



Federal Aviation Administration

Memorandum

Date: October 9, 2014

To: Larry Kelly, Manager, Rotorcraft Standards Staff, ASW-110

From: Kim Smith, Manager, Rotorcraft Directorate, Aircraft Certification Service, ASW-100

Prepared by: Matt Wilbanks, Project Officer, ASW-111

Subject: Equivalent Level of Safety (ELOS) Finding for the Airspeed and Powerplant Indication
Green Marking on the Airbus Helicopters Deutschland GmbH MBB-BK117 D-2
Amended Type Validation Project, FAA Project SP4262RD-R

ELOS Memo#: SP4262RD-R-F-02

Regulatory Ref: 14 CFR §§ 29.1545(b)(4) and 29.1549(b)

This memorandum informs the certification management office of an evaluation made by the Rotorcraft Directorate on the establishment of an equivalent safety finding for the Airbus Helicopters Deutschland GmbH MBB-BK117 D-2.

Background:

The Airbus Helicopters Deutschland GmbH MBB-BK117 D-2 has a new integrated modular avionics suite that is used for the display of all flight, navigation, and powerplant instruments. These displays do not include the traditional use of green lines or green arcs for normal operating ranges, as required by 14 CFR §§ 29.1545(b)(4) and 29.1549(b).

Applicable regulation(s):

14 CFR §§ 29.1545, 29.1549

Regulation(s) Requiring an ELOS Finding:

14 CFR §§ 29.1545(b)(4) and 29.1549(b)

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 the equivalency)

The following compensating features have been evaluated during FAA flight evaluations:

- The airspeed tape and powerplant instruments utilize a dark background.

- Precautionary ranges and limits are displayed as required by 14 CFR §§ 29.1545 and 29.1549.
- In accordance with AC25-11A, the standby instruments maintain the same color markings used by the primary instruments.

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

The airspeed and powerplant indicators provide quick perception of the relevant parameters as well as instrument interpretation at a glance as recommended by AC29-2C (AC29.1543). Precautionary ranges and limits, displayed as required by 14 CFR §§ 29.1545 and 29.1549, provide sufficient cues to the crew to indicate the bounds of the normal operating ranges. This is supported by AC20-88A, which states “if all abnormal conditions are adequately indicated by specific design features, green markings are unnecessary based upon an equivalent safety finding.”

Consistency in markings between the primary instruments and standby instruments reduces any confusion in the cockpit when failures require using the standby instruments.

FAA approval and documentation of the ELOS finding:

The FAA has approved the aforementioned equivalent level of safety finding in project issue paper F-02. This memorandum provides standardized documentation of the ELOS finding 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 (TC's & ATC's). An example of an appropriate statement is provided below.

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

14 CFR § 29.1545(b)(4) Airspeed indicator, and 29.1549(b) Powerplant instruments (documented in ELOS Memo SP4262RD-R-F-02)

 Manager, Rotorcraft Directorate,
 Aircraft Certification Service

 Date

ELOS Originated by Rotorcraft Standards Staff	Rotorcraft Standards Staff Manager: Larry M. Kelly	Routing Symbol: ASW-110
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