EACTB R4.6 – Fire Prevention and SAE A-22 subgroups F and G

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By:                 Philip Haberlen, AIR-6A1
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EACWG/EACTB background information

• EACWG (Engine Aircraft Certification Working Group)
  • Joint effort launched between FAA and EASA launched in May 2016 to identify regulatory gaps and disharmonies between engine certification and aircraft (especially part 25/CS 25 aircraft) which have been creating certification challenges when engines are installed on such aircraft.
  • The EACWG published their recommendations in June 2017. Recommendation 4-6 addressed fire prevention and is itself composed of six subtasks.

• EACTB Recommendation 4-6 subtasks:
  • Produce consistent FAA and EASA guidance on approved burners (kerosene vs. propane/gas)
  • Produce consistent FAA and EASA guidance on ground after landing condition
  • Produce consistent FAA and EASA guidance on engine combustor burn through and engine mount fireproof-ness
  • SAE committee to develop industry standards covering remaining gaps
  • FAA to revise AC 20-135 to incorporate content/results of SAE committee report
  • EASA to revise AMC/guidance to incorporate content/results of SAE committee report
Engine combustor case burn through

- Physical situation: Fuel nozzle/injector breaks loose inside combustor; torching flame is directed toward case and burns through it; torching flame threatens environment surrounding flame.
- Relevant rule: 14 CFR 25.903(d)(1) and CS 25.903(d)(1).
  - No explicit requirement at part 33 or CS-E.
- Existing guidance: AC 20-135, change 1 provides short, very top level guidance – 1 page, approx.
- A draft AC 20-135-2 was prepared in January 2000 which proposed more comprehensive guidance. This was never published for unknown reasons.
Engine mount fireproofness

- Relevant rules: 14 CFR 25.865 and CS 25.865
  - 14 CFR part 33.17 does not have explicit engine mount fireproofness requirements
  - In contrast, CS-E 130(g) contains engine mount fireproofness requirements
- Guidance: None.
- ARAC Loads and Dynamics Harmonization Working Group published their report in 1998 which included a proposed draft AC 25.865-1. An agreement was unable to be reached and the draft AC was never finalized nor published.
SAE A-22 subgroups F and G

• SAE A-22 working group was commissioned back in 2017 to generate consensus standards governing fire testing with the long term goal of revising AC 20-135 to reference these standards.

• 4 subgroups (Groups A-D) initially created to deal with thermocouple selection, flame calibration, pass/fail criteria, residual burning, panel size, boundary conditions, etc. Work is ongoing.

• The FAA subsequently requested A-22 leadership in early 2020 to discuss combustor case burnthrough and engine mount fireproofness and develop standards which the FAA can reference in the appropriate AC(s).

  • A-22 agreed to this request and launched subgroups F and G in June 2020 to deal with these fire prevention topics.

  • Preliminary discussion has revealed that fire size needs to be treated before engine mount fireproofness can be discussed; as such, it is added to subgroup G.
Participation

• **Subgroup F**
  • Co-leads: FAA and GE
  • Participants include: EASA, TCCA, ANAC, Boeing, Airbus, Honeywell, Pratt and Whitney, Rolls-Royce, Safran, and Waldron AeroSystems

• **Subgroup G**
  • Co-leads: FAA, Airbus, Honeywell, Boeing
  • Participants: FAA, TCCA, ANAC, Boeing, Bombardier, Collins, GE, STE, Airbus, Lockheed-Martin, Rolls-Royce
Questions?