



EASA
European Aviation Safety Agency

Helicopter Ditching Occupant Survivability - NPA (Notice of Proposed Amendment)

Peter Chittenden
Cabin Safety Expert
9th Rotorcraft Symposium
2nd – 3rd December, 2015



Your safety is our mission.

An agency of the European Union 

TE.GEN.00409-001



Helicopter Ditching Occupant Survivability

- Background
- Scope of Rule/AMC proposed amendments
- Significant Amendments (summary)
- NPA Recommendations
- Next Steps
- Questions



Helicopter Ditching Occupant Survivability

➤ Background

➤ Studies and Accident Investigations

- In otherwise survivable water impacts – fatalities due to drowning inside cabin or inability to survive after escape.
- Water impact – capsize and flooded cabin inevitable.
- Ditching – elimination of capsize risk is difficult.
- Time for escape exceeds breath hold ability, especially in cold water due to cold shock.
- Disorientation/injury further hinders escape.
- European and N. American authorities performed many studies aimed at possible improvements in helicopter design.



Helicopter Ditching Occupant Survivability

➤ Background cont.

➤ Regulatory Action

➤ JAA/FAA initiated regulatory changes, transferred to EASA.

Date	Task	Comments
2005	Ditching task transferred to EASA	Task RMT.0120 created
2006	AC changes developed and published in FAA AC Change 2.	Formally adopted in EASA CS-27 and 29 Amdts 2 - 2008.
July 2006	IHST/EHEST Launched.	Aim to enhance helicopter safety through a data driven approach.
Oct 2007- Dec 2008	Research project EASA 2007.C16: Study on helicopter ditching and crashworthiness.	Contract specifically addressed the practicalities of the “side-floating” concept.
July 2010	IHST/EHEST sub-group (EHSIT ST-R) list of priority rulemaking tasks.	3 of “top 10” related to ditching/water impact. (now covered by RMT.0120)
Dec 2011	Helicopter Ditching, Water Impact and Survivability Workshop.	Aimed to gather information prior to launching the RMT and to scope the ToR.
Oct 2012	RMT.0120 launched.	



Helicopter Ditching Occupant Survivability



- RMT.0120 Group members;
- Helicopter manufacturers (3)
- Offshore Helicopter Operators (2)
- Specialist Naval Engineering Consultant
- PPE/Evacuation/Survival Consultant
- CAA-UK
- FAA
- C-NLOPB
- Oil and Gas UK



Helicopter Ditching Occupant Survivability

Scope of
proposed rule
and AMC
amendments.

Applicable
only to new
designs

* - Includes
new/revised
AMC material

CS27	CS29	Title
CS27.563*	CS29.563*	Structural Ditching Provisions
CS27.783	CS29.783	Doors
CS27.801*	CS29.801*	Ditching
N/A	CS29.803*	Emergency Evacuation
CS27.805*	CS29.805*	Flight Crew Emergency Exits
CS27.807*	CS29.807*	Passenger Emergency Exits
N/A	CS29.809*	Emergency Exit Arrangement
N/A	CS29.811*	Emergency Exit Marking
N/A	CS29.812	Emergency Lighting
N/A	CS29.813*	Emergency Exit Access
CS27.1411*	CS29.1411*	Safety Equipment - General
CS27.1415*	CS29.1415*	Ditching Equipment
CS27.1470*	CS29.1470*	Emergency Locator Transmitter
CS27.1561*	CS29.1561*	Safety Equipment



Helicopter Ditching Occupant Survivability

➤ Air Pocket



➤ CS29 and CS27 Cat A Types only

- An “air pocket” large enough and accessible to all passengers in the cabin, following capsizing, must be provided (both with flotation system intact and with single float puncture).
- Egress must be feasible from “air pocket”, even if any door is fully open.
- Rule based on ditching case. Although water impact case may involve flotation system damage, useable air pocket is expected in 80% of cases.
- Helicopter must not sink with one flotation unit lost.



Helicopter Ditching Occupant Survivability

➤ Improved Flotation/Trim Test Specification

➤ CS29 and CS27 Types;

- Scale Model (wave tank) testing must be performed in irregular (i.e. realistic) wave conditions.
- Probabilistic approach defined, in sea conditions chosen by applicant.
- Different required probabilities for CS27/29 and degree of capsize mitigation provided.
- Chosen sea conditions to be included in RFM performance section (air pocket - feasible that all sea states covered).





Helicopter Ditching Occupant Survivability

► Improved Egress

CS29 and CS27 Types;

- Ditching Emergency Exits - one per side for each unit of four passengers.
- Passenger seats – installed so no one is “worse than second out”.
- Ditching Emergency Exits - optimised for underwater operation with adjacent handhold.
- All exits – HEELS equipped.
- All exits operating handle/lever - Black/Yellow marking.





Helicopter Ditching Occupant Survivability

➤ Life Rafts

➤ CS29 and CS27 Types

- Life rafts – remote deployment handles, accessible in flight deck, from cabin, and by swimming escapee (all floating attitudes).
- Easy “step in” life raft boarding (CS29/CS27 Cat A only).
- Exterior lighting (CS29 only).
- Appropriate life raft retaining lines lengths.



➤ CS29 and CS27 Types

➤ ELT

➤ Improved Guidance



➤ Under Fuselage Chevrons





➤ RMT.0120 Recommendations

- Applicability of CS27 and CS29 changes is only for new type certification projects.
 - However, NPA will recommend that, where appropriate, corresponding Part26/CS26 changes be introduced.
 - These changes will soon be the subject of a separate rulemaking activity.
- NPA also makes several recommendations.
 - Further improvements to life raft and immersion suit standards and development of ETSO EBS standard.
 - Change operational rule for immersion suit wearing, e.g. to 12°C sea temperature.



➤ Next Steps

- NPA will be issued for public comment end 2015/early 2016.
- Comment procedure invites anyone to submit comments.
- See EASA website.



Helicopter Ditching Occupant Survivability

- Workshop (early 2016)
 - EASA is planning a workshop to discuss NPA contents and to solicit stakeholder input.
 - See EASA website.





EASA
European Aviation Safety Agency

Questions?

Your safety is our mission.

An agency of the European Union

