



TERMS OF REFERENCE

Task Nr: 27&29.003
Issue: 2
Date: 21 October 2008
Regulatory reference: CS-27&29.351
Reference documents: Pre-RIA 27&29.003,
Report of the YCWG,
JAA RSG Minutes October 2002 – Trento, Italy.

1. **Subject:** Yawing Conditions

2. **Problem/Statement of issue and justification; reason for regulatory evolution (regulatory tasks):**

In the past, different interpretations have been used for showing compliance with the yaw manoeuvre structural design requirements prescribed under CS 27&29.351. Certification experience has shown that 27&29.351 is often a critical design condition and any variations in interpretation and application can have important repercussions on the strength level required for new designs.

To address these concerns, in 2000 the FAA and JAA created a specialists group under the auspices of the JAA Rotorcraft Steering Group (RSG), to provide clarification and consistent interpretation. The Working Group reported in 2002. However, although clarification was achieved in certain areas, the limited scope of the activity (AC/AMC only) prevented full resolution and agreement, and the group completed its task with majority and minority views expressed. Areas of contention included: interpretation of the term "resulting sideslip angle", the extent of the associated loading conditions to be considered for design under this rule, the environmental conditions applicable and the use of yaw limiters. There was general agreement within the Working Group that there could be circumstances where compliance with the rule, as written, is problematic, and that a rule change may be necessary.

At the JAA RSG meeting in Trento in 2002, a way forward was proposed and accepted. This entailed a two-prong strategy whereby the majority view was accepted as a short-term measure and associated AC (AMC) material would be published in AC 2006 and secondly, to form a new group with a wider remit to review the rule and associated policy. This ToR is aimed at addressing this second element. (The AC (AMC) is being progressed under Agency Rulemaking Task 27&29.012).

3. Objective:

Review the rationale and acceptability of CS 27&29.351 and associated AMC. If the standard is judged to be insufficient, identify options to enhance the regulation and perform a Regulatory Impact Assessment (RIA) to identify the implications of these options. In conjunction with the Agency, identify an option to be used for future rulemaking.

Additional Objectives for Issue 2:

If the advisory material associated with 27&29.351 is determined to need clarification, prepare a draft NPA and amendment to FAA AC, as appropriate.

The Rulemaking Group has identified a gap in the regulations regarding aerodynamic design loads and is recommending development of a new rule, separate from 27/29.351 and not limited to yaw motion. Following agreement by EASA, FAA, TC that rulemaking action is appropriate, prepare draft regulatory text.

4. Specific tasks and interface issues (Deliverables):

An RIA, identifying and analysing options available to address the yawing conditions issue (including doing nothing) should be produced. The following tasks should be included in the RIA's development:

- Identify in-service experience of occurrences involving flight at high sideslip angles and determine the loads likely to have been generated in such flight conditions, including those resulting from pilot action;
- Review rotorcraft designs to establish current directional control capabilities;
- Review previously accepted design/certification practice and the validity of assumptions used;
- Determine the acceptability of the manoeuvre specified in CS 27&29.351 and its associated AMC as the design standard, and its relevance to actual in-service experience;
- Determine acceptable safety levels associated with the yawing condition of CS 27.351 and CS 29.351;
- Determine the safety/economic impact of options identified;
- Recommend a way forward.

Additional Tasks for Issue 2:

Following agreement from the EASA/FAA/TC on a way forward:

- develop guidance text to amend FAA AC 27&29 Change 2 (27&29.351);
- develop draft regulatory text relating to aerodynamic loads. This may be separate from 27&29.351 and not limited to yaw motion.

5. Working Methods (in addition to the applicable Agency procedures):

Drafting Group

6. Time scale, milestones:

NPA to be drafted 2009.