Policy Statement

Subject: Early Extended Operations (ETOPS) Eligibility for Engines with Service Experience

Date: Initiated By: AIR-624

Policy No: DRAFT PS-AIR-33.201-01

Summary

This policy statement provides guidance on compliance with Title 14, Code of Federal Regulations (14 CFR), 33.201, Design and test requirements for Early ETOPS eligibility, when the engine has limited service experience.

Current Regulatory and Advisory Material

- Section 21.4, ETOPS reporting requirements.
- Section 33.201, Design and test requirements for Early ETOPS eligibility.
- Appendix K to part 25, Extended Operations (ETOPS).
- Advisory Circular 33.201-1, Extended Operations (ETOPS) Eligibility for Turbine Engines.

Relevant Past Practice

Section 33.201 applies to applicants seeking type design approval for engines to be installed on a two-engine airplane approved for ETOPS without the service experience specified in appendix K to part 25, K25.2.1. That service experience threshold is the accumulated engine-hours for the world fleet airplane-engine combination and must be a minimum of 250,000 engine-hours, or may be reduced as specified in appendix K, to part 25, K25.2.1. Typically, the candidate engines without the specified service experience include new type design engines with zero time in service (i.e. no experience), engines previously certificated without Early ETOPS eligibility having service experience less than the specified threshold, and amended type design engines with prior Early ETOPS eligibility.

The type design for engines with service experience beyond the specified thresholds may be approved for ETOPS under appendix K to part 25, K25.2.1, Service experience method, for two-engine airplanes.

Section 33.201(a) requires a design quality process acceptable to the FAA that ensures the design features of the engine minimize the occurrence of failures, malfunctions, defects, and maintenance errors that could result in an in-flight shutdown (IFSD), loss of thrust control, or other power loss.

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Section 33.201(b) requires that the design features of the engine must address the problems shown to result in an IFSD, loss of thrust control, or other power loss in the applicant’s other relevant type designs approved within the past 10 years, to the extent that adequate service data is available within that 10-year period. An applicant without adequate service data must show experience with and knowledge of problem mitigating design practices equivalent to that gained from actual service experience in a manner acceptable to the FAA. The reference to “the applicant’s other relevant type designs” is intended to encompass the service experience of all relevant FAA certified engine models, including the candidate engine experience.

The FAA received requests for approval of Early ETOPS eligibility for type certificated engines, which accumulated time in service less than the threshold specified in § 33.201. While in service, these engines have experienced IFSD, loss of thrust control, or other power losses. For these engines to be eligible for Early ETOPS, the FAA requested applicants to address the service problems as part of the “problems shown to result in an IFSD, loss of thrust control, or other power loss in the applicant's other relevant type designs…” required by § 33.201(b).

Section 21.4 requires that the holder of a type certificate (TC) for an engine installed on an airplane approved for ETOPS must maintain a system of tracking and resolving the problems that contribute to engine IFSDs. Section 21.4(a) requires the TC holder to investigate and resolve any cause of an IFSD resulting from an occurrence attributable to the product design. Section 21.4(a)(3) requires TC holders to maintain a stable IFSD rate at or below the levels specified in § 21.4(b)(2).

**Policy**

The applicant requesting Early ETOPS eligibility for an engine with service experience in accordance with § 33.201 must account for the candidate engine’s service experience when showing compliance with paragraph § 33.201(b) as part of the required experience on “other relevant type designs.” The showing of compliance to § 33.201(b) should include the resolution of each problem that resulted in one of the occurrences specified in § 21.4(a)(6). The resolutions should ensure that the world fleet 12-month rolling average IFSD rates are stable and at or below the rate required by § 21.4(b)(2).

The policy applies to:

- Type design engines previously approved without Early ETOPS eligibility; and
- Type design engines with prior Early ETOPS eligibility for which the applicant is requesting approval of major changes in design.

**Effect of Policy**

The general policy stated in this document does not constitute a new regulation. Agency employees and their designees and delegations must not depart from this policy statement without appropriate justification and concurrence from the FAA management that issued this policy statement.

Whenever a proposed method of compliance is outside this established policy, the project aircraft certification office has to coordinate it with the policy issuing office using an issue paper.

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Similarly, if the project aircraft certification office becomes aware of reasons that an applicant’s proposal that meets this policy should not be approved, the office must coordinate its response with the policy issuing office. Applicants should expect that certificating officials would consider this information when making findings of compliance relevant to new certificate actions. In addition, as with all guidance material, this policy statement identifies one means, but not the only means, of compliance.

**Implementation**

This policy discusses compliance methods that should be applied to type certificate, amended type certificate, supplemental type certificate, and amended supplemental type certification programs. The compliance methods apply to those programs with an application date that is on or after the effective date of the final policy. If the date of application precedes the effective date of the final policy, and the methods of compliance have already been coordinated with and approved by the FAA or its designee, the applicant may choose to either follow the previously acceptable methods of compliance or follow the guidance contained in this policy.

**Conclusion**

The FAA has concluded that it is necessary to provide clarification for compliance with the Early ETOPS eligibility requirements for engines with the accumulated service experience. This policy clarifies the methods of compliance with the requirements of § 33.201 for these engines.