

**Temporary Deviation on CS 29.952 Amendment 2.
Applicable to Airbus Helicopter EC175-B**

Introductory note:

The following Deviation shall be subject to public consultation, in accordance with EASA Management Board decision 12/2007 dated 11 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."

Statement of Issue

The applicant has applied to EASA for the certification of a cargo sling installation on EC175-B helicopters.

In the frame of this application, the applicant has proposed that compliance of the helicopter to CS29.952 with the cargo sling installation be established through an analysis (according to AC29-2C § 952) demonstrating that the drop test carried out without a cargo sling installation for Type Certification (TC) covers this new configuration.

For that purpose, a computer simulation of the EC175-B fuel tank and surrounding structure was developed. Good correlation was achieved between simulation results and test measurements performed for the TC.

This computer simulation was then modified to incorporate the cargo sling configuration. Part of this exercise involved conducting coupon tests to characterize the material properties of relevant parts of the cargo sling configuration and implementation of the material laws in the model.

However, EASA did not find this approach sufficient to demonstrate compliance with C29.952 without further drop testing, since some potential failure conditions or failure modes associated with the cargo sling installation behaviour are not covered by the TC drop test versus simulation validation.

The applicant has accepted to conduct an additional test. In the interim a request has been made for a temporary deviation to allow delivery of A/C equipped with the cargo sling installation before completion of the additional test.

Applicant's Proposal

Substantiation data for the cargo sling installation is provided based on several demonstrations:

- Test results of TC drop tests,
- Correlation of a computer simulation with TC drop tests,
- Material characterization of relevant parts of the cargo sling installation,
- Computer simulation results incorporating the cargo sling installation

This substantiation data shows that several failure modes (e.g. sharp edges, fuel tank interconnections, behaviour of fuel system equipment) are less aggressive for the cargo sling configuration than for the TC configuration. Indeed, safe behaviour of the TC configuration has already been demonstrated by test and the calculated margins with regard to material allowables are very high with the cargo sling configuration.

Pending the availability of the requested additional drop test results, aimed at showing full compliance with C29.952, the following mitigation means are proposed:

- A limitation prohibiting passengers on board with the cargo sling installed, i.e. only crew members or operators essential for the cargo sling operations are allowed to be on board.
- A limitation requiring removal of the cargo sling installation removable parts when performing any flight other than cargo sling operations (in this context cargo sling operations include flights to/from a cargo sling operation location).

Deliveries of EC175-B helicopters equipped with cargo sling installation are predicted to consist of about 10 aircraft in 2018 and with the above mitigation means the exposure time for sling operations is therefore considered to be limited.

It is understood that any agreed deviation will be temporary and every effort will be made to achieve full compliance with CS29.952 by conducting the subject certification drop test before the end of 2018.