EUROPEAN AVIATION SAFETY AGENCY
AGENCE EUROPÉENNE DE LA SÉCURITÉ AÉRIENNE
EUROPÄISCHE AGENTUR FÜR FLUGSICHERHEIT

EASA – Rulemaking Activities

presented by
Enzo Canari
Cabin Safety Expert
IASFPF Meeting
Cologne,8-9 May 2018

EASA – Rulemaking Activities

- Halon Replacement Status
- Halon-free portable fire extinguishers
- EASA Proposed Certification Memorandum on Smoke Propagation Testing
- EASA Continuing Airworthiness Review Item (CARI) on potential Risks due to devices containing Lithium batteries located on the flight deck

Halon Replacement Status

EASA – Rulemaking Activities

Halon-free portable fire extinguishers

- In CS-ETSO Amendment 11 issued new ETSO-2C515 for halon-free portable fire extinguishers based on SAE AS6271 'Halocarbon Clean Agent Hand-Held Fire Extinguisher' , which further refers to:
  - UL 711/2129 (Minimum Rating, Test Requirements, Qualification)
  - FAA MPS DOT/FAA/AR-01/37 (e.g. Hidden Fire Test, Seat Fire Toxicity Test)

- EASA considers the installation of a new type of Halon-free portable fire extinguisher as a major change to the aircraft design.

- EASA has developed a MOC CRI to address the installation of portable Halon-free fire extinguishers. The CRI clarifies that the extinguisher and its installation are required to meet the requirements of ETSO-2C515 and FAA AC 20-42D.

EASA – Rulemaking Activities

EASA Proposed Certification Memorandum on Smoke Propagation Testing (1/3)

- The purpose of this CM is to provide specific clarification and additional guidance regarding certification testing to be conducted to evaluate the entry of hazardous quantities of smoke into compartments occupied by the crew or passengers as a result of an in-flight fire event in the pressurized areas of the fuselage of a large aeroplane.

- EASA intends to start the public consultation phase for the Proposed CM in Q3 2018. Coordination with the FAA is on-going with the objective to propose a policy that is fully harmonized.

- EASA considers FAA AC 25-9A to be the reference for smoke detection, penetration and evacuation tests conducted for the evaluation of the performance of fire protection systems of large transport aeroplanes.

- According to FAA AC 25-9A smoke penetration tests are required for cargo compartments and for equipment bays, but are only recommended for other compartments such as lavatories, crew rest areas, etc. Smoke penetration tests are conducted to show that no penetration of smoke into occupied areas occurs from a compartment in which a fire originates.

EASA Proposed Certification Memorandum on Smoke Propagation Testing (2/3)

- In general, a smoke penetration test is successful only if the compartment is provided with effective isolation means (e.g. smoke barriers, airtight liners) to prevent smoke penetration into the surrounding areas and if the ventilation system available in the compartment may be isolated upon detection of a fire event.

- In-flight fires may originate in other compartments (e.g. equipment bays, Class A cargo compartments, lavatories, crew rest compartments, remote areas of the cabin, etc.) that may not be equipped with the above-mentioned isolation features. For such type of compartments, EASA finds it appropriate to conduct smoke propagation tests rather than smoke penetration tests.

- In a smoke propagation test, the affected compartment does not necessarily need to be smoke-filled as is required in a smoke penetration test, although a larger amount of smoke should be generated than that used in a smoke detection test.

EASA Proposed Certification Memorandum on Smoke Propagation Testing (3/3)

- The smoke propagation test conditions should be discussed and agreed with EASA.
- The amount of smoke and the emission time should be established considering the applicable emergency procedures. In compartments in which manual firefighting procedure cannot be implemented, smoke should be generated continuously for an amount of time sufficient to reach a steady state, i.e. sufficient to produce evidence that no accumulation of smoke would occur in the occupied areas.
- The pass/fail criteria specified in Chapter 11 of FAA AC 25-9A for smoke penetration tests should also be considered as a reference for smoke propagation tests. However, as smoke propagation tests are conducted in compartments that are not designed to be smoke-tight (e.g., galley) or are designed to be smoke tight but rely upon crewmember firefighting and access to the compartment (e.g., a Class B cargo compartment), it is acceptable that smoke may enter occupied areas (e.g., during the time the access door is opened) if it is demonstrated that it does not accumulate when the smoke and fire procedures are used or create a hazardous condition. Any accumulation of smoke in an occupied area would not be acceptable.

EASA – Rulemaking Activities

EASA CARI on potential Risks due to devices containing Lithium batteries located on the flight deck (1/3)

- EASA has released to EASA TC holders a Continuing Airworthiness Review Item (CARI) to address the higher risk of in-flight lithium battery fires due to the increasing number of lithium batteries contained in equipment carried by the flight crew on commercial transport aircraft.

- Lithium batteries and PEDs commonly found in the flight deck are electronic flight bags (EFB) and those carried by the flight crew for personal convenience. Typical location may be in the storage boxes available or on mounting brackets when provided. It is also possible that PED's are stored connected to a charging device, e.g. a power bank or USB charger.

- On certain aircraft design, the flight deck storage boxes may be located in close proximity to built-in oxygen lines routed in the flight deck, the oxygen mask storage box or other critical system components.

EASA – Rulemaking Activities

EASA CARI on potential Risks due to devices containing Lithium batteries located on the flight deck (2/3)

- A PED fire in the flight deck could generate a significant amount of smoke. Additionally, having such burning device in the vicinity of oxygen lines, the oxygen mask storage box or other critical system components, may be potentially hazardous. The scenario of the crew using the oxygen system due to the presence of smoke in the flight deck in conjunction with a PED fire may potentially be hazardous as well.

- EASA does not envisage to prohibit the storage and usage of PED's in the flight deck. However, the hazard associated to lithium battery fires due to lithium batteries thermal runaway must be addressed, mitigated and minimized by design provisions and best practices.

- As a first step, there is a need to investigate if potential unsafe conditions associated to lithium battery fires in the flight deck may exist on any specific transport aircraft type that would require corrective actions as a second step.

EASA – Rulemaking Activities

EASA CARI on potential Risks due to devices containing Lithium batteries located on the flight deck (3/3)

- As part of the investigation, the Type Certificate Holder is requested to:

  1) Perform a hazard assessment of a representative lithium battery (PED and/or spare battery) fire that could be located in the storage boxes available in the flight deck or on the mounting brackets when provided. Proximity of oxygen components and other critical systems must be taken into account.

  2) If there is evidence that the storage boxes or mounting brackets cannot keep their physical integrity or the local ambient temperatures may be critical for the surrounding systems the TCH is requested to define how to handle such event and justify a safe location in the flight deck, if no other choice exists. The location on the flight deck should be determined to minimize the effects to the airplane and the occupants.

  3) Define the safety equipment (e.g. specific gloves) necessary to move an overheated PED to the defined location, if needed.

  4) Define the procedure associated to a PED fire in the flight deck.

  5) Define the necessary placards and makings.

- Based upon the responses provided by the TCH, the Agency will liaise with the TCH to agree any further action(s).

EUROPEAN AVIATION SAFETY AGENCY
AGENCE EUROPÉENNE DE LA SÉCURITÉ AÉRIENNE
EUROPÄISCHE AGENTUR FÜR FLUGSICHERHEIT

- END -

Your safety is our mission.
easa.europa.eu