

SUBJECT : **Deviation to CS 29.965(d) - Fuel Tank Test – Slosh and Vibration**

REQUIREMENTS incl. Amdt. : **CS 29.965(d) Amdt. 3**

ASSOCIATED IM/AMC¹ : Yes ☐ / No ☒

ADVISORY MATERIAL : **N/A**

INTRODUCTORY NOTE:

The following Deviation (DEV) has been classified as important 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.) 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."

IDENTIFICATION OF ISSUE:

CS 29.965(d) requires fuel tank with large unsupported or unstiffened flat areas, or with other features whose failure or deformation could cause leakage, to be submitted to slosh and vibration testing for 25 hours, no leaks being the test pass criterion.

In frame of the H160 helicopter type certification, the fuel tank assembly specimen under test has been found leaking at 2 occasions.

This results in a non-compliance with CS 29.965(d).

The root cause of the leakage was investigated and the failure mode identified, being associated with the fuel tank bladders and their installation.

Corrective design changes are foreseen. Since they will be introduced after the issuance of the EASA TC, this Deviation is issued to identify the mitigating factors to be put in place to ensure that the type is compliant with the essential requirements for airworthiness in Annex II of the regulation (EU) 2018/1139.

Considering the above, the following Deviation is proposed:

¹ In case of SC, the associated Interpretative Material and/or Acceptable Means of Compliance may be published for awareness only and they are not subject to public consultation.

Consultation paper
Deviation

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- In case of abnormal fuel level in the feeder tanks, a caution is raised to the crew. This caution is triggered when the fuel level decreases in the feeder tanks while there is still usable fuel in the front and/or rear tanks.
- A low level warning is triggered when approximately 10min of usable fuel remains in one feeder tank. On H160, in addition, another caution is raised when only 20min of fuel remains in the concerned feeder tank: this provides the crew with more time to react and avoid flight in low fuel condition.

This embedded monitoring function contributes to mitigate consequences on rotorcraft autonomy should in-flight fuel leakage occur.

EASA POSITION

The fuel tank bladders SLL will be included into the Airworthiness Limitations Section.

The Rotorcraft Flight Manual will require accomplishment of the pre-flight and post-flight inspections of the fuel tank compartment drains. Any findings will be recorded in the rotorcraft logbook.

The Deviation is limited in time to 31 December 2021.

Under the conditions specified above, EASA agrees with the proposed mitigating factors and determines that the Deviation to CS 29.965(d) at Amdt 3 meets the essential requirements for airworthiness in Annex II to Regulation (EU) No 2018/1139.