Safety Together!

AeroSPI 2018 – Helicopter Rescue Hoist Thematic Design & Regulations

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Your safety is our mission.

An agency of the European Union

TE.GEN.00409-001
Hierarchy of hazard controls

Most effective

- Eliminate

Substitute

Design

Instructions/SOP/Training

PPE

Least effective
Service history

- database of occurrences related to hoist design ONLY
- 300+ events dating back to

- 22 Feb. 1955, in Maitland, New South Wales, Australia, a Royal Australian Navy Sycamore crashed following a cable rebound, 2 fatalities
Service history

Occurrence Categories

- entanglement
- cable rupture
- PCDS
- hook
- cable rebound

- occurrences
- serious injuries
- fatalities

AeroSPI - Hoist Safety Promotion - 27 Sep. 18
Service history

Entanglements

resulting in
cable rupture

19

55
Current regulation

all potential failure mode of the hoist or rescue hook system which may result in catastrophic failures, serious injuries, or fatalities are extremely improbable and any less significant failures are improbable.

- overload

- cable/structure rupture

- cable rebound
Overload

24.12.2011 Wollongong, Australia
NSW Ambulance, AW139
ATSB AO-2013-136

Pulled from cliff with slack on the cable, hit the ground, 1 fatality, 1 serious injury.
Cable/structure rupture

- 04.09.2008 Oahu, HI, USA
  US Coast Guards, HH-65C
  USCG CG6505

Blade slap on hoist and damage to elastomeric transmission mounts, **4 fatalities**.
Cable rebound

9.11.2009 Horn Island, Australia
Queensland Health Rescue, Bell 412
ATSB AO-2009-068

Entanglement on ship, rebound in main and tail rotor, 2 serious injuries.
Cable rebound
Design mitigation

» Overload / rupture / rebound mitigation example:

- Overload protection
- Cable properties

Load factor

0 1
Overload protection test

Existing standards

15 m
Overload protection test

- Cable length: 1.8 m
- Weight: 100 kg
- Height loss: 1.8 m
Cable rebound test

margin

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EASA actions

» Drive and perform Safety Promotion with all actors involved

» Propose standards and tests within an industry group (SAE G-26) for possible incorporation in a TSO/ETSO
EASA actions

» Publish Safety Information Bulletins
  » e.g. “Dynamic Rollout during Hoisting and/or External Sling Load Operations”
    https://ad.easa.europa.eu/ad/2016-18R1

» Issue Certification Memoranda
  » “Safety considerations covering External Loads”
  » “Helicopter External Loads Personnel Carrying Device System”
EASA actions

- Propose Acceptable Means of Compliance
  - Certification Specifications 27 and 29 Amdt 5
    [https://www.easa.europa.eu/regulations#regulations-initial-airworthiness](https://www.easa.europa.eu/regulations#regulations-initial-airworthiness)

- Lead and perform Rule Making Tasks (RMTs) within the European Plan for Aviation Safety (EPAS)
  - e.g. RMT.0709 – “Prevention of catastrophic accidents due to rotorcraft hoist issues – Improvement of CS and Standards”
Questions?