

AVIATION RULEMAKING ADVISORY COMMITTEE (ARAC)

FEDERAL AVIATION ADMINISTRATION

December 13, 2018

ARAC MEETING 1:00 p.m.

- Welcome and Introductions
- Federal Advisory Committee Act (FACA) Statement
- Ratification of Minutes
- Status Reports
 - ARAC
 - o Updates to Previously Accepted Recommendation Reports
 - Rotorcraft Bird Striking Working Group
 - Rotorcraft Occupant Protection Working Group
 - Airman Certification Systems Working Group Mr. David Oord (Covering expanded tasks and proposed timelines. Interim Recommendations Due: 12/2019; ARAC Meeting: 9/2019)
 - Interim Recommendation Report
 - Part 145 Working Group Ms. Sarah McLeod
 - Transport Airplane and Engine (TAE) Subcommittee Mr. Keith Morgan
 - Flight Test Harmonization Working Group Transport Airplane Performance and Handling Characteristics, Phase 3 Tasking (Tasked: 11/1/17; Recommendations Due: 5/1/20; ARAC Meeting: 3/2020)
 - o Avionics System Harmonization Working Group
 - o Ice Crystals Icing Working Group
- Recommendation Reports
 - Transport Airplane and Engine (TAE) Subcommittee Mr. Keith Morgan
 - Flight Test Harmonization Working Group Topic 30: Controllability During Low Speed OEI RTO Recommendation Report
- Any Other Business
 - FAA Reauthorization
 - FAA update on regulatory reform



Federal Aviation Administration Aviation Safety

800 Independence Ave., S.W. Washington, DC 20591

SEP 2 0 2018

Ms. Yvette A. Rose Chair, Aviation Rulemaking Advisory Committee Cargo Airline Association 1620 L Street, NW, Suite 610 Washington, DC 20036

Dear Ms. Rose:

The Federal Aviation Administration (FAA) has reviewed the Rotorcraft Occupant Protection Working Group (ROPWG) Task 5 Final Recommendation Report for Crash Resistant Seats and Structures (CRSS), which the Aviation Rulemaking Advisory Committee (ARAC) submitted to the FAA on March 23, 2018. The FAA is requesting clarification on the ROPWG's recommendation on the dynamic seat rules (14 CFR Part 27.562 and 29.562).

The report states in Table 1 that § 27.562(b)(1) is recommended with changes as described in the report and §§ 29.562(b)(1), 27.562(b)(2), and 29.562(b)(2) are recommended as is. It is unclear if the ROPWG report is recommending the FAA mandate §§ 27.562(a)(c)(d) and 29.562(a)(c)(d).

We request the ARAC clarify whether the ROPWG report is recommending the FAA mandate §§ 27.562(a)(c)(d) and 29.562(a)(c)(d). Also, please clarify if these subparagraphs apply to any recommendations in the ROPWG Task 6 CRSS report.

If you have any questions, please feel free to contact me at (202) 267-9677.

Sincerely,

Designated Federal Officer Aviation Rulemaking Advisory Committee November 1, 2018

Ms. Yvette A. Rose Chair, Aviation Rulemaking Advisory Committee Cargo Airline Association 1620 L Street, NW, Suite 610 Washington, DC 20036

Dear Ms. Rose:

This letter is in response to a request from the Federal Aviation Administration (FAA) to the Rotorcraft Occupant Protection Working Group (ROPWG) to clarify its recommendation on the dynamic seat rules (14 CFR Part 27.562 and 29.562) as stated in the ROPWG Task 5 Report submitted on January 29, 2018. This letter also clarifies the ROPWG's recommendations on these same rules as they apply to the retrofit of previously manufactured helicopters as stated in the ROPWG Task 6 Report submitted on September 27, 2018.

The ROPWG is recommending that the FAA mandate §§ 27.562(a)(c)(d) and 29.562(a)(c)(d), in addition to §§ 27.562(b) with the changes specified in the Task 5 report and 29.562(b) as-is, for all newly manufactured rotorcraft that were certified before these regulations went into effect. The recommendation to mandate §§ 27.562(b) with the changes specified and 29.562(b) as-is was explicitly approved by a majority of the ROPWG voting membership, and these recommendations are described in Table 5 of the Task 5 report. The recommendation to mandate §§ 27.562(a)(c)(d) and 29.562(a)(c)(d) was implicitly agreed upon by a majority of the ROPWG voting membership, but was inadvertently omitted from the Task 5 report.

With regard to the Task 6 report, the ROPWG recommends against mandating the incorporation of the dynamic seat rules, including §§ 27.562(a)(b)(c)(d) and 29.562(a)(b)(c)(d), for previously manufactured helicopters. The recommendation against mandating §§ 27.562(b) and 29.562(b) was explicitly approved by a majority of the ROPWG voting membership, and this recommendation is described in Table 32 of the Task 6 report. The recommendation against mandating §§ 27.562(a)(c)(d) and 29.562(a)(c)(d) was implicitly agreed upon by a majority of the ROPWG voting membership, but this discussion was inadvertently omitted from the Task 6 report.

The content of this letter was approved unanimously by the ROPWG membership. I hope this clarifies the ROPWG's recommendations on the dynamic seat rules. Please feel free to contact me should you have any additional questions.

Sincerely,

Dannis F. Stenchan

Dennis F. Shanahan, M.D., M.P.H. Chair, Rotorcraft Occupant Protection Working Group 2839 Via Conquistador Carlsbad, CA 92009-3020



Airman Certification System Working Group Status Report to the Aviation Rulemaking Advisory Committee

David Oord Working Group Chair

November 27, 2018





MEMBERS of ACSWG - INDUSTRY

- David Oord, AOPA
- Paul Alp, Jenner & Block
- Cindy Brickner, SSA
- Paul Cairns, ERAU
- Kevin Comstock, ALPA
- Mariellen Couppee, Honeywell John King, King Schools
- Eric Crump, Polk State College
- David Dagenais, FSCJ
- Maryanne DeMarco, CAPA
- Anna Dietrich, Terrafugia
- Rick Durden, Independent
- Megan Eisenstein, NATA
- David Earl, Flight Safety
- Tom Gunnarson, KittyHawk

- Lauren Haertlein, GAMA
- John Hazlet Jr., RACCA
- Jens Hennig, GAMA
- Chuck Horning, ERAU
- David Jones, Avotek
- - Janeen Kochan, ARTS Inc.
 - Kent Lovelace, UND
 - Justin Madden, AMFA
 - John McGraw, NATA
 - John "Mac" McWhinney, King Schools
 - Crystal Maguire, ATEC
 - Nick Mayhew, L3
 - Phillip Poynor, NAFI

- Jimmy Rollison, FedEx
- JR Russell, NBAA
- Mary Schu, Mary Schu Aviation
- Roger Sharp, Independent
- Jackie Spanitz, ASA
- Burt Stevens, Oxford Flying Club, Inc.
- Robert Stewart, Independent
- Tim Tucker, Robinson
- Robert Wright, NBAA
- Donna Wilt, SAFE
- Roger Woods, Leonardo
- Philipp Wynands, Metro Aviation





<u>MEMBERS of ACSWG – FAA SMEs</u>

- Susan Parson
- Barbara Adams
- Bill Anderson
- Brianna Aragon
- Robert Burke
- Dennis Byrne
- James Ciccone
- Bryan Davis
- Joel Dickinson
- Troy Fields
- Ramona Fillmore

- Adam Giraldes
- Shawn Hayes
- Vanessa Jamison
- Laurin J. Kaasa
- Jeffrey Kerr
- Ricky Krietemeyer
- Mike Millard
- Anne Moore
- Kevin Morgan
- Margaret Morrison
- Richard Orentzel

- Katie Patrick
- Andrew Pierce
- Jason Smith
- Shelly Waddell Smith
- Jeff Spangler
- Robert Terry
- Matt Waldrop
- Larry West
- Stephanie Williams
- Jimmy Wynne





SUMMARY OF TASKING

- Provide recommendations regarding standards, training guidance, test management, and reference materials for airman certification purposes.
- Continuation of ATP, Instructor, and Aircraft Mechanic certificates.
- Revisions for Private, Commercial, Remote Pilot certificates and the Instrument Rating.
- Added Sport and Recreational Pilot certificates airplane.
- Added Private, Commercial, ATP, and Instructor certificates and Instrument Rating in additional aircraft categories—
 - Rotorcraft, powered lift, lighter-than-air, glider, etc.



<u>SCHEDULE</u>

- Interim reports
 - PVT, COM, ATP, Instructor, and AMT certificates and Instrument Rating no later than June, 2018 complete
 - Covering expanded tasks and proposed timelines for completion no later than December, 2019
- Final recommendation reports no later than June 12, 2020



<u>SCHEDULE</u>

- Future Meetings
 - December 11-12, 2018
 - 2019 Working to finalize



STATUS OF TASKING

• Overall, with the expanded and new tasks, working group remains on track to meet its schedule.



AIRMAN CERTIFICATION SYSTEM

Statutes provide for the Administrator to determine qualifications and to use designees to examine/test/issue certificates.

49 USC 44703

The Administrator of the Federal Aviation Administration shall issue an airman certificate to an individual ...qualified for...the position to be authorized by the certificate.

49 USC 44702

(d) DELEGATION The Administrator may delegate to a qualified private person ...a matter related to—(A) the examination, testing, and inspection necessary to issue a certificate under this chapter; and (B) issuing the certificate

14 CFR part 61: FAA regulations set forth the requirements and conditions for issuance of pilot/instructor certificates & rating in terms of aeronautical experience and broad subject areas for aeronautical knowledge and flight proficiency (skill).

Implementing Guidance

Through the Aviation Rulemaking Advisory Committee (ARAC), the FAA receives essential advice and recommendations from the aviation community on keeping all components of the airman certification system up to date in the context of constant change.

- Specific guidance to designees via the Practical Test Standards or Airman Certification Standards for a given certificate or rating.
- Keeping FAA advisory handbooks up to date
- Best practices for effective testing





• Instructor Airman Certification Standards

- Revised Area of Operation XI Slow flight, Stalls, and Spins
 - Task B. Demonstration of Flight Characteristics at Various Configurations and Airspeeds. This is a wholly new task inserted at this point due to its relationship to Task A. Maneuvering During Slow Flight and before the stall/spin tasks. Task B. Power-Off Stalls from earlier versions of this draft ACS has been re-designated Task C. Power-Off Stalls as well as the remaining tasks in succession within Area of Operation XI. The objective statement for new Task B:
 - To determine that the applicant understands the elements associated with flight characteristics and power required at different airspeeds and gear/flap configurations appropriate to the make and model of airplane flown and demonstrates the ability to apply that knowledge in delivering ground and/or flight instruction.
- The Note associated with all tasks in Area of Operation XI has been revised to read:
 - The evaluator must select Task A or B, and Task C, D, or E, and Task F, G or H, and Task I from Area of Operation XI. Slow Flight, Stalls, and Spins.

Aviation Maintenance Inspection Authorization

- Testing Standards
- Subgroup Consolidated Comments



Part 145 Working Group Status Report to the Aviation Rulemaking Advisory Committee

Sarah MacLeod and Ric Peri

Working Group Chairs

Thursday, December 13, 2018

Paul Cloutier Working Group Representative **Brent Hart** Analyst Thuy Cooper Analyst Justin Smith **Director of Operations** Craig Fabian **Regulatory Compliance Leader** Mark House Senior Business Process Manager Sarah MacLeod **Executive Director**

FAA—Flight Standard Services **Repair Station Branch** Federal Aviation Administration Office of Rulemaking Federal Aviation Administration Office of Rulemaking Quality Aviation Instruments, Inc., D/B/A QAI **GE Engines GE Engines**

Aeronautical Repair Station Association

Rick Tober Director of Quality Tim Miller Vice President / Safety, Quality & Technical Training Richard Macklosky Manager, Regulatory Management Civil Aviation Jeff Eagle Senior Regulatory Compliance Specialist Howard Whyte Quality Fellow—Regulatory Eric M. Monte Principal Quality Assurance Engineer

Triumph Group Operations

Aviation Technical Services

United Technologies Corporation

United Technologies Corporation Pratt & Whitney United Technologies Aerospace Systems DBA Hamilton Sundstrand Worldwide Repair Rockwell Collins

Michael Tharp Delta TechOps Senior Principal Engineer **Component Engineering** David Fitzsimmons Delta TechOps Program Manager Rodney Markesbery Delta TechOps **Program Manager Regulatory Compliance** Ronald Witkowski Gulfstream Director of Quality – Regulatory Compliance Richard (Ric) Peri Aircraft Electronics Association Vice President Government & Industry Affairs Sam Porter Sikorsky Senior Quality Manager A Lockheed Martin Company

Joe Sambiase **Director Airworthiness & Maintenance** Jeremy Bryck Senior Director 145 Maintenance Justin Madden Legislative Affairs Director Stephanie Branscomb Director of Operations Quality Manager Gary Daniel Avionic Certification Stephen R. Wysong President

General Aviation Manufacturers Association

Air Methods Corporation

Aircraft Mechanics Fraternal Association (AMFA)

Wysong Enterprise

Wysong Enterprise

Wysong Enterprise

John Fox Accountable Manager Senior Manager, Quality Control Steven Brewer Manager Structure Engineering Bill Hanf Owner Samuel Edwards Administrative Manager Jeffrey Orth Senior Regulatory & Compliance Specialist

United Airlines, Inc.

Kalitta Air

Green Mountain Avionics

Boeing Commercial Airplanes

Boeing Global Services

Recognized Observers to the Part 145 Working Group

Brian Koester

Manager, Flight Operations & Regulation

Carol Giles

Aircraft Maintenance and Systems

Technology Committee Liaison

National Business Aircraft Association

National Air Transportation Association

SUMMARY OF TASKING

- Comprehensive review of internal and external guidance material relate to laws and regulations – on certificating and overseeing all part 145 repair stations
 - ✓ Orders, notices, advisory circulars, job aids and safety assurance system (SAS) Data Collection Tools (DCTs)
 - ✓ Laws, executive orders
- Recommend improvements to guidance documents to ensure they—
 - ✓ Align with regulations, laws and executive orders
 - ✓ Annotate the applicable regulations, laws or executive orders
 - ✓ Are numbered to establish a relationship between the guidance and the underlying regulation
 - ✓ Communicate agency expectation of compliance to the public and FAA workforce in a comprehensive and consistent manner, with tools to ensure application and evaluation is based on performance-based oversight
 - ✓ Account for oversight of repair stations vis-à-vis amount, type, scope and complexity of the certificate holders' work and its size
- Develop a preliminary and final report containing the recommendations

<u>SCHEDULE</u>

- Preliminary report within 24 months from the first meeting of the Part 145 Working Group (December 11, 2018 means no later than Friday, December 11, 2020)
- Final report will be submitted no later than 12 months after the preliminary report is <u>forwarded to the FAA by ARAC</u> (earliest week of December 13, 2021).
- Working group meetings to conduct the study
 - ✓ First Thursday of every month starting February 7
 - Review laws, regulations, executive orders and guidance material
 - Align guidance to public and FAA workforce with regulation
 - ✓ Twice yearly face-to-face for 2-1/2 days invite subject matter experts and realign detail work with overall tasks – May 7-8; November 13-14

STATUS OF TASKING

- First meeting December 11 to 13
- Reviewed issues and task
- Developed schedule for working group meetings
- Developed draft outline of review process
 - ✓ Provided scope of laws, regulations and guidance material
 - ✓ Provided background to part 145 rulemaking(s)
 - Provided matrix to capture laws, statutes, executive orders, regulations (including preambles) guidance material (internal and external, including legal interpretations

AREAS of ARAC CONSIDERATION

Hopefully always none, otherwise advised.

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

Keith R. Morgan

Committee Co-Chair

13 December 2018

This document does not contain any export regulated technical data

MEMBERS of the Transport Aircraft and

Engines Committee

Pratt & Whitney

ALPA

A4A

ASD

Airbus

Boeing

GAMA

AIA

Bombardier

NADA/F

Embraer

<u>SCHEDULE</u>

- Last Meetings:
 - May 10, 2018 Rosslyn, VA
 - Telecom July 25, 2018
 - Nov. 15, 2018 Seattle, WA
- Next meetings:
 - Telecom Feb. 6, 2019
 - Face-to-face week of May 13, 2019 (Washington D.C.)
 - Telecom July 24, 2019
 - Face-to-face week of Nov. 4 2019 (Seattle)

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

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

15 November, 2018

MEMBERS of

Flight Test Harmonization Working Group

Authorities	OE	M'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: now complete
- 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
- ASHWG: Low Energy Alerting
 - FTHWG is participating with ASHWG (B. Lee is Liaison)





PHASE 3 SCHEDULE

	1	2	3	4	5	6	7	8	9	10	11	12
	Wichita	Cologne	Seattle	Paris	Montreal	Toulouse	Melbourne	Cologne	Washington DC ?	Oslo	Savannah	Bordeaux/ Istres?
	June 17	Sept 17	Dec 17	March18	Jun-18	September 18	December 18	4-8 March 19	10-14 June 19	9-13 Sept 19	2-6 Dec 19	2-6 March 20
15 PIO					н			Н	н	Н*		
16 HQRM					н	Н	Н	Н	н	Н*		
18 GAR		Р	Р	*P		Report 1 November	Report 20 December					
20 Return to Land					Р	Р	Р	*				
30 Yaw Control	Н	Н		H*	Report 1 June							
31 Vdf/Mdf	Н		н	Н		Н	Н	*	Report 30 June			

(*) 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 Tasking End Date 31 March, 2020 (We won't use it if we don't need it; we are anticipating Phase 4 to follow)

STATUS OF TASKING

- Topic from Phase 2: Wet Runway Stopping Performance
 - Scheduled Completion: March, 2018
 - Considered on-track / on-schedule: Complete!
- 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.)
 - NPA and CRD released earlier this year
 - Based on release date of NPA and CRD, we target 20 December, 2018 report date.
 - OEI directional control on slippery surfaces (Topic 30) Complete! To ARAC in December, 2018
- ASHWG: Low Energy Alerting
 - FTHWG is participating (B. Lee is the liaison)
 - First Face-to-face meeting was concluded yesterday

STATUS OF TASKING

- →FTHWG-46: 11-15 June 2018 Meeting Montreal (Bombardier)
 - 26 June (Go-Around OEI) 3 July (HQRM)
 - 10 July (RTL)
 - 31 July (Vdf/Mdf)
 - 7 August (Go-Around AEO)
 - 21 August (RTL)
 - 28 August (Go-Around AEO)
 - 4 September (RTL)
- →FTHWG-47 : 17-21 September 2018 Meeting Toulouse (Airbus)
 - 2 October (Go-Around AEO)
 - 9 October (RTL)
 - 16 October (Go-Around AEO)
 - 23 October (PIO)
 - 30 October (HQRM)
 - 6 November (Vdf/Mdf)
 - 7 November (Go-Around)
 - 13 November (RTL)
 - 20 November (HQRM)
 - 21 November (Go-Around)
- →FTHWG-48 : 3-7 December 2018 Meeting Fort Lauderdale (Embraer)
- →FTHWG-49: 4-8 March, 2019 Meeting Cologne (EASA)
- →FTHWG-50 : 10-14 June, 2019 Meeting Washington, DC (ALPA)
- →FTHWG-51: 9-13 September, 2019 Meeting Oslo (Norwegian)
- →FTHWG-52 : 2-6 December, 2019 Meeting Savannah (Gulfstream)
- →FTHWG-53 : 2-6 March, 2020 Meeting Bordeaux / Istres (?) (Dassault)

Activity since June, 2018

AREAS for ARAC CONSIDERATION

- No additional guidance needed from FAA or ARAC
- EASA's participation has improved (Thank you)

Transport Airplane Metallic and Composite Structures Working Group

Recommendation Report, Extension Topics, Briefing to the Aviation Rulemaking Advisory Committee

Doug Jury (Delta Air Lines)

Working Group Chair

November 15, 2018

Members of the Working Group

No membership changes from prior tasking

- 1. Michael Gruber
- 2. Chantal Fualdes
- 3. Salamon Haravan
- 4. Benoit Morlet
- 5. Antonio Fernando Barbosa
- 6. Kevin Jones
- 7. Toshiyasu Fukuoka
- 8. David Nelson
- 9. Phil Ashwell
- 10. Doug Jury
- 11. Mark Boudreau
- 12. Eric Chesmar

(Boeing) – Outgoing Chairperson (Airbus) (Bombardier) (Dassault Aviation) (Embraer) (Gulfstream) (Mitsubishi Aircraft) (Textron Aviation) (British Airways) (Delta Air Lines) – Incoming Chairperson (FedEx) (United Airlines)

SUMMARY OF ORIGINAL TASKING

With the increased use of composite and hybrid structures recommendations regarding revision of the **fatigue and damage-tolerance requirements** & associated guidance material were previously provided in Final Report, dated 6/27/2018

Tasking was divided up into the following 12 focus areas:

- 1. Threat Assessment
- 2. Emerging material technology
- 3. Inspection Thresholds
- 4. Structural Damage Capability Fail-safety
- 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
- 11. Disposition of cracking during full-scale fatigue testing
- 12. Accidental damage inspections included in the ALS conflicts w/ MSG-3 program

During final report submission and review by ARAC in July, 2018 <u>three separate</u> <u>topics were raised as needing further evaluation and recommendation</u> from this existing WG.

13

<u>SUMMARY OF TASKING – extended topics</u>

Three additional items for rule & guidance recommendation development

1. Structural Damage Capability (SDC) for Single Load Path (SLP) structure:

Develop requirements and guidance material for single load path (SLP) structure, which by definition has no SDC

2. Structural Bonding and "Weak Bonds"

FAA requests further clarification from the working group on how to address disbonds and weak bonds as a manufacturing defect

3. Repeat Inspections & Crack Interaction

Advisory Circular 91-82A provides evaluation considerations for establishing inspection thresholds and repeat intervals, including consideration of crack interaction with little guidance in AC. Based on this, the FAA is requesting information from the working group on how to address crack interaction when establishing inspection programs.

Each of these topics to be addressed by a smaller team, where each team has a designated leader to coordinate tasking activities among the smaller team – each leader has been identified, similar approach used in prior report development for the 12 separate items.

Deliverable & Schedule

Deliverable: report (either new report or amended existing report) containing:

•Recommendations on appropriate performance-based requirements

•Recommendations on any new guidance or changes to existing guidance

•Qualitative and quantitative costs and benefits of the recommendations

Milestones:

•TAE Status 1	Nov 2018
•Three targeted areas – define scope to be addressed in report - Face to Face	Jan/Feb 2018
•TAE Status 2	April 2019
 Provide draft rule & guidance recommendations 	Aug 2019
 Provide cost and benefit analysis 	Aug 2019
•Draft report - Face to Face	Sept 2019
•TAE Status 3	Nov 2019
 Approve Recommendation Report 	Dec 2019

Objective is to complete the report within 13 months, with 5 months reserve in case of unexpected roadblocks

Meeting cadence:

- Sub-teams (including NAA representatives) would meet more frequently
- Bi-weekly progress meetings (virtual) with FAA
- Full WG meetings (virtual) monthly or as needed

Avionics Systems Harmonization Working Group

November, 2018

ASHWG Summary

New task:

Identify and develop recommendations on low energy alerting requirements to supplement previous work

Status:

Meeting held on 27/28 June, 2018 (webex) Meeting held on 5/6 September, 2018 (webex) Meeting held on 13/14 November, 2018 (in person)

ASHWG New Task

New task:

Identify and develop recommendations on low energy alerting requirements to supplement previous work

Background:

ASHWG previously tasked to develop standards and guidance material for low speed alerting systems, that may complement existing low speed alerting requirements.

Update:

As a result of the Asiana Flight 214 accident, NTSB recommended to the FAA to "develop design requirements for context-dependent low energy alerting systems for airplanes engaged in commercial operations" (NTSB Safety Recommendation A–14–043)

ASHWG New Task

- Task Deliverable: Provide advice and recommendations to the ARAC through the TAE Committee in a report that addresses the following questions relative to new airplane designs, along with rationale.
 - 1. Do you recommend any changes to the existing low speed alerting requirements to provide additional pilot reaction time in cases where the airplane is both slow and close to the ground?
 - 2. Do you recommend any new or revised guidance material to define an acceptable low energy alert?
 - 3. After reviewing airworthiness, safety, cost, and other relevant factors, including recent certification and fleet experience, are there any additional considerations that the FAA should take into account regarding avoidance of low energy conditions?
 - 4. Is coordination necessary with other harmonization working groups (e.g., Human Factors, FlighTest)? If yes, coordinate with that working group and report on that coordination.
 - 5. Develop a report containing recommendations on the findings and results of the tasks explained above.
 - a. The recommendation report should document both majority and dissenting positions on the findings and the rationale for each position.
 - b. Any disagreements should be documented, including the rationale for each position and the reasons for the disagreement.

November 2018 Meeting

Team converged on an initial recommendation

- Change to 14 CFR 25.1303(c), Flight and Navigation Instruments
 - Add sub paragraph (3), to provide low airspeed (energy) alerting to the flight crew during the approach phase of flight
- Change to AC 25-7D, paragraph 32.2 (Flight and Navigation Instruments—§ 25.1303.)
 - Guidance for compliance/design
 - Guidance for evaluation/procedures
- Identified a list of additional considerations to be considered

Next Steps

- ASHWG Internal draft report containing recommendations for the rule/AC
 - Include other options identified but not included EX: update § 25.173 & 25.175 (positive stability airplanes), to be consistent with the FTHWG recommendation Topic 6 Phase2 report for neutral stability airplanes (§25.176 (c)).
 - Cover both automatic and manual Flight
 - Decouples longitudinal stability from the requirement for a low airspeed (energy) alert
 - Retains language consistent with the language from the FTHWG
 - Not be too prescriptive for the design and evaluation requirements/guidance
 - Writeup on each of the 'additional considerations' identified by the team
- Check point meeting in January 2019

• Answers to the questions in the tasking statement for internal team circulation, and with the FTHWG

- Face to face meeting in April, 2019
 - Objective to have a proposal for TAE Review

Current Roster

Joe Jacobsen	FAA	Joe.Jacobsen@faa.gov
Bob Myers	Boeing	Robert.j.myers@boeing.com
Dave Leopold	Boeing	David.D.Leopold@boeing.com
Brian Lee	Boeing	brian.p.lee@boeing.com
Karl Minter	ALPA	Karl.minter@alpa.org
Chris Heck	ALPA	Chris.heck@alpa.org
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Thierry Bourret	Airbus	thierry.bourret@airbus.com
Tim Buker	Gulfstream	Timothy.Buker@gulfstream.com
Janiece Lorey	Gulfstream	janiece.lorey@gulfstream.com
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Kajetan Litwin	Transport Canada	Kajetan.Litwin@tc.gc.ca
Marcelo de Lima Camargo	Embraer	macamargo@embraer.com.br
Loran Haworth	NASA	loran.a.haworth@nasa.gov
Clark Badie	Honeywell	Clark.badie@Honeywell.com

Ice Crystal Icing Working Group Status Report to the Aviation Rulemaking Advisory Committee

Melissa Bravin, Allan van de Wall

Working Group Chair

12/13/2018

MEMBERS of Ice Crystal Icing Working Group

Member Name	Organization	Role
Alan Strom	(FAA-ANE Standards) FAA	FAA Representative
	Representative	
Melissa Bravin	Boeing Commercial Airplanes	WG Co-Chair – Airplane – P
Allan van de Wall	GE Aviation	WG Co-Chair – Engine – P
Tom Dwier	Textron Aviation	Airplane – P
Pierre-Emmanuel Arnaud	Airbus	Airplane – P
Bryan Lesko	Air Line Pilots Association	Other – P
Rikki Gardonio	Air Line Pilots Association	Other – B
Jon Saint-Jacques	A4A/Atlas Air	Other – P
David Dischinger	Honeywell	Engine – P
Keith Wegehaupt	Honeywell	Engine – P
Jim Loebig	Rolls-Royce	Engine – P
Roberto Marrano	Pratt & Whitney Canada	Engine – P
Shengfang Liao	Pratt & Whitney East Hartford	Engine – P
Christopher Baczynski	Mitsubishi MITAC	Airplane – P
Kohei Oyabu	Mitsubishi MITAC	Airplane – B
Brian Matheis	UTAS	Other (probe) – P

SUMMARY OF TASKING

The ICIWG will provide advice and recommendations to the ARAC through the TAE Subcommittee on Appendix D to Part 33, and harmonization of §33.68 Induction System Icing requirements as follows:

1. Evaluate recent ICI environment data - determine whether flight testing data supports the existing Appendix D envelope.

2. Evaluate the results carried out in Task 1 and recommend changes to the existing Appendix D envelope, as required.

3. Compare available service data on air data probes from both government and industry probes on Appendix D, including any changes proposed in Task 2.

4. Evaluate the results from Task 3 and recommend ICI boundaries relevant to aircraft and engine air data probes. If the working group proposes a different envelope for aircraft and engine air data probes, recommend if these should be included in the existing Appendix D, or create a new appendix to Part 33.

5. Identify non-harmonized FAA or EASA ICI regulations or guidance. If the working group finds significant differences that impact safety, propose changes to increase harmonization.

6. Recommend changes to the Advisory Circular AC20-147a based on Task 1 through 5 results.

7. Assist the FAA in determining the initial qualitative and quantitative costs, and benefits.

8. Develop a recommendations report containing the results of tasks 1 through 6.

SCHEDULE (Preliminary)

Kick-off meeting January 15-16 2019, Location: FAA, Burlington, MA

• Submit work plan to TAE January 30 2019

At Meeting #2 (March 2019), Location Recommendation: Rolls-Royce, Indianapolis, IN, USA

- Walter Strapp to debrief FAA report
- OEMs determine if any additional events need consideration

At Meeting #3 (June/July 2019), Location Recommendation: GE, Munich, Germany

• Airframer ICI encounter database statistics (request data if available)

At Meeting #4 (October/November 2019), Location Recommendation: Boeing, Seattle, WA, USA

• Discuss envelope recommendations

At Meeting #5 (January/February 2020), Location Recommendation: Honeywell, Phoenix, AZ, USA

- Discuss envelope recommendations
- Begin work on report

At Meeting #6 (April / May 2020), Location Recommendation: Boeing, Washington, DC, USA

- Review / work on AC20-147a recommendations
- Review draft report

At Meeting #7 (August 2020), Location Recommendation: Pratt & Whitney, East Hartford, CT, USA

• Finalize draft, deliver to TAE (how long does TAE take to provide comments?) Via Webex

• Respond to TAE comments

At Meeting #8 if needed (October 2020), Location Recommendation: EASA, Cologne, Germany

• Final ARAC report to the FAA on or before TBD date

STATUS OF TASKING

- Working group has not started
- First milestone is the first meeting scheduled for January 15-16 at FAA offices in Burlington, MA

AREAS of ARAC CONSIDERATION

• None

Flight Test Harmonization Working Group Topic 30 Controllability During Low Speed OEI RTO Recommendation Report

Brian Lee (Boeing) US Co-Chair, FTHWG

25 July, 2018

MEMBERS of

Flight Test Harmonization Working Group

Authorities	OE	M'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			

<u>SCHEDULE</u>

	1	2	3	4	5	6	7	8	9	10	11	12
	Wichita	Cologne	Seattle	Paris	Montreal	Toulouse	Melbourne	Cologne	Washington DC ?	Oslo	Savannah	Bordeaux/ Istres?
	June 17	Sept 17	Dec 17	March18	Jun-18	September 18	December 18	<mark>4-8</mark> March 19	<mark>10-14</mark> June 19	<mark>9-13</mark> Sept 19	2-6 Dec 19	2-6 March 20
15 PIO					н			н	н	Н*		
16 HQRM					н	н	Н	н	н	H*		
18 GAR		Р	Р	*Р		Report 1 November						
20 Return to Land				•	Р	Р	Р	*				
30 Yaw Control	н	Н		H*	Report 1 June							
31 Vdf/Mdf	н		н	н		н	Н	*				

Topic 30

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

P = Aircraft Performance H = Handling Qualities 30 month clock began 1 November, 2017; Finishes 1 May, 2020

SUMMARY OF TASKING

- Swedish investigation report: FAA and EASA are recommended to investigate, in consultation with each other, "the prerequisites for introducing requirements concern yaw stability in large aircraft in the event of sudden loss of engine thrust below V_{MCG} under the anticipated operating conditions".
- Our task: Recommend Harmonized means of addressing the Swedish Accident Investigation Authority safety recommendation regarding engine out rejected takeoffs at speeds below V_{MCG} including slippery runways.

Background

- In January 2010 there was an accident in Sweden on a runway contaminated with ice. The airplane veered off the runway at approximately 60 kts after one of the engines failed during a takeoff run.
- From the Final Report of the investigation:
 - "There are no specific certification requirements for aircraft design organizations to show that the aircraft is maneuverable in the event of a sudden loss of engine thrust during the initial stage of the takeoff sequence. There are also no mandatory requirements for training regarding how to handle sudden losses of engine thrust during the initial stage of the takeoff sequence for pilots in training or recurrent training for this class of aircraft."

Summary of Method and Deliberations

- 4 face-to-face meetings; 8 dedicated telecons; Many more informal conversations, data study sessions
- Progression
 - Studied the accident scenario, the Swedish report, and the BEA's disagreement with the Swedish report (on the effect of differential braking)
 - Studied the inter-relationships between various regulations and guidance material already existing relative to directional control below V_{MCG} on slippery surfaces
 - OEM's conducted simulation studies to identify sensitivity trends of various parameters; data were shared
 - 20 runs for each airplane model
 - Debated several regulatory options
 - This is a physics problem. There are no practical design features available which would eliminate the potential safety issue for any foreseeable operating condition, for Part 25 airplanes of any size, configuration, takeoff thrust of number of engines.
 - Investigated other options, including AFM limitations, as well
 - Conclusion: it appears impractical to introduce new Subpart B regulation with clear, acceptable MOC to completely address this issue for any foreseeable combinations of runway condition and environmental conditions
 - Best way to address the safety issue:
 - Introduce guidance to 14CFR25.143(b)(1) specifying a new standard RTO demonstration by flight test or simulation on a dry runway; and
 - Produce combined recommendations in the areas of Operations and Procedures, Flight Crew Training, and Cockpit Controls

Recommendation Summary

- Subpart B Regulations
 - None necessary
- Subpart B Guidance
 - Introduce low speed RTO controllability demonstration by flight test or simulation on a dry runway
- Operations and Procedures
 - Do not take off if the runway surface is contaminated with wet ice
 - Consider using lower thrust if shown to be safe
 - Consider loading the airplane in mid to forward CG range
 - Adjust pedal position properly so that full rudder and full differential brakes can be applied simultaneously in the same sense
 - Include/Update information in Operating and/or Training Manuals

• Training

- Introduce specific ground training for low speed OEI RTO including slippery runways
 - Raise awareness of flight crews for the potential controllability issue
 - Emphasize training for quick reactions
 - Introduce training for use of differential braking
 - Introduce recommendation for proper pedal adjustment before takeoff
 - Include/update information in Operating and/or Training Manuals
- Introduce dedicated simulator task with low speed OEI RTO on slippery runways
 - Revise academic syllabus and simulator training sessions to include an event focused on the particular challenges
 - Revise FAA's AFS (Flight Standards) takeoff safety training aid
- Cockpit Ergonomics
 - Include additional guidance for 14CFR25.777 to ensure simultaneous full rudder and full differential braking can be achieved by crews of different statures

Recommendations for specific wording are included in the report for Subpart B guidance; specific example text is provided for those topics outside of FTHWG purview.

<u>Consensus</u>

- There were no dissenting opinions
- There were three comments from members, all addressed in the report
 - One OEM commented that the proposed certification demonstration did not seem very relevant to configurations with fuselage mounted engines.
 - Acknowledged, and the proposed demonstration condition would place a bound on thrust/weight, even for these configurations. The FTHWG believes this does not place an unreasonable burden on the OEM.
 - One operations member commented that use of de-rated thrust as a mitigation for lateral control brings a concern about longer exposure time to the condition at hand.
 - FTHWG is not directly proposing changes to operating regulations and guidance, but recommends FAA further study the subject, because there appears to be potential benefit
 - One OEM noted that the effect of differential braking would be limited on very slippery runways.
 - Acknowledged, but clarifies that the proposal could be beneficial on dry and wet conditions where braking efficiency is high.