

**Committee for a Study of the Technical Feasibility of Wheelchair Restraint  
Systems in Passenger Aircraft  
Second Meeting**

**Public Agenda  
April 20, 2020**

**Meeting Goals**

Gather information on technical/engineering aspects of the charge

**OPEN SESSION**

**11:30 Welcome and Introductions**

Alan Jette, Chair

The following sessions will explore technical, engineering, and certification challenges in the use of personal wheelchairs as a seat in passenger aircraft, and the feasibility of addressing these challenges. Speakers will cover technical and engineering issues related to wheelchairs, aircraft, and wheelchair restraint systems. Each session will consist of Q&A with committee members.

*Any technically feasible solution would have operational implications that are not the focus of these sessions. The committee will explore operational implications as warranted in a subsequent meeting.*

**11:40 Motorized and Non-motorized Personal Wheelchairs**

**11:45** William Ammer, Owner, Ammer Consulting

**12:05** Jonathan Duvall, Postdoctoral Researcher, Human Engineering Research Laboratories, University of Pittsburgh

**Guiding Questions**

- How variable are wheelchairs in terms of dimensions, weight, seating, structural integrity, operational features (tilt/recline), and other characteristics?
- Given this variability, what are key considerations in determining the potential of different wheelchairs for use as a seat in passenger aircraft (e.g., space requirements, tests for crashworthiness and safety, etc.?)
- What is the future of wheelchair technology and the potential impact on use of a personal wheelchair as a seat in passenger aircraft?

**12:25 Q&A with Committee Members**

**12:45 Presentation: Wheelchair Restraint Systems**

Nichole Orton, Senior Engineering Research Associate, University of Michigan Transportation Research Institute

**Guiding Questions**

- Given current knowledge of available wheelchair restraint systems used in motor vehicles, what are technical issues and challenges of installing and using wheelchair restraint systems in passenger aircraft?
- What research and development efforts are underway or could be reasonable to explore to address these challenges.

**1:00 Q&A with Committee Members**

**1:15 Break**

**1:30 Aircraft - OEM/Suppliers**

**1:35** Glenn Johnson, Fellow of Industrial Design, Collins Aerospace

**1:55** Raki Islam, Vice President, Technical Audit, SAFRAN Seats, and Group Technical Fellow, SAFRAN

**2:15** Hans-Gerhard Giesa, Senior Expert, Human Factors, Airbus  
Ralf Schliwa, Vice President, Cabin & Cargo Integration

**Guiding Questions**

- In what ways, if any, (such as research, concept development, design, analysis) have you addressed the engineering and technical challenges of allowing passengers to remain in their wheelchairs during flight? (*Again the focus being on the engineering challenges vs. the operational or economic challenges.*)
- Have you evaluated potential locations for wheelchairs and associated interior layouts in various aircraft types including narrow body, wide body and regional aircraft?
- What technical, engineering and certification challenges related to in-cabin wheelchairs might cause concern? (Structures, floor loading, emergency equipment access, lighted sign/placard visibility (e.g. fasten seatbelt / no smoking), IFE, boarding and deplaning space, etc.) Have any of these challenges been evaluated and/or addressed?
- Have you performed any analysis or testing related to airframe structural load paths and seat track interface load limits with designs to accommodate in-cabin wheelchairs?
  - In any analysis that you've completed, what design constraints have you considered in terms of wheelchair dimensions, weights, etc.?

- In any layout or solution considerations, how is access for boarding and deplaning handled (with respect to aisle widths, door locations, door dimensions, etc.)?

### **2:30 Q&A with Committee Members**

#### **2:50 Break**

#### **3:05 Airlines**

Gregg Fesenmyer, Technical Operations, American Airlines

*(At its first meeting, the committee heard from Airlines for America; the committee intends to hear from additional individual airlines at subsequent meetings.)*

#### **Guiding Questions**

- In what ways, if any, (such as research, concept development, design, analysis) has the airline addressed the engineering and technical challenges of allowing passengers to remain in their wheelchairs during flight? *(Again the focus being on the engineering challenges vs. the operational or economic challenges.)*
- Has the airline evaluated potential locations for wheelchairs and associated interior layouts in various aircraft types in your fleet including narrow body, wide body and regional aircraft?
- What technical, engineering and certification challenges related to in-cabin wheelchairs might cause concern to an airline? (Structures, floor loading, emergency equipment access, lighted sign/placard visibility (e.g. fasten seatbelt / no smoking), IFE, boarding and deplaning space, etc.) Have any of these challenges been evaluated and/or addressed?
- Has the airline been involved with any industry committees, studies or conferences at which the preceding topics were discussed, and, if so, were technical solutions presented that the airline views as having serious potential for success?

### **3:20 Q&A with Committee Members**

#### **3:35 Public Questions/Comments**

#### **3:45 ADJOURN OPEN SESSION**