AVIATION RULEMAKING ADVISORY COMMITTEE (ARAC) MEETING

September 21, 2023 ***1:00 PM – 4:00 PM

- Welcome and Introductions
- Federal Advisory Committee Act (FACA) Statement
- Ratification of Minutes
- Status Updates and Recommendation Reports
  - ARAC
    - Airman Certification System Working Group – Mr. David Oord
    - Training Standardization Working Group – Mr. Brian Koester
      - ❖ Standardized Curriculum Recommendation Report
    - Part 65.101 Repairman Certificate Portability Working Group – Mr. Ric Peri
      - ❖ Preliminary Report
  - Transport Airplane and Engine (TAE) Subcommittee – Mr. Keith Morgan
    - Flight Test Harmonization Working Group – Mr. Brian P. Lee
      - ❖ Phase 4/Topic 21 – Narrow Runway Operations (Present Recommendation Report to ARAC: 12/2023)
      - ❖ Phase 4/Topic 16 – Failure Assessment Methodology & Evaluation (FAME) (HQRM) (Present Recommendation Report to ARAC: 06/2024)
      - ❖ Phase 4/Topic 33 – Landing Distance on Dry Runway Recommendation Report
    - Ice Crystals Icing Working Group (Present Recommendation Report to ARAC: 2024) – Ms. Melissa Bravin and Mr. Allan van de Wall
    - Engine Propulsion Integration Working Group Status
  - Any Other Business

    - FAA Update on Regulatory Activities

- Next ARAC Meeting Date
    - December 14, 2023

AVIATION RULEMAKING ADVISORY COMMITTEE
DRAFT RECORD OF MEETING

MEETING DATE: July 20, 2023

MEETING TIME: 1:00 pm - 4:00 pm ET

LOCATION: The Aviation Rulemaking Advisory Committee (ARAC) held a hybrid meeting in person at the FAA Headquarters at 800 Independence Ave, SW, Washington, DC, 20591, in room 10A MacCracken/Huerta Collaboration Room, and virtually on Zoom.

PUBLIC ANNOUNCEMENT: The Federal Aviation Administration (FAA) provided notice to the public of this ARAC meeting in a *Federal Register* notice published on June 2, 2023 (88 FR 36354).

ATTENDEES:

Committee Members	
David Oord (In-person)	Wisk , *ARAC Chair*
Michelle Betcher	Airline Dispatchers Federation (ADF)
Ambrose Clay	National Organization to Insure a Sound Controlled Environment (N.O.I.S.E.)
Gail Dunham	National Air Disaster Alliance/Foundation (NADA/F)
Stéphane Flori	Aerospace & Defense Industries Association of Europe (ASD)
Daniel Friedenzohn	Embry-Riddle Aeronautical University
Paul Hudson (In-person)	FlyersRights.org
Randy Kenagy	Air Line Pilots Association (ALPA)
Chris Martino	Helicopter Association International (HAI)
Keith Morgan	Pratt & Whitney *Chair, Transport Airplane and Engine (TAE) Subcommittee*
George Paul	National Air Carrier Association (NACA)
Larry Rooney (In-person)	Coalition of Airline Pilots Association (CAPA)
Yvette A. Rose (In-person)	Cargo Airline Association (CAA)

Chris Witkowski	Association of Flight Attendants (AFA)
Non- Members	
Tanya Boisseranc	Boeing
Mel Bravin	Boeing
Antonio Chiesa	Transport Canada Civil Aviation
Maryann DeMarco (In-person)	CAPA
Jens Hennig (In-person)	General Aviation Manufacturers Association
Robert Ireland (In-person)	Airlines for America (A4A)
Brian Koester (In-person)	National Business Aviation Association (NBAA)
Brian Lee	Boeing Company *Flight Test Harmonization Working Group Chair*
Justin Madden (In-person)	A4A
Jim Stieve	Southwest Airlines
Phan Tran	Public Citizen
FAA Staff	
Kathy Abbott	Aircraft Certification Service (AIR)
Timothy Adams	Flight Standards Service (AFS)
Angela Anderson	Office of Rulemaking (ARM)
Chris Bailey	ARM
Troy Brown	AIR
Paul Cloutier	AFS
Thuy Cooper	ARM
Colleen Donovan	AIR
Michelle Ferritto	ARM
Ramona Fillmore	AFS
Robert Ganley	AIR
Johann Hadian (In-person)	ARM

Syerra Joyner (In-Person)	ARM - FAA Intern
Daniel Leach	Office of Aviation Policy and Plans (APO)
Karen Lucke (In-person)	AFS
Seth Markowitz	APO
Suzanne Masterson	AIR
Lane Murray	APO
Abbie Otis	AFS
George Padalec	AFS
Katie Patrick	AFS
Ryan Phillips	ARM - FAA Intern
Paul Preidecker	FAA Contractor
Alberto Ramon	APO
Robert Reckert	AFS
Brandon Roberts (In-person)	ARM, *Designated Federal Officer*
Puja Sardana (In-person)	FAA Contractor
Shelly Waddell Smith	AFS
Alan Strom	AIR
Chris Thomas (In-person)	AFS
Alana Zautner	AIR
Martin Zhu	APO

Welcome and Introduction

Mr. Brandon Roberts, Designated Federal Officer (DFO), called the meeting to order at 1:08 pm ET. He reminded everyone that the meeting was being recorded, and he reviewed logistics for the hybrid meeting.

Mr. Roberts read the required FACA statement (Title 5, United States Code (5 U.S.C.); Appendix 2 (2007)). He stated that members of the public may address ARAC with permission of the Chair, Mr. David Oord.

Mr. Oord welcomed everyone to the meeting. He noted a membership change as Mr. Chris Cooper is in a new position and no longer an ARAC member.

Ratification of Minutes

Mr. Oord asked for a motion to accept the March 16, 2023[1], ARAC meeting minutes. Mr. Keith Morgan motioned to accept the minutes, and Ms. Yvette Rose seconded the motion.

All ARAC members voted in favor of ratifying the minutes.

Status Reports/Recommendation Reports

A copy of the July 20, 2023, meeting packet, which includes working group presentations, can be found at:

https://www.faa.gov/regulations_policies/rulemaking/committees/documents/index.cfm/document/information/documentID/5906

Airman Certification Systems Working Group (ACSWG)

Mr. Oord, ACSWG Chair, provided the working group's status report. The update included an overview of membership, a summary of tasking, a review of the schedule, the status of tasking, and areas for ARAC consideration.

Mr. Oord stated that membership, tasking, and the schedule have largely remained the same. He recognized the FAA team for acknowledging the confines of ex parté. Mr. Oord reported that the working group has been in touch with the agency to find solutions. He noted the working group's schedule (and final report) may be updated based on the agency's approval of previously submitted work.

Mr. Oord described the working group's recommendation for ARAC consideration: a list that prioritizes the transition from Practical Test Standards (PTS) to Airman Certification Standards (ACS), and updates for the existing ACS already in effect.

Mr. Oord asked if there were questions or a motion to accept the recommendation. Ms. Rose motioned, and Ms. Gail Dunham seconded the motion. Mr. Paul Hudson asked if the working group has considered any pending legislation regarding the training of pilots.

[1] The March 16, 2023, meeting minutes can be found at: https://www.faa.gov/regulations_policies/rulemaking/committees/documents/index.cfm/document/information/documentID/5906

Mr. Oord answered no; the group's work had nothing to do with the number of hours worked. All ARAC members voted in favor of accepting the recommendation list for submission to the FAA.

Training Standardization Working Group (TSWG)

Mr. Brian Koester provided the TSWG's status report. The update included an overview of membership, a summary of tasking, a review of the schedule, the status of tasking, and areas for ARAC consideration, including the recommendation report the working group submitted to ARAC. Mr. Koester noted that proposed replacements have been submitted for members who have left or retired.

Mr. Koester stated that tasking has not changed and that the group meets regularly. He summarized the following status of taskings:

- Taskings 1 (schedule) and 2 (instructor curriculum) are complete.
    - The FAA is making revisions to the instructor curriculum.
- Anticipated recommendations:
    - September 2023:
        - Hawker 800
        - Citation Excel
    - December 2023:
        - King Air 300
        - Challenger 300

Mr. Koester emphasized and explained the scope of the group's work, which includes only part 135 standard curricula.

Mr. Koester summarized existing TSWG Aircraft Type Action Team Tasks and the progress of each. He mentioned the following areas for ARAC consideration:

- New Action Teams:
    - BE-300 King Air Action Team
    - CL-30 Challenger 300 Series Action Team
- FAA is working to publish guidance for Adaptive Recurrent Training.
- Reviewing methods to expedite the recommendation process.

Mr. Koester described the following recommended edits for consideration in response to the FAA review of their previously submitted work:

4.1 Recommendation to Improve the Instructor and Check Pilot Qualification Master Curriculum

TSWG recommends the FAA revise Standardized Curriculum Instructor and Check Pilot Qualification Master Curriculum with the following technical corrections and improvements.

Mr. Oord asked if all the training curricula recommended by the group are conducted in a simulator or in an airplane, and Mr. Koester confirmed it is all simulated.

Mr. Oord asked if there was a motion to accept the recommendation. Mr. Larry Rooney motioned, and Ms. Gail Dunham seconded the motion. All members voted in favor of accepting the report, with Mr. Paul Hudson abstaining.

Part 65.101 Repairman Certificate Portability Working Group

Mr. Oord noted that Mr. Ric Peri was not able to be at the meeting, and the group will present their recommendation report at the September ARAC meeting.

Transport Airplane and Engine (TAE) Subcommittee

Mr. Keith Morgan, the TAE Subcommittee Chair, provided the TAE Subcommittee status report update. He reviewed membership and stated that there are currently two active TAE Subcommittee working groups: Flight Test Harmonization (FTHWG) and Engine Ice Crystal Icing (ICIWG).

Mr. Morgan reviewed the scheduled meetings and the following schedule of deliverables:

September 2023
- FTHWG Dry Runway

December 2023
- FTHWG Narrow Runway

Flight Test Harmonization Working Group (FTHWG)

Mr. Morgan noted a few changes in FTHWG membership. He reviewed the schedule (including face-to-face meetings), described the tasking, and stated that the status is on track. Mr. Morgan stated that the working group has been working on phase 4 of the tasking, described a breakdown of the topics and progress of work, and detailed how the work is being delegated.

He flagged that the following reports need due date extensions:

- Narrow Runway Certification (at risk: requesting extension (ARAC Meeting in December 2023))
- Dry Runway Braking (Requesting Extension to finish (Now: ARAC Meeting in September 2023))

Mr. Morgan reviewed the phase 4 master plan (noting that the group's work should be closed out around the middle of 2024).

Mr. Morgan mentioned the following areas for ARAC consideration:

- European Union Aviation Safety Agency (EASA) is encountering budgetary challenges, which limits the specialist's travel.
- EASA is asking for in-person meetings, which increases costs to hosts and generally slows down productivity.
- Mr. Morgan encouraged EASA to support Webex meetings across necessary disciplines (as other members are).

Ms. Rose asked about the intent of topic 21, Narrow Runway Operations. Mr. Brian Lee, the FTHWG Chair, noted that the goal was centered around harmonizing standards amongst other entities (EASA, Canada, system safety people, etc.) to create a master plan where a certificate holder has to show runway approval.

Mr. Hudson asked if the flight test protocols would be public information, and Mr. Lee stated that the working group intends these to be public standards for flight test handbooks.

Mr. Hudson asked if the temperature (particularly hot runways) has been considered in their work. Mr. Lee noted that this has not been considered, and it is his understanding that operations do not occur over 120 degrees Fahrenheit.

Ice Crystals Icing Working Group (ICIWG)

Ms. Melissa Bravin provided the ICIWG status update. She noted that there have been no changes in membership or summary of tasking. She reviewed the schedule and summarized the group's status of tasking, including four completed and four in-progress tasks. Ms. Bravin stated that the group has no areas for ARAC consideration at this time.

Other Business and FAA Updates

<u>New Tasking - Engine & Powerplant Interface Working Group</u>

Mr. Roberts introduced Mr. Robert 'Bob' Ganley, DOT/FAA/AIR-600, who presented a new tasking to ARAC. Mr. Ganley summarized the tasking request, which is to address a range of engine and powerplant interface regulatory and guidance issues. The task will address several gaps, conflicts, and discrepancies between 14 CFR part 33 and part 25 regulations and guidance that have accumulated over time.

Mr. Ganley stated that the new Engine and Powerplant Interface Working Group (EPIWG) will report to the ARAC TAE Subcommittee. He described the tasks listed in the notice. Mr. Morgan confirmed that TAE is comfortable with the tasking should ARAC accept it.

Mr. Oord asked for a motion to accept the tasking for a new working group under TAE. Mr. Larry Rooney motioned, and Mr. Keith Morgan seconded the motion. All ARAC members voted in favor of accepting the tasking. Mr. Oord confirmed the new tasking notice would be posted to the FAA's committee website (not in the Federal Register) and emailed to all ARAC members. He stated that the solicitation period would be 3 weeks.

Regulatory Updates

Mr. Roberts noted that the following rules have published since the March meeting:

- U.S. Agents for Service on Individuals With Foreign Addresses Who Hold or Apply for Certain Certificates, Ratings, or Authorizations NPRM published on June 12, 2023, and the comment period closes on August 11, 2023.

- Integration of Powered-Lift: Pilot Certification and Operations; Miscellaneous Amendments Related to Rotorcraft and Airplanes NPRM published on June 14, 2023, and the comment period closes on August 14, 2023.

- Prohibition Against Certain Flights in the Territory and Airspace of Libya Final Rule published on March 21, 2023, and became effective on March 17, 2023.

- Medium Flocking Bird Test at Climb Condition Final Rule published on April 4, 2023, and became effective on June 5, 2023.

  This rule is consistent with the recommendations in the "Turbofan Bird Ingestion Regulation Engine Harmonization Working Group Report."

- Updating Manual Requirements to Accommodate Technology Final Rule published on May 30, 2023, and became effective on June 29, 2023.

- Aviation Maintenance Technician Schools Interim Final Rule published on June 23, 2023, and became effective on the day of publication.

- Decompression Criteria for Interior Compartments Final Rule published on June 13, 2023, and will be effective on August 14, 2023.

- High Elevation Airport Operations Final Rule published on June 15, 2023, and became effective on July 17, 2023.

- Installation and Operation of Flightdeck Installed Physical Secondary Barriers on Transport Category Airplanes in Part 121 Service Final Rule published on June 26, 2023, and will become effective on August 25, 2023.

The rule incorporates the consensus recommendations from the "Recommendation Report to Aviation Rulemaking Advisory Committee for Implementation of Section 336 of Public Law 115–254.

- Modernization of Special Airworthiness Certificate NPRM published on July 24, 2023.

FAA Responses to ARAC Recommendations

Mr. Roberts noted that in response to ARAC's Transport Airplane Metallic and Composite Structures Working Group Crack Interaction Report, the FAA will work with other stakeholders related to the two advisory circulars to develop a plan to implement appropriate changes to them.

Other Business

Mr. Roberts announced various changes in FAA leadership.

Mr. Roberts stated that the ARAC membership packet has been submitted to the department by the FAA, and he is hoping to have an approved membership by the next meeting in September 2023.

Mr. Hudson asked how members are appointed for a task force mentioned at a recent summit. Mr. Roberts confirmed the summit was not a public meeting under FACA, and the task force was not set up under an FAA committee. Mr. Hudson asked who was responsible for that group, and Mr. Roberts confirmed he did not know but could attempt to find out. Mr. Hudson asked about the status of the emergency evacuation request for comments. Mr. Roberts confirmed comments are still being analyzed and further steps would be taken based on congressional advisory.

Ms. Rose asked about the timing of the Fall Unified Agenda. Mr. Roberts noted that the Office of Information and Regulatory Affairs (OIRA) begins the process for the next cycle after one cycle has been published. Since the Spring Unified Agenda recently published, he expected OIRA to begin the Fall Unified Agenda cycle in September or October.

Mr. Robert Ireland noted that, while Airlines for America is not currently part of ARAC membership, their expert opinion would be highly valuable for pertinent discussions and updates.

Adjournment

Mr. Oord stated that the next meeting is on September 21, 2023. Mr. Oord thanked everyone, and he adjourned the meeting at 2:33 pm ET.

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

David Oord
Working Group Chair

September 8, 2023

MEMBERS of ACSWG - INDUSTRY

- David Oord, Wisk
- Paul Alp, Jenner & Block
- Cindy Brickner, SSA
- Paul Cairns, ERAU
- Kevin Comstock, ALPA
- Mariellen Couppee, Independent
- Eric Crump, Polk State College
- David Dagenais, FSCJ
- Maryanne DeMarco, CAPA
- Rick Durden, Independent
- Megan Eisenstein, NATA
- David Earl, Flight Safety
- John Hazlet Jr., RACCA
- Jens Hennig, GAMA
- Chuck Horning, ERAU
- David Jones, Avotek
- John King, King Schools
- Janeen Kochan, ARTS Inc.
- Kent Lovelace, UND
- John McWhinney, King Schools
- Crystal Maguire, ATEC
- Nick Mayhew, L3
- Jimmy Rollison, Independent
- Mary Schu, Mary Schu Aviation
- Roger Sharp, Independent
- Jackie Spanitz, ASA
- Burt Stevens, CFI Care
- Robert Stewart, Independent
- Tim Tucker, Robinson
- Donna Wilt, SAFE
- Roger Woods, Leonardo
- Philipp Wynands, Metro Aviation

MEMBERS of ACSWG – FAA SMEs

- Barbara Adams
- Bill Anderson
- Dennis Byrne
- James Ciccone
- Bryan Davis
- Joel Dickinson
- Mike Duffy
- Troy Fields
- Ramona Fillmore
- Adam Giraldes
- Laurin J. Kaasa
- Jeffrey Kerr
- Ricky Krietemeyer
- Karen Lucke
- Mike Millard
- Anne Moore
- Kevin Morgan
- Margaret Morrison
- Richard Orentzel
- Katie Patrick
- Andrew Pierce
- Robert Reckert
- Jason Smith
- Shelly Waddell Smith
- Jeff Spangler
- Robert Terry
- Chris Thomas
- Matt Waldrop
- Stephanie Williams
- Bill Witzig
- Jimmy Wynne
- Christopher Yanni

SUMMARY OF TASKING

- Provide recommendations regarding standards, training guidance, test management, and reference materials for airman certification purposes.
- Continuation of Pilot, 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.

SCHEDULE

- Interim reports
  - PVT, COM, ATP, Instructor, and AMT certificates and Instrument Rating – no later than June 2018 - complete
- Final recommendation report TBD
  - Unable to complete due to incomplete taskings and restrictions

SCHEDULE

- **2023 Meetings –**
  - April 18 (virtual meeting)
  - September 19 (virtual meeting)
  - . . .

STATUS OF TASKING

- Progress on Standards, Guidance, and Test Management on hold
  - Publication of completed ACS documents waiting on Incorporation by Reference (IBR) rulemaking
  - In response to Congressional requests made in H.R. 133-1160, Call to Action Final Report submitted May 2022, Data Analysis workgroup formed in February 2023
    - Means for ongoing data evaluation based on ACS codes, knowledge test reports, and practical exam reports for the purpose of ongoing improvement and collaboration between training and testing and to support emerging technologies.
  - FAA and working group leads continue to explore options to move forward
    - Guidance materials
    - ACS prioritization - ACS WG Leads prepared priority list for PTS to ACS transition, and ongoing maintenance of existing ACS, following IBR publication.
    - Pathways, process, and engagements going forward

Training Standardization Working Group
Status Report to the
Aviation Rulemaking Advisory Committee

September 8, 2022

MEMBERS of Training Standardization Working Group

Thomas	Benvenuto	Solairus Aviation
Stephen	Bragg	Executive Jet Management
Greg	Brown	Helicopter Association International
Doug	Carr	National Business Aviation Association
Gene	Copeland**	Jet Aviation
Jon	Dodd	Coalition of Airline Pilots Associations
Aimee	Hein	CAE, Inc.
Jens	Hennig	General Aviation Manufacturers Association
Brian	Koester*	National Business Aviation Association
Todd	Lisak	Air Line Pilots Association
Steve	Maloney	Sun Air Jets
Brian	Neuhoff	Airbus Helicopters
Fabricio	Oliveira de Toledo	Embraer
Janine	Schwahn	Summit Aviation, Inc.
Brian	Small	FlightSafety International
Annmarie	Stasi	Northwell
Daniel	Von Bargen	Pilot
Matt	Zeiman**	Textron

FAA Partners
Josh Tarkington
Paul Preidecker
Shannon Salinsky
James Sapoznik
Kristin Tullius

**Training Standardization Working Group Chair*
*** Membership pending DOT review*

SUMMARY OF TASKING

1) The Training Standardization Working Group (TSWG) will provide advice and recommendations to the ARAC on the most effective ways to standardize curricula provided by training centers. The group is tasked with the following:

2) Recommend a detailed master schedule for the development of part 135 standardized curricula for each aircraft or series of aircraft;

3) Develop and recommend a standardized curriculum to qualify training center instructors and evaluators (check pilots) to provide part 135 training, testing, and checking;

4) Develop and recommend part 135 standardized curricula for each aircraft or series of aircraft, including the maneuvers, procedures, and functions to be performed during training and checking;

5) Recommend continuous improvements to each part 135 standardized curriculum for a specific aircraft or series of aircraft; and

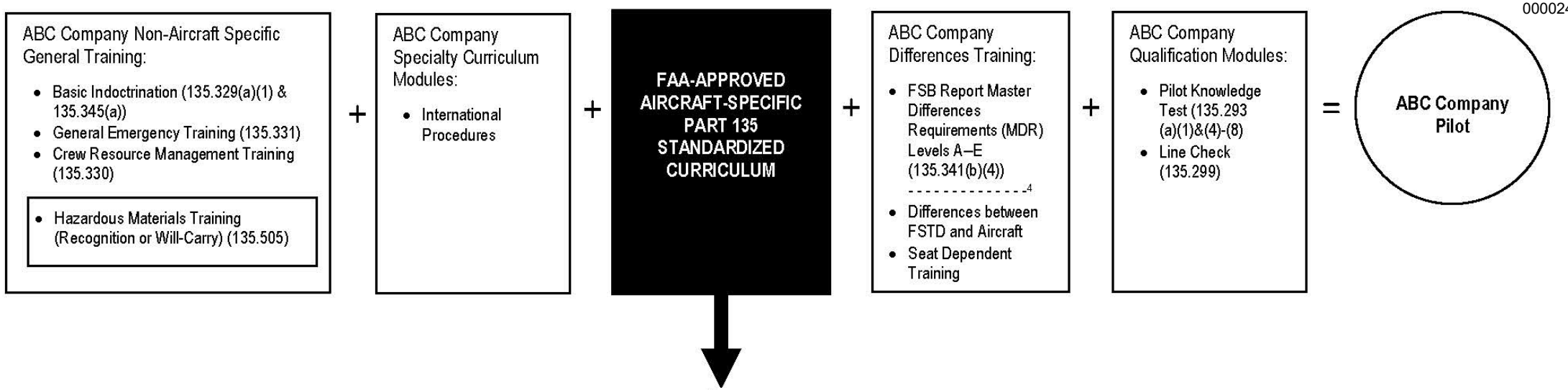
6) Develop reports containing recommendations for standardized curricula and results of the tasks listed here. The group should review any relevant materials to assist in achieving their objective, including FAA Advisory Circular 142-1,2 Standardized Curricula Delivered by Part 142 Training Centers.

SCHEDULE

- ✓June 2021 – Deadline for submitting initial recommendation report including the proposed master schedule for standardized curriculum development to ARAC. The deadline to submit the interim report to the FAA is June 30, 2021.
- ✓ December 2021 – Deadline for submitting the addendum recommendation report, including a standardized curriculum to qualify training center instructors and check pilots to provide part 135 training, testing, and checking to ARAC. The deadline to submit the interim report to the FAA is December 31, 2021.
- The Training Standardization Working Group may submit ad hoc recommendation reports, including continuous improvements, to standardized curricula, via ARAC to the FAA for review and consideration at any time.
- The voting members of the TSWG meet quarterly

STATUS OF TASKING

- Tasking 1 (schedule) and 2 (instructor curriculum) are complete.
  - The FAA is making revisions to the instructor curriculum
- Anticipate recommendations:
- September 2023:
  - Hawker 800
  - Citation Excel
- December or March 2023:
  - King Air 300
  - Challenger 300



What does the Aircraft-Specific Part 135 Standardized Curriculum *portion* include (what's in the box—*which curriculum segments are inside the box*)?

Aircraft-Specific Part 135 Standardized Curriculum:
(Note: Aircraft Ground Training & Flight Training Segments under current Definitions.)[1]

- Aircraft-Specific Ground Training/Aircraft Systems (135.345(b))
- Flight Training (135.347)[2]
- SOPs
- Profiles (Maneuvers) (135.327(b)(3))
- Checklists (OEM or developed by SMEs)
- Aircraft-Specific Qualification Modules (Testing/Checking)[3]
  - Pilot Testing: 135.293(a)(2)&(3)
  - Proficiency Check: 135.293(b)
  - Instrument Proficiency Check: 135.297

- Instructors/Check Airman (Evaluators) qualified by the 142 Training Center in accordance with 135.337 through 135.340 to deliver training, testing & checking under Aircraft-Specific Part 135 Standardized Curriculum.

TSWG Aircraft Type Action Team Tasks:

Action Team:	Team Lead	Participants:

1. Conduct a review and analysis of the assigned tasks and any other related materials or documents.
   - Review TNA
   - Review FSBR
   - Review relevant OpSpecs/MELs
   - Review existing 142 training programs
2. Perform malfunction equivalency exercise.
3. Based on the templates and best practices established by the TSWG Develop and recommend the following curricula, including planned hours, for each aircraft fleet:
   - Initial New Hire,
   - Standard Recurrent,
   - Requalification,
   - Upgrade Recurrent, and
   - Adaptive Recurrent Training.
4. Each Type Specific Action Team will develop the following based on the templates and best practices established by the TSWG, to be used throughout the standardized training program and during normal operations:
   - SOPs
   - Call outs
   - Checklists
5. Draft and submit the recommendation report based on the assigned tasks.
6. Present the recommendation report at the TSWG meeting.
7. Provide continuous improvement for the standardized curriculum based on recommendations from the TSWG.

STANDARDIZED CURRICULUM
SAFETY • CONSISTENCY

TSWG CE-560 XL & HS-125 Action Team Progress:

100%	Type Specific Training Needs Analysis	• Remove baseline LOs that do not apply to type. Add Type specific LOs from FSB report.
100%	FSB Reports	• Review Pilot Training and Special Emphasis Items • Add associated learning objectives
100%	Malfunction Equivalency	• Follow the ICAO Delphi process to determine which abnormal and emergency procedures will be taught in ground school, systems integration, and simulator sessions
100%	OpSpec Review	• Determine Specialty courses required as part of SC package Finalize front matter verbiage
100%	Populate Training Plan	• Determine planned hours for each ground module and structure ground curriculum segment • Allocate tasks to systems integration and sim sessions
100%	SOPs	• Determine Call Outs • Determine SOPs • Determine Checklists

AREAS of ARAC CONSIDERATION

- New Action Teams:
  - BE-300 King Air Action Team
  - CL-30 Challenger 300 Series Action Team
- FAA is working to publish guidance for Adaptive Recurrent Training
- Reviewing methods to expedite the recommendation process

RECOMMENDATION(S)

5.1 Recommendation on Training Curricula

In accordance with the tasking, the Training Standardization Working Group recommends the curriculum in Appendices A through E for adoption and implementation as the standardized training program for pilots operating G-V aircraft under 14 CFR part 135.

Appendix A – G-V Curriculum Document
Appendix B – Standard Operating Procedures
Appendix C – Course 1, 2, and 3 Learning Objectives
Appendix D – Specialty Curriculum Learning Objectives (CPDLC)
Appendix E – Differences Course Learning Objectives

RECOMMENDATION(S)

Appendices:

- Appendix A: CE-560 XL Curriculum Document
- Appendix B: CE-560XL SOPs, Maneuvers, and Callouts
- Appendix C: CE-560XL Learning Objectives
- Appendix D: CE-560XL Differences Courses Learning Objectives
- Appendix E: HS-125 Curriculum Document
- Appendix F: HS-125 SOPs, Maneuvers, and Callouts
- Appendix G: HS-125 Learning Objectives
- Appendix H: HS-125 Differences Courses Learning Objectives

DISSENT(S)

- None.

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

Keith R. Morgan
Subcommittee Chair

21 Sept 2023

Members of the Transport Aircraft and Engines Subcommittee

Pratt & Whitney

ALPA

A4A

ASD – need a member

Airbus

Boeing

GAMA

AIA – need a member

NADA/F

Embraer

SRCA

TAE Meeting Schedule

- 2023 Meetings
  - January 24
  - April 25 (planned face-to-face Seattle)
  - August TBD
  - October 24 (planned face-to-face Washington DC)

Active Working Groups

- Flight Test Harmonization (FTHWG)
- Engine Ice Crystal Icing (ICIWG)
- Engine Propulsion Integration (EPIWG)
  - In development

Look Ahead Report Submittal Schedule to ARAC

September 2023

- FTHWG Dry Runway

December 2023

- FTHWG Narrow Runway

Flight Test Harmonization Working Group Status Report to the Transport Aircraft and Engines Subcommittee of the Aviation Rulemaking Advisory Committee

Brian P. Lee, Boeing

Laurent Capra, Airbus

Working Group Co-Chairs

August, 2023

MEMBERS of Flight Test Harmonization Working Group Phase 4

Authorities	OEM's			Observers
FAA ~~Bob Stoney~~ Joe Prickett Troy Brown (sponsor)	Airbus Philippe Genissel + SME's	Embraer Murilo Ribeiro + SME's	ATR Matthieu Ollivier Jean-Pierre Marre +SME's	JCAB (Japan) Shinsuke Yamauchi CAAI (Israel) Yshmael Bettoun
EASA Matthias Schmidt Lorenzo Prieto Saiz	Boeing Brian Lee (Acting) Ryan Westbrock + SME's	Gulfstream Mike Watson +SME's	Airbus Canada Joel Boudreault +SME's	Norwegian Airlines John Lande Operations SME David Anvid
Transport Canada Lee Fasken	Bombardier Tony Spinelli +SME's	Textron Kurt Laurie +SME's	DeHavilland Canada Eric Herrmann +SME's	Centre d'Essais en Vol (DGA) Matthieu Buisson **Operators**
ANAC (Brazil) Marcos Carvalho	Dassault Philippe Eichel +SME's			ALPA John Cinnamon ~~Josh Larson~~

Status of Working Group Activities

- Back in step
  - Quarterly face-to-face meeting (two in Europe, two in North America)
  - Weekly scheduled telecons, extra telecons as necessary
- Additional working meetings
  - Dry Runway Stopping is meeting weekly IN ADDITION to finish consensus
  - Subteams of FAME are meeting regularly (IN ADDITION) in support larger group

STATUS OF TASKING

- Work is under way on 5 topics (Specific details to follow):
  - FAME (how to deal with failures affecting Handling Qualities) (EASA has withdrawn)
  - Narrow Runway Certification (Now planning Interim Report ARAC in December)
  - Dry Runway Braking Recommendation report to ARAC this meeting
  - Reduced/Derated Thrust Takeoff Procedures (Discussions are progressing)
  - Landing Distance for Abnormal Configurations (Discussions are progressing)

- ASHWG: (Recommendation to Working Groups in September)
  - Low Energy Alerting
    - There will be fall-out from the ASHWG Recommendation
      - FTHWG Phase 2 recommended
        - Low Energy Alerting for all phases of flight only for neutral-stability configurations
      - ASHWG recommends
        - Low Energy Alerting only for close-to-ground for all configurations

Phase 4 FTHWG Topic Technical Status (1 of 3)

- Topic #16 Failure Assessment Methodology & Evaluation (FAME)
  - Making progress on many fronts
  - 2 sub-teams chartered and meeting regularly
    - Recommend Consistent Flight Envelope for failure evaluations
    - Recommend Consistent Environmental Conditions for failure evaluations
  - Challenge: CATA is working 25.672
    - Specific questions submitted to CATA for clarification
  - Another Challenge: EASA has withdrawn from discussion of FAME (budget restrictions)
  - Our direction from FAA: keep working without EASA
- Topic # 21 Narrow runway operations
  - Team has converged on the definition a “baseline” runway, the “regulatory hook” for declaration of runway width, and made considerable progress regarding “narrower than baseline”
  - The anticipated protracted discussion regarding System Safety which will put the topic schedule at risk has surfaced: Authorities’ System Safety just do not have sufficient bandwidth to engage with this topic at this time. New plan: document what progress we have made and submit Interim Report to ARAC at December meeting. Draft well along.

Phase 4 FTHWG Topic Technical Status (2 of 3)

- Topic # 33 Landing Distance on Dry Runway (dispatch, not TALPA) Note: This is a harmonization task, not a safety issue.
  - Recommendation Report to ARAC, this meeting

However…

  - When the Dry Runway Stopping report is finished, we really should re-open Topic 9, Wet Runway Stopping, and Topic 31, TALPA reports and modify to ensure that all are consistent…Consider this (consistency issue) appropriate as a new topic during the next phase.

Phase 4 FTHWG Topic Technical Status (3 of 3)

- Topic # 22 Landing in Abnormal Configurations Kickoff in September in Toulouse
  - Progressing on schedule
- Topic # 26 Derate Thrust Procedures Kickoff in September
  - Progressing on schedule

AREAS for ARAC CONSIDERATION

- EASA is encountering budgetary challenges
  - Limits the specialists availability
- We would like to encourage EASA to support this activity across necessary disciplines (as other members are)

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

Topic 33 Landing Distance on Dry Runway

Brian Lee, Boeing
Laurent Capra, Airbus
Working Group Chairs

21 September, 2023

FTHWG MEMBERS

Authorities	OEM's			Observers
FAA ~~Bob Stoney~~ Joe Prickett Troy Brown (sponsor)	Airbus Philippe Genissel + SME's	Embraer Murilo Ribeiro + SME's	ATR Matthieu Ollivier Jean-Pierre Marre +SME's	JCAB (Japan) Shinsuke Yamauchi CAAI (Israel) Yshmael Bettoun
EASA Matthias Schmidt Lorenzo Prieto Saiz	Boeing Brian Lee (Acting) Ryan Westbrock + SME's	Gulfstream Mike Watson +SME's	Airbus Canada Joel Boudreault +SME's	Norwegian Airlines John Lande Operations SME David Anvid
Transport Canada Lee Fasken	Bombardier Tony Spinelli +SME's	Textron Kurt Laurie +SME's	DeHavilland Canada Eric Herrmann +SME's	Centre d'Essais en Vol DGA) Matthieu Buisson **Operators**
ANAC (Brazil) Marcos Carvalho	Dassault Philippe Eichel +SME's			ALPA John Cinnamon ~~Josh Larson~~ Brandon Miller

SUMMARY OF TASKING

(11 Dec, 2020)

2. Takeoff and Landing Performance

The Flight Test Harmonization Working Group will recommend regulatory requirements and/or associated guidance material for the following areas in order to standardize as much as possible.

(a…)

b. Assess landing distance on dry runways in order to provide consistency with the new wet runway recommendation methodology, proposed in phase 2, and TALPA implementation.

SCHEDULE

- FTHWG Phase 4 Tasking was released in Federal Register on 11 December, 2020 for completion by June, 2024
- Topic 32 was one of 6 tasks taken during this period
- Work has progressed since the tasking with quarterly progress reports
- Although production of the final recommendation report took longer than we anticipated, we are still within the tasking window
- The recommendation report was taken up by TAE in August, 2023, now presented to ARAC

RECOMMENDATION(S)

- □ Modify the dry runway landing distance regulation in 14 CFR part 25, §25.125, based on the same hypotheses as those proposed in the FTHWG Topic 9 report, but considering the wheel braking on a dry runway.
- □ Recommend modification of appropriate operational factors for dispatch planning in the Operating Requirements to reflect the modified actual landing distance defined in Task 1.
- □ Recommend a follow-on review by an appropriate working group or body of this proposed 14CFR part 25, § 25.125 landing distance in the context of the various operating standards existing today.

RECOMMENDATION(S)

- Some History
  - Landing Distance, defined by 25.125 is for Dry Runway Only, and intended only to be used for dispatch (does not account for runway slope, or temperature)
    - Some OEM's for some airplanes took advantage of methods available in AC 25-7 to produce very aggressive landing distances (e.g. 3.5 deg glideslopes with 8 fps touchdown sink rate) to show technical capability of the airplane; others used more operational assumptions
    - Operating Regulations (Part 121, 136, and 91(K)) imposed large operating factors (e.g. 1.67) for dispatch weight restrictions
  - TALPA imposed time-of-arrival distance checks, including also runway contaminants, but also included a number of other assumption changes. Initially imposed as voluntary, FTHWG Topic 33 proposed to codify these.
  - FTHWG Topic 9 (Wet Runway) added a proposed 25.126, for wet runway conditions which adopted many of the TALPA assumptions
- …the result was (is) confusing and inconsistent
- Since there is no historical record of safety issues associated with the factored landing distance from 25.125, the technical assignment became one of making the assumptions consistent among Dry, Wet, and Time-of-Arrival, while maintaining approximately the same total factored distance being used in service.

RECOMMENDATION(S) (visual)

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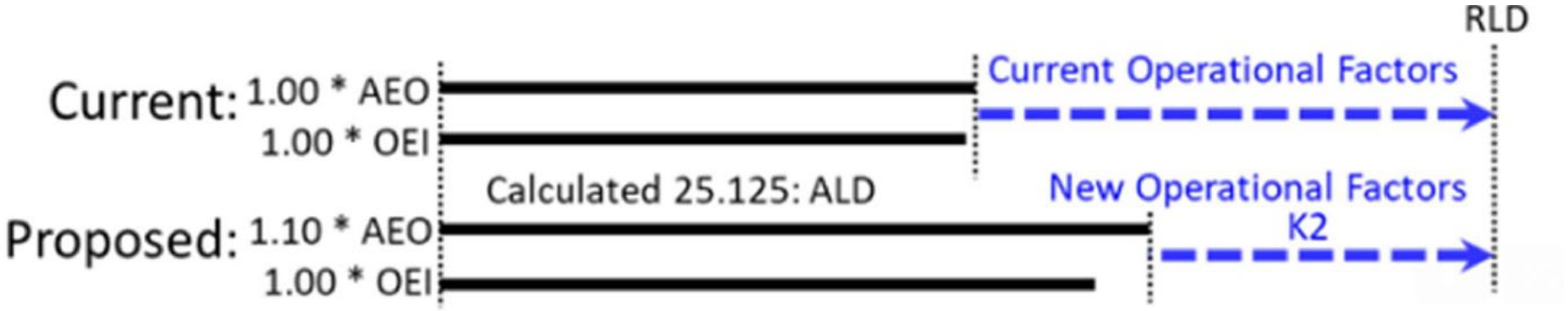

- Current
  - Based on AEO
  - Reference Landing Speed at Threshold
  - Performance flare (-3.5 deg/sec, 8 ft/sec)
  - Demonstrated Pilot Transition Times
  - Demonstrated braking mu
  - No reverse thrust
  - Standard-Day temperature
- Proposed
  - Longer of 1.1*AEO or OEI
  - Actual Landing Speed per procedure
  - Operational Flare (=3 deg/sec, 3 ft/sec)
  - Demonstrated Pilot Transition times
  - 95% demonstrated braking mu (if done on a clean portion of the runway
  - Reverse Thrust Credit
  - Temperature Accountability

RECOMMENDATION(S)

Summarizing the Result:

- A more homogeneous stopping distance margin across the entire aircraft altitude and temperature operating envelope,
- Greater consistency with part 25 landing distances used at time of dispatch on wet runways as per FTHWG Topic 9 recommendations and landing distance on dry runways at TOA per FTHWG Topic 32 recommendations,
- Establishment of one set of part 25 unfactored dry runway landing distances with realistic operational hypotheses, which can be used as a common reference for application of the different operational factors associated to the different types of operations,
- Consideration of an engine failure occurring during the landing flare in deriving the stopping distance
- Improved understanding by flight crews of the operational margins required for the dispatch landing distance calculations when the unfactored distances consider operational hypotheses and are more consistent with TOA calculations.

RECOMMENDATION(S)

In Addition:

- This report recognizes that the operational rules related to landing distances are impacted by the changes made in 14 CFR part 25 / CS-25 25.125 leading to:
  - A new recommended landing distance operational factor for basic part 121 and 135 operations equal to 1.20,
  - New recommended landing distance operational factors for part 91K Fractional Ownership and part 135 Eligible on Demand operations (operations with reduced landing distances factors) equal to 1.09.

- FTHWG recognizes that it does not have appropriate purview to implement operational factor changes, but recommends the appropriate body do so, and has offered expertise and assistance.

RECOMMENDATION(S)

Regulation	Comment
25.125(a) (a) The horizontal distance necessary to land and to come to a complete stop (or to a speed of approximately 3 knots for water landings) from a point 50 feet above the landing surface must be determined (for ~~standard~~ ambient temperatures, at each weight, altitude, and wind within the operational limits established by the applicant for the airplane). (1) In non-icing conditions; and (2) In icing conditions with the most critical of the landing ice accretion(s) defined in Appendices C and O of this part, as applicable, in accordance with §25.21(g), if VREF for icing conditions exceeds VREF for non-icing conditions by more than 5 knots CAS at the maximum landing weight.	Ambient Temperature Standard temperature has been changed into ambient temperature to be closer to physics and be consistent with landing distance of wet runway recommendation of Topic 9. Some manufacturers have accounted for ambient temperature and slope in their Airplane Flight Manual to support operations that may not require a minimum operational factor for dispatch planning (14 CFR part 91). With this proposed change, manufacturers will have to provide data taking into account ambient temperature.

RECOMMENDATION(S)

Regulation	Comment
25.125(b) (b) The distance determined in paragraph (a) must be the longer of: (1) 110% of the landing distance with all engines operating. (2) The landing distance assuming the critical engine becomes inoperative during landing.	Landing Distance (b) is new to introduce a new standard for landing distance. The intention is to get a requirement consistent with the proposed § 25.126 in the Topic 9 – Wet Runway Stopping Performance report. It leads to a landing distance requirements structure similar to the takeoff distance requirements where a factored all engine distance is compared to an unfactored engine inoperative distance. This new distance definition addresses the engine failure accountability currently contained in § 25.125(g). Having a 110% factor on the all-engine landing distance on (b)(1) is consistent with the factor proposed in Topic 9. The part 25 calculation for landing distance with engine failure assumes an engine failure at or after the runway threshold (50 ft). This calculation takes into account any system effect on control and stopping devices whose effectiveness is reduced due to an engine failure. Examples are typically hydraulics and their effect on speed brakes, wheel braking and reverse thrust. Including this condition as a direct calculation removes the need for a paragraph similar to current §25.125(g) which refers to accounting for the effect of a “noticeably increased” landing distance due to an engine failure. The airspeed and configuration of the one engine inoperative landing distance are the same as the all-engines landing distance.

RECOMMENDATION(S)

Regulation	Comment
(c) In determining the distance in paragraph (a) of this section: (1) The airplane must be in the landing configuration. (2) A stabilized approach, with a calibrated airspeed of not less than VREF, must be maintained down to the 50-foot height. (i) In non-icing conditions, VREF may not be less than: (A) 1.23 VSR0; (B) VMCL established under §25.149(f); and (C) A speed that provides the maneuvering capability specified in §25.143(h). (ii) In icing conditions, VREF may not be less than: (A) The speed determined in paragraph (c)(2)(i) of this section; (B) 1.23 VSR0 with the most critical of the landing ice accretion(s) defined in Appendices C and O of this part, as applicable, in accordance with §25.21(g), if that speed exceeds VREF selected for non-icing conditions by more than 5 knots CAS; and (C) A speed that provides the maneuvering capability specified in §25.143(h) with the most critical of the landing ice accretion(s) defined in Appendices C and O of this part, as applicable, in accordance with §25.21(g). (3) Changes in configuration, power or thrust, and speed, must be made in accordance with the established procedures for service operation. (4) The landing must be made without excessive vertical acceleration, tendency to bounce, nose over, ground loop, porpoise, or water loop. (5) The landings may not require exceptional piloting skill or alertness.	§ 25.125(b) was renumbered (c). No change in definition of the runway threshold speed.

RECOMMENDATION(S)

Regulation	Comment
(d) The dry runway landing distance must be determined from the VREF defined to meet the requirements of §25.125(c)(2)(i) up to and including a minimum of 10 knots above the VREF speed in non-icing conditions, VREF+10. In addition, landing distances for higher speeds must be determined if speeds greater than VREF +10 (considering non-icing and icing conditions) are recommended by normal procedures.	§ 25.125(d) Effect of Increased Threshold Speed Data must be provided for at least a 10 knot increase in airspeed at the threshold above the non-icing VREF. In addition, if procedures recommend increases of speeds beyond 10 knots (e.g. for icing conditions, wind, autothrust etc.), data must be provided up to the maximum recommended landing speed. Some manufacturers provide guidance in non-certified documents which include increased threshold speed above VREF. The proposed standard will require all manufacturers to provide this additional speed information in their AFM recognizing that the operator may choose to fly an airspeed above VREF to the threshold either by the operator's policy or based on a recommendation by the manufacturer or per AFM procedure. An example of this would be a manufacturer who recommends flying a minimum airspeed of VREF + 5kt for all operations or when autothrottle is engaged. Another example is adding speed in case of gusting wind.

RECOMMENDATION(S)

Regulation	Comment
§25.125 Landing – (e) (f) (g) (e) For landplanes and amphibians, the landing distance on land must be determined on a level, smooth, dry, hardsurfaced runway. In addition— (1) ~~The pressures on the wheel braking systems may not exceed those specified by the brake manufacturer~~ Wheel brake limits as specified by the brake manufacturer must not be exceeded. (2) The brakes may not be used so as to cause excessive wear of brakes or tires; and (3) Means other than wheel brakes, including the effects of reverse thrust, may be used if that means (i) Is safe and reliable; (ii) Is used so that consistent results can be expected in service; and (iii) Is such that exceptional skill is not required to control the airplane. (f) For seaplanes and amphibians, the landing distance on water must be determined on smooth water. (g) For skiplanes, the landing distance on snow must be determined on smooth, dry, snow.	§ 25.125(c)(d)(e) were renumbered (e)(f)(g) § 25.125(e)(1): Wheel brake limits may come from maximum hydraulic pressure or other torque or energy limits. § 25.125(e)(3): Credit of reverse thrust is a major evolution in the requirements. It is important to specifically identify reverse thrust because of the long history of the FAA not allowing reverse thrust for landing calculations. There is regulatory precedent for including reverse thrust in the calculation of landing distance; for example, the original UK CAA regulations and the UK CAA national variant of the JAR's. Specifically including reverse thrust is consistent with the change proposed for Topic 9 wet runway and the change in § 25.109 when wet runway wheel braking considerations were introduced in Amdt 25-92.

RECOMMENDATION(S)

Regulation	Comment
§25.125 Landing – (h) (h) The landing distance data must include correction factors for not more than 50 percent of the nominal wind components along the landing path opposite to the direction of landing, and not less than 150 percent of the nominal wind components along the landing path in the direction of landing.	§ 25.125(f) is unchanged except renumbered (h).
~~(g) If any device is used that depends on the operation of any engine, and if the landing distance would be noticeably increased when a landing is made with that engine inoperative, the landing distance must be determined with that engine inoperative unless the use of compensating means will result in a landing distance not more than that with each engine operating.~~	§ 25.125(g) is removed, since the consideration of both all-engine and one-engine-inoperative cases are part of the proposed standard (see § 25.125(b)).

RECOMMENDATION(S)

- Advisory Material
  - Extensive guidance material for means of compliance has been drafted by the FTHWG. It is included in the report.

RECOMMENDATION(S)

- Dry Runway Operating Standards (currently)
  - 25.125 distances are factored by 1.0, 1.25, 1.43, or 1.67 depending on the operation
  - No distinction between turbojets and turboprops for destinations, but the field length requirements are different for alternate airports
    - This report recommends explicit definitions for turbojets and turboprops
- New Operational Standards (Proposed in this report)
  - 1.20 recommended for part 121/135 (to replace current “60% rule”)
  - 1.09 recommended for part 121/135 turboprops at alternate airports (to replace current “70% rule”)
  - 1.09 recommended for part 135EOD/91K (to replace current “80% rule”)

RECOMMENDATION(S)

- Proposing and Implementing New Operating Standards
  - Because the technical goal was to retain (approximately) the same factored landing distance with new consistent assumptions, it is critical that new 25.125 methods be implemented simultaneously with new operational factors.
  - FTHWG has offered numerical values for those factors, but recognizes that we do not have appropriate expertise in the implementation of those standards.
- We recommend that the implementation be taken up by appropriate standards organizations
  - FTHWG offers their expertise in that activity
- FTHWG also suggests that Topics 9 (Wet Runway) and 32 (Codification of TALPA) be implemented simultaneously with these recommendations.

DISSENT(S)

- None
- The recommendations included were agreed unanimously among all members of the working group, including industry and authorities* participants.

*Even though FAA is not “voting”, this activity is one of harmonization. As such, all 4 authorities representatives (FAA, EASA, TCCA, ANAC) were present and their opinions were heard and considered by the industry participants. In this way, the HWG was able to conclude that the recommendations would indeed result in a harmonized set of requirements and associated guidance.

Ice Crystal Icing Working Group Status Report Transport Aircraft and Engines Subcommittee

Melissa Bravin
Allan van de Wall
Working Group Co-Chairs

15 August 2023

ICI Working Group Membership

No Change

Member Name	Organization	Role
Philip Haberlen	(FAA-ANE Standards) FAA Representative	FAA Representative
Melissa Bravin	Boeing Commercial Airplanes	WG Co-Chair – Airplane – P
Allan van de Wall	GE Aviation	WG Co-Chair – Engine – P
Aaron Cusher	Collins	Other – P
Adam Malone	Boeing	Consultant
Alberto Ramon	FAA	Non-voting role
Ashlie Flegel	NASA	Consultant
Bob Hettman	FAA	Non-voting role
Bryan Lesko	Air Line Pilots Association	Other – P
Daijiro Kawakami	JCAB	Non-voting role
Dan Fuleki	National Research Council Canada	Consultant
David Dischinger	Honeywell	Engine – P
David Johns	TCCA-probes	Non-voting role
Doug Bryant	FAA	Non-voting role
Eric Duvivier	EASA	Non-voting role
Eric Fleurent-Wilson	TCCA-engines	Non-voting role
Fausto Enokibara	ANAC	Non-voting role
Jeanne Mason	FAA	Consultant
Jim Loebig	Rolls-Royce	Engine – P

Member Name	Organization	Role
John Fisher	FAA	Non-voting role
Jon Saint-Jacques	A4A/Atlas Air	Other – P
Josh Larson	Air Line Pilots Association	Other - P
Julien Delanoy	EASA	Non-voting role
Jun Izumi	JCAB	Non-voting role
Keith Morgan	Pratt & Whitney	ARAC Representative
Keith Wegehaupt	Honeywell	Engine – P
Mauricio Caio Rosin	TCCA	Non-voting role
Philip Chow	FAA	Consultant
Pierre-Emmanuel Arnaud	Airbus	Airplane – P
Rajeev Atluri	AeroSonic	Other - P
Roberto Marrano	Pratt & Whitney Canada	Engine – P
Roxanne Bochar	Pratt & Whitney	Engine – P
Shengfang Liao	Pratt & Whitney East Hartford	Engine – P
Shoichi Yamasaki	JCAB	Non-voting role
Takuya Mikami	JCAB	Non-voting role
Terry Tritz	Boeing	Consultant
Tom Dwier	Textron Aviation	Airplane – P
Tom Ratvasky	NASA	Consultant
Walter Strapp	Met Analytics Inc.	Consultant

Tasking Summary

No Change

- 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 obtained from both government and industry to 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. Examine how compliance with §33.68(e) and §25.1093(b)(1) can be shown to demonstrate that at the airplane level, engine effects that could prevent the continued safe flight and landing of the airplane during encounters in ice crystal icing conditions would be extremely improbable (10^{-9}). If that cannot be shown, recommend changes to the text of §33.68 or §25.1093 (or a combination of both) that would provide the level of safety described by §25.1309(b)(1).
    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. Determine whether engine or aircraft data probe responses warrant the use of a different environmental envelope from those proposed in Task 2, or to the existing Appendix D envelope.
    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 that may also include icing environments other than Appendix D as a secondary objective.
    6. Recommend changes to the Advisory Circular AC20-147a, *Turbojet, Turboprop, Turboshaft and Turbofan Engine Induction System Icing and Ice Ingestion*, based on Task 1 through 5 results.
    7. Assist the FAA in determining the initial qualitative and quantitative costs, and benefits that may result from the working group's recommendations.
    8. Develop a recommendations report containing the results of tasks 1 through 6. The report should document both majority and dissenting positions on the findings, the rationale for each position, and reasons for disagreement.

2023 Schedule

- Teleconferences monthly through summer
- 19-21 September 2023 F2F meeting @ Boeing, Washington D.C.
- Teleconferences October, November
- 5-7 December 2023 F2F meeting EASA, Cologne, Germany

STATUS OF TASKING – 1 / 2

1. **COMPLETE -** Evaluate recent ICI environment data obtained from both government and industry to determine whether flight testing data supports the existing Appendix D envelope.

2. **IN-WORK -** Evaluate the results carried out in Task 1 and recommend changes to the existing Appendix D envelope, as required.
   a) **Joint Probability Study IN-WORK -** Examine how compliance with §33.68(e) and §25.1093(b)(1) can be shown to demonstrate that at the airplane level, engine effects that could prevent the continued safe flight and landing of the airplane during encounters in ice crystal icing conditions would be extremely improbable (10^{-9}). If that cannot be shown, recommend changes to the text of §33.68 or §25.1093 (or a combination of both) that would provide the level of safety described by §25.1309(b)(1).

3. **COMPLETE -** Compare available service data on air data probes from both government and industry probes on Appendix D, including any changes proposed in Task 2. Determine whether engine or aircraft data probe responses warrant the use of a different environmental envelope from those proposed in Task 2, or to the existing Appendix D envelope.

4. **COMPLETE -** 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

WG UPDATES

- **Joint Probability Study:**
  - FAA contract in work with NASA Langley - possibly complete later in 2023?
  - Current prediction is that joint probability study projected to complete in 2025
  - Boeing continuing with MCS bucket support, and Monte Carlo support when ready

STATUS OF TASKING – 2 / 2

5. **COMPLETE -** 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 that may also include icing environments other than Appendix D as a secondary objective.
6. **COMPLETE -** Recommend changes to the Advisory Circular AC20-147a, Turbojet, Turboprop, Turboshaft and Turbofan Engine Induction System Icing and Ice Ingestion, based on Task 1 through 5 results.
7. **COMPLETE by September F2F -** Assist the FAA in determining the initial qualitative and quantitative costs, and benefits that may result from the working group's recommendations.
8. **FINAL REPORT IN-WORK (FAA agreed that no interim report was necessary) -** Develop a recommendations report containing the results of tasks 1 through 6. The report should document both majority and dissenting positions on the findings, the rationale for each position, and reasons for disagreement.

AREAS of ARAC CONSIDERATION

- None

Engine Propulsion Integration Working Group Status

21 September 2023

Membership

- Solicitation period ended August 11, 2023
- Nominations from most of the major engine and aircraft OEMs

Next Steps

- finalize nominations and get through the DOT approval process
- select co-chairs (one each engine and aircraft)
- begin development of work plan
- anticipate 1Q2024 start