Federal Aviation Administration

Memorandum

Date: June 30, 2009

To: Jorge R. Castillo, Acting Manager, Rotorcraft Standards Staff, ASW-110

From: Mark R. Schilling, Acting Manager, Rotorcraft Directorate, ASW-100

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Subject: Equivalent Level of Safety (ELOS) Finding for Bell Helicopter Model 429 project TC2486RD-R

ELOS Memo No.: TC2486RD-R/F-2

Regulatory Ref: 14 CFR 27.1545(b)(2)

This memorandum documents an evaluation made by the Rotorcraft Directorate on the establishment of an ELOS finding for the Bell Model 429 helicopter.

Background

The Bell 429 helicopter is a twin-engine aircraft certified under 14 CFR part 27, Normal Category Rotorcraft. The aircraft is fitted with electronic flight instrument system (EFIS). This ELOS covers airspeed instrument markings required by 14 CFR 27.1541 and 14 CFR 27.1545.

The airspeed indicator is an electronic instrument and airspeed limits are continuously calculated by the air data system and displayed to the pilot, changing as the environmental and flight conditions change. The electronic airspeed indicator does not have a static power off V_{NE} marking indicated by a red, cross-hatched, radial line as required by §27.1545(b)(2). Rather, the aircraft uses electronic air data computers (ADC) to calculate the current V_{NE} limit. Consequently, the display does not present a static power off V_{NE} indication. However, the system automatically senses dual engine failure conditions and reconfigures the airspeed displays to show the all engine out (AEO) V_{NE} as a red radial with red shading for speeds higher than V_{NE}.

Bell Helicopter Textron Canada, Limited (BHTCL) applied to Transport Canada Civil Aviation (TCCA), Certification Authority and FAA as the Validation Authority for an ELOS to address

the airspeed indicator and requirement of 14 CFR 27.1545(b)(2). TCCA has granted an ELOS finding.

Applicable regulation(s)

14 CFR 27.1545(b)(2)

Regulation(s) requiring an ELOS finding

14 CFR 27.1545(b)(2)

Description of compensating design features or alternative Methods of Compliance (MOC) which allows the granting of the ELOS

The use of the ADC to compute V_{NE} based on aircraft and environmental conditions provides the pilot with more accurate data than a statically defined V_{NE} marking.

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

The FAA finds that the use of ADCs to calculate and present a power-off V_{NE} to the pilot as a red radial with red shading for airspeeds greater than V_{NE} value meets the intent of 14 CFR 27.1545(b)(2).

FAA approval and documentation of the ELOS:

The FAA has approved the aforementioned ELOS finding in project issue paper F-2. This memorandum provides standardized documentation of the ELOS that is non-proprietary and can be made available to the public. The Rotorcraft Directorate has assigned a unique ELOS Memorandum number (see front page) to facilitate archiving and retrieval of this ELOS. This ELOS Memorandum number should be listed in the Type Certificate Data Sheet under the Certification Basis section. As example:

Equivalent Level of Safety Finding has been made for the following regulation:

14 CFR 27.1545(b)(2) and documented in Rotorcraft Directorate ELOS Memo TC2486RD-R/F-2.

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Aircraft Certification Service, ASW-100

7-16-09
Date