



TERMS OF REFERENCE

- Task Nr:** RMT.0120 (27&29.008)
- Issue:** 1
- Date:** 24 October 2012
- Regulatory reference:** CS 27.801, CS 27.1411, CS 27.1415, AC 27-1B Change 3
CS 29.801, CS 29.1411, CS 29.1415, AC 29-2C Change 3
- Reference documents:**
- (1) JAA Water Impact, Ditching Design and Crashworthiness Working Group (WIDDCWG) report
 - (2) JAA Helicopter Off-shore Safety & Survivability (HOSS) report (HOSS/WP-99/8.5)
 - (3) UK-CAA Review of Helicopter Offshore Safety & Survivability (CAP641)

<p>1. Subject: Ditching Occupant Survivability</p>
<p>2. Problem/statement of the issue and justification; reason for regulatory evolution (regulatory tasks):</p> <p>Experience has shown that water impact events can lead to loss of life. Even a successful helicopter ditching or emergency landing on water can still lead to catastrophic consequences due to the propensity for a helicopter to capsize. This task aims to propose enhancements to the design standards to both reduce the likelihood of capsize and to further enhance the ability of occupants to escape and survive.</p>
<p>3. Objective:</p> <p>This task is aimed at enhancing post ditching and water impact standards that could significantly enhance occupant escape and survivability. It will, in part, consider the recommendations arising from early work performed by the JAA Water Impact, Ditching Design and Crashworthiness Working Group (WIDDCWG) and the Helicopter Offshore Safety and Survival (HOSS) working group.</p>
<p>4. Specific tasks and interface issues (Deliverables):</p> <ul style="list-style-type: none">1. Review accepted definitions of 'Ditching', 'Emergency landing on water' and 'Water impact' and determine, based on experience from previous accidents and incidents, whether there is an identified safety need to amend or expand the regulatory scope.2. Review JAA WIDDCWG and HOSS Working Group Report recommendations and other relevant papers relating to water impact, ditching design and survivability.3. Assess whether the current interpretation of CS 27/29.801(d) to demonstrate floatation stability in reasonably probable water conditions as being SS4 should be amended to address a broader consideration of regional climatic sea conditions. Consideration should be given to different operating environments, the need to align with operational rules, different categories of rotorcraft and the possibility of multiple standards. Consider the definition of reasonably probable water conditions in terms of

- significant wave height, zero crossing period and wave spectrum (WIDDCWG Recommendations 2.1 & 2.2/HOSS Proposal 2.2.1).
4. Review the acceptable means of demonstration of compliance in terms of regular vs. irregular wave testing (WIDDCWG Recommendation 2.4/HOSS Proposal 2.2.2).
 5. Identify regulatory changes that could enhance crashworthiness of emergency flotation systems, both in ditching and water impact events. For example, by assessing the pros/cons of both pre- and post-ditching float inflation, minimising/avoiding float damage, by providing float redundancy, and by improved design of activation and gas distribution systems.
 6. Identify and assess novel solutions, including the side-floating helicopter emergency flotation scheme, as a means of mitigating the risk of post ditching capsizes, and as a means of improving emergency flotation system crashworthiness in respect of water impacts (WIDDCWG Recommendation 3.1/HOSS Proposal 2.5.2).
 7. Develop appropriate rule change proposals for the following:
 - Automatic activation of flotation system (WIDDCWG Recommendation 1.2/HOSS Proposal 2.5.1). The flotation system should be automatically activated (either primary or secondary means) upon sensing water immersion.
 - Flotation System Arming/Disarming (WIDDCWG Recommendation 1.3/HOSS Proposal 2.5.1). During any flight over water, the possibility of the automatic float activation feature being disabled, e.g. deactivation of the system, should be minimised.
 - Use of fuel jettison (WIDDCWG Recommendation 2.5). Fuel jettison aspects should be removed from regulations.
 8. Consider the technical viability and economic impact of deploying external life raft with the rotorcraft in any probable attitude (WIDDCWG Recommendation 3.3/HOSS Proposal 2.3).
 9. Review existing ETSO standards for life raft (ETSO-2C70a and ETSO-2C505) and how to mandate their fitment and protection from damage when installed (HOSS Proposal 2.3).
 10. Review emergency exit design, including: type, number, location, marking (HEELS), ease of operation, operation at all fuselage attitudes, and the possible standardisation of opening procedures.
 11. Develop appropriate rule change proposals regarding push-out windows, having regard for the need to clarify:
 - minimum practical dimensions for suitable escape openings (considering passengers wearing survival suits);
 - the provision of handles or other aids to facilitate the pushing out of windows;
 - the non-acceptability of seating restrictions imposed either because of passenger size, physical abilities or the prescribed need to align seat rows with windows;
 - an appropriate standard of marking and lighting having regard to the status of the opening being only for underwater escape;
 - the justification for requiring push-out windows in small cabins if crew and passenger doors are jettisonable.

(WIDDCWG Recommendation 3.2/HOSS Proposal 2.4.1)
 12. Review CAA Paper 2003/13 and draft specification for an EBS, and determine if its content and maturity is suitable for development of an ETSO standard. Consider requiring EBS to enhance occupant escape and survivability (HOSS Proposal 2.4.2.2).

13. Based on accident and incident data, identify issues related to ELT/PLB installation and functioning that have resulted in poor in-service experience. (This task is linked to Rulemaking Task RMT.0274: 'ELT installation, location and activation', which will consider broader issues relating to ELT installation and functioning and aims to provide consistent regulation across all CSs.)
14. Where applicable, draft rulemaking text applicable to CS-27, CS-29 and CS-ETSO together with revised AC 27-1 and AC 29-2 Guidance Material, based on the reviews accomplished. Where applicable, recommend changes to other regulatory documents.
15. Consider the need for retroactive application in CS-26 of any of the rule changes being proposed.
16. Draft an NPA to propose the rulemaking changes, including a RIA.

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

Group

6. Timescale, milestones:

NPA: 2014/Q3

CRD: 2015/Q2

Decision: 2015/Q3