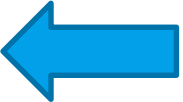



SAE A-22 AND AC20-135 REVISION – STATUS INTERNATIONAL AIRCRAFT SYSTEMS FIRE PROTECTION FORUM

April 21 2021

Daniel Laborie (General Electric), John Ostic (Boeing) - Co-chairs

SAE A-22 Powerplant Fire Test and Flammability Committee formed in March 2018 to support FAA AC20-135 Update and Next Gen Burner

WARRENDALE, Pa. ([PRWEB](#)) June 08, 2018 -- SAE International, the leading global association for aerospace, automotive and commercial-vehicle engineers, has been tasked by the Federal Aviation Administration (FAA) to develop industry aerospace standards to demonstrate compliance with FAA powerplant fire protection requirements. 

SAE International is forming a new technical committee, A-22 Fire Protection and Flammability Testing to develop industry standards for the testing of systems and components to assist with the design and certification of fire protection systems. The initial program of work includes the development of a suite of standards to assist with the update of FAA Advisory Circular AC 20-135 Powerplant Installation and Propulsion System Component Fire Protection Test Methods, Standards and Criteria. Methods to calibrate and setup a new sonic burner as an optional replacement for existing fire test burners will also be created. 

FAA requested SAE to form the A-22 committee to update AC 20-135 and to develop the NexGen burner for powerplant fire testing

SAE A-22 Committee objectives and Initial Program of Work

The objectives of the committee are to:

- Develop and publish SAE Technical Reports for testing of fire protection systems, components and structure
- Define test requirements for aircraft and propulsion systems
- Develop performance standards for certification testing of aircraft and propulsion systems
- Define the sensitivities and accuracy of equipment used to conduct fire and flammability testing
- Harmonize global testing methodologies

INITIAL PROGRAM OF WORK

Develop SAE standards or recommended practices to address the FAA Tasking Request to develop industry standards to update AC20-135, *Powerplant Installation and Propulsion System Component Fire Protection Test Methods, Standards and Criteria*. The proposed standards will be used to demonstrate compliance with powerplant fire protection requirements. In addition, methods to calibrate and setup a new sonic burner as an optional replacement for existing fire test burners will be developed.

The new AS6826 fire test standards are intended to provide acceptable means of compliance to be recognized in a revision to the FAA AC20-135.*

*similar example as AC20-155A for Lightning Protection



Adobe Acrobat
Document



Current SAE roster lists 140+ participants from across the entire industry

Airplane Manufacturers

Airbus
Boeing
Bombardier
COMAC
Dassault
Embraer
Gulfstream
Mitsubishi
Textron/Cessna

Certification Authorities

Brazil (ANAC)
Canada (TCCA)
China (CAAC)
Europe (EASA)
Israel (CAAI)
United States (FAA)



Government Institutions

FAA Tech Center
Naval Air Systems Command (NAVAIR)
National Research Council (Canada)
ONERA (France)

Academia/Research

Concordia Univ. Montreal
Rescoll (Bordeaux Univ.)
University of Cincinnati
Wichita State University



Testing Facilities

ACES
Accufleet
Aeroblaze
CTA
DGA
Element
Govmark
Lefae-Emitech
NIAR
NTS
Resonate

Engine Manufacturers

GE
Honeywell
Pratt & Whitney
Rolls-Royce
SAFRAN

Components Manufacturers

Air Liquide Tech
Akro Fire
Eaton
JPR Hutchinson
Meggitt
Luxfer MEL Tech.
Parker
Titeflex
Trelleborg
Triumph
Unison Industries



Industry Consultants

Danker Associates
GE Aviation
Marlin Engineering
Nacelle Group
Waldron Aerosystems

Commodity Manufacturers

AIM Altitude
Collins Aerospace
GKN
Safran Nacelles
Spirit AeroSystems
UTC
Zodiac Aerospace

Helicopter Manufacturers

Airbus
Bell/Textron
Sikorsky/Lockheed

Standards Org.

NACE
SAE



In addition to the original task of developing a fire test standard, the FAA has requested that the Committee take on several additional tasks

- **Combustor burn-through**
- **Fire size for analysis of structure and components**
- **Fireproof requirements for engine mounts**

Committee effort now divided into 7 different working groups

- **Phase 1 - AS6826 Powerplant Fire Test Standard publication - end of 2021**

- **Phase 2 – Remaining tasks in the 2021-2022 time frame**

The Committee also anticipates additional tasks when the fire test standard is completed, including defining additional modifications to the NextGen burner for powerplant use

Current SAE roster lists 140+ participants

Aviation Certification Authorities from Brazil, Canada, China, Europe, and United States

Airplane manufacturers

Helicopter manufacturers

Engine manufacturers

Commodity manufacturers

Component manufacturers

Testing laboratories

Universities

Government standards and research organizations

Industry consultants

SAE Staff support

SAE A-22 Committee Structure

Group A - AS6826

B. Ciero (Honeywell)
M. Dowey Resonate)
J. Ostic (Boeing)

- Temperature calibration method
- Heat flux calibration method
- Temperature and heat flux instrumentation

Group B – AS6826

D. Laborie (GE)
A. Cirioli (Sikorsky)

- Test pass/fail criteria
- Post test burning or residual flame criteria

Group C – AS6826

S. Pugliese (Airbus)
J. Barter ombardier)

- Standard flame, acceptable burners
- Fire test guidelines, panel size, material thickness, burner position, orientation, applicable regulations

Group D – AS6826

P. Booth (Dassault)
G. Wozniak (Gulfstream)

- Fire test boundary conditions
- Vibration, mechanical loading, pressure differential, backside cooling, system pressure/temperature/flow/speed

SAE A-22 Committee Structure (continued)

**Group E - AS6826
Rotorcraft
T. Parsons (Bell)**

- Objective: provide rotorcraft inputs to AS6826

**Group F – Combustor
Burn Through
D. Laborie (GE)
P. Haberlen (FAA)**

- Objective: review previous ARAC materials and provide update to AC20-135 Section 8

**Group G – Fire
Size/Engine Mounts
S. Pugliese (Airbus)
S. Hariram (Boeing)
P. Haberlen (FAA)
T. DeCaro (Honeywell)**

- Objective: review previous ARAC materials on engine mounts and fire size to develop compliance approach

SAE A-22 Committee Structure – Additional Phase 2 projects

FAA Next Gen Burner Mods Review

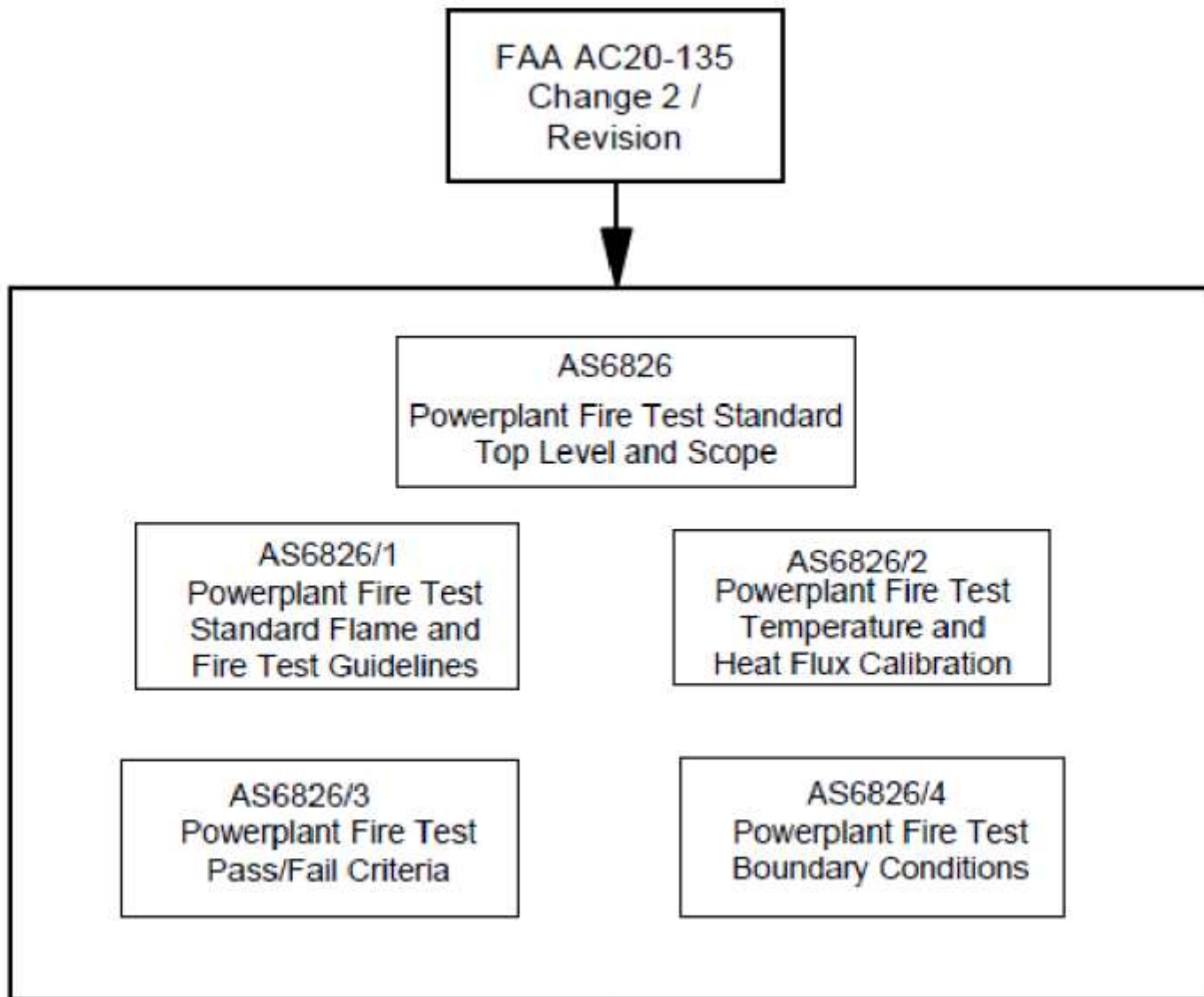
T. Salter (FAA)
R. Ochs (FAA)
A. Brown (FAA)
TBD Industry

- Develop FAA NG Burner modifications for powerplant certification fire tests
- Coordinate with GE, Resonate, other fire test labs

Open / Other FAA/EASA Top Certification Issues

- Address open or deferred Phase 1 major issues
- Review top issues from FAA/EASA leadership or EACWG (Engine Aircraft Certification Working Group)

AS6826 Powerplant Fire Test Standard to update AC20-135



SAE A-22 Powerplant Fire Test Standard – Activities / Milestones

- ✓ 1st Meeting - May 9th & 10th 2018 – Industry/FAA/EASA/TCCA Kick-off Meeting hosted by EASA (May 9th) and SAE / Hilton (May 10th) in Cologne, Germany
- ✓ 2nd Meeting - November 1st and 2nd 2018 - SAE A-22 meeting in Atlantic City, NJ hosted by FAA Tech Center
- ✓ 3rd and 4th Meetings - May 2019 at EASA, Cologne; September 2019 at Boeing (Arlington, VA) – SAE A-22 meetings
- ✓ 5th and 6th Meetings - Oct 30th-31st 2019 meeting New Jersey; February 24-27 2020, Lockheed, Arlington, VA);
- ✓ Due to COVID-19, SAE WebEx Monthly Virtual Meetings
- ✓ SAE AS6826 Powerplant Fire Test Standard, Consolidated draft – Sep 30, 2020
- AS6826 Document for final balloting: June 2021
- Phase 1 Completion with AS6826 publication: 3rd Quarter 2021
- Phase 2 tasks: Group F, Group G, Next Gen Burner Modifications, Open FAA / EASA Top Certification Issues