AVIATION RULEMAKING ADVISORY COMMITTEE (ARAC) MEETING

March 20, 2025 ***1:00 PM – 4:00 PM

- Welcome and Introductions
- Federal Advisory Committee Act (FACA) Statement
- Ratification of Minutes
- Status Updates and Recommendation Reports
  - Airman Certification System Working Group – Mr. David Oord
    - ❖ Instrument Flying Handbook Recommendation Report
  - Transport Airplane and Engine (TAE) Subcommittee – Mr. Keith Morgan
    - Flight Test Harmonization Working Group – Mr. Brian P. Lee
    - Ice Crystals Icing Working Group – Ms. Melissa Bravin and Mr. Allan van de Wall
    - Engine and Powerplant Interface Working Group – Melissa Bravin and Douglas Beneteau
- FAA Updates
  - Personnel Updates
  - Regulatory Activities
- Fiscal Year 2025 Meeting Dates
  - June 26, 2025
  - September 18, 2025

AVIATION RULEMAKING ADVISORY COMMITTEE DRAFT RECORD OF MEETING

MEETING DATE: December 12, 2024

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

LOCATION: The Aviation Rulemaking Advisory Committee (ARAC) held a meeting in person at FAA Headquarters at 800 Independence Ave, SW, Washington, DC, 20591, in Conference Room 8AB, 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 November 21, 2024 (89 FR 92273).

ATTENDEES:

Committee Members	
Andrew Moore	National Agricultural Aviation Association
Chris Martino (In-Person)	Vertical Aviation International
Chris Witkowski	Association of Flight Attendants
David Oord (In-Person)	Wisk, *ARAC Chair*
George Paul	National Air Carrier Association
Javier de Luis	Advocate for Passengers and Victims (Ethiopian Airlines Flight 302)
Jonathan Archer	SAE International
Justin Barkowski (In-Person)	American Association of Airport Executives
Keith Morgan (In-Person)	Pratt & Whitney
Lisa Ellman	Commercial Drone Alliance
Mildred Troegeler	The Boeing Company
Murray Huling (In-Person)	Aircraft Owners and Pilots Association
Paul Hudson (In-Person)	FlyersRights.org
Ric Peri	Aircraft Electronics Association

Committee Members	
Robert Ireland (In-Person)	Airlines for America
Sarah MacLeod	Aeronautical Repair Station Association
Walter Derosier (In-Person)	General Aviation Manufacturers Association
Non- Members	
Antonio Chiesa	Transport Canada Civil Aviation
Brian Lee	The Boeing Company *Flight Test Harmonization Working Group Chair*
Estelle Laurendeau	Airbus Helicopters
Gail Dunham	National Air Disaster Alliance/Foundation
Jessica Dedeaux (In-Person)	The Boeing Company
Jim McClay	AOPA
Jim Stieve	Southwest Airlines
Julio Ceron (In-Person)	Transport Workers Union of America
Kara Charles (In-Person)	The Boeing Company
Laura Everington	National Business Aviation Association
Maryanne DeMarco (In-Person)	Coalition of Airline Pilots Association
Mel Johnson	Radia
Scott Shtofman	Association for Unmanned Vehicle Systems International
FAA Staff	
Alan Strom	Aircraft Certification Service (AIR)
Aliah Duckett (In-person)	Office of Rulemaking (ARM)
Ali Gungor	Office of Aviation Policy & Plans (APO)
Anastasia Couch	ARM
Angela McCullough	UAS Integration Office (AUS)
Brandon Roberts (In-person)	ARM, *Designated Federal Officer*
Bryan Davis	Flight Standards Service (AFS)

Committee Members	
Catalin Fotache	AIR
Caitlin Nabinger	ARM
Christopher Bailey	AIR
Daniel Sullivan	AFS
Erin McMakin	ARM
Everette Rochon	AFS
Kenneth Gene Savage	AFS
George Padalec	AFS
Jabari Raphael	AFS
Jim Crotty	ARM
James Ciccone	AFS
James Doucette	Office of Policy, International Affairs, and Environment
Jeffrey Vincent	AUS
Jerome Sveeggen	AFS
Jim Anderson	AFS
Kenneth Thomas	AFS
Lakisha Pearson	ARM
Martin Crane	AIR
Melissa Smith (In-Person)	ARM
Michelle Ferritto	ARM
Meghan Gordon	AIR
Patricia Williams	AFS
Paul Gauthier	AFS
Puja Sardana (In-person)	FAA Contractor
Rick Clark	AFS
Sean Gallagher	ARM
Sean Whiteford	ARM

Committee Members	
Shelly Waddell	AFS
Sierra Elam	ARM
Tiffany Jackson	ARM
Tim Adams	ARM
Thuy Cooper	ARM
Troy Brown	AIR
Uchenna Nwaobilor (In-Person)	ARM
Yvette Rose (In-person)	ARM
Zachary Thornburg (In-Person)	ARM

Welcome and Introduction

Mr. Brandon Roberts, Designated Federal Officer (DFO), called the meeting to order at 1:03 pm ET. He reminded everyone that the meeting was being recorded and reviewed logistics for the hybrid meeting, including information about exit procedures in case of an emergency.

Mr. Roberts read the required Federal Advisory Committee Act statement (Title 5 U.S.C. Chapter 10). He stated that members of the public may address ARAC with permission of the Chair, Mr. David Oord.

Ratification of Minutes

Mr. Oord asked for a motion to accept the September 26, 2024,[1] ARAC meeting minutes. Mr. Chris Martino motioned to accept the minutes, and Mr. Keith Morgan seconded the motion.

All ARAC members voted in favor of ratifying the September meeting minutes.

Status Reports and Recommendation Reports

The December 12, 2024, meeting packet, which includes working group presentations and the draft tasking notices, can be found at:

[1] The September 26, 2024, meeting minutes can be found at: https://www.faa.gov/regulationspolicies/rulemaking/committees/documents/aviation-rulemaking-advisory-committee-december.

https://www.faa.gov/regulationspolicies/rulemaking/committees/documents/aviation-rulemaking-advisory-committee-december

Airman Certification System Working Group (ACSWG)

Mr. Oord, ACSWG Chair, provided the working group's status report update. He reviewed some changes to the membership list and noted that the ACSWG tasking remains the same. He stated that since the Airman Certification Standards and Practical Test Standards for Airmen; Incorporation by Reference (IBR) Final Rule (89 FR 22482), published on April 1, 2024, the working group meets biweekly to define and prioritize next steps.

Mr. Oord stated that the working group created a sub-team devoted to handbook revisions, and that the working group is currently working on the following handbooks:

- Aviation Maintenance Technician – General Handbook (FAA-H-8083-30C)
- Aviation Maintenance Technician – Airframe Handbook (FAA-H-8083-31B)
- Aviation Maintenance Technician – Powerplant Handbook (FAA-H-8083-32B)
- Instrument Flying Handbook (FAA-H-8083-15C)

Mr. Oord presented the ACSWG December 2024 Recommendation Report and explained that the following handbooks are covered in the report:

- Pilot's Handbook Pilot's Handbook of Aeronautical Knowledge (FAA-H-8083-25C), intended publication date June 2025.
- Weight-Shift Control Handbook (FAA-H-8083-5C), intended publication date June 2025.
- Glider Flying Handbook (FAA-H-8083-13B), intended publication date December 2024.
- Balloon Flying Handbook (FAA-H-8083-11B), intended publication date December 2024.

Mr. Oord noted that the working group reviewed the current editions of the following handbooks to facilitate creating a scope of work and timeline to produce a new edition. He noted that the working group does not have an estimated date for publishing the new editions:

- Helicopter Flying Handbook (FAA-H-8083-21B)
- Helicopter Instructor Handbook (FAA-H-8083-4)

Mr. Oord asked for a motion to accept the report. Mr. Morgan motioned, and Mr. Murray Huling seconded the motion. All ARAC members voted to accept the report, and Mr. Oord confirmed he would forward it to the FAA.

Transport Airplane and Engine (TAE) Subcommittee

Mr. Morgan provided the TAE Subcommittee status report update, including the membership list, meeting schedule, and the expected dates for future deliverables.

Flight Test Harmonization Working Group (FTHWG)

Mr. Morgan noted that the Phase 4 tasking is complete and that Phase 5 will launch once ARAC approves the new tasking. Mr. Morgan stated that the working group continues to meet regularly. Mr. Morgan said that the working group would like to continue to encourage authorities to support this activity across necessary disciplines, noting that the European Union Aviation Safety Agency (EASA) does not have the availability to have a consistent representation.

Ice Crystal Icing Working Group (ICIWG)

Mr. Morgan stated that the working group has no status changes from the last meeting, and it is on track to meet its scheduled completion date of December 2025.

Engine and Powerplant Interface Working Group (EPIWG)

Mr. Morgan reviewed the tasking summary and meeting schedule. He described the workflow, noting that some topics can be worked on simultaneously. Mr. Morgan noted that the working group's recommendations should maximize harmonization between the FAA, EASA, the National Civil Aviation Agency, and Transport Canada Civil Aviation.

Mr. Morgan reported that the FAA requested the working group conduct a deeper dive into previously submitted recommendations relating to Fan Blade Out Release Locations (outer-most retention feature vs flow path). Mr. Morgan requested the FAA task this as a separate topic, as opposed to adding this to the working group's existing tasking.

FAA Updates

FAA Personnel Updates

Mr. Roberts noted the following agency personnel updates:

Office of the Administrator

- Administrator Whitaker announced his last day is January 20, 2025.
- Deputy Administrator Thomson's last day is January 10, 2025.
- Mark House, Assistant Administrator for Finance & Management, will serve as Acting Deputy Administrator.

Office of Aviation Safety

- David Boulter, Associate Administrator for Aviation Safety, has announced his plans to retire on January 3, 2025.

Aircraft Certification Service

- Caitlin Locke has been named the permanent Executive Director for Aircraft Certification Service, effective December 16, 2024.

Air Traffic Safety Oversight

- Wes Mooty has been named the permanent Air Traffic Safety Oversight Executive Director (AOV-1), effective December 16, 2024.
- Jonathan Gray is the Deputy Executive Director for AOV.

Office Accident Investigation and Prevention

- David Hempe, Deputy Executive Director for Accident Investigation and Prevention (AVP), has retired.
- Brittany Richardson is the Acting AVP Deputy Executive Director.

Office of Quality, Integration, and Executive Services

- Lisa Mansfield is the Deputy Executive Director of the Office of Quality, Integration, and Executive Services.

Office of Chief Counsel

- Lorelei Peter is the Acting FAA Chief Counsel.

Air Traffic Organization

- Nick Fuller is the Vice President of Safety and Technical Training.

Mr. Roberts responded to questions regarding the impact on existing and future rulemakings in a new administration. He noted that the FAA was very productive during the previous Trump administration, so he does not foresee any major changes. Mr. Roberts emphasized that the FAA recognizes the importance of safety regulations and is grateful to the industry for their support and for providing feedback that encourages continuous improvement and public safety. He noted that he does not know of any potential regulatory impacts at this time. Members expressed concern about rulemakings currently in process and asked for an update, including the Part 108 rulemaking project. Mr. Roberts said there is no official update but that the FAA is working to get things complete before the administration transitions on January 20, 2025. He stated that the rules not completed before the transition may be returned to the FAA for review.

Ms. Sarah MacLeod noted that she intends to draft a letter to the Office of the Secretary when the Office of Chief Counsel does not fully support the recommendations from committees, such as ARAC. She noted that when ARAC recommendations go under agency review, the intent of the recommendations has sometimes been changed or lost, resulting in poorly written rulemaking.

FAA Reauthorization Act of 2024 Updates

Mr. Roberts provided the following status updates to the FAA Reauthorization.

- Section 205 – Directs the FAA to establish a process review team to provide the Administrator with recommendations to improve the promulgation of regulatory materials by the agency. Mr. Roberts thanked the aviation stakeholders who provided feedback on the FAA's regulatory processes to the Regulatory Process Review Team.

- Section 403 – Directs the FAA to establish the Bessie Coleman Women in Aviation (BCWA) Advisory Committee to advise the Department of Transportation and FAA on matters and policies related to the recruitment, retention, employment, education, training, career advancement, and well-being of women in the aviation industry and in aviation-focused Federal civil service positions. The FAA established the BCWA Advisory Committee on November 15, 2024. The membership solicitation notice published in the Federal Register on November 21, 2024, and closes on December 23, 2024[2].

- Section 406 – Directs the FAA to use the ACSWG to obtain industry feedback in reviewing Airman Certification Standards to ensure the airman proficiency and knowledge correlate and correspond to regulations, procedures, equipment, aviation infrastructure, and safety trends. Mr. Roberts stated that this requirement is already consistent with the 2016 ACSWG tasking, so it does not require a new tasking.

New ARAC Taskings

Mr. Roberts stated that the FAA has five new taskings to present to ARAC.

1) ACSWG - Mr. Bryan Davis presented the tasking related to Section 426(a) of the FAA Reauthorization Act of 2024 (the Act). The FAA tasked ARAC to provide recommendations that would develop, as necessary, a relevant Airman Certification Standard to qualify eligible military maintenance technicians for a civilian mechanic certificate with airframe or powerplant ratings.

   Mr. Oord asked for a motion to accept the new tasking. Mr. Morgan motioned, and Mr. Martino seconded the motion. Ms. MacLeod asked about another task regarding early testing for high school student testing, and she asked why these efforts were not being combined. Mr. Davis confirmed these topics would be worked separately. Ms. MacLeod noted that she believes it would be much more efficient to work these topics together in the spirit of efficiency. Mr. Oord and Mr.

[2] *See* https://www.faa.gov/sites/faa.gov/files/Charter_Bessie-Coleman-Women-Aviation-Advisory-Committee_11152024.pdf.

Ric Peri noted that they would support the topics being worked together. Mr. Robert Ireland stated that the mechanic shortage is every bit as real as the pilot shortage even though it doesn't get as much press. All ARAC members voted to accept this tasking.

2) Part 135 Aircraft Conformity Working Group - Mr. Kenneth Thomas presented the tasking related to Section 819 of the Act. The FAA tasked ARAC to study methods and make recommendations to clarify requirements and standardize the process for conducting and completing aircraft conformity processes in a timely manner for existing operators and air carriers operating aircraft under part 135 and entering such aircraft into service.

   Mr. Oord asked for a motion to accept the new tasking. Mr. Walter Derosier motioned, and Mr. Huling seconded the motion. All ARAC members voted to accept this tasking.

3) Hydrogen Aviation Working Group (HAWG) - Mr. Catalin Fotache presented the tasking related to Section 1019 of the Act. The FAA tasked ARAC to develop recommendations on research, policy, and regulations that will enable the safe and efficient use of hydrogen in U.S. civil aviation.

   Mr. Oord asked for a motion to accept this tasking. Mr. Derosier motioned, and Mr. Martino seconded the motion.

   ARAC members discussed the safe and efficient sourcing of hydrogen, and many members noted that this sounds outside of the scope of the ARAC. ARAC members asked the agency if they could ensure the working group has representation from any other agency involved in regulating the safe and efficient use of hydrogen. Mr. Fotache stated that the Department of Energy's Hydrogen Interagency Task Force (HIT) exists, but he did not confirm if someone from that task force would be represented on HAWG. ARAC members requested it be documented that this new tasking should include someone from HIT or include representation from all agencies who have an interest in hydrogen.

   Mr. Derosier asked for clarity on expectations of this tasking noting that much of the tasking is reporting and not developing actual recommendations. He motioned to strike the word *commercial* from the last sentence of the tasking. Mr. Morgan seconded that motion. All ARAC members voted to accept the tasking with the suggested amendment.

   "Section 1019 of the FAA Reauthorization Act of 2024 (Public Law 118-63) directs the FAA and Department of Energy to conduct research and development activities relating to enabling the safe use of hydrogen in civil aviation, including the safe and efficient use and sourcing of hydrogen to propel ~~commercial~~ aircraft."

4) Rotorcraft Occupant Protection Working Group (ROPWG) - Mr. Martin Crane presented the tasking related to Section 320 of the Act. The FAA tasked ARAC to update the analysis and recommendations provided by the ROPWG in 2018 and provide recommendations to encourage helicopter owners and operators to expedite the installation of crash-resistant fuel systems in the aircraft of such owners and operators regardless of original certification and manufacture date.

   Mr. Oord asked for a motion to accept this tasking. Mr. Morgan motioned, and Mr. Martino seconded the motion.

   Mr. Derosier proposed to strike the words *'blunt force trauma'* at the end of the first sentence of the task since this language describes the 2016 ROPWG tasking.

   The ROPWG will provide advice and recommendations to the ARAC on the most effective ways to improve rotorcraft safety through reduction of fatal accidents due to post crash fires ~~and blunt force trauma~~.

   Mr. Huling motioned to accept this proposed amendment, and Mr. Morgan seconded the motion. Mr. Crane noted that this tasking language came from the previous tasking notice issued 9 years ago, and he supports this change. All ARAC members voted to accept the tasking with the words 'blunt force trauma' taken out, except for Mr. Paul Hudson, who abstained from voting.

5) FTHWG - Mr. Troy Brown presented the tasking for Phase 5. He explained that Phase 5 will consider the following topic areas:

   - Failure Assessment: Methodology Evaluation
   - Narrow Runway Operations; Use of Simulation for Certification
   - Autoland & Flare Cue Guidance Landing Distance
   - Controllability During Approach and Landing
   - Stall Identification/Protection Systems; and
   - Tail Clearance during Certification Testing.

   Mr. Oord asked for a motion to accept this tasking. Mr. Morgan motioned to accept the tasking, and Mr. Derosier seconded the motion. Mr. Oord asked if FTHWG could submit an official workplan for the record, and Mr. Morgan confirmed they could. All ARAC members voted in favor of accepting the tasking.

Regulatory Activities

Mr. Roberts stated the FAA issued the following final rules since the September 2024 ARAC meeting.

Final Rules

- Removal of Expiration Date on a Flight Instructor Certificate; Additional Qualification Requirements to Train Initial Flight Instructor Applicants; and Other Provisions published on October 1, 2024, with an effective date of December 1, 2024. The amendatory instruction 10 is effective March 1, 2027.

- Public Aircraft Logging of Flight Time, Training in Certain Aircraft Holding Special Airworthiness Certificates, and Flight Instructor Privileges published on October 2, 2024, with an effective date of November 2, 2024.

- Extension of the Prohibition Against Certain Flights in the Tehran Flight Information Region published on October 3, 2024, effective upon publication.

- U.S. Agents for Service on Individuals with Foreign Addresses Who Hold or Apply for Certain Certificates, Ratings, or Authorizations published on October 8, 2024, effective upon publication.

- Extension of the Prohibition Against Certain Flights in the Baghdad Flight Information Region published on October 16, 2024, effective upon publication.

- Integration of Powered-Lift: Pilot Certification and Operations; Miscellaneous Amendments Related to Rotorcraft and Airplanes published on November 21, 2024, with an effective date of January 21, 2025.

  Mr. Desrosier asked Mr. Roberts about the January 21, 2025, effective date, and the potential impact the change of administration may have on the rulemaking. Mr. Roberts noted the effective date is 60 days from the date the rule was published. He stated that rules that have been published but are not yet effective under an administration transition are reviewed and the new administration can decide to extend the effective date, repeal, or change the rule if they choose to. Mr. Roberts noted that the FAA will not know until the new Congress determines what will be included in the Congressional Review Act. Mr. Roberts stated that the FAA is not anticipating any big changes, as the agency recently went through a bipartisan reauthorization.

- Regulatory Updates to BasicMed published on November 18, 2024, effective upon publication.

Mr. Roberts noted the following final rules that will publish before the end of 2024:

- Foreign Air Operator Certificates Issued by a Regional Safety Oversight Organization
- Drug and Alcohol Testing of Certificated Repair Station Employees Located Outside of the United States

NPRM

- Requirements to File Notice for Meteorological Towers and Other Wind Energy Systems published on November 15, 2024. The comment period closes on January 17, 2025.

Correction

- Modernization of Passenger Information Requirements Relating to "No Smoking" Sign Illumination Final Rule; Correction; Confirmation of Effective Date, published on October 8, 2024, with an effective date of October 22, 2024.

Adjournment

Mr. Oord reminded members that the next meeting is March 20, 2025. He adjourned the meeting at 3:34 pm.

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

David Oord
Working Group Chair

March 2025

MEMBERS of ACSWG - INDUSTRY

- David Oord, Wisk
- Paul Alp, Independent
- Emelia Bernava, Independent
- David Bowen, ATS Airframe Services
- Jared Brit, Aviation Ed Academy
- Paul Cairns, Independent
- Kenneth Byrnes, Embry-Riddle
- Kevin Comstock, ALPA
- Rhonda Cooper, Independent
- Eric Crump, Aerospace Center for Excellence
- Rob Cush, AMFA
- David Dagenais, Independent
- Samuel Daniels, Pilot/Instructor
- Maryanne DeMarco, CAPA
- David Earl, Flight Safety
- Scott Ferris, United Airlines
- Dan Foster, Helicopter, P-L FAA DPE
- Sue Gardner, AOA WG/EAA Safety Cmte.
- Tom Gunnarson, Wisk
- Robert Hackman, EAA
- Jens Hennig, GAMA
- Mark Holloway, AIM
- Chuck Horning, ERAU
- Murray Huling, AOPA
- Tom Johnson, Soaring Safety Fdn.
- David Jones, Avotek
- Karen Kalishek, NAFI
- John King, King Schools
- Janeen Kochan, ARTS Inc.
- Kent Lovelace, UND
- Justin Madden, A4A
- John McWhinney, King Schools
- Crystal Maguire, ATEC
- Nick Mayhew, Independent
- BJ Ransbury, NBAA Safety Cmte.
- Jimmy Rollison, Independent
- Arthur Rousseau, CC of Air Force
- Brad Schmidt, Leonardo Helicopters
- Mary Schu, Mary Schu Aviation
- Roger Sharp, Independent
- Andrew Smith, KSU
- Jackie Spanitz, ASA
- Burt Stevens, CFI Care
- Tim Tucker, Robinson
- Ted Voelkerdig, NATA
- Donna Wilt, SAFE
- Roger Woods, Leonardo

MEMBERS of ACSWG – FAA

- Ethan Argenbright
- Anna Celani
- James Ciccone
- Bryan Davis
- Joel Dickinson
- Mike Duffy
- Todd Evans
- Troy Fields
- Ramona Fillmore
- James Gibson
- Brian Karns
- Jeffrey Kerr
- Trey McClure
- Mike Millard
- Kevin Morgan
- Margaret Morrison
- Everette Rochon
- Lynsey Scott
- Ryan C. Smith
- Shelly Waddell Smith
- Scott Stacy
- Patricia Terry
- Matt Waldrop
- Stephanie Williams
- Lorraine Wright

SUMMARY OF TASKING

- Provide recommendations regarding standards, training guidance, test management, and reference materials for airman certification purposes.
- Data analysis subgroup to continue to develop reports needed for training, testing and safety improvements.
- 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
  - Call to Action report - May 2022
  - Call to Action, Recommendation 4, Data Analysis report - January 2023
  - Interim recommendation reports to be utilized, as the working group completes draft standards and guidance material.
- Final recommendation report
  - Defining new processes, coordination, priorities, and timelines to complete the work and get to a final recommendation report.
  - Current work on-hold

SCHEDULE

- **2025 Meetings**
  - TBD

STATUS OF TASKING

- Current work on-hold, until further notice
  - Meetings have been cancelled, out of an abundance of caution, and until the FAA team receive additional information on engagement with industry partners
- Standards
  - Prioritized list for PTS to ACS conversion and ACS revisions
- Guidance Handbooks
  - Reviewing draft documents received
    - Aviation Maintenance Technician – General Handbook (FAA-H-8083-30C), publishing ETA TBD.
    - Aviation Maintenance Technician – Airframe Handbook (FAA-H-8083-31B), publishing ETA TBD.
    - Aviation Maintenance Technician – Powerplant Handbook (FAA-H-8083-32B), publishing ETA TBD.
    - Instrument Flying Handbook (FAA-H-8083-15C), publishing ETA December 2025.
  - For ARAC consideration and approval
    - Recommendations for the Instrument Flying Handbook (FAA-H-8083-15)

Transport Airplane and Engine Subcommittee Status Report to the Aviation Rulemaking Advisory Committee

Keith R. Morgan
Subcommittee Chair

20 March 2025

Members of the Transport Airplane and Engine Subcommittee

Pratt & Whitney

ALPA

A4A

Airbus

Boeing

GAMA

Embraer

SRCA

FAA

EASA

TCCA

TAE Meeting Schedule

- 2025 Meetings
  - January 28 (virtual)
  - April 22 (West Coast)
  - July 22 (virtual)
  - Oct 21 (East Coast)

Active Working Groups

- Flight Test Harmonization (FTHWG)
- Engine Ice Crystal Icing (ICIWG)
- Engine Powerplant Interface (EPIWG)

Look Ahead Report Submittal Schedule to ARAC

December 2025

- ICIWG Final report
- EPIWG Rotor fragments
- FTHWG Tail Clearance During Certification Testing

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

28 January, 2025

MEMBERS of
Flight Test Harmonization Working Group Phase 4

Authorities	OEM's			Observers
FAA Joe Prickett Troy Brown (sponsor)	Airbus Philippe Genissel + SME's	Embraer Murilo Ribeiro + SME's	ATR Matthieu Ollivier Thierry Pauliard +SME's	JCAB (Japan) Shinsuke Yamauchi
EASA Lorenzo Prieto Saiz	Boeing Brian Lee (Acting) Ryan Westbrock + SME's	Gulfstream Mike Watson +SME's	Airbus Canada Richard Clairoux +SME's	Norwegian Airlines John Lande
Transport Canada Lee Fasken	Bombardier Tony Spinelli +SME's	Textron Kurt Laurie +SME's	DeHavilland Canada Eric Herrmann +SME's	Operators
ANAC (Brazil) Carlos Cruz	Dassault Philippe Eichel +SME's			ALPA John Cinnamon Yonas Aboye

Status of Working Group Activities

- Regular Meetings
  - Quarterly face-to-face meeting (two in Europe, two in North America)
  - Weekly scheduled telecons
- Additional working meetings
  - Subteams of FAME are meeting regularly (IN ADDITION) in support of the larger group
    - Effects of Environmental Factors
    - Flight Envelope for assessing failures
    - FAA Specialist Group for 25.671/25.1309

STATUS OF TASKING

- Planning for Phase 5 complete (due dates from tasking date)
  - Tasking Statement accepted at December, 2024 ARAC meeting
    - (16) FAME (continue from Phase 4) (30 months)
      - Includes System Safety and Propulsion SME's (for 901(C)3)
    - (21) Narrow Runway (Baseline finished, now move to "narrower than baseline") (30 months)
      - Delayed start to allow for System Safety participation
    - (42) Use of Simulation for Certification (36 months)
      - Harmonize and improve wording in current guidance to encourage more use
    - (24) HUD/Autoland Landing Distance (18 months)
      - Improve consistency during landing operations
    - (34) Control During Approach and Landing(24 months)
      - Generate equivalent to Vmc and $margins_L$ for go around from approach flaps
    - (38) Stall ID / Protection Systems (36 months)
      - Harmonize guidance for pusher systems
    - (23) Tail Clearance during Certification Testing (18 months)
      - Harmonize philosophy for inadvertent contact with the tailskid during takeoff abuse testing

Phase 5 Planning

	CY 25				CY 26				CY 27			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Failure Assessment Methods and Evaluation (FAME)								TAE Oct ARAC Dec				
Control during Approach and Landing						TAE Apr ARAC Jun						
Stall ID/Protection Systems												TAE Oct ARAC Dec
Use of Simulation in Certification											TAE July ARAC Sep	
Narrow Runway Certification										TAE Apr ARAC Jun		
Autoland and HUD Flare Cue Landing Distance							TAE July ARAC Sep					
Tail Clearance during Certification Abuse Testing					TAE Oct ARAC Dec							

End dates taken from tasking statement

Task duration estimates taken from draft work plans

Some tasks benefited from early strategic discussions

Phase 5 FTHWG Topic Technical Status (1 of 4)

- Topic #16 Failure Assessment Methodology & Evaluation (FAME)
  - EASA Pilot SME joined our call last week (Hurray! We hope this trend continues!)
  - Interactions with CATA regarding 25.672: Word (last week): CATA is moving forward again (Hurray!)
  - Consensus Achieved So Far:
    - Regulations “in-scope” (and those “out-of-scope”)
    - Maneuvers
    - Maximum Pilot Forces allowed
    - Not-Exceptional Pilot Skill (moving away from “Average” or “Minimum”
    - Basic Structure for Criteria regarding Hazard Classification (continuing to refine this)
  - Current Issues being Worked
    - Definition of “Normal Flight Envelope” in 25.671 (changed at Amendment 152, active involvement with principals)
    - Time of Occurrence for each failure (e.g. does the failure happen in 1-g level flight, or during maneuvering at envelope boundary?)
    - Task Performance Tolerances for HQ criteria (e.g. ability to maintain +/- 1 deg bank or +/- 5 deg bank during a failure upset)
  - Items of Contention being worked
    - Controllability/Maneuverability Criteria
    - Single Failure requirements
    - Uncontrolled High Thrust strategy
  - Topic leader considers on-track to finish on schedule

Phase 5 FTHWG Topic Technical Status (2 of 4)

- HUD / Autoland Landing distance
  - 25.125 landing distance is based on manual pilot technique; Now supplemented with Time-of-Arrival landing distance.
  - Many HUD's have a flare cue, which might not meet the same criteria for distance
  - Much of existing material is in operations rules/guidance; not airworthiness rules
  - Existing material is not harmonized
  - Consensus Achieved so far:
    - Brought Work Plan up to date, agreed to details
  - Issues being worked
    - HUD flare cue effects on landing distance
      - Assessing where new guidance is needed (25.125 (dispatch and/or 25.1592 (time of arrival))
      - Assessing how to harmonize with CS AWO.A.HUD/112 Head-up display landing distance
    - Autolanding Landing Distance
      - Assessing whether and how to harmonize with CS AWO.A.ALS.109 Automatic Landing Distance
    - Autobraking
      - Assessing whether existing AC25-7D guidance for autobrake systems is sufficient.
  - Contentious issues being worked
    - None identified yet.
  - Topic leader considers on track to finish on schedule

Phase 5 FTHWG Topic Technical Status (3 of 4)

- Tail Clearance on takeoff
  - Reviewed various standards in place; working on common understandings
    - Flight test only tail skids
    - What about production protection devices?
    - Details of rotation rate; common variations in service
  - Consensus Achieved So Far
    - Allowable tail contact criteria
    - All-engines-operating test gross weight – propose to add optional MOC
  - Current Issues being Worked
    - All-engines-operating test – rapid/over rotation clarification
    - One-engine-inoperative test – rotation technique clarification
  - Items of Contention being worked
    - Nothing indicating a dissent is probable at this time; issues still seem workable
  - On track to finish in 2025 (TAE October; ARAC in December)

Phase 5 FTHWG Topic Technical Status (4 of 4)

- Control during Approach and Landing
  - TCCA has a unique requirement, not shared by FAA, ANAC, or EASA
    - About protecting Go Around from Approach configuration, protecting Vmc
  - Consensus Achieved So Far
    - Agreed Work Plan revisions
  - Current Issues being Worked
    - Only just starting this topic
  - Items of Contention being worked
    - TCCA requirement was discussed during Topic 18 and went unresolved at that time
    - Nothing indicating dissenting opinions yet.
  - Topic Leader believes on track to finish on time

AREAS for ARAC CONSIDERATION

- We would like to continue to encourage Authorities to support this activity across necessary disciplines (as other members are)

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

Melissa Bravin
Allan van de Wall
Working Group Co-Chairs

21 January 2025

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
Dayne Olmstead	Air Line Pilots International Association	Other – P
Yonas Aboye	Air Line Pilots International 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.

2025 Schedule

- F2F meeting: 19-21 February 2025 @ Honeywell, Phoenix, AZ
- Other F2F meetings subject to need
- Monthly telecons as needed planned for 2025

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).

   - **UPDATES:**
     - **November 2024: Funding approved for FAA / NASA Langley contract, status of contract with NASA TBD (1/14/25)**
     - **Current prediction is that joint probability study projected to complete in by end of 2025 (TBD as of 1/14/25)**
     - **ICIWG requested and received approval for new end date of December 2025 - Current end date unknown (no change as of 10/3/2024)**
     - **F2F plan: discuss contingency plan for engines if probability results are not amenable**

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

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 -** 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 -** 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.
   - Working open actions prior to / during February F2F meeting

AREAS of ARAC CONSIDERATION

- None

Engine Powerplant Interface Working Group Status Report

Doug Beneteau
Melissa Bravin
Working Group Co-Chairs

28 January 2025

EPIWG Introduction

- The EPIWG will provide advice and recommendations to the ARAC on the most effective ways to resolve regulatory and guidance gaps and conflicts between part 33 and part 25. EPIWG recommendations should maximize harmonization of airworthiness authority regulations and guidance to the extent practicable.

EPIWG Working Group Membership

No Change 045

Name	Organization	Role	Voting Member
Rob Esteve	PW		Yes
Doug Marchese	ALPA		Yes
Yonas Aboye	ALPA		Yes
Pierre-Emmanuel Arnaud	Airbus		Yes
Philippe Vigarios	Airbus		Yes
Dominique Bernard Tosolini	Safran		Yes
Doug Beneteau	GE Aerospace	Co-Chair	Yes
David Berger	GE Aerospace		Yes
Marco Fraternale	Leonardo Helicopters (Italy)		Yes
Ian Morris	Leonardo Helicopters (Yeovil)		Yes
Michael Dwight Danielson	Bombardier		Yes
James Barter	Bombardier		Yes
Melissa Bravin	Boeing	Co-Chair	Yes
Dylan Welsh	Boeing		Yes
Thomas Rothermel	Gulfstream		Yes

Name	Organization	Role	Voting Member
Federica Musella	Rolls-Royce		Yes
Peter Turyk	PWC		Yes
Philippe Conchon	Dassault		Yes
Shawna Greiner	Honeywell Aerospace		Yes
Nathalie Goudin	ATR		Yes
Alan Strom	FAA AIR-62A	FAA Representative	No
Tim Mouzakis	FAA AIR-625		No
Jeff Stillinger	FAA AIR-625		No
Doug Bryant	FAA AIR-625		No
Brian Kierstead	FAA AIR-625		No
Deepak Kamath	FAA AIR-625		No
Phil Dang	FAA AIR-625		No
Philippe Hemeury	EASA		No
Angus Abrams	EASA		No
Marcelo Saito	ANAC		No
Roop Dhaliwal	TCCA		No
Grant Taylor	TCCA		No
Allison Bassett	Boeing		Yes
Maria Fernanda Dalla Rosa	Embraer		Yes

EPIWG SMEs for Task a) Rotor Blade Fragments

No Change

Name	Company
Antoine Pilon	Airbus
Torben Syberg	Boeing
Andrew Kulak	Boeing
Alexander Girgenti	PW
Bill Graves	PW
Kevin Kirkeng	GE Aerospace
Juan van der Merwe	Rolls-Royce
Alain Bassot	Safran
Matthew Kappes	Rolls-Royce
Moritz Wirth	Rolls-Royce
Michael Bolis	Boeing
Katherine Cerra	Boeing

Tasking Summary

No Change 047

In work

a) Rotor Blade Fragments: Propose revisions and new data reporting requirements under §§ 33.19 and 33.94 and b) guidance for compliance with part 25 to ensure that engine containment test data can be properly evaluated at the aircraft level. This task would include both airplane and engine recommendations to completely address the current policy gaps regarding rotor blade failure.

b) Function & Reliability Testing: Review 14 CFR part 33 to determine how it supports the engine function and reliability flight test requirements of 14 CFR § 21.35(b)(2) and (f). If needed, propose amendments to the relevant regulations or guidance.

c) Engine Restart/Relight: Provide recommendations to resolve part 33 and part 25 regulatory or guidance gaps, or conflicts with respect to rapid restart/high power fuel cuts and quick windmill relight requirements.

d) Inhibition of engine protection systems used to comply with part 33: Address if and when part 25 aircraft systems should be able to deliberately inhibit the operation of engine systems used to meet part 33 safety requirements (e.g., software used as a means of compliance to prevent hazardous engine conditions resulting from shaft failure under § 33.27(a) and (c)). As a minimum, recommend whether additional allowance for aircraft inhibition of engine protection systems should go beyond the conditions described in FAA Policy Statement PS-AIR-33.27-02, "Turbine, Compressor, Fan, and Turbosupercharger Rotor Overspeed Engine Control Systems, 14 CFR § 33.27(c) & (e)," Dated February 2, 2023.

e) Electrical Wiring Interconnection Systems (EWIS): Propose changes to part 33 to ensure the engine would meet the part 25 subpart H and Appendix H25.5 EWIS requirements at the time of engine certification, without additional FAA certification findings at the part 25 level.

f) Thrust Reverser Aircraft Requirement Guidance: Recommend changes to AC 20-18B, "Qualification Testing of Turbojet and Turbofan Engine Thrust Reversers," dated July 7, 2015, to include additional part 25-specific thrust reverser requirements.

g) Where applicable, for any changes to FAA regulations proposed under each sub-task, provide quantitative and qualitative estimates of the resulting costs and benefits.

h) Develop reports for each task 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.
   c. The working group may submit incremental reports covering individual sub-tasks to the TAE for consideration by the ARAC.

2025 Schedule

✓December 2024 F2F meeting @ Rolls-Royce, Berlin, Germany

- March 11-13 2025 – F2F @ Honeywell, Phoenix, AZ
- June 2025 – F2F @ Airbus, Toulouse, France
- September 2025 – F2F @ Boeing, Seattle
- December 2025 – F2F @ location to be confirmed (Gulfstream?)
- Telecons every 2 weeks

EPIWG Fan Blade Failure Tasking

- Objective: Define generic process enabling the evaluation of fragment trajectory, loads and displacements imparted on aircraft components at several operating conditions (CPA) during a fan blade failure event.
  - Resulting loads and displacements may be the result of radially contained and/or fragments exiting the engine boundaries axially. May include various engine speeds and angular release locations.
    - Fragments exiting the engine (inlet or exhaust) must be documented in the Installation manual per AC 33-5 also addressed in AC20-128A.

- Updates In Work:
  - Part 25: AC 25-362, AC 25-24
  - Part 33: §33.5(a), §33.19, AC 33-5, AC 33-75
  - Joint AC: 20-128A, and created new AC 20-XXX

Fan Blade Failure Task Schedule

Description	Date
Finalize EPIWG recommendations for first report •Joint: new AC 20-XXX, AC 20-128A •Part 25: AC 25-362, AC 25-24 •Part 33: §33.5, §33.19, AC 33-5, AC 33-75	2/14/2025
Draft EPIWG report ready for member review	3/1/25
F2F Meeting (HON, PHX)	3/11/25
Firm WG recommendations	5/1/25
F2F Meeting (June) - Toulouse (Airbus)/ Cologne (EASA) - concur / freeze WG recommendations + report	6/1/25
EPIWG submits final report for first task to TAE	6/15/25
Kick off Task 2	7/1/25
F2F Meeting (September) - DC / Seattle (Boeing) •Task 2	9/1/25
TAE reviews / votes on EPIWG report during their F2F meeting	10/21/25
TAE submits EPIWG report to ARAC	10/31/25
F2F meeting December - Task 2 (Savannah?)	12/1/2025

Areas of ARAC Consideration

- None

TO: David Oord, ACS WG Chair
FROM: Jackie Spanitz, ACS Handbook Subgroup Chair
DATE: January 10, 2025
SUBJECT: Handbook recommendation
Instrument Flying Handbook (FAA-H-8083-15)

On behalf of the Aviation Rulemaking Advisory Committee's (ARAC) Airman Certification System Working Group (ACSWG), I submit the following recommendations for the *Instrument Flying Handbook* (FAA-H-8083-15), intended publication date December 2025.

The draft new edition was reviewed and recommended changes and comments are attached.

Consistent with the recommendations made for the FAA Guidance Documents Vision submitted July 2 2015, we appreciate the FAA now providing a production schedule for all FAA Handbooks (FAA-H-8083 documents). Additionally, it would be helpful to know the projected timeline for the next revision (i.e. how long do you anticipate the new editions of each title to remain in effect, 2 years, 5 years, etc.). Doing so will allow the training community to plan for and update material to ensure training and testing remain correlated, as well as provide feedback in a timely way to help with continued development of this title and the other FAA handbooks.

With the Incorporate by Reference (IBR) rulemaking now in effect, we anticipate any new handbook edition will correlate directly to an ACS. The process to look something like this:

1. ACS Published – task elements define the expected knowledge.
2. Handbook Published – task elements supported with scope and breadth of ACS task elements.
3. FAA Knowledge Exams updated, supported with Change communications – public sample exams and Airman Testing Briefing describe the test changes so training and testing remain correlated.

The ACSWG and its members welcome the opportunity to provide feedback and thank you for this opportunity. Please let us know if we can provide anything further.

Sincerely,

Jackie Spanitz, ACS Handbook Subgroup Chair
General Manager, Aviation Supplies & Academics, Inc.

Instrument Flying Handbook Comments from ACS WG

Page	Paragraph	Comment	Reviewer	Date
1-4	1 Airways and Route Systems	Add information pertaining to the new Special Military Activity Routes (SMARS) for Unmanned Aircraft Operations.	JS	10/1/2025
1-15	Key 6760 - no	Enroute	GU	10/12/2024
1-24	Key 6809 - fi	Caption for Figure 1-27 contains an editorial note that needs to be addressed (Image Key 1316) and then removed from the caption text before publishing.	JS	10/1/2025
1-24	Key 6810 - fi	Caption for Figure 1-28 contains an editorial note that needs to be addressed (Image Key 1317) and then removed from the caption text before publishing.	JS	10/1/2025
1-25	Key 6812 - fi	Caption for Figure 1-29 contains an editorial note that needs to be addressed (Image Key 1318) and then removed from the caption text before publishing.	JS	10/1/2025
1-26	Key 6820 - fi	Caption for Figure 1-31 contains an editorial note that needs to be addressed (Image Key 1319) and then removed from the caption text before publishing.	JS	10/1/2025
1-32	Key 6832 - fi	Caption for Figure 1-40 contains an editorial note that needs to be addressed (Image Key 1322) and then removed from the caption text before publishing.	JS	10/1/2025
1-32	Key 6831 - fi	Caption for Figure 1-41 contains an editorial note that needs to be addressed (Image Key 1323) and then removed from the caption text before publishing.	JS	10/1/2025
1-33	Image Key 1323	Caption for continuation of Figure 1-41 contains an editorial note that needs to be addressed (Image Key 7805) and then removed from the caption text before publishing.	JS	10/1/2025
1-36	Image Key 1327	"That required capability will be listed in the PBN box."	GU	10/12/2024
1-36	Image Key 1327	will be listed first	GU	10/12/2024
2-13	Key 14754 - ol	receive. Or, 'The pilot can file a flight plan and receive an ATC clearance...'	GU	10/12/2024
2-14	Key 7041 - no	unavailable	GU	10/12/2024
2-14	Key 7032 - no	Chicago O'Hare International	GU	10/12/2024

Page	Paragraph	Comment	Reviewer	Date
3-4	Key 54126 - fi	Figure 3-3 is the incorrect image (it is a duplicate of image key 7906). The caption for Fig 3-3 is “Central vision” but the image is illustrating the night blind spot.	JS	10/1/2025
3-6	Key 54129 - fi	Figure 3-6 is the incorrect image (it is a duplicate of image key 7910). It does not match the discussion in the text or caption.	JS	10/1/2025
3-16	Key 7117 - fi	Caption for Figure 3-13 contains an editorial note that needs to be addressed (Image Key 1353) and then removed from the caption text before publishing.	JS	10/1/2025
4-6	Key 7257 - fi	Caption for Figure 4-5 contains an editorial note that needs to be addressed (Image Key 1357) and then removed from the caption text before publishing.	JS	10/1/2025
9-3	Key 33518 - no	Figure reference should be Figure 9-2, not Figure 9-21.	JS	10/1/2025
9-4	Key 33523 - no	The first three sentences in this paragraph talking about the number of satellites is very confusing. Based on my research 24 satellites are considered the minimum needed for full global coverage and at present time there are 32 satellites in the 6 orbital planes (not 24 as it mentioned). So the way those sentences are written is just not correct, I think they almost have it backwards. I would recommend moving away from the current number of satellites in orbital plane since its changing a lot, more and more all the time. I also believe where they mentioned spaced 60 degrees apart they are trying to say the satellite orbits are tilted to the earth's equator by 55 degrees to ensure coverage of polar regions.	JS	10/1/2025
9-8	Key 8689 - no	Figure reference should be Figure 9-4, not Figure 9-2. All figure references in the text are incorrect for the remainder of the chapter. I did not call them all out from here.	JS	10/1/2025
10-3	Key 9296 - fi	Update ICAO flight plan image to just release one.	JS	10/1/2025