

“Composite Safety Meeting & Workshop in New Zealand”

- Purpose & Objectives -

Larry Ilcewicz

Lester Cheng

Wellington, New Zealand

March 01-04, 2016



Federal Aviation
Administration



Composite Safety Meetings

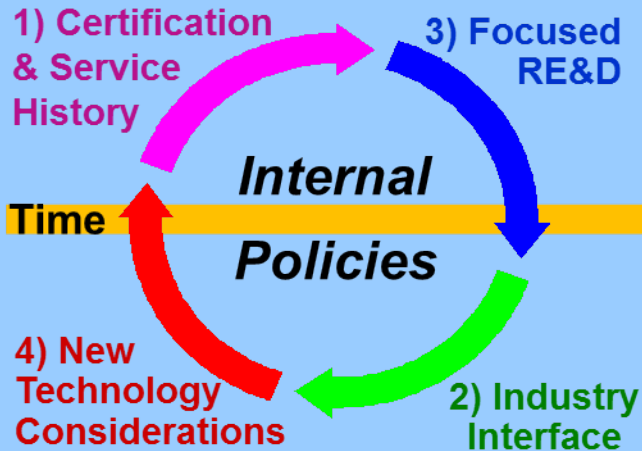
- AVS Composite Plan -

Objectives

- 1) Work with industry, other govt. agencies and academia to ensure safe and efficient deployment of composite technologies used in existing & future aircraft
- 2) Update policies, advisory circulars, training, and detailed background used to support standardized composite industry practices

FAA Approach to “Composite Safety & Certification Initiatives (CS&CI)”

Evolving



#) Order of Influence for Unwritten Internal Policies

Rules & General Guidance

Detailed Background
(Various forms of technology transfer)

Mature

Policy Statements

Advisory Circulars

FARs

Training (Workshops, Courses, and Videos)

JAMS JOINT ADVANCED MATERIALS & STRUCTURES CENTER OF EXCELLENCE

Public Documents and Standards (e.g., CMH-17, SAE AMS, Contractor Reports)

Important Teammates

- Partnerships with industry have been essential, including working groups & standards org. (e.g., **CMH-17**, SAE P-17, **CACRC**, ASTM, SAMPE, AGATE, SATS, RITA, SAS/IAB/AACE)



Training
Databases
Standardization
Engineering guidelines



- EASA, TCCA and other foreign regulators
- NASA research and other support
 - Significant research support since 1970/1980s
 - AA587, A300-600 accident investigation
- DOD and DARPA research
 - NCAMP support to material standardization



Composite Technical Thrust Areas

Advancements depend on close integration between areas

Material Control, Standardization
and Shared Databases

Structural Substantiation

- Advances in analysis & test building blocks
- Statistical significance
- Environmental effects
- Manufacturing integration

Progress to Date 2016

- AC 20-107B (9/09)
- 3 other Advisory Circulars
- 11 Policy Memos/Statements
- 20 Workshops
- 5 Training Initiatives
- 2 Technical Documents
- CMH-17 Updates
- SAE CACRC Standards
- ~80 FAA R&D Reports

Damage Tolerance and Maintenance Practices

- Critical defects (impact & mfg.)
- Bonded structure & repair issues
- Fatigue & damage considerations
- Life assessment (tests & analyses)
- Structural test & analysis protocol
- Accelerated testing
- Structural tear-down aging studies
- NDI damage metrics
- Equivalent levels of safety
- Training standards

Bonded Joint
Processing Issues

Advanced Material
Forms and
Processes

Flammability &
Crashworthiness

*Support to future
cabin safety initiatives*

Overview of AVS Composite Plan

Continuous Operational Safety (COS)	Certification Efficiency (CE)	Workforce Education (WE)
COS A: Bonded Structure	CE A: Hybrid F&DT Substantiation	WE A: Composite Manufacturing Technology
COS B: HEWABI (High-Energy, Wide-Area Blunt Impact)	CE B: Advanced Composite Maintenance	WE B: Composite Structures Technology
COS C: Failure Analysis of Composites Subjected to Fire	CE C: Composite Structural Modifications	WE C: Composite Maintenance Technology
	CE D: Composite Quality Assurance	
	CE E: Bonded Structure Guidance	
	CE F: General Composite Structure Guidance	

New FY16 initiative in Green

Composite Safety Meetings

- Background & Purpose -

- **Background & Purpose**

- FAA have extensively engaged in the efforts of promoting Composite Safety, Certification Efficiency and Workforce Education since 1999.
- Many of these efforts have involved the participation of EASA & TCCA. Many CAAs missed the exposures.
- Composite airplanes (e.g., B787, A350) are increasingly operated in the global environment, we would like to establish a **link** with the CAAs who missed the engagement.
- This **link** would provide the very needed safety management guidance for the operation of composite airplanes.
- **A Singapore “Composite Meeting” with 11 CAAs was held in 2015. This NZ activity is a further extension of the LINK.**



Composite Safety Meetings

- Activity Objectives (March 1-4, 2016) -

Objectives

- This NZ activity consists of an authority (FAA/CAAs) Meeting (3/1 & 3/4) and a joint industry Meeting (3/2 & 3/3).
- Authority meeting is to link with CAAs who missed the Singapore Meeting in 2015.
- Workshop is to link with industry (OEMs, Operators, MROs, Institutions) in promotion of composite safety management.
- To provide technical presentations including:
 - ^ FAA Composite Plan (CS&CI) and Guidance (AC & PS)
 - ^ CMH-17 and CACRC – Development & Content Review
 - ^ Advisory Circular 20-107B Content Review
 - ^ FAA Workforce Education (Strategy & Courses)
- To share future FAA AVS Composite Plans and explore opportunity of further collaboration.



“Composite Safety Meeting & Workshop” Activity (Meeting & Workshop) Agenda

Tue (Mar 01) [FAA/CAAs Meeting]

- FAA Composite Plan: Background & Accomplishments
- FAA Composite Guidance and Relevant Resources
- CAAs Programs & Experiences Sharing
- FAA & CAAs Future Collaborations

Wed (Mar 02) [Regulatory/Industry Meeting]

- Background: Development of AC 20-107B
- AC 20-107B Content Review
(started, with emphasis on bonding)
- Participants (Industry) Presentations
- FAA & Industry Interactions

“Composite Safety Meeting & Workshop” Activity (Meeting & Workshop) Agenda

Thu (Mar 03) [**Regulatory/Industry Meeting**]

- AC 20-107B Content Review
(remaining, with emphasis on Fatigue & DT, COS items)
- Development of AC 20-107C

Fri (Mar 04) [**FAA/CAAs Meeting**]

- FAA Workforce Education Initiatives
- Composite Safety Awareness Courses
 - ^ Composite Maintenance Technology (CMT)
 - ^ Composite Structural Engineering Technology (CSET)
 - ^ Composite Manufacturing Technology (CMfgT)
- Recap and Future Collaborations

CAA & Industry Presentations

- **Mar 01 (Tue) [CAA Presentations]**
 - See final agenda
- **Mar 02 (Wed) [Industry Presentations]**
 - See final agenda

“Composite Safety Meeting & Workshop” [New Zealand]

- **Thanks to CAA NZ for Hosting Meeting & Workshop.**
- **Thanks to CAAs & Industry for their Participation & Interaction.**
- **Link to Participants Talent Pool.**
- **Global Aviation Safety is Our Mutually Shared Purpose & Objective.**