

Proposed Temporary Deviation on CS-E 1040 – ETOPS, Interim Conditions

Introductory Note

The following Temporary Deviation has been classified as an important Temporary Deviation and as such shall be subject to public consultation in accordance with EASA Management Board decision 12/2007 dated 11 September 2007, Article 3 (2.) of which states:

"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency".

Statement of Issue

The Applicant had requested approval in accordance with CS-E 1040 "ETOPS" for a diversion time of 330 minutes to follow the means of compliance for "Early ETOPS" capability outlined by AMC 20-6 rev 2. However, the programme has encountered delays which does not allow time to perform the complete disassembly and inspection as per AMC 20-6 rev 2 Appendix 1, 2. b. (2) (ii), prior to entry into service.

The Applicant is requesting an interim ETOPS approval for a limited duration.

Agency Position

The failure to show full compliance from a detailed strip examination at 3000 cycles life is seen as a reduction in the confidence, which is normally required for full ETOPS approval. This situation requires compensation by mitigation measures. Two aspects to the mitigation are to be considered: the reduced reliability confidence during any single engine powered diversion, which may occur during the temporary deviation period, and usage limitations to restrict engine usage to within demonstrated compliant levels.

In the current circumstances EASA has decided that a 180 minute diversion time approval may be granted combined with appropriate mitigation for the lack of a fully demonstrated test requirement.

In addition to the above, mitigation must also be incorporated for any sources of in-flight shutdown, loss of thrust control, or other power loss encountered during the test. If parts of engine from the same family are known to cause Continued Airworthiness issues, the concerned piece parts should be inspected as per AMC 20-6 rev 2 Appendix 1, 2. b. (2) (ii).

The deviation will be of limited time duration, the demonstration of full compliance must be made before the end of December 2018 at which point ETOPS approval will otherwise be withdrawn.

The Applicant is requested to qualify the details of the mitigation actions to be applied.

Applicant's Proposal

Clearance will be provided based on:

1. Completion of 3000 cycles ETOPS test

2. Boroscope or adequate inspection without disassembly to piece part and reporting of results on the hardware at the end of the testing in point 1,
 3. Inspection as per AMC 20-6 rev 2 Appendix 1, 2. b. (2) (ii) for piece parts of engine known to cause Continued Airworthiness issues on engines from the same family.
 4. Incorporation of mitigation for potential sources of in-flight shutdowns, loss of thrust control, or other power loss encountered during the test and inspections if any.
 5. Mitigation for lack of having fully demonstrated the test requirement as follows:
 - a. Engine usage restricted to 500 cycles (commensurate with the planned usage of aircraft during this interim period)
 - b. ETOPS capability limited to 180 minutes
- This is a conservative approach, restricting usage well within the demonstrated levels, and thereby giving confidence in engine reliability, noting that many reliability issues are associated with extended use.
- The Applicant understands that any deviation agreed will be temporary and commits to achieving full compliance as soon as possible by inspection as per Appendix 1, 2. b (ii)

Applicants Safety Equivalency Demonstration

Subject to Public Consultation EASA is prepared to agree conservative interim ETOPS conditions for failure to fully meet the AMC prescribed test requirements.

The conditions will be considered as a temporary deviation. The engine usage restrictions will be recorded in the Airworthiness Limitation Section of the Instruction for Continued Airworthiness. EASA considers the compensating factors are adequate to substantiate the safety level for the purposes of a Temporary Deviation to CS-E 1040 compliance until such time as full compliance is substantiated.