



Federal Aviation Administration

Memorandum

Date: ~~September 11~~^{August 27}, 2009

To: Manager, Engine Certification Office (ANE-140)

From: Francis Favara, Engine and Propeller Directorate, ANE-100

Prepared by: Alan Strom, ANE-141

Subject: Equivalent Level of Safety (ELOS) Finding for General Electric Aircraft Engines' (GE) CF34-8C1 Engine, FAA Project number AT1024EN-E

ELOS Memo Number: 8040-ELOS-97-NE-01

Regulatory Reference: 14 CFR § 33.77

This memorandum informs the Engine Certification Office of an evaluation made by the Engine and Propeller Directorate on the establishment of an equivalent level of safety (ELOS) finding for the CF34-8C1 engine.

The FAA is updating its Regulatory & Guidance Library files and found that no CF34-8C1 ELOS memorandum was published at the time of certification (1999). The purpose of this memo is to ensure the public record with respect to certification of the CF34-8C1 engine is complete.

Background

As part of their application for certification of the CF34-8C1 engine (May 1, 1997), GE requested an ELOS relating to 14 CFR 33.77 foreign object ingestion (bird ingestion) requirements.

Applicable regulations

14 CFR § 33.77

Regulations requiring an ELOS finding

14 CFR § 33.77

Description of compensating design features or alternative Methods of Compliance (MoC) which allow the granting of the ELOS (including design changes, limitations or equipment need for equivalency)

GE proposed to satisfy the 14 CFR § 33.77, amendment 19, foreign object ingestion test requirements relating to bird ingestion by demonstrating compliance with the requirements specified in the new regulation 14 CFR § 33.76, amendment 20. The new proposed rule, specific for bird ingestion, was not published in the Federal Register until December 11, 1998 (Volume 63, Number 238). Accordingly, the FAA requested that GE submit data to support an equivalent safety finding, to show that the proposed engine severity testing was equivalent to the 14 CFR § 33.77 bird ingestion test requirements.

Explanation of how design features or alternative Methods of Compliance (MoC) provide an equivalent level of safety to the level of safety intended by the regulation

On October 25, 1999, GE provided data that the FAA found acceptable to satisfy an equivalent safety finding. The FAA formally accepted that data by approval of GE's Medium Bird and Large Bird Ingestion reports. The data provided by GE and the Medium Bird and Large Bird Ingestion reports met the requirements of the 14 CFR § 33.76 bird ingestion requirements as of December 11, 1998 that superseded the 14 CFR 33.77 foreign object ingestion test requirements relating to bird ingestion in effect as of the CF34-8C1 date of application.

FAA approval and documentation of the ELOS finding:

The FAA has approved the aforementioned equivalent level of safety finding. This memorandum provides standardized documentation of the ELOS finding that is non-proprietary and can be made available to the public. The Engine and Propeller Directorate has assigned a unique ELOS Memorandum number to facilitate archiving and retrieval of this ELOS. This ELOS memorandum is listed in the Certification Basis section of the Type Certification Data Sheet



Manager, Engine and Propeller Directorate
Aircraft Certification Service

9/4/2009

Date