Transport Aircraft and Engines Working Group Status Report to the Aviation Rulemaking Advisory Committee

Keith R. Morgan
Working Group Chair

21 June 2018

MEMBERS of the Transport Aircraft and Engines Working Group

Pratt & Whitney

ALPA

A4A

ASD

Airbus

Boeing

GAMA

AIA

Bombardier

NADA/F

Embraer

SCHEDULE

- Last Meeting – May 10, 2018 Rosslyn, VA
- Next meetings:
  - Telecom July 25, 2018
  - November 15, 2018 Seattle

Flight Test Harmonization Working Group
Status Report to the
Aviation Rulemaking Advisory Committee

Brian P. Lee, Boeing
Christine Thibaudat, Airbus
Working Group Chairs

10 May, 2018

MEMBERS of Flight Test Harmonization Working Group

Authorities	OEM's		Operators	Observers
FAA Joe Jacobsen Bob Stoney Paul Giesman	Airbus Laurent Capra + SME's	Embraer Murilo Ribeiro + SME's	ALPA Rikki Gardonio Len Quiat	JCAB (Japan) Takahiro Suzuki Atsushi Fukui
EASA John Matthews Marco Locatelli	Boeing Darren Jens + SME's	Gulfstream Mike Watson +SME's		CAAI (Israel) Yshmael Bettoun
Transport Canada Lee Fasken	Bombardier Tony Spinelli +SME's	Textron Kurt Laurie +SME's		Norwegian Airlines John Lande
ANAC (Brazil) Pedro Donato	Dassault Philippe Eichel +SME's			

SUMMARY OF TASKING

- Transport Aircraft Performance and Handling Characteristics, Phase 3
- Long list of topics prioritized in Phase 1 (June, 2013 – June, 2014)
- Phase 2 Complete November, 2017; except
  - Wet Runway Stopping Performance: Report will be presented to TAE in May
- Phase 3:
  - 15 . Pilot Induced Oscillation
  - 16. Handling Qualities Rating Method (+17)
  - ~~17. Failure Assessment Methodology~~
  - 18. Go-Around Performance
  - ~~19. Use of Amber Band on Airspeed Tape~~ (Send to ASHWG with help from FTHWG)
  - 20. Return-to-Land
  - 30. Directional Control Below Vmc on Slippery Surfaces
  - 31. Definitions of Vdf/Mdf (esp. for limited airplanes)
- Strategic Considerations
  - Considered to be aggressive
  - FTHWG began work ahead of formal tasking

PHASE 3 SCHEDULE

	1	2	3	4	5	6	7	8	9	10
	Wichita	Cologne	Seattle	Paris	Montreal	Toulouse	Melbourne	Cologne	Savannah	Bordeaux/ Istres
	June 17	Sept 17	Dec 17	March18	Jun-18	September 18	December 18	March 19	June 19	September 19
15 PIO					H			H	H	H*
16 HQRM					H	H	H	H	H	H*
18 GAR		P	P	*P		Report 1 November				
20 Return to Land					P	P	P	*		
30 Yaw Control	H	H		H*	Report 1 June					
31 Vdf/Mdf	H		H	H		H	H	*		

(*) means voting on requirements and guidance; final report will follow

P = Aircraft Performance
H = Handling Qualities

30 month clock starts 1 November, 2017
(so we've had a head-start)
FTHWG intends to stay on this schedule as best we can
(as opposed to stretching to 30 months from this date)
Buffer at end of schedule for contingencies

STATUS OF TASKING

- Topic from Phase 2: Wet Runway Stopping Performance
  - Scheduled Completion: March, 2018
  - Report approved by TAE May 10, 2018

- Phase 3: FTHWG considers activity on-track / on-schedule
  - Go-Around Performance (Topic 18)
    - OEI Requirements and Guidance complete by March Meeting
    - Desire to address EASA RMT 0647 activity (AEO, somatogravic illusion, etc.)
      - Anticipating NPA and CRD “early in 2018”, but have not seen indication of publication
    - Based on “early 2018” promise of NPA and CRD, we target 1 September, 2018 report date (subject to revision based on actual publication of NPA and CRD).
  - OEI directional control on slippery surfaces (Topic 30)
    - Requirements and Guidance for OEI conditions complete by March meeting

STATUS OF TASKING

- →FTHWG-44 : 4-8 December 2017 Meeting Seattle (Boeing)
  - 12 December (WET)
  - 19 December (WET)
  - 9 January, 2018 (WET)
  - 16 January (Topic 30 - OEI Directional Control on Slippery Runways)
  - 23 January (WET)
  - 30 January (Go-Around)
  - 6 February (WET)
  - 13 February (Topic 30)
  - 20 February (Go Around)
  - 26 February (WET)
  - 27 February (Topic 30)
- →FTHWG-45 : 5-9 March 2018 Meeting Paris (Dassault)
  - 13 March (OEI Directional Control on Slippery Runways)
  - 20 March (Go Around OEI)
  - 29 March (OEI Directional Control on Slippery Runways)
  - 3 April (Vdf/Mdf)
  - 24 April (Go Around AEO)
  - 15 May (Vdf/Mdf)
  - 5 June (Go Around AEO)
- →FTHWG-46 : 11-15 June 2018 Meeting Montreal (Bombardier)
  - …plan weekly telecons (Tuesdays, 09:00 Eastern Time)
- →FTHWG-47 : 17-21 September 2018 Meeting Toulouse (Airbus)
  - …plan weekly telecons (Tuesdays, 09:00 Eastern Time)
- →FTHWG-48 : 3-7 December 2018 Meeting Melbourne (Embraer)

Activity since December, 2017

AREAS for ARAC CONSIDERATION

- No additional guidance needed from FAA or ARAC
- Continued concern about inconsistent participation from EASA

Metallic and Composite Structures Working Group
Status Report to the
Aviation Rulemaking Advisory Committee

Mike Gruber (Boeing)
Working Group Chair

May 10, 2018

SUMMARY OF TASKING

With the increased use of composite and hybrid structures provide recommendations regarding revision of the fatigue and damage-tolerance requirements & associated guidance material

Tasking was divided up into the following 12 focus areas:

1. Threat Assessment
2. Emerging material technology
3. Inspection Thresholds
4. Large damage capability (SDC, Structural Damage Capability) - **AAWG**
5. Aging, WFD & LOV *(including ultimate strength & full-scale fatigue test evidence)*
6. Testing (related to composite and hybrid materials *including WFD test demonstration)*
7. Repairs (bonding / bolting)
8. Modifications
9. EASA aging aircraft rulemaking and harmonization
10. Rotorburst – **AAWG**
11. Disposition of cracking during full-scale fatigue testing
12. Accidental damage inspections included in the ALS conflicts w/ MSG-3 program

2 year tasking

MEMBERS of Metallic and Composite Structures WG

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)

SCHEDULE

#	Major Tasks/Deliverables	Date	Status	Comments
1	ARAC Tasking Published in Federal Register	1/26/15	Complete	
2	ARAC Working Group (WG) Chair and member selected & notified	5/5/15	Complete	
3	WG Plan accepted by TAE	11/4/15	Complete	
4	Face to Face WG Meetings	6/16/15 9/14/15 3/16/16 12/6/16 6/27/17	Complete Complete Complete Complete Complete	Kick-off meeting Everett, Wa . Montreal Canada Everett, Wa. (leverage AAWG mtg) Melbourne, Florida Everett, Wa.
5	Planned Date to submit Final Report to TAE	5/16/2018		Additional time required to ensure a comprehensive report
6	Final Report provided to FAA	10/2018		

Recommendation Summary

- The rule recommendations are consistent with current industry practice and the associated guidance and policy material recommendations are intended to ensure a common understanding consistent with industry practice.
  - Generalize the environmental damage threat to address when evaluating the structure (e.g., replace corrosion with environmental deterioration).
  - Require applicants to address all modes of damage in the damage-tolerance evaluation (DTE) [e.g., add manufacturing defects to paragraph (b)].
  - Generalize the DTE to require applicants to establish inspections or other procedures for structure that exhibits growth or no growth behavior.
    - For metals, generalize the assumptions to be used in threshold determination.
    - For materials that exhibit growth, continue to allow the repeat interval to be different from the threshold.
    - For materials that exhibit no growth, continue to allow the repeat interval to be equal to the threshold.
  - Require applicants to establish a limit of validity (LOV) based on the aging space (expected environmental exposure and repeated loading environment) for all structure, regardless of the materials used in construction of that structure.
  - Include analysis for certain loads in order for an applicant to supplement the full-scale fatigue test evidence to show freedom from aging (WFD for metals).

Transport Aircraft Crashworthiness and Ditching Working Group Recommendation Report Briefing to the Aviation Rulemaking Advisory Committee

Kevin Davis
Working Group Chair

10 May 2018

TACDWG MEMBERS

Working group voting members

Kevin Davis	(Boeing Commercial) – Chairperson
John van Doeselaar	(Airbus)
Akif Bolukbasi	(Boeing Military Vertical Airlift)
Milenko Milekic	(Bombardier)
Clóvis Augusto Eça Ferreira	(Embraer)
Olena Zagoskina	(Cascade Aerospace)
Matthias Waimer	(German Aerospace Center (DLR))
Toru Sakagawa	(Mitsubishi Aircraft Corporation)
Vincent Jacques	(Dassault Aviation)
Candace K. Kolander	(Association of Flight Attendants)
Heidi R. Moore	(Naval Air Systems Command)
Justin Littell	(NASA)
Jack Caughron	(Gulfstream Aerospace Corporation)
Gerardo Olivares Ph.D.	(National Institute of Aviation Research)
Dan Hoverson	(Textron Aviation)

SUMMARY OF TASKING

- Provide recommendations regarding the incorporation of airframe-level crashworthiness and ditching standards into Title 14, Code of Federal Regulations (14 CFR) part 25 and development of associated advisory material.

SCHEDULE

#	Major Tasks/Deliverables	Date	Status	Metric	Comments
1	ARAC Tasking Published in Federal Register	4 June ‘’15	Complete	Completed	
2	ARAC Working Group (WG) Chair and members selected & notified	October ‘15	Complete	Industry Representation	
3	WG Plan submitted to TAE	April ‘16	Complete	Plan Approved	
4	Face to Face WG Meetings	Dec. ’15 April ‘16 October ’16 March ’17 Sept ‘17	Complete Complete Complete Complete Complete		
5	Planned Date to submit Final Report to TAE	12/2017	Complete	Submitted 12/15/2017	Reflected in approved plan
6	Final Report Due to FAA	03/2018			Reflected in approved plan

RECOMMENDATIONS

- Proposed new airframe level crashworthiness rule and associated guidance
  - Ability to use similarity to previous acceptable designs as MoC option
- Proposed revised ditching rules; sections 25.563, 25.801 and associated guidance
- Proposed harmonization with some reorganization of emergency equipage and evacuation rules; sections 25.785, 25.801, 25.809, 25.810, 25.811, 25.812, 25.1411, 25.1415
  - Includes additional guidance for section 25.801for unplanned ditching incorporating means of compliance issue papers for flotation and evacuation.

DISSENT(S)

- Airline Flight Attendants (AFA)
  - Regarding use of similarity as a MoC for crashworthiness and other minor points.
- Embraer
  - Concerns related to requirement in performing drop tests specifically for mid-size or small part 25 aircraft. Significant expense and potential impact to design with improvement in safety not clear.
- German Aerospace Center (DLR)
  - Regarding use of similarity as a MoC for crashworthiness + other minor points.
- NASA
  - Regarding impact velocities proposed. NASA believes they should be greater than proposed derived from existing test data and some of the OEM data.
- Airbus, Boeing, Bombardier, Dassault, Embraer, Gulfstream, Textron
  - Not in agreement that an airframe rule is necessary.
  - Concern regarding cost impact to derivative aircraft certification with improvement in safety not clear.
  - Supported draft rule with ability to leverage similarity to previous acceptable designs as best option if a rule is deemed necessary and found financially viable for industry.

STATUS OF TASKING

- Final report submitted to TAE for consideration at May 10, 2018 meeting
- TAE returned report to WG without voting for further discussion on dissents in an attempt to gain consensus
- TAE requested WG to submit report for consideration at July 25, 2018 meeting
- If approved, submit for ARAC review at September 2018 meeting

AREAS of ARAC CONSIDERATION

- None