

# Transport Airplane and Engine ARAC Sub-Committee Meeting

## Agenda

**Boeing**  
**Cleveland Conference Room 5D1090**  
**929 Long Bridge Drive**  
**Arlington, VA 22202**

**June 3, 2015**  
**All Times are Eastern Daylight Time**

***DRESS: BUSINESS CASUAL***

**Thursday, Nov 13, 2014 – Call in number:**

Dial In Access: (USA Only)	<b>888-924-3230</b>
Dial In Access: (Direct Dial)	<b>609-916-1975</b>

Participant Passcode: **522863**

9:00	Call to Order, Reading of the Procedures Statement, Review of Agenda, Meeting Logistics, Review of Action Items, Review of Minutes from previous meeting	C. Bolt/ J. Piccola
9:15	FAA Report	J. Piccola
9:45	ARAC Report	C. Bolt
10:00	Transport Canada Report	M Provencher
10:15	EASA Report	Thomas Mickler
10:45	Engine Harmonization WG Report – Engine Endurance Testing	Peter Thompson
11:30	Lunch	
12:30	Airworthiness Assurance Working Group Report	S. Chisholm/M. Yerger
1:00	Flight Test Harmonization WG Report	Bob Park/Christine Thibaudat
1:30	Materials Flammability WG Report	Jim Davis
2:00	Transport Airplane Metallic and Composite Structures WG	M Gruber
2:30	Action Item Review / Any Other Business	C. Bolt

**-- ADJOURN --**

Issued in Washington, DC, on May 13, 2015.

**Lirio Liu,**

*Director, Office of Rulemaking.*

#### Petition for Exemption

Docket No.: FAA–2015–0726.

Petitioner: Mr. Michael H. LeMee, MED-Trans Corporation.

Section of 14 CFR Affected: § 43.3(a).  
Description of Relief Sought: On behalf of MED-Trans Corporation, Mr. Michael LeMee petitions the FAA for an exemption from 14 CFR 43.3(a) to allow properly trained medical personnel to perform the insertion and removal of litter systems, isolettes and secondary stretcher systems in the EC–135 and EC–155 aircraft operated by MED-Trans Corporation.

[FR Doc. 2015–11913 Filed 5–15–15; 8:45 am]

**BILLING CODE 4910–13–P**

### DEPARTMENT OF TRANSPORTATION

#### Federal Aviation Administration

#### Aviation Rulemaking Advisory Committee Meeting on Transport Airplane and Engine Issues

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of public meeting.

**SUMMARY:** This notice announces a public meeting of the FAA's Aviation Rulemaking Advisory Committee (ARAC) Transport Airplane and Engine (TAE) Subcommittee to discuss TAE issues.

**DATES:** The meeting is scheduled for Wednesday, June 03, 2015, starting at 9:00 a.m. EST. The public must make arrangements by June 01, 2015, to present oral statements at the meeting.

**ADDRESSES:** 929 Long Bridge Drive, Arlington, VA 22202.

**FOR FURTHER INFORMATION CONTACT:** Ralen Gao, Office of Rulemaking, ARM–209, FAA, 800 Independence Avenue SW., Washington, DC 20591, Telephone (202) 267–3168, FAX (202) 267–5075, or email at [ralen.gao@faa.gov](mailto:ralen.gao@faa.gov).

**SUPPLEMENTARY INFORMATION:** Pursuant to Section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92–463; 5 U.S.C. app. 2), notice is given of an ARAC Subcommittee meeting to be held on Wednesday, June 03, 2015.

The agenda for the meeting is as follows:

- FAA Report
- ARAC Report
- Transportation Canada Report
- EASA Report

- Engine Harmonization Working Group Report—Engine Endurance Testing
- Airworthiness Assurance Working Group Report
- Flight Test Harmonization Working Group Report
- Materials Flammability Working Group Report
- Transport Airplane Metallic and Composite Structures Working Group Report
- Any other business

Participation is open to the public, but will be limited to the availability of teleconference lines.

To participate, please contact the person listed in **FOR FURTHER INFORMATION** by email or phone for the teleconference call-in number and passcode. Please provide the following information: Full legal name, country of citizenship, and name of your industry association, or applicable affiliation. If you are participating as a public citizen, please indicate so. Anyone calling from outside the Arlington, VA, metropolitan area will be responsible for paying long-distance charges.

The public must make arrangements by June 01, 2015, to present oral or written statements at the meeting. Written statements may be presented to the Subcommittee by providing a copy to the person listed in the **FOR FURTHER INFORMATION CONTACT** section. Copies of the documents to be presented to the Subcommittee may be made available by contacting the person listed in the **FOR FURTHER INFORMATION CONTACT** section.

If you need assistance or require a reasonable accommodation for the meeting or meeting documents, please contact the person listed in the **FOR FURTHER INFORMATION CONTACT** section.

Issued in Washington, DC, on May 12, 2015.

**Lirio Liu,**

*Designated Federal Officer.*

[FR Doc. 2015–11881 Filed 5–15–15; 8:45 am]

**BILLING CODE 4910–13–P**

### DEPARTMENT OF TRANSPORTATION

#### Federal Aviation Administration

[Summary Notice No. 2015–23]

#### Petition for Exemption; Summary of Petition Received; American Airlines, Inc.

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice.

**SUMMARY:** This notice contains a summary of a petition seeking relief

from specified requirements of Title 14 of the Code of Federal Regulations. The purpose of this notice is to improve the public's awareness of, and participation in, the FAA's exemption process.

Neither publication of this notice nor the inclusion or omission of information in the summary is intended to affect the legal status of the petition or its final disposition.

**DATES:** Comments on this petition must identify the petition docket number and must be received on or before June 8, 2015.

**ADDRESSES:** Send comments identified by docket number FAA–2015–0409 using any of the following methods:

*Federal eRulemaking Portal:* Go to <http://www.regulations.gov> and follow the online instructions for sending your comments electronically.

*Mail:* Send comments to Docket Operations, M–30; U.S. Department of Transportation (DOT), 1200 New Jersey Avenue SE., Room W12–140, West Building Ground Floor, Washington, DC 20590–0001.

*Hand Delivery or Courier:* Take comments to Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

*Fax:* Fax comments to Docket Operations at 202–493–2251.

*Privacy:* In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to <http://www.regulations.gov>, as described in the system of records notice (DOT/ALL–14 FDMS), which can be reviewed at <http://www.dot.gov/privacy>.

*Docket:* Background documents or comments received may be read at <http://www.regulations.gov> at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Valentine Castaneda (202) 267–7977, Office of Rulemaking, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591.

This notice is published pursuant to 14 CFR 11.85.

**Aviation Rulemaking Advisory Committee (ARAC)  
Transport Airplane and Engine (TAE) Subcommittee**

**Meeting Minutes**

**Date:** June 03, 2015  
**Time:** 09:00 a.m. (EST)  
**Location:** 929 Long Bridge Drive, Arlington VA

**Call to Order /Administrative Reporting**

Mr. John Piccola opened the meeting at 9:07 a.m.

Item	February 2015 Meeting Action Items	Status
1	N/A	

Following the reading of the Opening Statement, Mr. Craig Bolt shared the agenda (Handout 1).

**FAA Report (See Handout 2)**

Ms. Mary Schooley presented this report.

Mr. Rolf Grenier asked about the publication schedule for the Rudder Load and Low-Speed Alerting rulemaking. Ms. Schooley replied that the rulemakings are scheduled to publish by the end of this year.

Mr. Al Bahrami asked for the elaboration of the System Safety Assessment rulemaking. Mr. Piccola replied with a brief outline of the rulemaking.

Mr. Bahrami stated that EASA recently put out their 4-year rulemaking plan for public comment, and is the FAA looking at that list and seeing how that would align with the FAA's upcoming rulemaking? EASA identified 4 areas, one of which is Economics & Level Playing Field, which include a lot of issues that do not fall under safety. Mr. Piccola stated he will review this list once he has it. Mr. Jim Crotty stated that the FAA has formal rulemaking harmonization guidelines with EASA, which reviews the overlapping upcoming rulemakings so the organizations could begin their harmonization efforts early. EASA has recently completely restructured their rulemaking processes and structure. Lirio, director of the FAA's Office of Rulemaking, has visited EASA within the past few weeks in order to better understand EASA's new structure and how to better cooperate in the future. Mr. Crotty will follow-up as well with EASA's 4-year rulemaking list.

### **ARAC Report (See Handouts 3)**

Mr. Bolt presented this report.

Mr. Bahrami asked that one of the actions for the Working Group was to create a database, but AIA does not understand what the statement of work requires, so who is the person in the working group who could provide more information. Mr. Bolt stated that Chris Debeers (sp) at Pratt & Whitney will be the contact for that information.

Mr. Michel Provencher asked, has the membership for the Crashworthiness Working Group been finalized? Mr. Bolt replied that the process is first the tasking notice will be published in the Federal Register, then parties interested in participating will contact the focal person, and then ARAC and TAE chairs will chose the members, maintaining a balance between diversity and interests and also a manageable group size.

### **Transport Canada Report (See Handout 4)**

Mr. Provencher presented this report.

Mr. Khim asked that for the NPA that will include ETOPS requirements, will it include EASA or FAA regulatory standards? Mr. Provencher replied that the rule will probably include a combination of both; however, the NPA also received a dissenting public comment, which will trigger some delays. Ultimately, TCCA will harmonize with both the FAA and EASA, and will amend its regulatory language depending on the final text of both the FAA and EASA's rulemaking. In more detail, this delay to the NPA is because TCCA has an adoption-by-incorporation process, where TCCA adopts the entire regulatory text of another rulemaking authority, and if there is no dissenting comment, the text is incorporated. However, this rule received a dissenting comment, which means the rule would not be adopted wholesale, but will need to be resubmitted for public comments again, now including TCCA justification for the rulemaking.

### **EASA Report (N/A)**

Cancelled.

### **Flight Test Harmonization Working Group Report (See Handout 5)**

Mr. Bob Park presented this report.

The working group has been meeting by teleconference, and has a teleconference scheduled next week, as well as a face-to-face meeting coming up in 2 weeks.

One such topic is Envelop Protection. Envelop protection topic lead to a plethora of other topics, some of which are listed in the handout on page 3. I.e. Structure of the rule and guidance materials, protection function types, overridable versus not-overridable protection functions that the group is struggling with right now.

Another is Stability, Longitudinal and Lateral, FBW Aspects. The task group foresees that work will continue beyond the last scheduled meeting in June 2015.

Another topic is Flight in Icing, FBW Aspects. This topic has had lots of special conditions and differences between EASA and FAA. The task group will meet for a final time in December 2015.

Another topic is Steep Approach Landing. The plan for this working group is to meet by teleconference until the job is done.

The working group has realized that topics could not be completed in one face-to-face meeting as scheduled, and may have to add one or two more face-to-face meetings going forward.

#### **Engine Harmonization Working Group Report – Engine Endurance Testing (See Handout 6)**

Mr. Pete Thompson presented this report.

This working group has bi-weekly teleconferences, and meets face-to-face at least quarterly.

The group has spent considerable time discussing the original objectives and intent of the 150 Hours Endurance Test. The conclusion is modern engines are significantly different from traditional engines, therefore a modified test that maintains the intent of the original that can be conducted on a modern engine is desirable.

The working group requests an 18-months extension, because the tasking was greater than expected, and affects more issues than expected, not only current generation engines, but also next generation engines must meet the requirements in discussion.

Mr. Bolt opened the working group's request for extension to TAE. GAMA has already submitted its support for granting this extension via email.

Mr. Bahrami asked, in today's certification process, is there a requirement to modify engines to meet the red line number. Mr. Bolt replied in some technical detail. The biggest issue is trying to come up with a test that would fit the red line issue, but also would accommodate current and future engine design. As for the working group, should this extension be granted, it would continue to work as it does now.

Mr. Bahrami asked, since the working group is conducting additional testing to collect data, what kind of tests are these, opportunity tests or dedicated tests to support the testing activity? Mr. Thompson responded that, in considering the tests, the working group considered: did other working groups, etc., already ran testing and generated data that the group could use in the tasking; was historical testing conducted and data collected over the years that the group could use, because it did not want to duplicate the effort if useful data already exists.

Mr. Grenier asked, if the report will be submitted to ARAC in 2017, and the 33 rule will be out 3 or 4 years after that, does this mean industry will see actual changes in the 2020s? Mr. Thompson replied that this timeframe sounds reasonable; and that, before this rule could be implemented, each manufacturer would have to work with its regulatory authority. Mr. Piccola stated that the FAA could issue an ELOS that would implement the ARAC's recommendations at a faster timeframe than the rulemaking procedure could provide.

TAE agreed to the working group's request for extension.

#### **Materials Flammability Working Group Report (See Handout 7)**

*Need the report.*

Mr. Jim Davis presented this report.

Boeing provided much of the data on tests it did previously that the working group now uses for their cost-benefit analysis. Otherwise, the working group has been meeting online weekly, and will begin drafting reports in each area soon, aiming for a full final report by September 18, 2015.

#### **Airworthiness Assurance Working Group Report (See Handout 8)**

Mr. Mark Yerger presented this report.

In the report, items in red are those issues the working group must still discuss.

The working group would like to continue on as an industry group after this tasking is completed, if the FAA doesn't have any further tasks to assign to the group.

Items in red are those the working group must still discuss at current and upcoming meetings.

Mr. Piccola stated that the Metal & Composites Working Group has already been assigned the tasking to address the issues proposed by AAWG. Therefore there is no need to further task the AAWG.

Mr. Bolt stated that, if any working group discovers that an existing working group is working on issues that are potentially helpful, is welcome to collaborate as the groups deem necessary.

### **Transport Airplane Metallic and Composite Structures Working Group (See Handout 9)**

Mr. Mike Gruber presented this report.

The working group would like to add some fail-safe back into the rule, provide cost-benefit estimates, etc.

Team members were selected for strong background in composite materials. The regulatory agencies will also be participating in the group.

Mr. Khim asked, what is the fallout if this working group doesn't meet the 18-month timeline to complete the tasking? Mr. Gruber replied that there is an option to extend the timeline. Mr. Piccola replied that when the group meets, this should be one of the topics to be discussed – whether there are external deadlines or factors that must be met.

Mr. Sippel asked how would TAE approve the working group's draft work plan? Mr. Bolt responded that, depending on how complex the plan turned out to be, either vote via email or a quick teleconference.

### **Action Item Review/ Any Other Business**

Item	June 03, 2015 Meeting Action Items	Status
1.		

### **Future Transport Airplane and Engine Subcommittee Meetings:**

The next subcommittee meeting will be held on November 4, 2015 in Renton, WA.

### **Public Notification**

The *Federal Register* published a notice of this meeting on May 18, 2015.

**Approval**

I certify the minutes are accurate.

A handwritten signature in black ink, appearing to be 'Ali Bahrami', with a long horizontal stroke extending to the right.

Ali Bahrami  
Chair, ARAC



**MEETING ATTENDEES**

NAME	ORGANIZATION
John Piccola	FAA AIR
Jim Crotty	FAA AIR
Mary Schooley	FAA AIR
Ralen Gao	FAA ARM
Doug Khim	Boeing
Ryan Aggergaard	MARPA
John Stift	ALPA
Michel Provencher	Transport Canada
Ali Bahrami	AIA
Tom Peters	Embraer
Rolf Grenier	Airbus
Bob Park	Boeing
Craig Bolt	Pratt & Whitney
Michael Gruber	Boeing

# FAA Rulemaking Status

## Update to TAE

Presented to: TAE

By: John Piccola, Manager,  
Transport Standards Staff

Date: June 3, 2015



Federal Aviation  
Administration



# June 2015 TAE Meeting

## Topics:

- **Rulemaking Project Status**
- **AC and Policy Status**
- **Recent and Upcoming ARAC Taskings**
- **Rulemaking Proposals for FY16**



# June 2015 TAE Meeting

## Rulemaking Project Status (since Dec 2014)

### Published Part 25 Final Rule

*Harmonization of Airworthiness Standards – Gust and Maneuver Loads (Amdt 25-141)*

Published December 11, 2014; Effective February 9, 2015

Published AC 25.451-1, AC 25.362-1, & AC 25.341-1, December 12, 2014

### Part 33/35 Final Rules

- None

### Part 121 Related Final Rules

- None

# June 2015 TAE Meeting

## Rulemaking Project Status (since Dec 2014)

### Published Part 25 NPRMs

- *Fuel Tank and System Lightning Protection*
  - Published for comment December 18, 2014
  - Comment period closed March 18, 2015
  - AC20-53 & AC 25.954-X comment period closed March 31, 2015





# June 2015 TAE Meeting

## Rulemaking Project Status (since Dec 2014)

### Published Part 33/35 NPRMs

- None

### Published Part 121 Related NPRMs

- None



# June 2015 TAE Meeting

## Rulemaking Project Status (since Dec 2014)

### Part 25 Final Rules

- **In OMB/OST**
  - None
- **In Headquarters (HQ) Coordination**
  - None
- **In Directorate Coordination**
  - None
- **In Development**
  - Harmonization of Airworthiness Standards – Fire Extinguishers and Class B and F Cargo Compartments (CHWG)
  - Fuel Tank Vent Fire Protection

# June 2015 TAE Meeting

## Rulemaking Project Status (since Dec 2014)

### Part 25 NPRMs

- **Open for Comment**
  - None
- **In OST/OMB**
  - None
- **In HQ Coordination**
  - *Part 121/129 Exiting Icing* (IPHWG)
  - *System Safety Assessments* (ASAHWG)
- **In Directorate Coordination**
  - *Flammability Requirements for Transport Airplanes* (MFHWG)





# June 2015 TAE Meeting

## Rulemaking Project Status (since Dec 2014)

### NPRMs in Development

#### – Part 25 NPRM

- *Rudder Load Condition* (FCHWG)

#### – Part 33/35 NPRMs

- *None*

#### – Part 121 Related NPRM

- *Low Airspeed Alerting* (ASHWG)



# June 2015 TAE Meeting

## Advisory Circular Status (since Dec 2014)

### Final Part 25 Advisory Circulars (ACs)

Related to Harmonization of Airworthiness Standards -  
Gust and Maneuver Loads Rule

- **AC 25.341-1** *Dynamic Gust Loads*
  - Published December 12, 2014
- **AC 25.362-1** *Engine Failure Loads*
  - Published December 12, 2014
- **AC 25.415-1** *Ground Gust Conditions*
  - Published December 12, 2014



# June 2015 TAE Meeting

## Advisory Circular Status (since Dec 2014)

### Final Part 33/35 Advisory Circulars (ACs)

- **AC 33.87-1A** *Engine Overtorque Test, Calibration Test, Endurance Test, and Teardown Inspection for Turbine Engine Certification (§§ 33.84, 33.85, 33.87, 33.93)*
  - Published March 9, 2015

### Final Part 121 Related Advisory Circulars (ACs)

- None

# June 2015 TAE Meeting

## Advisory Circular Status (since Dec 2014)

### Draft Part 25 Advisory Circulars (ACs)

Related to the Fuel Tank and System Lightning Protection Rule

- Published for comment December 18, 2014
  - Comments closed March 31, 2015
- 
- **AC 20-53** *Protection of Aircraft Fuel Systems Against Fuel Vapor Ignition Caused by Lightning*
  - **AC 25.954-X** *Fuel System Lightning Protection*
  - **AC 25.981-X** *Fuel Tank Ignition Source Prevention Guidance*

# June 2015 TAE Meeting

## Advisory Circular Status (since Dec 2014)

### Draft Part 25 Advisory Circulars (ACs) Continued

- **AC 25-17A** *Transport Airplane Cabin Interiors Crashworthiness Handbook*
  - Comments closed May 22, 2015
- **AC 20-184** *Guidance on Testing and Installation of Rechargeable Lithium Battery and Battery Systems on Aircraft*
  - Comment period closes June 5, 2015

# June 2015 TAE Meeting

## Final Policy Status (since Dec 2014)

### Final Part 25 Policies

- **PS-ANM-25.1441-01** *Mitigating Fire Hazards in Gaseous Oxygen Systems*
  - Published December 9, 2014
- **PS-ANM-25-10** *Type Certification Policy for Approval of Use of Type II, III, and IV Deicing/Anti-Icing Fluids on Airplanes Certificated Under 14 CFR Parts 23 and 25*
  - Published March 5, 2015
- **PS-ANM-25-12** *Certification of Structural Elements in Flight Control Systems*
  - Published March 13, 2015

# June 2015 TAE Meeting

## Final Policy Status (since Dec 2014)

### Final Part 33 / 35 Policy

- None

### Final Part 121 Related Policy

- None

# June 2015 TAE Meeting

## Draft Policy Status (since Dec 2014)

### Draft Part 25 Policies

- PS-ANM-25.785-01, *Occupant Injury Considerations for Dual Pilot Head Up Display (HUD) Installations*
  - [Comments closed February 5, 2015](#)
- PS-ANM-25-17, *Structural Certification Criteria for Antennas, Radomes, and Other External Modifications*
  - [Comment period closes July 5, 2015](#)

### Draft Part 33 / 35 Policy

- None

### Draft Part 121 Related Policy

- None



# June 2015 TAE Meeting

## New ARAC Tasking (since Dec 2014)

### New Taskings

- Materials Flammability Re-tasking
- Damage Tolerance (25.571)
- Crashworthiness and Ditching

### Proposed Taskings for FY16

- Flutter Requirements (25.629)
- Thrust Reversing Systems (25.933)
- Crashworthy Fuel Systems

# June 2015 TAE Meeting

## Rulemaking Proposals for FY16

### Proposed Rules to Start in FY16

- Protection from Debris Impact
- Propeller Pitch Beta Lockout (25.1155)
- Design Roll Maneuver (25.349)
- Cabin Safety Harmonization Miscellaneous Requirements

# June 2015 TAE Meeting

*Questions?*



# FAA ARAC Meeting Summary for TAE

June 3, 2015

**AVIATION RULEMAKING ADVISORY COMMITTEE (ARAC)**  
**FEDERAL AVIATION ADMINISTRATION**  
**MARCH 2015**

- Avionics HWG Low Speed Alerting Clarification Report Reviewed and Accepted
- AC 120-17A Maintenance Control by Reliability Methods Report Approved as ARAC Recommendation
- Engine Harmonization Working Group (TAE) - Engine Bird Ingestion Report Approved as ARAC Recommendation
- New Tasking - Transport Airplane Crashworthiness and Ditching Evaluation Working Group – Federal Register Publication Imminent



# Transport Canada Update

## Presentation to Aviation Rulemaking Advisory Committee (ARAC ) Transport Airplane and Engine (TAE) Subcommittee



Philippe Ngassam and Michel Provencher  
Aircraft Certification Standards Division  
Transport Canada

June 3, 2015

# Overview

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- Canadian Aviation Regulation 521
- Update - Emerging Issue - Lithium Battery  
Categorization of risks and threats

# Canadian Aviation Regulation 521

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## Background

- CAR521 provides the requirements for design approval, including modifications and repairs, for aeronautical products in Canada (domestic and foreign)
- CAR 521 parallels FAR 21 and IR 21.
  - <http://wwwapps.tc.gc.ca/Saf-Sec-Sur/2/NPA-APM/actr.aspx?id=9&aType=1&lang=eng>



# Canadian Aviation Regulation 521

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## Rulemaking

- In response to stakeholder input and changes to the certification environment, an NPA is being developed to address various issues with CAR521
  - Method to approve / accept modification data other than through an STC for small aeroplanes
  - Revision to text related to CAN - TSO design changes
  - Clarification of Service Difficulty Reporting requirements
  - Clarification of Part Design Approval issuance requirements
  - Incorporation of early ETOPS requirements for transport aeroplane type certificate
  - Introduction of function and reliability flight testing requirements for small turbine powered aeroplanes and broadening of requirements for flight test operations manuals
  - Clarification of the provisions related to aircraft certification of foreign products in Canada
- It is planned that the “*advance*” NPA text will be available online, Target Date June 2015
  - <http://wwwapps.tc.gc.ca/Saf-Sec-Sur/2/NPA-APM/actr.aspx?id=9&aType=1&lang=eng>



# Lithium Battery - Emerging Issues

- Transport Canada attended the ICAO Airworthiness Panel (AIRP) Meeting held in Singapore in 20-24 April, 2015
  - Discussed the risks associated with transport of high density package of Lithium batteries as cargo on passenger aircraft
  - Cooperation between various ICAO Panels (Dangerous Goods Panel, Airworthiness Panel and Aviation Security Panel) now recommended

# Contact Information

## Transport Canada Aircraft Certification Division (AARTC)

Blake Cheney Chief, Aircraft Certification Standards	<a href="mailto:blake.cheney@tc.gc.ca">blake.cheney@tc.gc.ca</a>	(613) 990-2738
Eric Lucas Program Manager Certification Policy	<a href="mailto:eric.lucas@tc.gc.ca">eric.lucas@tc.gc.ca</a>	(613) 952-0212
Philippe Ngassam Program Manager, Design Standards	<a href="mailto:philippe.ngassam@tc.gc.ca">philippe.ngassam@tc.gc.ca</a>	(613) 991-2244
Michel Provencher Senior Engineer Design Standards	<a href="mailto:michel.provencher@tc.gc.ca">michel.provencher@tc.gc.ca</a>	(613) 993-8377



# Thank you for your time!

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## Any Questions?

# **Report to ARAC Transport Airplanes and Engines Subcommittee**

## **ARAC-Transport Airplane Performance and Handling Characteristics—Phase 2 Status**

### **Flight Test Harmonization Working Group**

**Christine Thibaudat – European Co-chair**

**Robert Park – US Co-chair**

**June 3, 2015**

# **FTHWG Status - Agenda**

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- **Status of Envelope Limiting Topic**
- **Status of Stability Topic**
- **Status of Flight in Icing Topic**
- **Status of Steep Approach Landing Topic**
- **Future Meeting Topic Adjustments**
- **Agenda for FTHWG-34**
- **FTHWG-34 Attendees (Tentative List)**
- **Future Meeting Schedule**

# Status of Envelope Protection Topic

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- **Topic 1, Envelope Protection**
- **Topic Leader: Brian Lee, Boeing**
  - **Telecons: 12/9/14, 1/13/15, 2/10/15, 3/31/15, 5/12/15**
  - **Face-to-face meeting: FTHWG-33 (3/9-10/15)**
  - **Example Issues discussed**
    - **Structure of rules and guidance material**
    - **Protection function types (airspeed, load factor, angle of attack, roll-related, etc.)**
    - **Normal versus alternate laws**
    - **Normal/Operation/Limit flight envelopes**
    - **Overridable versus not-overridable protection functions**
    - **Protection function availability**
    - **Minimum maneuver performance**
    - **Team member proposals**
    - **Plan for remaining work**
  - **Last scheduled meeting for Topic 1 is FTHWG-36 (7-8 Dec. 2015)**

# Status of Stability Topic

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- **Topic 6, Stability (Longitudinal and Lateral, FBW Aspects)**
- **Topic Leader: Brian Lee, Boeing**
  - **Telecons: 12/9/14, 1/13/15, 2/10/15, 3/31/15, 5/12/15**
  - **Face-to-face meeting: FTHWG-33 (3/12-13/15)**
  - **Example Issues discussed**
    - **Static longitudinal stability, Static lateral-directional stability, and Dynamic stability work continuation**
    - **Response to external disturbances**
    - **Applicability of overridable vs. non-overridable discussion**
    - **Thrust-affected modes and effects**
    - **Neutral stability**
    - **Icing aspects**
    - **Discussion of team member proposals for stability rule and guidance language**
    - **Plan for concluding work**
  - **Last scheduled meeting for Topic 6 is FTHWG-34 (15-16 June 2015)**



# Status of Flight in Icing Topic

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- **Topic 2, Flight in Icing (FBW Aspects)**
- **Topic Leader: Christine Thibaudat, Airbus**
  - **Telecons: 12/9/14, 1/13/15, 2/10/15, 3/31/15, 5/12/15**
  - **Face-to-face meeting: FTHWG-33 (3/12-13/15)**
  - **Example Issues discussed**
    - **Special Conditions differences mapping and proposed harmonization solutions**
    - **WAIS failure clarification**
    - **Robustness tests**
    - **Landing reference speed criteria**
    - **Inadvertent speed decay**
    - **Pre-activation ice**
    - **High altitude icing**
    - **Atmospheric disturbance analysis**
    - **Rule wording proposal**
    - **Plan for remaining work**
  - **Last scheduled meeting for Topic 2 is FTHWG-36 (9 Dec. 2015)**

# Status of Steep Approach Landing Topic

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- Topic 12, Steep Approach Landing
- Topic Leader: Claude Duchesne, Bombardier
  - Telecons: 1/21/15, 2/11/15, 3/30/15, 5/4/15
  - Face-to-face meeting: *[FTHWG-32 (10/23-24/14)]*
  - Example Issues discussed
    - Differences between FAA, EASA, TCCA SAL rules/guidance
    - Key harmonization recommendations
    - Screen height other than 50 feet
    - Engine thrust aspects during abuse testing
    - Minimum go-around altitude versus go-around from any alt.
    - Acceptability of current rules/guidance versus guidance material only regulatory approaches for this topic
    - Plan for concluding work
  - Last scheduled meeting for Topic 12 was FTHWG-32 (also see next slide)

# Future Meeting Topic Adjustments

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- Phase 1 work plans estimated number of face-to-face meeting days and overall schedule for each topic
- Some topics were estimated to be completed in one face-to-face meeting plus several follow-up telecons
- Steep Approach Landing may require a second face-to-face meeting to close out issues not resolved in telecons
- Two more of these “one meeting” topics will be taken up in FTHWG-34
- If necessary we will adjust the planned topics for future face-to-face meetings to permit closeout sessions

# Agenda for FTHWG-34

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**FTHWG-34 is Scheduled for June 15-19 in Savannah:**

- **Stability Topic: June 15, 16**
  - Writing Team present proposed rules
  - Writing Team present proposed guidance material
  - Discuss what may be missing
  - Vote on proposal
  - Notional review draft final report appendix
- **Out of Trim Topic (New): June 17**
  - Introduction to topic
  - All organization presentations
  - Discuss regulation/guidance structure, baseline wording
  - Post-meeting plan for completing topic

# Agenda For FTHWG-34, Cont.

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- **Side Stick Controls Topic (New): June 18, 19**
  - Introduction to topic
  - OEM presentations
  - Regulatory Agency presentations
  - Develop action plan and schedule

# FTHWG-34 Attendees (Tentative List)

Organization / Attendees	Organization / Attendees
<b>Airbus</b> <ul style="list-style-type: none"> <li>Christine Thibaudat (Co-chair)</li> <li>Laurent Capra / Dominique Chatrenet</li> </ul>	<b>Dassault Aviation</b> <ul style="list-style-type: none"> <li>Philippe Eichel</li> </ul>
<b>ANAC</b> <ul style="list-style-type: none"> <li>Diego Muniz Benedetti</li> </ul>	<b>EASA</b> <ul style="list-style-type: none"> <li>John Matthews / Massimo Barocco</li> </ul>
<b>American Airlines</b> <ul style="list-style-type: none"> <li>Ernie Tangren</li> </ul>	<b>Embraer</b> <ul style="list-style-type: none"> <li>Murilo Pinto Ribeiro</li> </ul>
<b>Boeing</b> <ul style="list-style-type: none"> <li>Bob Park (Co-chair)</li> <li>Brian Lee</li> </ul>	<b>FAA</b> <ul style="list-style-type: none"> <li>Joe Jacobsen / Paul Giesman</li> <li>Bob Stoney</li> </ul>
<b>ALPA</b> <ul style="list-style-type: none"> <li>Chad Balentine</li> <li>Ron Wilson</li> </ul>	<b>Gulfstream</b> <ul style="list-style-type: none"> <li>Barry McCarthy / Mike Watson</li> <li>Bill Osborne</li> </ul>
<b>Bombardier</b> <ul style="list-style-type: none"> <li>Antonio Spinelli</li> </ul>	<b>Textron</b> <ul style="list-style-type: none"> <li>Kurt Laurie</li> </ul>
<b>CAAI (Israel)</b> <ul style="list-style-type: none"> <li>Yshmael Bettoun</li> </ul>	<b>Transport Canada</b> <ul style="list-style-type: none"> <li>John Wiseman</li> </ul>
<b>JCAB</b> <ul style="list-style-type: none"> <li>*Takahiro Suzuki</li> </ul>	* Regrets received

# FTHWG Meeting Schedule/Venue/Topics 1/2

Meeting	Venue	Topics	Dates
FTHWG-33	Airbus/Toulouse	T1 (Envelope Limiting) T2 (Adaptation for flight in icing) T6 (Lateral / directional / longitudinal stability)	9-10 March 2015 11 March 2015 12-13 March 2015
FTHWG-34	Gulfstream/Savannah	T6 (Lateral / directional / longitudinal stability) T13 (Out of trim characteristics) T7 (Side stick controls)	15-16 June 2015 17 June 2015 18-19 June 2015
FTHWG-35	EASA/Cologne	T9 (Wet runway stopping performance) T10 (Runway excursion hazard classification)	21-23 Sept. 2015 24-25 Sept. 2015
FTHWG-36	Embraer/Melbourne FL	T1 (Envelope limiting) T2 (Flight in icing) T11 (Stall speed in ground effect)	7-8 Dec. 2015 9 Dec. 2015 10-11 Dec. 2015

# FTHWG Meeting Schedule/Venue/Topics 2/2

Meeting	Venue	Topics	Dates
FTHWG-37	EASA/Cologne	T16 (HQ Compliance Finding) T9 (Wet runway stopping performance)	7-9 March 2016 10-11 March 2016
FTHWG-38	Bombardier/Montreal	T16 (HQ Compliance Finding) T9 (Wet runway stopping performance)	13-14 June 2016 15-17 June 2016
FTHWG-39	Dassault/Istres	T14 (Tailwind / Crosswind) T11 (Stall speed in ground effect) T15 (PIO/APC)	19-20 Sept. 2016 21 Sept. 2016 22-23 Sept. 2016
FTHWG-40	FAA/TBD	T10 (Runway excursion hazard classification) T16 (HQ Compliance Finding)	5-6 Dec. 2016 7-9 Dec. 2016
FTHWG-41	Airbus/Toulouse	T15 (PIO/APC) T14 (Tailwind / Crosswind)	6-8 March 2017 9 March 2017



# 150 Hour Endurance Test (14CFR33.87) ARAC Working Group Status

Summary For TAE June 3rd, 2015

Peter Thompson – Working Group Chair

# Team Membership

- Airbus
- Boeing
- EASA
- FAA
- GE Aviation
- HEICO
- Honeywell
- Pratt & Whitney
- Pratt & Whitney Canada (via AIA-C)
- Rolls-Royce Derby
- Rolls-Royce Indianapolis
- SNECMA
- Transport Canada
- Williams International (recent addition)

# Meeting Rhythm

- Bi-weekly telecons
- Quarterly face-to-face meetings
  - ✓ Burlington, MA – April 2014
  - ✓ East Hartford, CT – July 2014
  - ✓ Cologne, Germany – September 2014
  - ✓ Phoenix, AZ – January 2015
  - ✓ Derby, UK - March/April 2015
  - Cincinnati, OH – June 2015
  - Burlington, MA – Sept 2015
  - In planning

# Summary

- Conduct of the current test drives operation at simultaneous rotor speed and EGT red lines and the WG has concluded that:
  - Historically, piston, turbo-shaft, and low bypass ratio and low pressure ratio turbofan engines approached simultaneous rotor speed and EGT red lines when throttle pushed
  - Modern multi-shaft, FADEC controlled, high by-pass and high pressure ratio engines approach individual and simultaneous rotor and EGT red lines at different points in the operating/deterioration envelope
  - Forcing modern high PR engines to simultaneous RLs in a sea level static test requires enabling and surviving modifications that may deviate considerably from Type Design
- A modified test is desired **that maintains the intent** of the original that can be conducted on a type design engine.

# Key Points

- Rule has evolved and intent has not changed since inception in 1937 to 1950s era
  - For piston engine single speed machines, to a large extent test mirrored typical field operation and service life and rule was appropriate and justifiable
  - Negligible rule changes since 1957 even though engine technology has changed markedly
- Today's engine and airplane combinations significantly more complex than even 30 years ago. (High press ratio, internal cooling etc)
  - Need to develop a rule strategy that will satisfy **original intent**, be a severe test that provides a significant challenge, to the engine, and
  - Enables the engine to run in type design configuration , and
  - Be relevant to today's high pressure ratio engines, associated airplane designs and operation
- Engine service life now vastly in excess of duration of this test and “wear out” modes not necessarily represented

# Working Activities

- The working group evaluated numerous minor modifications and variations to the basic content and profile of today's test - all potentially required significant modifications to the test engine if concurrent red lines or extended running at red line core speed were required
- Consensus reached to evaluate more detailed changes based on a modified service type cycle with some (TBD) running at limiting (red line) conditions – maintain **original intent** of rule and appropriate level of severity
- Evaluate if other rules introduced or significantly modified post 14CFR33.87 may provide data to support the effort
- Evaluate harmonization efforts with CS-E 740 as appropriate

# Go Forward Plan

- Request 18 month extension (to mid 2017) to allow:
  - Reach full agreement on the original intent of the rule, define and fully evaluate an Alternate Test cycle that meets that intent within the WG – end 4Q15
  - Gather necessary supporting data from OEMs to support the Alternate Test – 1Q16
  - Draft report for internal OEM & FAA review – 2Q16
  - Incorporate feedback – 3Q16
  - Submit report to TAE – 4Q16
  - Incorporate feedback – 1Q17
  - Submit report to ARAC - 2Q17
- Extension supported by OEMs and FAA-ECO



# AAWG Report

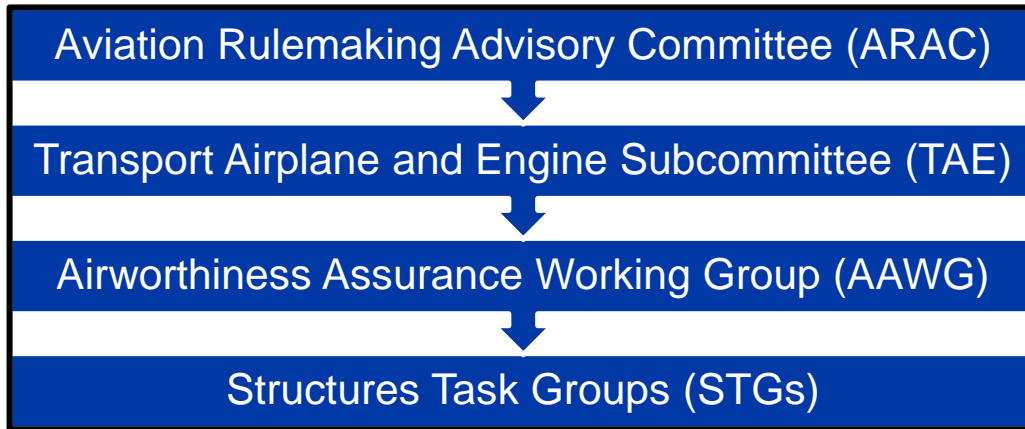
## Transport Airplane and Engine Subcommittee (TAE)

Wednesday, March 11 – Thursday, March 12, 2015

Mark Yerger  
AAWG Co-Chair



# AAWG Update



The last AAWG meeting was March 11-12, 2015 in Melbourne, FL

- 33 Attendees
- 4 regulatory authorities
- 5 manufacturers
- 12 operators

Next Meeting: 2016



# Airworthiness Assurance Working Group

## Wednesday, March 11, 2015

- |  |                 |        |
|--|-----------------|--------|
| ● Call to order  | Chisholm/Yerger | 1:00pm |
| ● Introductions / roll call  |                 |        |
| ● Minutes review & approval  | Cardwell        | 1:20   |
| ● Action review  |                 | 1:30   |
| ● TAE report out   | Chisholm        | 2:00   |
| ● STG report outs  | OEMs            | 2:10   |
| ● <b>STG Guidelines Final Approval</b>   | Donahue         | 3:00   |
| <br>   |                 |        |
| ● <b>FAA Actions</b>   | Sippel          | 3:10   |
| • AC 120-93 changes related to section 26.47                                     |                 |        |
| • AC 120-104 changes related to incorporation of FAA's FAQs                      |                 |        |
| • <a href="#">Update on 25.571 Aviation Rulemaking Advisory Committee (ARAC)</a> |                 |        |
| • What LOVs mean going forward – future changes to the ALS                       |                 |        |
| ● Adjourn  | Chisholm/Yerger | 5:00   |

# Airworthiness Assurance Working Group

## Thursday, March 12, 2015

- |  |                 |          |
|--|-----------------|----------|
| • Call to order                            | Chisholm/Yerger | 9:00 am  |
| • Future of AAWG                           | Yerger          | 9:05 am  |
| • MPIG Request - Corrosion                 | Bozzolo         | 9:30 am  |
| • EASA Ageing Aircraft Telecon             | Minter          | 10:30 am |
| • RSC Industry Guidelines                  | Cardwell/Jensen | 11:00 am |
| • Lunch                                    |                 | 11:30 am |
| • RSC Requirements – Operator Only         | Shimizu         | 12:00 am |
| • Additional Topics                        |                 | 1:00 pm  |
| • Implementation Issues with LOV           |                 |          |
| • Bonded Repair Size Limits                | Chisholm        |          |
| • Proactive Identification of Aging Issues | Yerger          |          |
| • Harmonization of Regulations             |                 |          |
| • Action Item Review                       |                 | 4:00     |
| • Next meeting & Process Check             |                 | 4:30     |
| • Adjourn                                  |                 | 5:00 pm  |

# AAWG Update

## FAA – 25.571 ARAC

- UPDATE – At AAWG this was expected to be an ARC
- 25.571 ARAC
  - The FAA will propose tasking to ARAC for the aviation community to discuss fatigue and damage-tolerance requirements of part 25 for metallic and composite structures.
  - The FAA will determine whether it is necessary to adopt changes to section 25.571 and any related guidance material.
  - Topics to be discussed include:
    - Long-term continued operational safety of composite structure
    - Structural damage capability
    - Testing of hybrid structure
    - AC 25.571-1D: Damage Tolerance and Fatigue Evaluation of Structure
    - AC 20-107B: Composite Aircraft Structure
  - Assigns the task to either an ARAC working group or a subcommittee working group

# Maintenance Planning Industry Group (MPIG)

## Corrosion Definitions

- The level 1 corrosion definition has been finalized, level 2 and 3 are in-work.
- In April 2013, the Airworthiness Assurance Working Group received a request from MPIG to recommend an industry definition of Level 1 corrosion. The experienced group, consisting of:

4	Regulators	(ANAC, FAA, EASA, Transport Canada)
4	Manufacturers	
13	Airlines	

concluded that level 1 corrosion would be defined as follows:

- Damage occurring between successive inspections that is within allowable damage limits; or
- Damage occurring between successive inspections that does not require structural reinforcement, replacement or new damage tolerance based inspections; or
- Corrosion occurring between successive inspections that exceeds allowable limits but can be attributed to an event not typical of operator usage of other aircraft in the same fleet; or
- Light corrosion occurring repeatedly between inspections that eventually requires structural reinforcement, replacement or new damage tolerance based inspections.

# Removable Structural Components

- The RSC Industry Guidelines document was submitted to Airlines for America (A4A) in December 2014, publication is still pending.

## Airlines for America (A4A) Document Development:

- Several operators and an MRO shared RSC case studies on how they identify and control RSCs
- A4A presented document format and expectations for draft from the working group
- Decision was made to create a new Air Transport Association (ATA) document, Spec 120 is pending approval.

# New AAWG Topic Rotorburst Damage Tolerance Interpretations

# Rotorburst

## Means of Compliance

- 14 CFR 25.571(e):
  - “The airplane must be capable of successfully completing a flight during which likely structural damage occurs as a result of . . .
    - (2) Uncontained fan blade impact
    - (3) Uncontained engine failure”
- “Successfully completing flight” is determined by showing the damaged structure can withstand the loads, considered as ultimate, given in Paragraph 9. of AC 25.571-1, and meeting the flutter criteria in the same paragraph
- “Likely structural damage” is determined by utilizing the guidance in AC 20-128A
- FAA Policy Statement [PS-ANM100-1993-00041](#)
  - Guidance material released to establish a common interpretation of 14 CFR 25.571(e)
  - FAA interpretation of Policy Statement has changed since originally released



# Rotorburst

## Means of Compliance

- Analysis accounts for all risk (structural, systems, opposite engine, . . .)
- Risk is acceptable for compliance to 25.903(d)(1) and 25.571(e) if the airplane level probability of an uncontained 1/3 disc fragment being catastrophic is less than or equal to 1 in 20.
  - Compliance has been shown by evaluating the total level of risk (averaged over all rotors) from all possible rotor burst damage cases per the AC 20-128 rotor burst model
  - I.E. Airplane can successfully complete a flight from which likely structural damage occurs.
- The risk for any individual engine stage may be higher or lower than 1 in 20 (but cannot be higher than twice that, per AC 20-128A Paragraph 10.e)
- For wing mounted engines, we cannot show that the structural risk for each stage is less than 1 in 20 since many stages may have trajectories with significant structural exposure for the wing and/or fuselage.
- This Means of Compliance (MoC) is documented in previous certification projects

# Rotorburst FAA Policy

- The 1993 FAA Policy requires clarification
- The new ARAC WG is focused on composites, hybrid structure, and testing/analysis requirements
- AAWG could accept tasking to develop recommendations for the Rotorburst Policy

# Thank You

- Airworthiness Assurance Working Group
  - Steven Chisholm Boeing Co-Chair
  - Mark Yerger FedEx Co-Chair

# Transport Airplane Metallic and Composite Structures Working Group

## **ARAC tasking Overview**

- Increased use of composite and hybrid structures has driven concerns whether the damage-tolerance and fatigue airworthiness standards and advisory material are adequate

### Tasking :

Provide recommendations regarding revision of the damage-tolerance and fatigue requirements of 14 CFR part 25, including subparts C and E of part 26 and development of associated advisory material

Working group will address and provide recommendations on the following:

- Remaining 2003 GSHWG rulemaking recommendations
  - Increased use of composites by industry
  - Costs and benefits estimates
- Authorizes two years for activity

# Transport Airplane Metallic and Composite Structures Working Group

## Working group members

- |     |                          |                        |
|-----|--------------------------|------------------------|
| 1.  | Michael Gruber           | (Boeing) – Chairperson |
| 2.  | Chantal Fualdes          | (Airbus)               |
| 3.  | Salamon Haravan          | (Bombardier)           |
| 4.  | Benoit Morlet            | (Dassault Aviation)    |
| 5.  | Antonio Fernando Barbosa | (Embraer)              |
| 6.  | Kevin Jones              | (Gulfstream)           |
| 7.  | Toshiyasu Fukuoka        | (Mitsubishi Aircraft)  |
| 8.  | David Nelson             | (Textron Aviation)     |
| 9.  | Phil Ashwell             | (British Airways)      |
| 10. | Doug Jury                | (Delta Air Lines)      |
| 11. | Mark Boudreau            | (FedEx)                |
| 12. | Eric Chesmar             | (United Airlines)      |

# Transport Airplane Metallic and Composite Structures Working Group

## Kick-off meeting:

*June 16 – 17 at Boeing (Everett Plant)*

### Planned Topics:

- Explanation of ARAC process by FAA's Rulemaking Analyst
- Brief the working group on the task assignment by FAA
- Compile a draft work plan