

Proposed Equivalent Safety Finding on CS-E 800 – Bird Strike and Ingestion

Consultation Paper

1 Introductory Note

The hereby presented Equivalent Safety Finding (ESF) requests shall be subject to public consultation, in accordance with EASA Management Board Decision No 7-2004 as amended by EASA Management Board [Decision No 12-2007](#) products certification procedure dated 11th 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.”

2 Deviation Request

Summary of Deviation

Statement of Issue

An Applicant, having previously received their FAA Certificate of Compliance to Part 33 for a large turbofan engine and currently seeking EASA validation of this, requests an Equivalent Safety Finding (ESF) against CS-E 800 (Bird Strike and Ingestion). The Applicant had conducted the medium bird ingestion test in order to demonstrate compliance with applicable FAA requirements as laid down in 14 CFR §33.76. These requirements are equivalent to the requirements of CS-E 800 with respect to the medium bird ingestion test. During the bird ingestion phase of the test it was confirmed that only 6 out of 7 of the birds required for the test were ingested into the engine. The bird that was not ingested into the engine was not the one that is per CS-E 800 (d)(1)(v)(A) required to be aimed at the engine core primary flow path, but one of the six birds that per the same regulation are required to be evenly distributed over the engine face area. The Applicant elected to terminate the test and therefore the required engine run-on testing was not completed. The Applicant proposed to restart the engine, re-stabilise at the same mechanical fan speed as the prior test condition, ingest the remaining bird and complete the full 20 minute run-on sequence as required by the above mentioned FAA requirements. The Applicant is proposing an ESF to CS-E 800 using compensating factors.

Applicant's Proposal

The Applicant proposes to justify that with consideration of certain compensating factors an equivalent level of safety, in accordance with 21.A.103 (a)(ii), to the above mentioned departure from the test schedule may be demonstrated for the engine.

The compensating factors proposed by the Applicant consist in the utilisation of test data and analysis in order to demonstrate that ingestion of the single remaining bird into the same test engine on a subsequent run did not change the test results (after ingestion of the remaining bird, the engine successfully completed the required 20 minute run-on demonstration and met all of the requirements of the applicable rule). The Applicant proposes to demonstrate by using test data and analysis that the bird impacts act individually and that if the misfired bird was ingested during the initial test instead of during a second one, it would not have resulted in a stall, loss of thrust control or engine shutdown.

Applicants Safety Equivalency Demonstration

The applicant shall substantiate compliance to the compensating factors to justify an equivalent level of safety.

EASA Position

EASA is prepared to agree to the proposal of the applicant subject however to the inputs from this public consultation which will be taken into consideration.

