

AVIATION RULEMAKING ADVISORY COMMITTEE

RECORD OF MEETING

MEETING DATE: September 17, 2015

MEETING TIME: 1 p.m.

LOCATION: Federal Aviation Administration
800 Independence Avenue, SW.
10th Floor
MacCracken Conference Room
Washington, DC 20591

PUBLIC ANNOUNCEMENT: The Federal Aviation Administration (FAA) told the public of this Aviation Rulemaking Advisory Committee (ARAC) meeting in a Federal Register notice published September 1, 2015 (80 FR 52839).

ATTENDEES: **Committee Members**

Todd Sigler The Boeing Company (Boeing),
ARAC Chair

Dr. Tim Brady Embry-Riddle Aeronautical University
(ERAU), *ARAC Vice Chair*

Chris Baum Air Line Pilots Association,
International (ALPA)

Michelle Betcher Airline Dispatchers Federation (ADF)

Doug Carr National Business Aviation Association
(NBAA)

Ambrose Clay National Organization to Insure a Sound
Controlled Environment (NOISE)

Mack Dickson* Experimental Aviation Association
(EAA)

Gail Dunham* National Air Disaster
Alliance/Foundation (NADA/F)

Stéphane Flori* AeroSpace and Defence Industries
Association of Europe (ASD)

Jens Hennig* General Aviation Manufacturers
Association (GAMA)

Paul Hudson	Aviation Consumer Action Project (ACAP)
Peter Ivory	Federal Aviation Administration (FAA) <i>Office of Aviation Policy and Plans, APO-300</i>
Doug Kihm*	The Boeing Company (Boeing)
Lirio Liu	Federal Aviation Administration (FAA) <i>Office of Rulemaking, ARM-1 Designated Federal Officer (DFO)</i>
Sarah MacLeod*	Aeronautical Repair Station Association (ARSA)
Paul McGraw	Airlines for America (A4A)
David Oord	Aircraft Owners and Pilots Association (AOPA)
Ric Peri	Aircraft Electronics Association (AEA)
Lorelei Peter	Federal Aviation Administration (FAA) <i>Office of the Chief Counsel, AGC-200</i>
Phil Poynor	National Association of Flight Instructors (NAFI)
Yvette Rose	Cargo Airline Association (CAA)
David Supplee*	International Association of Machinists & Aerospace Workers (IAMAW)
Chris Witkowski	Association of Flight Attendants (AFA)
David York	Helicopter Association International (HAI)
Attendees	
Ryan Aggergaard	Modification and Replacement Parts Association (MARPA)
Jonathan Archer	General Aviation Manufacturers Association (GAMA)
Ali Bahrami	Aerospace Industries Association (AIA) <i>Transport Airplane and Engine (TAE) Subcommittee, Chair</i>

Chad Balentine	Air Line Pilots Association, International (ALPA)
Daniel Black*	Federal Aviation Administration (FAA) <i>Southwest Region—Rotorcraft Directorate, ASW-112</i>
Dale Bouffiu	Federal Aviation Administration (FAA) <i>Office of Rulemaking, ARM-020</i>
Karen Callihan	Federal Aviation Administration (FAA) <i>Air Traffic Organization, AJI-231</i>
Jorge Castillo	Federal Aviation Administration (FAA) <i>Southwest Region—Rotorcraft Directorate, ASW-111</i>
Anthony Chu	Federal Aviation Administration (FAA) <i>Air Traffic Organization, AJI-231</i>
Martin Crane	Federal Aviation Administration (FAA) <i>Southwest Region—Rotorcraft Directorate, ASW-112</i>
Jim Crotty	Federal Aviation Administration (FAA) <i>Office of Rulemaking, ARM-200</i>
William Ertle*	PATS Aircraft Systems
Henry Fair	Federal Aviation Administration (FAA) <i>Air Traffic Organization, AJI-231</i>
David Floyd*	The Boeing Company (Boeing)
Katherine Haley	Federal Aviation Administration (FAA) <i>Office of Rulemaking, ARM-203</i>
Rhonda Hennig	Harris Corporation
Katrina Holiday	Federal Aviation Administration (FAA) <i>Office of Rulemaking, ARM-202</i>
Joe Jacobsen*	Federal Aviation Administration (FAA) <i>Transport Airplane Directorate, ANM-113</i>
Randy Kenagy	Air Line Pilots Association, International (ALPA)
Sandra Lamparello	PAI Consulting

Christine Madden	Federal Aviation Administration (FAA) <i>Air Traffic Organization, AJI-231</i>
David Maddox	Federal Aviation Administration (FAA) <i>Air Transport Organization, AJV-113</i>
Bob Mattern*	Pratt & Whitney
Dorina Mihail*	Federal Aviation Administration (FAA) <i>New England Region—Engine & Propeller Directorate, ANE-111</i>
Robert Newell	Federal Aviation Administration (FAA) <i>Flight Standards Service, AFS-630</i>
Gary Norek	Federal Aviation Administration (FAA) <i>Air Traffic Organization, AJV-8</i>
Michael O'Donnell	Federal Aviation Administration (FAA) <i>Office of Airports Safety and Standards, AAS-1</i>
Steve Paasch*	Federal Aviation Administration (FAA) <i>Aircraft Engineering Division, AIR-130</i>
Susan Parson	Federal Aviation Administration (FAA) <i>Flight Standards Service, AFS-2</i>
John Piccola*	Federal Aviation Administration (FAA) <i>Transport Airplane Directorate, ANM-113</i>
Renee Pocius	Federal Aviation Administration (FAA) <i>Office of Rulemaking, ARM-024</i>
Tony Price	Federal Aviation Administration (FAA) <i>Air Traffic Organization, AJI-231</i>
James Ranshaw*	Private Citizen
Kenneth Ready	Federal Aviation Administration (FAA) <i>Air Traffic Organization, AJV-115</i>
Brandon Roberts	Federal Aviation Administration (FAA) <i>Office of Rulemaking, ARM-100</i>
Lee Roskop	Federal Aviation Administration (FAA) <i>Southwest Region—Rotorcraft Directorate, ASW-112</i>

Sandra Shelley Federal Aviation Administration (FAA)
*Southwest Region—Rotorcraft
Directorate, ASW-111*

Kerry Skofteland Federal Aviation Administration (FAA)
Air Traffic Organization, AJI-231

*Attended via teleconference.

WELCOME AND INTRODUCTION

Mr. Todd Sigler, ARAC Chair, called the meeting to order at 1:02 p.m. and thanked the ARAC members and the public for attending. He invited the attendees to introduce themselves. Ms. Lirio Liu, DFO, read the required Federal Advisory Committee Act, Title 5, United States Code (5 U.S.C.) Appendix 2 (2007) statement.

Mr. Sigler referenced a letter from Ms. Margaret Gilligan, Associate Administrator for Aviation Safety, FAA, (Attachment 1) recognizing Mr. Craig Bolt upon his retirement as Chair of the Transport Airplane and Engine (TAE) Subcommittee and welcoming Mr. Ali Bahrami as new TAE Chair. Ms. Liu displayed a plaque the FAA will present to Mr. Bolt to commemorate his time as TAE Chair. The letter from Ms. Gilligan also reiterated the role of the ARAC, and noted members represent their industry segment, not only their organization. Ms. Liu further noted that the ARAC only addresses tasks the FAA has assigned to the committee and subcommittees are created as expertise is needed. Ms. Liu stated subcommittees and working groups provide recommendations to the ARAC and those recommendations are for the use of the FAA, not for the advantage of ARAC participants.

Ratification of Minutes

Mr. Sigler stated the first item on the agenda is ratification of the minutes from the June 18, 2015, meeting. He asked for any revisions or amendments to the draft minutes circulated before the meeting. Without any revisions or questions, the ARAC ratified the minutes.

STATUS REPORTS FROM ACTIVE WORKING GROUPS

Airman Certification System Working Group (ACSWG) (Attachment 2)

Mr. David Oord, AOPA, provided the update for the ACSWG. He stated the ACSWG is tasked with finalizing the airman certification standards (ACS), which is a system of standards, tests, and guidance material and specific to pilot certifications. Mr. Oord noted new standards must be incorporated in guidance material and tests.

Mr. Oord reviewed developments and the work accomplished regarding ACS since the last ARAC meeting in June 2015. Mr. Oord stated the FAA ACS Exam Review Board completed its review of the draft instrument and commercial ACS, and validation is complete. Mr. Oord added the ACSWG is continuing to work on the authorized instructor ACS, which poses challenges:

student comprehension of elements, teaching the skill on the ground and in flight, and ensuring a safe outcome for the flight and instruction (risk management).

Mr. Oord stated the ACSWG has made substantial progress reviewing the private pilot and instrument flight rules (IFR) test banks. He added the FAA has archived questions that are no longer relevant. Mr. Oord indicated the ACSWG would review the air transport pilot and commercial pilot airplane question banks in 2016. He added the FAA is revising the request for proposal for the Test Management Services contract, which will ensure the coding is in place when the FAA implements the revised tests.

Mr. Oord reviewed the ACSWG's progress on guidance materials. He stated the Pilot's Handbook of Aeronautical Knowledge and the Aircraft Weight and Balance Handbook are with the contractor and will be ready during the first quarter of 2016. Mr. Oord noted the FAA is currently working with the contractor on the Risk Management Handbook. He stated the FAA is reviewing chapter 4 of the Airplane Flying Handbook, which deals with loss of control, and the ACSWG will review any changes before publication. Mr. Oord explained the Instrument Flying Handbook is with the FAA awaiting the assignment of a subject matter expert. He added the FAA will publish a new edition of the Instrument Procedures Handbook in late September 2015 with ACSWG input, and the Aviation Instructors Handbook must be restructured to align to the current standard. Mr. Oord noted the ACSWG sent the FAA recommendations for its long-term vision and short-term steps to align guidance with the standards. He stated the ACSWG is reviewing the Private, Commercial, and Instrument Rating ACS with the goal of making recommendations for new editions of guidance documents.

Mr. Oord gave an update on the ACSWG's prototyping effort. He provided details on the private pilot ACS being prototyped in Florida, noting the ACSWG has completed 41 new knowledge tests. Mr. Oord reported the ACSWG documented lessons learned and better defined its expectations. He explained the IFR ACS prototyping began in July 2015 and is set to close on May 16, 2016.

Mr. Oord stated the FAA's Flight Standards Service is adopting a formal change management process, which will ensure implementation of the ACSWG's recommendations is successful.

Mr. Oord stated the ACSWG met September 15–16, 2015, in Washington, DC, at GAMA headquarters, and the next meeting will be January 5–6, 2016, in Washington, DC, at NBAA headquarters.

Mr. Paul Hudson, ACAP, noted the 9/11 terrorists received flight training in the United States. Mr. Hudson expressed concern about students having knowledge of test questions before taking the test, along with other types of cheating. He asked if there are any requirements for English language proficiency or U.S. citizenship. Mr. Oord explained security of the testing system(s) is outside the scope of Title 14, Code of Federal Regulations (14 CFR), part 61. He noted cheating has not been a problem in the past, but students have memorized questions before taking the test. Mr. Oord stated the ACSWG's intent is to eliminate memorizing by creating tests that can be revised at any time. He added, under the new structure, questions will not be in the public domain and students cannot memorize the questions. He stated the questions test pilots' training and flight instructors ensure English language proficiency during training.

Mr. Ambrose Clay, NOISE, noted of the 41 knowledge tests completed, 37 students passed and four failed. He asked if the score distribution is available. Mr. Oord responded a score of 70 percent was required to pass the test, but he does not know the distribution of scores among the students who passed. He indicated as part of the prototype, students are given a copy of the standard at the beginning of the course. He noted that based on survey responses from applicants, instructors, and examiners, under the new format it is clear what learners need to understand and why. Mr. Oord stated instructors receive specific details on questions missed and they can review the subject of the question with the student.

Mr. Clay asked whether an instructor could change a student's score after reviewing a missed question with the student. Mr. Oord responded this was not possible. Mr. Clay asked if the ACSWG attempted to ensure a standard mix of test subjects from different training backgrounds. Mr. Oord replied the test subjects had a mix of backgrounds, from students trained at ERAU to recreational aviators.

Mr. Sigler noted the ARAC extended the ACSWG's tasking and asked if its work is on schedule. Mr. Oord stated it is.

Aircraft Systems Information Security/Protection (ASISP) Working Group (ASISPWG) (Attachment 3)

Mr. Jens Hennig, GAMA, and Mr. David Floyd, Boeing, provided the update for the ASISPWG. Mr. Hennig reviewed the task and noted the ASISPWG is currently identifying which categories of airplanes and rotorcraft any rulemaking, policy, and/or guidance should address, and which airworthiness standards any rulemaking, policy, and/or guidance should reference. He noted this includes ascertaining whether any security-related industry standards from Aeronautical Radio, Incorporated (ARINC); Federal Information Processing Standards (FIPS); the International Organization for Standardization (ISO); the National Institute of Standards and Technology (NIST); SAE International (SAE) Aerospace Recommended Practice (ARP) 4754A, Guidelines for Development of Civil Aircraft and Systems; and/or SAE ARP4761, Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and Equipment; or the recently released RTCA standards would be appropriate for use in ASISP-related policy and/or guidance. Mr. Hennig added the ASISPWG is considering international harmonization needs with input from the European Aviation Safety Agency (EASA) and Transport Canada Civil Aviation (TCCA).

Mr. Floyd stated the ASISPWG has developed its work plan and made it available to the ARAC chair and ARM. He reviewed the technical briefings the ASISPWG has received since its formation. Mr. Floyd noted the ASISPWG is closely tracking a draft ASISP-related Notice of Proposed Amendment (NPA) EASA plans to release in early 2016, with the final rule expected in 2017. He added the ASISPWG would consider this in its international harmonization planning.

Mr. Floyd reviewed the ASISPWG's future activities, including a review of draft amendments to subpart F of 14 CFR parts 23, 25, 27, and 29. He stated the group plans to hear technical briefings from EASA, the U.S. Department of Homeland Security, and the U.S. Department of Defense.

Mr. Sigler asked if there was any group or industry activity preceding the EASA NPA, possibly by EASA's ARAC counterpart, the Safety Standards Consultative Committee (SSCC).

Mr. Hennig stated EASA issued a preliminary regulatory impact analysis in 2014. He added EASA hosted a workshop to discuss institutional issues earlier in 2015 and EASA is now on an aggressive schedule. Mr. Hennig noted EASA would present a briefing at the next ASISPWG meeting.

Mr. Doug Carr, NBAA, asked if the small aircraft ad hoc overview Mr. Floyd referenced in the upcoming technical briefings is a differentiation between part 23 and part 25. Mr. Hennig replied RTCA standard DO-326A, Airworthiness Security and Aircraft Certification, supporting this task, draws a line between transport category airplanes with 20 or more seats and those with 19 or fewer seats. He noted the security threat is different for large scheduled aircraft than for small business or general aviation aircraft. Mr. Hennig noted the ASISPWG seeks to develop a proportional set of requirements for each type of aircraft, including small aircraft, rotorcraft, and large aircraft.

Ms. Sarah MacLeod, ARSA, asked what security measures the ASISPWG is studying. She noted component manufacturers produce parts for several different aircraft and asked if the ASISPWG is focusing on the interface between the aircraft and these components. Mr. Hennig responded the ASISPWG task is broad, but the general focus is a change to the airworthiness standard under subpart F of parts 23, 25, 27 and 29. He noted the ASISPWG is focusing on the instructions for continued airworthiness (ICA) requirements.

Air Traffic Controller Basic Qualification Training Working Group (ATCWG) (Attachment 4)

Mr. Tony Price, FAA, provided the update for the ATCWG, a new task assignment for the ARAC. He stated the tasking notice is set for publication in the Federal Register on September 18, 2015, and allows 30 days for member nominations. Mr. Price noted he expected the ATCWG's first meeting to occur in December 2015 or January 2016. He stated the FAA edited the tasking notice after the June 18, 2015 ARAC meeting to correct his name and title, and other small edits, which were approved by the ARAC chair.

Ms. Gail Dunham, NADA/F, stated Mr. David Boone, FAA, briefed the ARAC on the ATCWG at its June 2015 meeting, and asked where he was. Mr. Price responded he has replaced Mr. Boone as the FAA representative.

Ms. Dunham noted the ARAC discussed dividing the task into two phases at the June 2015 ARAC meeting. She stated U.S. air traffic control is the best in the world and expressed concern that changes to the training program would diminish those standards. Ms. Dunham expressed her belief that the Next Generation Air Transportation System would not affect the basic training of air traffic controllers. She noted the first page of the ATCWG tasking states training will remain at the same level as current training, but some air traffic controllers are trained in the military, which provides a different experience than those trained academically. Ms. Dunham reiterated her concerns about the impact on the quality of air traffic controller training and her desire that any new training not result in lower standards.

Mr. Sigler stated Ms. Dunham's comments are similar to those discussed at the June 2015 ARAC meeting. He noted the ARAC made edits to the tasking after a lengthy discussion, and suggested the group not revisit that discussion.

Ms. Dunham stated her concerns are still the same. She noted she is opposed to making any major changes that might affect hiring or training practices unless the ATCWG identifies a need.

Mr. Chris Witkowski, AFA, asked how long people have to apply for membership to the ATCWG. Mr. Price replied there is a 30-day application period after publication in the Federal Register. He added he expects the application period to close on October 19, 2015.

TAE Subcommittee (Attachment 5)

Mr. Doug Kihm, Boeing, provided the TAE update. He thanked Mr. Bolt for his service and wished Mr. Bahrami well running TAE in the future. Mr. Kihm stated TAE met in June 2015 and its next meeting will be in November 2015.

Airworthiness Assurance Working Group (AAWG) (TAE)

Mr. Kihm noted the AAWG co-chairs remain the same. He stated the AAWG has not met since the last ARAC meeting and its next face-to-face meeting will be in early 2016. Mr. Kihm stated the AAWG received a request from the ARAC Transport Airplane Metallic and Composite Structure Working Group (TAMCSWG). He explained the TAMCSWG requested the AAWG evaluate and make recommendations on the appropriateness of adding large damage capability in the regulation and establishing an industry approach for assessing the damage tolerance of engine rotorburst.

Mr. Kihm explained the AAWG has agreed to provide recommendations to the TAMCSWG by March 2016, which fits the overall TAMCSWG schedule.

Engine Harmonization Working Group (EHWG) (TAE)—Engine Endurance Testing Requirements—Revision of Section 33.87

Mr. Kihm noted the EHWG chair remains the same, reviewed the companies and agencies represented by group members, and discussed the meeting schedule.

Mr. Kihm referenced the extension granted to the EHWG in June 2015. He noted the tasking now runs through mid-2017 and reviewed the EHWG schedule. Mr. Kihm stated the existing test under 14 CFR § 33.87 does not work well with new modern bypass ratio engines, so a new block test is required.

Flight Test Harmonization Working Group (FTHWG) (TAE)—Phase 2 Tasking

Mr. Kihm noted the FTHWG chairs remain the same. Mr. Kihm provided a summary of ongoing FTHWG tasks and meeting dates. He reviewed six topics the FTHWG is working on—stability, steep approach landing, envelope protection, flight in icing, out of trim, and sidestick controls.

Mr. Kihm predicted the FTHWG would prepare its recommendations on stability, steep approach landing, envelope protection, flight in icing, and out of trim by December 2015 and sidestick controls in June 2016.

Mr. Sigler noted out of trim and sidestick controls are new topics for the FTHWG and asked if they are within the scope of the FTHWG's tasking. Mr. Kihm replied the FTHWG has a broad tasking and they do fall under the scope. He noted the FAA currently manages both topics using special conditions and the FTHWG wants to create guidance or rulemaking as appropriate.

Materials Flammability Working Group (MFWG) (TAE)

Mr. Kihm stated the chair remains the same. Mr. Kihm reviewed the MFWG team members, noting the wide range of entities represented. He discussed the original MFWG tasking, which concluded with the submission of a recommendation report to the FAA in 2012.

Mr. Kihm stated the FAA assigned the MFWG with a new tasking, requesting better definition of the intended results of the proposed regulatory updates and cost-benefit analysis for the 2012 recommendations. He noted the MFWG would not meet the September 18, 2015, deadline. Mr. Kihm added the MFWG would complete its recommendation report by the end of September 2015, which will give TAE enough time to review it before its November 2015 meeting.

*Transport Airplane Metallic and Composite Structure Working Group (TAMCSWG) (TAE)—
Transport Airplane Damage—Tolerance and Fatigue Evaluation*

Mr. Kihm stated this is a relatively new tasking for the TAE. Mr. Kihm noted the TAMCSWG asked the AAWG to review the large damage capability and engine rotorburst policy tasks, and the AAWG plans to provide the TAMCSWG its recommendations in March 2016.

Mr. Kihm stated the TAMCSWG will now focus on the composite topics. He reviewed the meeting schedule and noted the TAMCSWG was currently meeting in Montreal. Mr. Kihm added the TAMCSWG submitted its draft work plan to TAE for approval on July 20, 2015 and it calls for recommendation report submittal in January 2017. He explained although TAE has not yet approved the work plan, the TAMCSWG continues to work according to that plan. Mr. Kihm stated TAE would discuss the plan at its November 2015 meeting.

Transport Airplane Crashworthiness and Ditching Evaluation Working Group (TACDWG) (TAE)

Mr. Kihm stated this is a new working group created to advise the FAA on what airframe-level crashworthiness and ditching standards should be incorporated into part 25 and any associated advisory material.

Mr. Kihm noted the TACDWG was given a 24-month tasking beginning in June 2015. He stated he did not believe the FAA had selected the members or co-chairs yet. Mr. John Piccola, FAA, explained he has identified the TACDWG members and they will meet soon.

Ms. Yvette Rose, CAA, asked whether the TAE working group deadlines reflect the dates the reports must be submitted to the TAE or to the ARAC. Ms. Liu stated the agenda due dates reflect the dates the reports are due to the FAA. Mr. Bahrami and Mr. Sigler agreed the TAE would review the due dates and determine when the working group reports must be submitted to the TAE.

Mr. Hudson noted it takes 1–2 years or longer for a working group to review the issues assigned to it. He expressed his desire to see some tasks completed in a shorter timeframe. Mr. Hudson sought a policy statement from the FAA advocating shorter timelines whenever possible. He noted currently there are applications to lengthen working group timelines, but there are none to shorten working group timelines.

NEW TASK

Rotorcraft Occupant Protection Working Group (ROPWG) (Attachment 6 and 7)

Mr. Martin Crane, FAA, briefed the ARAC on a proposed tasking to form the ROPWG. He stated while the number of rotorcraft accidents has declined over the past 30 years, fatal rotorcraft accidents and fatalities has remained relatively constant. Mr. Crane noted the FAA Rotorcraft Directorate believes slow incorporation of occupant protection and safety improvements has prevented reduction of fatal accidents.

Mr. Crane stated the Rotorcraft Directorate adopted requirements for safety improvements such as dynamic seats and crash-resistant fuel systems approximately 20–25 years ago, but the requirements only apply to newly type certificated helicopters. He stated 16 percent of the U.S. helicopter fleet has crash-resistant fuel systems, and 10 percent of the U.S. fleet incorporates increased blunt force trauma protection.

Mr. Crane presented charts depicting accident data for U.S.-registered rotorcraft over the past 30 years, noting the number of accidents has gradually decreased, while the number of fatal accidents has remained relatively stable. He stated the percentage of rotorcraft accidents involving one or more fatalities has fluctuated widely around an overall rate of roughly 17 percent over the same period. Mr. Crane stated over the past 10 years, the rotorcraft fatal accident rate has remained relatively steady, with the exception of a notable spike in 2013, when the fatal accident rate of 1.25 accidents per 100,000 flight hours exceeded the FAA's target of 1.04 accidents per 100,000 flight hours for general aviation.

Mr. Crane stated in 2013 the Rotorcraft Directorate and the FAA Civil Aerospace Medical Institute (CAMI) conducted a study of the cause of death in fatal rotorcraft accidents, based on autopsy data from 97 helicopter accidents occurring between 2008 and 2013. He stated the analysis examined the contribution of post-crash fires to the fatal accidents for rotorcraft with and without crash resistant fuel tanks. He noted the analysis also included a statistical comparison of frequency of injury patterns from blunt force trauma to those seen in previous research. Mr. Crane stated for part 27 rotorcraft accidents where a fully crash resistant fuel system was not installed, post-crash fires were present in 39 percent of fatal accidents and contributed to fatalities in 20 percent of those accidents. He noted rotorcraft designs might also

be certificated under part 29. Mr. Crane added the data indicated there are no significant differences between different makes and models of helicopter.

Mr. Crane stated a review of skeletal and organ injury patterns indicated no statistically significant change over a 10-year period. He noted the most frequently cited injuries were to the core body region and head. Mr. Crane stated if incorporated into the helicopters involved in the accidents, the body protection and head impact requirements of §§ 27.562 and 29.562 would have offered increased protection and could have prevented some fatalities.

Mr. Crane stated since the requirements of parts 27 and 29 for increased protection from blunt force trauma went into effect in 1989, there have been approximately 4,200 rotorcraft accidents, involving approximately 9,000 total occupants. He stated only 2 percent of the rotorcraft involved in those accidents met the current requirements. Mr. Crane noted the remaining 98 percent of rotorcraft involved in accidents carried approximately 8,800 occupants, of which over 1,300 were fatally injured.

Mr. Crane stated the FAA and the National Transportation Safety Board (NTSB) recently issued safety recommendations to require (after January 1, 2020, in the case of the FAA recommendation) all newly manufactured rotorcraft to be equipped with crash-resistant fuel systems, regardless of the date of original design certification. He stated the proposed ROPWG would respond directly to the safety recommendations.

Mr. Crane stated the majority of rotorcraft currently in production are older type designs or derivative designs, and as such, are not required to incorporate the safety enhancements specified in the existing regulations. He noted these safety enhancements include crash-resistant fuel systems, dynamic seat systems, and structural designs such that a survivable volume is maintained and items of mass are restrained to prevent harm to passengers and crewmembers when subjected to loads within specified limits.

Mr. Crane stated under the tasking proposed by the Rotorcraft Directorate, the ROPWG would—

- Recommend how occupant protection standards should be made effective for newly manufactured rotorcraft;
- Develop an associated cost-benefit analysis; and
- As a follow-on task, recommend how to incorporate improvements and standards in rotorcraft occupant protection into the existing rotorcraft fleet.

Dr. Brady asked why the FAA had not foreseen the need to incorporate the safety enhancements in newly manufactured rotorcraft when it promulgated the current rules. Mr. Crane stated absent a known safety issue, the FAA generally permits manufacturers to continue manufacturing type designs certificated prior to the effectiveness of new design requirements. He noted the FAA has previously prescribed retroactive design requirements, such as the shoulder harness requirements of §§ 27.2 and 29.2, which is one way to address the issue at hand.

Mr. Clay indicated he agrees with the goal of the tasking. He asked why the number of fatal accidents has remained stable while the overall number of accidents has decreased. He noted this is potentially indicative of a problem unrelated to occupant safety enhancements, and asked

whether this indicates the severity of errors made by rotorcraft flightcrew members is increasing. Mr. Crane stated the ROPWG could look into this question, but noted the objective of the proposed tasking is to improve survivability of accidents that do occur. Mr. Lee Roskop, FAA, noted the International Helicopter Safety Team (IHST) set a goal in 2006 to reduce helicopter accidents by 80 percent. He stated the IHST and its members believed as overall accidents decreased, they would observe a commensurate reduction in fatal accidents. Mr. Roskop noted the IHST believes the lack of such a reduction in the fatal accidents warrants a more direct approach to improving accident survivability.

Mr. Hennig noted to accomplish the objectives of the proposed tasking with respect to retroactive applicability, it would be necessary to amend § 21.101 or to expand the applicability of part 26 to non-transport category airplanes. He stated there are established, if frequently debated, certification procedures for products, and suggested amending the proposed tasking to explicitly reference those provisions. Mr. Jorge Castillo, FAA, noted the tasking is not specifically focused on § 21.101. He explained there appears to be resistance in the rotorcraft community to modifying existing certificated rotorcraft to incorporate the safety enhancements described, for fear the FAA will require an applicant to comply with all current requirements. Mr. Castillo observed the result of this perception has been a hesitance to incorporate incremental improvements in those areas. He stated the Rotorcraft Directorate is in the process of amending the relevant advisory circular to establish a clear delineation between modifications that would trigger such a requirement and those that would not. Mr. Castillo noted the goal of these amendments is to eliminate uncertainty and ensure standardization among aircraft certification offices, and to encourage modifications that enhance safety, even if they do not result in full compliance with current requirements.

In response to a question from Mr. Stéphane Flori, ASD, to clarify items 1 and 4a of the tasking, Mr. Crane stated the language of the proposed tasking is broad enough to permit the ROPWG to propose new certification standards, or to propose modifications to the existing standards in parts 27 and 29. Mr. Castillo noted the tasking recognizes the current standards with respect to occupant seating, structural occupant protection, and crash-resistant fuel systems are effective measures addressing known risks. He stated when the current standards were promulgated, the Rotorcraft Directorate assumed they would be implemented in the fleet over time by the emergence of new rotorcraft models or by modifications to existing model designs. Mr. Castillo noted this assumption has been proven incorrect.

Mr. Sigler referenced the language in paragraph 1 of the proposed task, which cites specific sections of parts 27 and 29. He asked whether the language was overly prescriptive and could be read to limit the ROPWG to working with the standards contained in those sections, thereby foreclosing the opportunity to identify different, equally effective standards. Mr. Castillo stated the Rotorcraft Directorate believes the existing standards contained in parts 27 and 29 are valid and effective. He stated the purpose of the tasking is not to examine the content of the standards, but to seek ways to encourage broader implementation of them.

Ms. Dunham expressed support for the proposed tasking. She noted there had been an ARAC subcommittee focused on rotorcraft issues in the past, and suggested a review of that subcommittee's activities and membership. Ms. Dunham confirmed the ROPWG tasking includes emergency medical helicopters. She observed that helicopter emergency medical

services operations often take place in adverse weather conditions, and therefore have an inherent increased accident risk, which must be considered when reviewing the CAMI study. Mr. Castillo stated the Rotorcraft Directorate had reviewed the activities of the ARAC Rotorcraft Subcommittee, and the director of the Rotorcraft Directorate had participated in the subcommittee.

Mr. Hudson expressed shock and dismay with the reported findings and the prospect of a further 2 years without implementation of known safety enhancements. He stated the reported statistics indicate approximately 160 accidents per year, with approximately one fatality per week. Mr. Hudson noted if applied to commercial air carrier operations, the same rates would equate to thousands of accidents per year, with over 1,000 accidents with fatalities. He stated he opposed the ARAC's acceptance of the proposed tasking, and recommended the FAA publish a notice of proposed rulemaking (NPRM) mandating adherence to the current standards. Mr. Hudson noted this would provide industry the opportunity to comment or suggest alternatives, while addressing the problem in a shorter time than formation of the ROPWG.

Ms. Liu stated by proposing the tasking, the FAA intends to obtain additional data from the rotorcraft industry. She noted the IHST, like the Commercial Aviation Safety Team, recognizes the need for industry involvement and support in addressing safety issues. Ms. Liu suggested immediate publication of an NPRM would not be a successful strategy because the FAA does not have adequate data to justify the costs associated with retrofitting the existing rotorcraft fleet.

Mr. David York, HAI, noted the proposed tasking does not represent an attempt to avoid appropriate action. He reiterated the IHST's assumed that efforts to reduce the overall rotorcraft accident rate would also reduce the fatal accidents. Mr. York noted the CAMI study provided the first detailed data on causes of death in rotorcraft accidents, clarifying the need for action. He stated the availability of that data and recognition of the effectiveness of the current standards would inform the ROPWG's future efforts. Mr. York noted the rotorcraft industry expects to be fully engaged in efforts to improve the fatal accident rate.

In response to a question from Dr. Brady, Mr. Crane clarified that the ROPWG will make recommendations regarding retrofitting existing aircraft only after it has delivered its recommendations regarding implementing current safety standards in newly manufactured aircraft.

Mr. Ric Peri, AEA, noted the chart presented to the ARAC comparing the rotorcraft fatal accidents to the overall accidents is somewhat misleading. He stated the data indicates a reduction of 45 to 50 percent in accidents. Mr. Peri stated the chart caption indicates the fatal accidents have not changed over the same period, but the data indicates a reduction in fatalities of approximately 35 percent. He stated while this still represents a need for improvement, the number of fatalities is not static.

Mr. Peri stated he is in favor of using §§ 27.2 and 29.2 to mandate incorporation of safety enhancements in newly manufactured rotorcraft when such use is appropriate, and stated the ROPWG should evaluate such action. He noted the current safety standards cited in the proposed tasking are 20–25 years old, and recommended the ROPWG consider the possibility of performance-based standards, which may be incorporated into existing designs in a more

cost-effective fashion. Mr. Peri argued § 21.101 is not an appropriate vehicle for effecting the desired result, as it is oriented toward the retention of an earlier standard when an applicant seeks a change to a type certificate. He stated he supports the task fundamentally and the concept of incrementally increasing the safety standards applicable to newly manufactured aircraft, but expressed doubt this objective could be achieved without imposing a significant administrative burden on applicants.

Mr. Hudson stated he could see no justification to delay closing the loophole permitting new aircraft to be manufactured using designs not compliant with the current safety standards. He noted the IHST's goal of reducing overall rotorcraft accidents by 80 percent apparently has not been met. Mr. Peri objected to the characterization of the provisions of the aircraft certification regulations as a loophole of which manufacturers are taking advantage. He stated the intent of the regulations applicable to certification of all types of aircraft has consistently been to apply current standards only to new type designs.

Mr. Hudson observed the fatal accident rate for rotorcraft meeting the current safety standards is exceedingly low, and reiterated his support for mandating immediate compliance with current standards. He also questioned the need for the 2-year timeframe specified in the tasking, and recommended, if the ARAC deemed it necessary to proceed with the tasking, its timeframe be significantly shortened to 6 months. Mr. York stated it is possible to reduce the timeframe for the tasking, but it would take time to assemble the ROPWG and gather data necessary to develop recommendations. Ms. Liu noted the tasking provides for submission of an initial report no later than 18 months from publication of the tasking notice, and the ROPWG could submit its report earlier than that date.

Ms. MacLeod noted there are two ways to retroactively apply a safety standard: 1) by mandating compliance with the new standard for all newly manufactured aircraft, regardless of the date of type certification, as done in 14 CFR §§ 27.2 and 29.2; or 2) by issuing airworthiness directives (AD) requiring retrofit of existing fleet, which must be supported by a safety analysis for each type of aircraft or similar aircraft. She stated a key question will be how many aircraft would be affected by each of the two options. Ms. MacLeod asked whether manufacturers are producing significant numbers of the rotorcraft in question, and noted if they are not, any significant change would require retrofitting existing rotorcraft pursuant to ADs. She noted many of the rotorcraft in question are operated by small businesses, which will complicate any rulemaking effort.

Ms. Liu stated the tasking was written broadly enough for the ROPWG to examine different options for improving fatal accidents, including amending §§ 27.2 and 29.2 or amending operating rules. She noted paragraph 1 of the proposed task could be modified to reference the regulatory sections containing the existing standards, but also noted the possibility of implementing performance-based standards, which would address Mr. Flori and Mr. Peri's concerns. Mr. Castillo recognized concerns regarding the timeframe of the tasking. He noted modifying the tasking to include evaluating the current standards and developing recommendations with respect to performance-based standards would make the tasking more complex, and likely would extend the amount of time needed to complete it. Mr. Witkowski agreed, and stated it would take years to develop performance-based standards.

Mr. Sigler expressed support for giving the ROPWG latitude to consider alternate means to achieve its objective. He stated options that do not involve compliance with the existing standards might allow the industry to achieve the desired result at costs more likely to satisfy the executive review process. Mr. Peri noted the FAA might find some of the current standards, particularly those contained in §§ 27.562, 27.595, 29.562, and 29.595, cannot be retrofitted to existing designs. He added that in that case, the costs of requiring adherence to those sections cannot justify benefits. Mr. Peri stated a performance-based standard could provide manufacturers an opportunity to meet the standard within the constraints of existing designs.

Mr. Sigler and Ms. MacLeod again discussed the separation in the draft tasking of recommendations relating to newly manufactured aircraft and those relating to retrofit of existing aircraft. Ms. MacLeod suggested the tasking more explicitly require the ROPWG to examine the numbers and types of certificate holders that would be affected by actions based on the ROPWG's recommendations under each part of the tasking. She recommended the ROPWG address this as a threshold matter before considering the more technical aspects of the tasking.

Mr. Sigler suggested the work of the 14 CFR Part 23 Reorganization Aviation Rulemaking Committee, including any regulatory language drafted by it, could be instructive, because its objective was to develop recommendations regarding a transition from prescriptive certification standards to performance-based standards. Mr. Crane observed many occupant safety rules, such as those involving passenger access to exits, had been adapted from rules in part 25, and are not well adapted to rotorcraft. He noted opportunities to apply performance-based concepts to those standards. Mr. Crane expressed concern that expanding the ROPWG's tasking to also consider performance-based standards would significantly extend the timeframe of the tasking.

Mr. Sigler noted the suggested revision to paragraph 1 to grant the ROPWG more latitude in considering alternative solutions, and asked for any other requested revisions to the draft tasking. Mr. Hudson reiterated his request to shorten the timeframe to 6 months. Mr. Sigler and Mr. Hennig expressed doubt the timeframe of the process could be significantly shortened. Mr. Hennig stated the scope of the tasking is relatively broad and the FAA has not previously sought this level of input on how to implement safety standards. He added the ROPWG should not be rushed.

Mr. Sigler noted the tasking does not address harmonization considerations, and asked if there are any. Mr. Castillo stated the existing part 27 and part 29 rules are largely harmonized with EASA and TCCA. In response to a question from Mr. Peri, Mr. Castillo stated revisions to §§ 27.2 and 29.2 would have to be harmonized as well. He noted the Rotorcraft Directorate meets biannually with representatives of EASA and TCCA, and has been discussing rotorcraft occupant safety with them for approximately the past year.

Mr. Sigler and Mr. Peri discussed whether the language of the tasking, without revisions, permits the ROPWG latitude to consider performance-based standards or other alternatives. Mr. Sigler stated the tasking, as written, does not preclude such consideration, but the language of the tasking and the FAA's statements indicate an intent for the ROPWG to limit its recommendations to the existing standards.

Mr. Bahrami noted the tasking calls for the ROPWG's recommendations on how to make occupant protection standards effective with respect to newly manufactured and existing rotorcraft. He concurred with Ms. MacLeod's statement that there are a limited number of methods for making standards effective. Mr. Bahrami stated the real issue is an assessment of costs and benefits associated with those methods. He suggested a phased approach, under which the ROPWG would first, on a relatively short timeframe, conduct a cost-benefit analysis of requiring compliance with the current standards. Mr. Bahrami stated if that analysis indicates the benefits do not justify the costs, the ROPWG could examine alternative courses of action, including extending the time needed to undertake work that is more complex. Mr. Castillo expressed support for this approach, noting it would reduce uncertainty.

Mr. Bahrami asked if any of the fatal accidents included in the CAMI study had led to the issuance of an AD with respect to a particular model of rotorcraft. Mr. Crane stated the FAA had not issued any ADs. Mr. Castillo stated the FAA had begun examining occupant safety standards in response to inquiries from other countries regarding the possible issuance of ADs. He noted analysis did not indicate any specific model not incorporating the current standards had a fatal accident rate significantly higher or lower than other models. Mr. Castillo stated pursuing action through ADs would require issuance of ADs affecting 90 percent of the rotorcraft fleet.

Mr. Hennig drew a distinction between use of ADs to raise the safety of a product and using them to restore the safety of a product. He noted the FAA typically uses ADs to restore safety, not to raise safety levels. Mr. Hennig noted the objective in this case appears to be to raise the safety level of rotorcraft, which would represent a significant leap from past AD issuances. Mr. Castillo confirmed the objective is to raise safety standards, which is one reason the FAA did not consider issuance of ADs to be appropriate. Ms. MacLeod pointed out the FAA had previously used ADs to raise fleet safety standards, when it used ADs to raise fire-resistance standards.

Ms. Dunham moved to accept the tasking, subject to receipt of quarterly reviews on the progress of the ROPWG. Mr. Sigler noted several ARAC members had expressed a desire for revisions to paragraph 1 of the task to permit consideration of standards other than those contained in the enumerated sections. He asked whether the ARAC members believed a follow-up acceptance of the revised tasking by email would be satisfactory.

Mr. Peri stated more significant revisions to the tasking were needed. He suggested the first tasking be to conduct a cost-benefit analysis of a rulemaking amending §§ 27.2 and 29.2 to mandate adherence to the existing safety standards for all newly manufactured rotorcraft. Mr. Peri stated the second tasking, which could be started concurrent with the first, would be development of recommendations on how to improve safety in the production fleet through performance-based standards if the benefits of such a rulemaking are determined not to justify the associated costs. Mr. Castillo endorsed this approach. Mr. Sigler asked why the ROPWG would create performance based standards for §§ 27.2 and 29.2 in lieu of making changes to existing regulations if the cost-benefit analysis falls short. Mr. Castillo indicated the FAA would still make changes to the existing regulations.

Mr. Hudson reiterated his opposition to accepting the tasking with the proposed timeframe, and recommended the FAA examine options such as issuance of ADs to reduce the rotorcraft fatal

accidents. Ms. Liu noted issuance of ADs would nevertheless require a deliberate rulemaking process, including gathering data, which would require industry support. She suggested the first step would still be an ARAC tasking. Ms. Liu noted the timeframe of the revised tasking could possibly be expedited. Mr. Sigler and Ms. Dunham also expressed support for moving forward with a tasking.

Mr. Hudson asked if information on what specific rotorcraft makes and models do not comply with current safety standards would be available under the Freedom of Information Act of 1966, 5 U.S.C § 552. He noted such data would allow passengers in those rotorcraft to better inform themselves of the risks they face. Mr. Roskop and Mr. Castillo indicated information on makes and models have not incorporated modifications may be found on type certificate data sheets (TCDS), which are freely available online, and noted the FAA Aircraft Registry provides information on how many of each make and model are registered. Ms. MacLeod noted gathering this information would be a necessary step in the development of a cost-benefit analysis. Mr. York stated some rotorcraft may incorporate safety features that provide enhancements over the standards applicable at the date of original type certification, but that do not satisfy the requirements of the later standards. Mr. Castillo agreed, and noted this information would not be in the TCDS. He stated it is not possible to quantify the extent to which such aircraft are enhanced over the standards applicable as of their type certification date.

Mr. Sigler summarized the revisions to the proposed tasking desired by the ARAC, consisting of a phased approach including an initial cost-benefit analysis of application of current standards via §§ 27.2 and 29.2; an analysis of application of other standards, including performance-based standards; and an analysis of possibilities for fleet retrofit. He stated the ARAC members should expect to receive a revised tasking for review and approval by email, and encouraged them to carefully review it and voice any concerns. Mr. Sigler noted if any concerns that are raised fall outside the scope of the discussion at the meeting, approval of the tasking would have to wait until the next ARAC meeting.

The ARAC provisionally accepted the proposed tasking subject to email acceptance of the revisions discussed.

FAA UPDATE

Ms. Liu stated the read-ahead materials for the meeting included a list of future ARAC proposed taskings resulting from the Fiscal Year 2016 (FY16) rulemaking prioritization activity, and encouraged the ARAC members to review them (Attachment 8). She sought feedback from remote participants on the usability of the meeting Webcast and the audio quality of the teleconference. Ms. Liu reminded the members to copy the ARAC email on all email correspondence relating to ARAC business, and advised the committee Web site includes information on ARAC taskings and recommendation reports.

Ms. Liu announced the next ARAC meeting will be held December 17, 2015; with subsequent meetings March 17, 2016; June 16, 2016; September 15, 2016; and December 15, 2016.

ADJOURNMENT

Mr. Sigler adjourned the meeting at 3:22 p.m.

ACTION ITEMS

Action Item	Responsible Party
Review the TAE working group due dates and determine when the recommendation reports must be submitted to the TAE to meet the tasking deadlines.	Ali Bahrami
Revise the ROPWG tasking to incorporate edits the ARAC has discussed and coordinate for acceptance via email.	FAA

Approved by: 
Todd Sigler, Chair

Dated: 11/5/2015

Ratified on: 12/17/15