

the electrical system, which has specific requirements in proposed Appendix L, all other potential airplane system functions that could be powered by an APU are addressed by the overall ETOPS requirement contained in section 25.1535(a). Examples include the cabin pressurization and hydraulic systems, which may be powered by an APU. The ARAC recommended proposed rule and preamble states the intent that this requirement should not be limited to just electrical system reliability. We have corrected this oversight by replacing "this appendix" with section 25.1535 in proposed paragraph I(b)(2).

I(b)(3) Engine Oil Tank Design

The engine oil filler cap design would have to comply with a proposed change to section 33.71(c)(4), which will require oil tank cap designs that prevent hazardous oil loss in the event of an oil tank cap installation error.

Explanation

See the proposed change to section 33.71(c)(4) for an explanation of the reasons for this change. We added paragraph I(b)(3) to Appendix L to ensure that engines installed on ETOPS airplanes comply with the part 33 requirement.

I(c) Engine Condition Monitoring

The applicant would have to define and validate, as required, an engine condition monitoring process in accordance with part 33, Appendix A, paragraph A33.4.

Explanation

This requirement would codify paragraph a(5) of Appendix A of AC 120-42A and paragraph (b)(2) of the Boeing Model 777 ETOPS special conditions.

With the propulsion system reliabilities existing on today's long range airplanes, the FAA is very concerned that the biggest threat to ETOPS safety is the risk associated with common cause, cascading failures and fuel exhaustion. Several of the proposed requirements in this notice would address these threats. The engine condition monitoring process requirement specifically addresses the potential of additional engine failure or failures resulting from the increased thrust or service demands on the remaining engine or engines.

Operators would be required, in the proposed changes to parts 121 and 135, to have an engine condition monitoring program as part of their ETOPS maintenance program. Paragraph I(c) of Appendix L and paragraph A33.4 in

part 33 would require the airplane and engine manufacturer to provide the instructions necessary for an operator to develop this program.

Since the potential for a catastrophic loss of thrust is greater on a two engine airplane than on airplanes with more than two engines, this proposed rule would require that the applicant validate the engine condition monitoring process for use on two engine airplanes before ETOPS approval. For airplanes with more than two engines, the applicant would need only to define the process.

I(d) Configuration, Maintenance and Procedures

The applicant would have to identify configuration, maintenance, or operational standards necessary to maintain appropriate reliability or to obtain required capability for ETOPS in a Configuration, Maintenance, and Procedures (CMP) document.

Explanation

Paragraph I(d) of the proposed rule would codify material AC 120-42A. All existing policy on revising CMP documents would remain in force under the new rule. This is discussed more fully previously under general issues in the general discussion of the proposal.

I(e) Airplane Flight Manual

This paragraph would specify certain information that the airplane flight manual (AFM) must contain for ETOPS approval.

Explanation

This proposed requirement would codify paragraph 8(f)(1) of AC 120-42A. ARAC did not include this paragraph in their proposed rule draft. However, there are provisions within the AC paragraph that the FAA has required in all ETOPS type design approvals issued since 1985. The ETOPS approval statement contained in AC subparagraph 8(f)(1)(vi) is particularly important as applicants have based their airplane flight manual ETOPS approval statements on this wording. We are proposing to add the relevant provisions from AC paragraph 8(f)(1) into this notice in order to maintain continuity with the historical AFM ETOPS requirements.

The two provisions from AC 120-42A that we are not proposing to incorporate directly into proposed paragraph I(e) are subparagraphs 8(f)(1)(iii) and (v). Subparagraph 8(f)(1)(iii) addresses inclusion of the performance data used to comply with the engine-inoperative diversion criteria of the flight dispatch considerations in the operational

approval section of the advisory circular. Contrary to this advisory circular provision, the FAA has not required that the performance data be included in the approved parts of the AFM and have not included this provision in the proposed rule. Subparagraph 8(f)(1)(v) asks for a description or reference to a document containing the approved airplane configuration CMP standard. The CMP document identification has traditionally been included in the ETOPS approval statement defined in subparagraph 8(f)(1)(vi) for ETOPS airplanes approved under the existing policy. Therefore, we have combined subparagraphs 8(f)(1)(v) and 8(f)(1)(vi) from the AC into the new proposed paragraph I(e)(5).

We are also proposing to add the original AFM requirement from the ARAC proposal into paragraph I(e)(4). This proposed requirement is not in AC 120-42A. This proposed paragraph would require the applicant to define the maximum ETOPS diversion time capability required by paragraph I(a)(3) into the airplane flight manual in accordance with § 25.1581(a)(2), "Furnishing Information." This proposed requirement provides a cross-reference to proposed paragraph I(a)(3), which would require that the ETOPS capability defined by most limiting ETOPS significant system capability be stated in the airplane flight manual.

Section II—Two Engine Airplanes

In addition to the requirements of section I, an applicant for a two engine airplane would have to also show compliance with one of three proposed requirements of section II.

II(a) Service Experience Method

The applicant would have to demonstrate that the airplane and engine combination for which approval is sought has the required airplane and propulsion system capability to safely conduct an ETOPS mission with the maximum diversion for which approval is sought, and has achieved required airframe and propulsion system reliability based upon fleet in-service experience.

Explanation

Proposed sub-section II(a) would codify part of the existing approval process based on service experience, as contained in AC 120-42A for two engine airplanes. This includes the most significant aspect of this process, the propulsion system assessment contained in Appendix 1 of the advisory circular. The AC process is predicated on having a sufficient amount of service