsepower. Technological advancements now allow airplanes that weigh 6,000 pounds or less to be more complex and automated than some transport category airplanes of the 1960s and earlier. The NPRM contains more of the historical background and reasons...
for this final rule. You should refer to the NPRM for that information.

C. Summary of the Comments

We received nine substantive comments from five commenters. Commenters to the NPRM represented manufacturers of airplanes and airplane engines, and other individuals. We also received comments from an aviation consulting group. The commenters generally had concerns about changes to F & R flight testing criteria and supplied alternative recommendations as discussed more fully in the Discussion of the Final Rule below. The comment period for the NPRM closed on July 8, 2010.

In general, the FAA received comments on the following areas of the proposal:

- Using the experience of the aircraft manufacturer cited in the NPRM.
- Basing the applicability of F & R flight testing on turbine-powered airplanes instead of other criteria, such as complexity.
- The safety benefits versus the costs to perform F & R flight testing for part 23 turbine-powered airplanes weighing 6,000 pounds or less.

II. Discussion of the Final Rule

Again, this final rule will only change the applicability of §21.35(b)(2) by removing the 6,000 pound weight exclusion for part 23 turbine-powered airplanes because of advancements in technology, as discussed in the notice of proposed rulemaking (NPRM). This final rule does not change existing F & R flight testing requirements.

Aero-Cert stated that relying on the experience of the aircraft manufacturer cited in the NPRM is flawed. Aero-Cert was concerned the proposed rule was based on the Eclipse EA–500 certification experience and objected to it being referenced in the NPRM. The individual commenter suggested that proper oversight during the design approval process is the best way to address F & R flight testing. The individual commenter also stated that the problems encountered by an inexperienced applicant would not happen with an experienced design organization.

The FAA acknowledges that proper oversight is a primary objective in the design approval process. However, we are only changing the applicability of §21.35. Function and reliability flight testing is envisioned for the design of new model airplanes and their systems. The level of expertise of the applicant is not a factor in the requirement.

The Eclipse certification experience showed that a manufacturer could type certificate a very light jet below the 6,000 pound threshold. The NPRM addressed the reality that advancements in technology since 1950 have led to the manufacture of high-performance, part 23 airplanes—those weighing 6,000 pounds or less—with complex systems. Therefore, the reliability of in-flight operations for those airplanes must be assessed before issuance of the type certificate.

Aero-Cert and the individual commenter further stated that basing the F & R flight testing requirements on the type of powerplant is flawed. They believed the issues that should drive the need for F & R flight testing are related to performance and the kinds of operations in which the airplane will be used, not the type of powerplant.

The FAA notes that F & R flight testing is required for all covered airplanes and should cover the normal operating environment in which an airplane will be used. Because of difficulty in choosing the type of testing based on the kinds of aircraft operation or the type of powerplant, the FAA chose to retain the existing provisions and has expanded the requirement to include the newer designs (such as very light jets and turboprop-driven airplanes) that are, by weight, presently excluded from F & R flight testing.

Cessna and the individual commenter stated the rulemaking would impose a cost burden on manufacturers not justified by the benefits. In the words of Cessna, “* * * the proposed NPRM has the potential to impose burden upon the manufacturer not commensurate with safety gained. For example, if a simple, well-developed airplane were modified with a reliable, well-developed turbine engine, it is not likely that F & R flight testing would discover issues not encountered during properly conducted certification testing. In this case, the 150-hour F & R [flight] testing proposed by the NPRM would be an undue [cost] burden on the manufacturer or the STC [supplemental type certificate] holder." Also, the individual commenter stated that these costs would reduce the competitiveness of American-made aircraft and give foreign aircraft manufacturers an unfair advantage.

The FAA notes that the commenters did not include any analysis or data to show that costs imposed by the rule would impose costs not equal to safety gained. The FAA has determined that the expected costs of the rule are modest in comparison to the expected benefits. We estimate that benefits will be at least three to six times the expected costs, depending on the engines chosen. (See §21.35(f).)

The rule addresses applicability only and does not change the number of hours required by §21.35(f) (that is, 150 or 300 hours, whichever is appropriate). Some simultaneous flight testing performed as part of the certification process may also be counted toward F & R flight testing if the conditions of §21.35(a) are met at the time the testing is performed (for example, testing related to Type Inspection Authorization). Given the cost-beneficial nature of the rule for the case of a newly type-certificated airplane with an engine previously used on a type-certificated airplane, we believe the rule will remain substantially cost-beneficial.

The FAA has also found no evidence that American-made aircraft would be at a disadvantage in comparison to foreign-made aircraft as a result of this rule. Due to global harmonization efforts, the European Aviation Safety Agency (EASA) and other foreign airworthiness authorities have similar requirements for certification, including F & R flight testing requirements.

Rolls Royce stated that the use of the word “turbine,” which was proposed in the NPRM, should be better defined. The commenter asked the FAA to revise the proposed rule, so that turbopropeller-driven (turboprop) aircraft would not be affected by the final rule, and submitted proposed language to that effect. However, we did not revise the rule (§21.35) to limit its applicability to only airplanes having turbofan-powered (turbofan) or turbojet-powered (turbojet) engines. This decision is consistent with other FAA plans for part 23 rule changes discussed in the part 23 “Certification of Turbojets” NPRM. (See 74 FR 41522, August 17, 2009.) Those decisions point out that features affecting the complexity of airplane operating systems are not limited to powerplant features.

In addition, Cessna stated that the evaluation of F & R flight testing (if needed) should be based on the scope of the project, such as the number of complex integrated systems, and that guidance should be developed accordingly.

While the FAA agrees that the use of complexity criteria might be an appropriate method to evaluate F & R flight testing, the FAA notes that the scope of the project, or the number of complex systems, may not be the most efficient measure for requiring this testing. The FAA also notes that obtaining agreement on what constitutes a complex integrated system that could be placed within part 21 regulations would be a difficult and burdensome
task. It would also delay adding already identified airplanes to the safety assessment of F & R flight testing. The FAA has also determined that defining complex systems may have implications beyond F & R flight testing, such as for pilot training requirements and flight operations.

IV. Regulatory Notices and Analyses

Paperwork Reduction Act

The Paperwork Reduction Act (PRA) of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. We have determined that there is no information collection burden associated with this final rule.

International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has identified no differences with these regulations.

Final Regulatory Evaluation, Regulatory Flexibility Determination, International Trade Impact Assessment, and Unfunded Mandates Assessment

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 (Pub. L. 96–354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Pub. L. 96–39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States; and (6) will not impose an unfunded mandate on state, local, or tribal governments, or on the private sector by exceeding the threshold identified above. These analyses are summarized below.

Total Costs and Benefits of This Final Rule

We expect that the typical certification project for an airplane subject to the final rule will be for a new airplane design with a turbine engine type previously used in a type-certificated aircraft requiring 165 hours of F & R flight testing at a total cost of about $317,000. In the case of new airplane design and an engine type not previously used on a type-certificated airplane, we estimate that double the hours (330) will be required, so the total cost will double to $634,000. We expect that this final rule will enhance safety and reduce costs by substantially reducing the number of safety incidents and Airworthiness Directives experienced post-certification. A partial estimate of the expected costs that will be avoided for a single new airplane design amounts to $1.8 million, with a present value of $1.6 million. These avoided costs are approximately six times the costs of our 165-hour “typical” estimate and approximately triple the higher 330-hour estimate. Consequently, the expected benefits of this final rule greatly exceed its modest expected costs.

Who is affected by this rule?

Manufacturers of part 23 turbine-powered airplanes weighing 6,000 pounds or less are affected.

Assumptions and Sources of Information

- We use a two-year period of analysis, as we find this period sufficient to show the cost-beneficial nature of this final rule. We use the period from the beginning of 2007 to the end of 2008, as the data used in the analysis are from this period. The short period of analysis reflects the inherent nature of F & R flight testing, designed as it is to uncover design or system reliability flaws that otherwise would reveal themselves in the very early life of an airplane.
- Data on costs of compliance with this rule were obtained from a part 23 airplane manufacturer and FAA estimates.

Costs of This Final Rule

We estimate the costs of this final rule based on the F & R costs incurred by a part 23 airplane manufacturer for a turbojet-powered airplane (turbojet) with a maximum weight greater than 6,000 pounds. The turbine-powered Eclipse EA–500, with a maximum weight less than 6,000 pounds, was recently type certificated under a program in which it voluntarily undertook a reduced 200-hour F & R flight testing program, 100 hours pre-certification and 100 hours post-certification. The F & R flight testing costs for the Eclipse EA–500 would be difficult, if not impossible, to obtain because Eclipse Aviation Corporation has been liquidated under Chapter 7 bankruptcy and a new firm, Eclipse Aerospace, has been formed to take over its assets. We believe our use of more readily obtainable data for a part 23 airplane manufacturer and FAA cost estimates.

1. Pratt & Whitney Canada developed a new PW610F engine for the Eclipse EA–500.

\[\text{See the separate cost section below for the reason we increased the number of hours from 150 (the minimum required by } \S 21.35(1)) \text{ to 165.}\]
provided by a part 23 airplane manufacturer.

For aircraft subject to F & R flight testing under 14 CFR 21.35(b)(2), 21.35(f) requires at least 300 hours of F & R flight testing “with a full complement of SDRs” for aircraft “incorporating turbine engines of a type not previously used in a type certificated aircraft,” and at least 150 hours for all other aircraft. As most proposed very light jet (VLJ) type certification projects appear to be based on the type-certificated Williams FJ–33 engine or other previously type-certificated engines, we expect this minimum requirement to hold for the typical project subject to this final rule.

Function and reliability flight testing for 150 hours was required for the airplane’s data we use here, so one of our cost estimates assumes 150 hours of F & R flight testing. Sometimes, to fulfill the requirements of F & R flight testing, more than the minimum number of flight hours is necessary. For the purposes of this cost analysis, we used an average extension of 10%, or 15 hours, so our “typical” estimate assumes 165 hours of F & R flight testing. We double that estimate to also provide an estimate for a new airplane design with a new engine design.

Benefits of This Final Rule

We expect that adoption of this final rule will enhance safety and reduce costs by substantially reducing the number of service difficulties experienced post-certification. This expectation is supported by evidence from the service experience of the Eclipse EA–500. The Eclipse Special Certification Review (Eclipse SCR) team looked at 85 Eclipse Service Difficulty Reports (SDRs) submitted between July 29, 2007 and May 13, 2008 and “concluded the majority of the SDRs resulted from reliability issues separate from compliance with the minimum FAA standards.” (See Eclipse SCR, Executive Summary.) There also were six Eclipse-related ADSs issued in the one-year period between November 2007 and November 2008. Eclipse voluntarily conducted its own limited F & R flight testing. However, the FAA team did not view F & R flight testing as a requirement for Eclipse to receive its type certificate. (See Eclipse SCR, p. 28.) This deficiency in Eclipse’s volunteer F & R flight testing program provides direct empirical evidence for the benefits of F & R flight testing.

The FAA estimates that the pitot/angle of attack (AOA) issue (AD 2008–02–04; SCR, p. 25) is the one most likely to have been uncovered by a mandatory F & R flight testing program. Extending the AD estimate to the entire U.S.-registered Eclipse EA–500 fleet (264 airplanes), we estimate the total cost of the pitot/AOA problem to be $2.5 million. However, we assess the probability of F & R flight testing uncovering the pitot/AOA problem to be approximately 0.7 to 0.75. Using the lower figure, we accordingly calculate the expected benefit as the total cost avoided of $2.5 million times 0.7, or $1.8 million. (We received no comment on this same method of calculating rule benefits used in the NPRM.) Since the FAA issued a type certificate on September 30, 2006, approximately 1.5 years prior to the compliance date for the Eclipse pitot/AOA AD, we discount the expected benefit 1.5 years to find present value benefit of $1.6 million.

Final Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (Pub. L. 96–354) (RFA) establishes “as a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration.” The RFA covers a wide-range of small entities, including small businesses, not-for-profit organizations, and small governmental jurisdictions.

Agencies must perform a review to determine whether a rule will have a significant economic impact on a substantial number of small entities. If the agency determines that it will, the agency must prepare a regulatory flexibility analysis as described in the RFA. However, if an agency determines that a rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the RFA provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

The FAA determined that this final rule will not have a significant impact on a substantial number of entities for the following reason: The cost of requiring F & R flight testing is a small one-time cost and a very small percentage of development, certification, and production costs. We received no comments on the same determination made in the NPRM. Therefore, as the FAA Administrator, I certify that this final rule will not have a significant economic impact on a substantial number of small entities.

International Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96–39) prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this final rule and determined the purpose is to promote safety. This final rule is therefore not considered an unnecessary obstacle to foreign commerce of the United States.

Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of $100 million or more (adjusted annually for inflation with the base year 1995) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a “significant regulatory action.” The FAA currently uses an inflation-adjusted value of $143.1 million.

This final rule does not contain such a mandate. The requirements of Title II do not apply.

Executive Order 13132, Federalism

The FAA analyzed this final rule under the principles and criteria of Executive Order 13132, Federalism. We determined that this action will not have a substantial direct effect on the States, or the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, and, therefore, will not have federalism implications.

Regulations Affecting Intrastate Aviation in Alaska

Section 1205 of the FAA Reauthorization Act of 1996 (110 Stat. 3213) requires the Administrator, when modifying regulations in Title 14 of the CFR in a manner affecting intrastate aviation in Alaska, to consider the extent to which Alaska is not served by transportation modes other than aviation, and to establish appropriate regulatory distinctions. The final rule would apply to the certification of all airplanes and are not specific to air transportation in Alaska.

Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this final rulemaking action qualifies for the categorical exclusion identified in paragraph 312(f) of the Order and involves no extraordinary circumstances.

Regulations That Significantly Affect Energy Supply, Distribution, or Use

The FAA has analyzed this final rule under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). We have determined that it is not a “significant regulatory action” under the executive order because it is not a “significant regulatory action” under Executive Order 12866, and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

Availability of Rulemaking Documents

You can get an electronic copy of rulemaking documents using the Internet by—

1. Searching the Federal eRulemaking Portal (http://www.regulations.gov);

2. Visiting the FAA’s Regulations and Policies Web page at http://www.faa.gov/regulations_policies/rulemaking/; or


You can also get a copy by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267–9680. Make sure to identify the notice, amendment, or docket number of this rulemaking. Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or by signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT’s complete Privacy Act statement in the Federal Register published on April 11, 2000 (Volume 65, Number 70; Pages 19477–78) or you may visit http://DocketsInfo.dot.gov.

Small Business Regulatory Enforcement Fairness Act

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires FAA to comply with small entity requests for information or advice about compliance with statutes and regulations within its jurisdiction. If you are a small entity and you have a question regarding this document, you may contact your local FAA official, or the person listed under the FOR FURTHER INFORMATION CONTACT heading at the beginning of the preamble. You can find out more about SBREFA on the Internet at http://www.faa.gov/regulations_policies/rulemaking/sbre_act/.

List of Subjects in 14 CFR Part 21

Aircraft, Aviation safety, Exports, Imports, Reporting and recordkeeping requirements.

The Amendment

In consideration of the foregoing, the Federal Aviation Administration amends Chapter I of Title 14, Code of Federal Regulations, as follows:

PART 21—CERTIFICATION PROCEDURES FOR PRODUCTS AND PARTS

1. The authority citation for part 21 continues to read as follows:


2. Amend §21.35 by revising paragraph (b)(2) to read as follows:

§21.35 Flight tests.

(b) * * *

(2) For aircraft to be certificated under this subchapter, except gliders and except reciprocating engine powered airplanes of 6,000 lbs. or less maximum certificated weight that are to be certificated under part 23 of this chapter, to determine whether there is reasonable assurance that the aircraft, its components, and its equipment are reliable and function properly.

Issued in Washington, DC, on August 19, 2011.

J. Randolph Babbitt,
Administrator.

[FR Doc. 2011–26955 Filed 10–17–11; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

[Docket FAA No. FAA–2011–0439; Airspace Docket No. 11–ANM–10]

Amendment of Class D and Class E Airspace and Establishment of Class E Airspace; Casper, WY

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; correction.

SUMMARY: This action corrects errors in the legal description of a final rule published in the Federal Register of August 25, 2011 that amends Class D and Class E airspace, and establishes Class E en route domestic airspace at Casper, WY.

DATES: Effective Date: 0901 UTC, October 20, 2011. The Director of the Federal Register approves this incorporation by reference action under 1 CFR part 51, subject to the annual revision of FAA Order 7400.9 and publication of conforming amendments.

FOR FURTHER INFORMATION CONTACT: Eldon Taylor, Federal Aviation Administration, Operations Support Group, Western Service Center, 1601 Lind Avenue, SW., Renton, WA 98057; telephone (425) 203–4537.

SUPPLEMENTARY INFORMATION:

History

Federal Register Docket No. FAA–2011–0439, Airspace Docket No. 11–ANM–10, published on August 25, 2011 (76 FR 53048), amends Class D airspace, Class E surface airspace, Class E designated as an extension, and Class E airspace extending upward from 700 feet above the surface; and establishes Class E en route domestic airspace at Natrona County International Airport, Casper, WY. An error was made referencing the Victor airway in the regulatory text for Class E airspace extending upward from 700 feet above the surface. Also, in the Class E en route domestic airspace area, the portion referencing excluding existing controlled airspace 7,100 feet MSL and above is replaced with the correct wording. Class D and E airspace designations are published in paragraph 6005 and 6006, respectively, of FAA

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