U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Administrator

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

May 13, 2022

The Honorable Maria Cantwell
Chair, Committee on Commerce, Science,
and Transportation
United States Senate
Washington, DC 20510

Dear Chair Cantwell:

The Federal Aviation Administration (FAA) is pleased to provide the enclosed report on procedures related to unoccupied exit rows, as required by Section 323 of the FAA Reauthorization Act of 2018, Public Law 115-254.

Section 323 directs the FAA to conduct a review of current safety procedures regarding unoccupied exit rows on passenger aircraft operating under Title 14 of the *Code of Federal Regulations* part 121 during all stages of flight. Section 323 further instructs the FAA to consult with air carriers, aviation manufacturers, and labor stakeholders in carrying out this review.

A similar response has been sent to the Ranking Member of the Senate Committee on Commerce, Science, and Transportation, and the Chair and Ranking Member of the House Committee on Transportation and Infrastructure.

Sincerely,

Billy Nolen
Acting Administrator

Enclosure

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Administrator

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

May 13, 2022

The Honorable Roger F. Wicker
Ranking Member, Committee on Commerce,
Science, and Transportation
United States Senate
Washington, DC 20510

Dear Ranking Member Wicker:

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A similar response has been sent to the Chair of the Senate Committee on Commerce, Science, and Transportation, and the Chair and Ranking Member of the House Committee on Transportation and Infrastructure.

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

May 13, 2022

The Honorable Peter A. DeFazio
Chair, Committee on
Transportation and Infrastructure
House of Representatives
Washington, DC 20515

Dear Chair DeFazio:

The Federal Aviation Administration (FAA) is pleased to provide the enclosed report on procedures related to unoccupied exit rows, as required by Section 323 of the FAA Reauthorization Act of 2018, Public Law 115-254.

Section 323 directs the FAA to conduct a review of current safety procedures regarding unoccupied exit rows on passenger aircraft operating under Title 14 of the *Code of Federal Regulations* part 121 during all stages of flight. Section 323 further instructs the FAA to consult with air carriers, aviation manufacturers, and labor stakeholders in carrying out this review.

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U.S. Department
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**Federal Aviation
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Office of the Administrator

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

May 13, 2022

The Honorable Sam Graves
Ranking Member, Committee on
Transportation and Infrastructure
House of Representatives
Washington, DC 20515

Dear Ranking Member Graves:

The Federal Aviation Administration (FAA) is pleased to provide the enclosed report on procedures related to unoccupied exit rows, as required by Section 323 of the FAA Reauthorization Act of 2018, Public Law 115-254.

Section 323 directs the FAA to conduct a review of current safety procedures regarding unoccupied exit rows on passenger aircraft operating under Title 14 of the *Code of Federal Regulations* part 121 during all stages of flight. Section 323 further instructs the FAA to consult with air carriers, aviation manufacturers, and labor stakeholders in carrying out this review.

A similar response has been sent to the Chair of the House Committee on Transportation and Infrastructure, and the Chair and Ranking Member of the Senate Committee on Commerce, Science, and Transportation.

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Billy Nolen
Acting Administrator

Enclosure

FAA
Aviation Safety

REPORT TO CONGRESS:

Federal Aviation Administration Reauthorization Act of 2018 (Pub. L. No. 115-254) – Section 323

Executive Summary

Congress enacted the Federal Aviation Administration (FAA) Reauthorization Act of 2018 (the Act), Public Law 115-254, on October 5, 2018. Section 323 of the Act requires the Administrator to conduct a review of current safety procedures regarding unoccupied exit rows on a covered aircraft[1] in passenger air transportation during all stages of flight. Section 323 further requires the Administrator to consult with air carriers, aviation manufacturers, and labor stakeholders in carrying out the review and submitting to Congress a report on the results of the review.

This report is provided pursuant to section 323 of the Act. Because an industry working group consulted in the review, the report not only reviews the regulatory framework that governs exit seating but also provides an operational perspective.

FAA's requirements for exit seating are set forth in 14 CFR § 121.585. Section 121.585 requires each air carrier with designated exit seating to maintain an FAA-approved exit seat program. The FAA also provides guidance on the passenger safety briefings and information cards, required components of air carrier exit seating programs, to ensure effective communication of safety information to passengers. Passenger safety briefings and information cards include the use of emergency exits and the safety responsibilities of passengers seated in exit seats. While § 121.585 places limitations on the seating of passengers in exit seats, it does not require that exit seats be occupied.

Based on its review, the FAA finds that unoccupied exit row seats do not pose a safety hazard and would not negatively impact the success of an emergency evacuation of an aircraft. There is no requirement for exit seats to be occupied. In the event that an exit seat is not occupied and an evacuation is needed, it is conceivable that the passenger or passengers in the closest proximity to the exit may assess conditions and operate the exit. Flight attendants have the latitude to move a passenger to an exit seat when they deem it necessary, based on their risk assessment of the situation.

Airplanes used in part 121 operations must also comply with requirements for emergency evacuation. For transport category airplanes, 14 CFR § 25.803 requires that an airplane, when operated at maximum capacity, including crewmembers and test subjects, can be evacuated, under specific test conditions, in 90 seconds or less. To meet the requirements, airplane manufacturers must perform an emergency evacuation demonstration.

In addition, 14 CFR § 121.291(b) requires that part 121 operators perform a partial emergency evacuation demonstration that conforms to the requirements of 14 CFR § 121.291(c). This second demonstration ensures the effectiveness of the airplane equipment and crew procedures to expeditiously prepare and open emergency exits. Test subjects are not present in this partial evacuation demonstration to assist the crew and therefore are not evaluated. The success of the demonstration reflects how the crew performed their evacuation procedures and operated the safety equipment of the aircraft during the demonstration event. In a real evacuation, the assistance of exit seat passengers is expected to augment this baseline capability that was demonstrated.

Section 121.585 requires operators to determine the likelihood that all persons occupying designated exit seats on the aircraft are willing and able to assist the crew during an emergency evacuation. Therefore part 121 air carriers must, via their exit seat programs, assess and verify passenger suitability to perform the exit seat safety functions. Despite the regulatory framework that governs exit seating, the challenge of effectively performing this screening still remains, according to air carriers. Even when requirements are clearly explained to exit seat passengers during ticketing and boarding, and reseating to a non-exit seat prior to departure is offered as an

[1] Section 323 defines a "covered aircraft" as an aircraft operating under part 121 of title 14, Code of Federal Regulations.

option, passengers have manifested a lack of comprehension, inattention, and indifference to the important exit seat safety functions. Perceptions of some passengers that exit seating is premium seating, with extra legroom and amenities, may also be distracting from the safety role. The FAA will continue to work with industry to improve the management of these safety issues related to exit seating and will continue to review air carrier exit seat programs to ensure that safe evacuation can be achieved with the assistance of exit seat passengers when required.

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Introduction

Congress enacted Public Law 115-254, the FAA Reauthorization Act of 2018 (the Act), on October 5, 2018. Section 323 of the Act requires the FAA to conduct a review of current safety procedures regarding unoccupied exit rows during all stages of flight on passenger aircraft operating under Title 14 of the Code of Federal Regulations (14 CFR) part 121. The statute also instructs the FAA to consult with air carriers, aviation manufacturers, and labor stakeholders and submit a report to the appropriate committees of Congress on the results of the review.

FAA requirements governing the seating of passengers in designated exit seats on aircraft operated under 14 CFR part 121 are set forth in 14 CFR § 121.585. Exit seats are those that provide passengers direct access to the exit not requiring entry into an aisle or passing an obstruction, such as a bulkhead, lavatory, closet, or galley.[2] The requirements of 14 CFR § 121.585 apply to certificate holders conducting operations under part 121 ("air carriers") with designated exit seats in the passenger seating configurations in their fleet. These seats are typically located in a row adjacent to an exit that a passenger could open or be directed by crewmembers to open in the event of an emergency evacuation.

In its review of current safety procedures related to unoccupied exit rows, the FAA addressed the regulatory framework that permits, but also limits, the seating of passengers in exit seats. The FAA reviewed the part 121 regulation governing exit seating, 14 CFR § 121.585, as well as Operations Specification (OpSpec) paragraph A022, which is used to document the FAA's approval of air carrier programs that meet the regulatory requirements. The review included the relevant Flight Standards Information Management System (FSIMS) data collection tools and Advisory Circular (AC) 121-24C, "Passenger Safety Information Briefing and Briefing Cards." Data analysis from the FAA's Safety Assurance System (SAS) data assessment tools was reviewed. The agency also reviewed the results of studies performed by the National Transportation Safety Board (NTSB), the FAA Civil Aerospace Medical Institute, and SAE International on topics related to the emergency evacuation of passengers. These studies are listed in Appendix A. Finally, to capture the industry perspective on practical issues associated with exit seating, the FAA established an Exit Seat Working Group (ESWG) to participate in the review. This group was formed by invitation to three aviation trade groups (Airlines for America, the Regional Airline Association, and the National Air Carrier Association), two labor organizations (the Association of Flight Attendants and the Association of Professional Flight Attendants), and five aviation manufacturers.[3]

This report provides the results of the FAA's review of the regulatory framework and operator procedures related to exit row seating. Although the findings and conclusions offered in the report are those of the agency, the report also reflects the ESWG's information about exit seat incidents, as well as its insights and operational perspectives on exit seat safety issues.

Regulatory Background

FAA regulations require two evacuation demonstrations.

The FAA's airworthiness standards ensure that emergency evacuation is addressed in aircraft design and manufacturing. Specific requirements in 14 CFR § 25.803 are meant to ensure that

[2] Exit seat is defined in Part 121 as each seat "having direct access to an exit" and each seat "in a row of seats through which passengers would have to pass to gain access to an exit, from the first seat inboard of the exit to the first aisle inboard of the exit." See 14 CFR § 121.585(a)(1).

[3] The FAA interpreted the term "aviation manufacturers" in section 323 of the Act as the manufacturers of transport-category airplanes. Accordingly, the FAA asked representatives of Boeing, Airbus, Embraer, Bombardier, and Mitsubishi to participate in the ESWG; however, representatives of each of those manufacturers declined.

the maximum seating capacity of passengers and the required number of crewmembers can be rapidly evacuated from the airplane to the ground under simulated emergency conditions.

All transport category airplanes with more than 44 seats that are certified for use by air carriers must demonstrate the capability of the airplane to accommodate a rapid egress of a maximum passenger load through a full evacuation demonstration or a combination of smaller-scale demonstrations, tests, and analyses. Under the provisions of 14 CFR § 25.803, airplane manufacturers, to obtain certification, must perform a full-scale evacuation demonstration[4] in accordance with the specific procedures and criteria stated in Appendix J to part 25. For a full demonstration to be successful, evacuation of the crew and passengers must be completed within 90 seconds under the simulated emergency conditions.

The manufacturer's full-scale evacuation demonstration is followed by a partial demonstration by the air carrier showing that its evacuation procedures, when performed in the airplane, meet the same standard. The air carrier demonstration shows the effectiveness of the crewmember emergency training and evacuation procedures for the type and model of airplane. The air carrier crew must be able to open 50 percent of the required floor-level emergency exits and 50 percent of the required non-floor-level emergency exits within 15 seconds.[5]

Section 25.807 of 14 CFR defines nine types of emergency exits for different configurations of passenger seats on transport category airplanes. Table 1 lists these nine types of recognized emergency exits and identifies the expected primary operator of each exit: crew or passenger. Of note, exit seating on airplanes operated under 14 CFR part 121 is normally proximate to a Type III exit.

Table 1 – Types of Emergency Exits

Type of Exit	Description	Exit Opened By
Type I	This type is a floor-level exit with a rectangular opening of not less than 24 inches wide by 48 inches high, with corner radii not greater than eight inches.	Primary crew exit responsibility; opened by exit seat passenger at crew's direction.
Type II	This type is a rectangular opening of not less than 20 inches wide by 44 inches high, with corner radii not greater than seven inches. Type II exits must be floor-level exits unless located over the wing, in which case they must not have a step-up inside the airplane of more than 10 inches nor a step-down outside the airplane of more than 17 inches.	Primary crew exit responsibility; opened by exit seat passenger at crew's direction.
Type III	This type is a rectangular opening of not less than 20 inches wide by 36 inches high with corner radii not greater than seven inches, and with a step-up inside the airplane of not more than 20 inches. If the exit is located over the wing, the step-down outside the airplane may not exceed 27 inches.	Primary or secondary exit responsibility for crew; unstaffed over-wing or under-wing exits may be opened by exit seat passengers.

[4] In some cases, analysis and testing may be accepted in lieu of an actual demonstration to show compliance. See 14 CFR § 25.803(c).

[5] 14 CFR § 121.291(c)(1).

Type of Exit	Description	Exit Opened By
Type IV	This type is a rectangular opening of not less than 19 inches wide by 26 inches high, with corner radii not greater than 6.3 inches, located over the wing, with a step-up inside the airplane of not more than 29 inches and a step-down outside the airplane of not more than 36 inches. Type IV exits are only allowed on airplanes with fewer than ten passengers.	Unstaffed over-wing or under-wing exits that may be opened by passengers. Secondary exit responsibility for crew.
Ventral	This type is an exit from the passenger compartment through the pressure shell and the bottom fuselage skin. The dimensions and physical configuration of this type of exit must allow at least the same rate of egress as a Type I exit with the airplane in the normal ground attitude, with landing gear extended.	Primary responsibility for crew.
Tailcone	This type is an aft exit from the passenger compartment through the pressure shell and through an openable cone of the fuselage aft of the pressure shell. The means of opening the tailcone must be simple and obvious and must employ a single operation.	Primary responsibility for crew.
Type A	This type is a floor-level exit with a rectangular opening of not less than 42 inches wide by 72 inches high, with corner radii not greater than seven inches.	Primary responsibility for crew; may be opened by exit seat passenger at crew's direction.
Type B	This type is a floor-level exit with a rectangular opening of not less than 32 inches wide by 72 inches high, with corner radii not greater than six inches.	Primary responsibility for crew; may be opened by exit seat passenger at crew's direction.
Type C	This type is a floor-level exit with a rectangular opening of not less than 30 inches wide by 48 inches high, with corner radii not greater than 10 inches.	Primary responsibility for crew; may be opened by passenger at crew's direction.

Type III exits are among those tested in full demonstrations of an emergency evacuation performed by manufacturers. The operation of these exits is typically demonstrated by test subjects. In contrast, if Type III exits are used in the partial demonstrations performed by the air carriers, they are operated by the crew. During an actual emergency, the assistance of exit seat passengers is intended to expedite the evacuation and potentially reduce the time required to evacuate all passengers and crew, depending on the circumstances of the specific event.

FAA regulations require operators to demonstrate emergency evacuation procedures.

Section 121.291 includes requirements for air carriers to demonstrate emergency evacuation procedures for airplanes with a seating capacity of more than 44 passengers. These demonstrations address both the reliability of evacuation equipment (doors and hatch operating handles, inflatable slides and stairs, and floor emergency escape path lighting) and also the effectiveness of the air carrier's flight attendant emergency training program and evacuation procedures.

For each emergency evacuation demonstration under 14 CFR § 121.291, a certificate holder must use at least the number of flight attendants required by 14 CFR § 121.391(a).[6] The flight

[6] If a certificate holder uses more flight attendants than required under § 121.391(a) (based seating capacity) in the demonstration, the certificate holder may not, thereafter, take off that airplane (1) in its maximum seating capacity configuration with fewer flight attendants than the number used during the emergency evacuation demonstration; or (2) in any reduced seating capacity configuration with fewer flight attendants than the number required by paragraph (a) of § 121.391 for that seating capacity plus the number of flight attendants used during the emergency evacuation demonstration that were in excess of those required.

attendants must be positioned and uniformly distributed in accordance with the requirements of 14 CFR § 121.391(d).

During partial demonstrations under 14 CFR § 121.291, air carriers must demonstrate the effectiveness of Type III non-floor-level emergency exits only when these exits are assigned to a flight attendant as part of their emergency evacuation duties. See 14 CFR § 121.291(c)(1). In such cases, flight attendants are trained to first assess conditions at their primary exit assignment and then assess conditions at their secondary exit assignment, which in some cases could be an unstaffed or unoccupied non-floor-level Type III exit.

FAA regulations require that exit seat passengers meet specific criteria.

The requirements of 14 CFR § 121.585 are intended to address safety issues raised by aviation accidents in the 1980s and 1990s in which evacuation delays were a factor in fatalities caused by seat configuration and passenger behavior at exit seating locations:

- British Airtours Flight 28M (Manchester, August 22, 1985) – The British Airtours international passenger flight caught fire before takeoff at Manchester Airport, England. As a result of the accident, 55 lives were lost. The investigation revealed that passengers had difficulty opening the right over-wing exit. At that time, there was no requirement that passengers be briefed on how to open the hatch.[7]
- USAir Flight 1493 collided with SkyWest Flight 5569 (Los Angeles, February 1, 1991) – The SkyWest flight was taxiing into takeoff position while the USAir flight was landing on the same runway. As a result of the collision, 12 people were killed on the SkyWest Metroliner turboprop airplane, and 23 were killed on the USAir Boeing 737-300. Many of the latter deaths were attributed to delays caused by passenger difficulties opening the right over-wing exit.[8]

On March 6, 1990, the FAA issued a final rule on exit row seating that added § 121.585 to 14 CFR.[9] Section 121.585 directed air carriers to place in exit row seats only persons who can perform a series of actions that may be necessary for an emergency evacuation. On October 27, 1992, the FAA clarified 14 CFR § 121.585 to ensure that passengers seated in exit seats could speak or understand the primary language in which oral commands would be given during an emergency evacuation, and that, prior to pushback, a crewmember has verified the suitability of the passengers seated in exit seats to perform the necessary safety functions if an emergency evacuation were to occur. Among the clarifications introduced in 1992 was the replacement of the term “exit row seat” with the new term “exit seat.”[10]

For two decades, 14 CFR § 121.585 has required that air carriers verify whether persons occupying designated exit seats are willing and able to assist during an emergency evacuation. Section 121.585 identifies specific neutral, non-discriminatory mobility, strength, and dexterity criteria, which, if not met, would result in reseating to a non-exit seat.[11] The FAA stated the purpose of these requirements in the preamble to the 1990 final rule:

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[7] *Report on the accident to Boeing 737-236 series 1, G-BGJL at Manchester International Airport on 22 August 1985* (Aircraft Accident Report 8/88). p. 135.

[8] *Runway Collision of USAir Flight 1493, Boeing 737 and SkyWest Flight 5569 Fairchild Metroliner Los Angeles International Airport, Los Angeles California February 1, 1991*. (NTSB/AAR-91/08). p. 69.

[9] 55 FR 8054.

[10] 57 FR 48658.

[11] “In the event a certificate holder determines in accordance with this section that it is likely that a passenger assigned to an exit seat would be unable to perform the functions listed in paragraph (d) of this section or a passenger requests a non-exit seat, the certificate holder shall expeditiously relocate the passenger to a non-exit seat.” 14 CFR § 121.585(k).

> The FAA's objective in this rule is to maximize the likelihood for survival. In order to do so, it is necessary that only persons capable of performing the necessary functions be seated in exit rows, to enhance the ability of all passengers to evacuate safely.[12]

In addition, 14 CFR § 121.585(d) requires certificate holders to provide passengers seated in exit seats with information cards detailing functions that they may be expected to perform in the event of an emergency to assist the crew. The functions are as follows:

- Locate the emergency exit;
- Recognize the emergency exit opening mechanism;
- Comprehend the instructions for operating the emergency exit;
- Operate the emergency exit;
- Assess whether opening the emergency exit will increase the hazards to which passengers may be exposed;
- Follow oral directions and hand signals given by a crewmember;
- Stow or secure the emergency exit door so that it will not impede use of the exit;
- Assess the condition of an escape slide, activate the slide, and stabilize the slide after deployment to assist others in getting off the slide;
- Pass expeditiously through the emergency exit; and
- Assess, select, and follow a safe path away from the emergency exit.

The FAA requires air carriers to communicate specific, accurate information and instructions to passengers seated in exit seats using a variety of methods to facilitate passenger awareness and comprehension of exit safety responsibilities. On March 5, 2019, the FAA updated Advisory Circular (AC) 121-24D, "Passenger Safety Information Briefing and Briefing Cards," with suggested methods to improve passenger comprehension through verbal or video safety briefings, demonstrations, information in safety briefing cards, and comprehension surveys.[13] In addition, the FAA is working on related initiatives addressing passenger information systems and procedures in an effort to identify those methods that may enhance passenger engagement and improve retention of safety information.

The FAA requirements do not guarantee that passengers seated in the exit seats will be able to perform the necessary functions; rather, the requirements are intended to maximize the likelihood that passengers seated in exit seats will be able to assist in an evacuation if needed.[14]

FAA regulations do not require that passengers be seated in exit seats.

When the FAA published the 1990 exit row seating final rule, the agency considered whether airlines should require that at least one seat be occupied in each emergency exit row. The FAA determined that such a requirement was unnecessary.[15] Through studies of passenger behavior,

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[12] 55 FR at 8069.

[13] Comprehension surveys are offered at AC 121-24D, Appendix 6, "Sample Post-flight Passenger Safety Briefing Comprehension Survey for Air Carrier Data Analysis."

[14] "This rule cannot guarantee that exit row passengers will be able to perform the necessary functions. It only can maximize the chances for selecting persons most able to begin and lead an emergency evacuation." 55 FR at 8063.

[15] "The question has arisen as to whether certificate holders should ensure that at least one seat is occupied in each emergency exit row. The FAA does not believe that such a requirement is necessary. Nearby passengers who are able to perform the necessary functions could move into an empty row rapidly to perform the necessary functions." 55 FR at 8060.

the FAA determined that nearby passengers who are able to perform the necessary functions could move to an unstaffed emergency exit rapidly and perform those functions.

Even when passengers seated in exit seats are willing and able to assist during an emergency evacuation, the FAA's position was that other passengers could also reasonably be expected to assist. The 1990 final rule stated:

> The FAA believes … that safety will be enhanced if passengers are given additional information on emergency evacuation functions. While these functions may fall only to persons seated in exit rows, it is conceivable that incapacitation of one or more exit row occupants may require assistance from other passengers. Further, if all passengers are aware of the procedures, it may elicit greater cooperation on their part, such as not crowding the exit row occupants while the exit is being opened, moving back to allow stowage of an over-the-wing exit door, and even readily accommodating a transfer of seating before takeoff.[16]

In this regard, the FAA's position has not changed. In the event that exit seats are not occupied, which could be the case on some flights, other passengers could assist with the exit doors if needed during an emergency evacuation. The FAA requirement that passengers seated in exit seats be willing and able to assist in the event of an evacuation does not imply a presumption that exit seats must be occupied.

OpSpec A022 documents FAA approval of an air carrier's exit seat program.

In order to comply with the requirements in 14 CFR § 121.585, air carriers must establish procedures to identify and designate exit seats, as well as procedures to assess and verify passenger suitability to perform the functions associated with exit seating. When approved by the FAA, these procedures become part of the air carrier's manual system. The FAA's issuance of Operations Specification (OpSpec) paragraph A022 — "Approved Exit Seat Program" documents the operator's FAA-approved exit seat program.

When the FAA issues OpSpec A022 to an air carrier, it means the air carrier has established procedures to ensure that seats with direct access to an emergency exit are not occupied by passengers who, in an emergency, are unlikely to be able to perform certain functions described in § 121.585. The FAA designates an air carrier that operates an aircraft with no designated exit seats for the passenger seating configurations in its fleet as having "No Exit Seat Program" under OpSpec A022. For example, an air carrier with only the Embraer ERJ-170 airplane in its fleet would have "No Exit Seat Program."

Review of the FAA's Oversight Data for Indications of Risk

Although FAA regulations do not require exit seats to be occupied, the FAA's review of safety procedures related to unoccupied exit seats looked for any indications of safety risk that could arise from exit seats being left unoccupied should an evacuation be required. The FAA reviewed a number of sources for these indications, including emergency procedures training, preflight departure briefings, individual exit seating briefings, and aviation safety studies listed in Appendix A of this report. In particular, the FAA considered safety oversight audit information from its SAS[17] reporting to be a valuable source of information. These reports include observations made by FAA safety inspectors about air carriers' FAA-approved exit seat programs.

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[16] 55 FR at 8066.

[17] SAS is an FAA oversight tool used in the performance of certification and surveillance activities, and to ensure continued operational safety. SAS includes policy, processes, and associated software that Flight Standards Service uses to capture data when conducting oversight.

Safety Assurance System program provides essential means of regulatory oversight.

The FAA maintains the SAS program for its performance of regulatory oversight of air carriers that hold OpSpecs issued in accordance with 14 CFR parts 119 and 121. This oversight, which includes monitoring of the air carriers' exit seat program implementation, ensures that the programs are compliant, that their effectiveness is not adversely impacted by changes in the air carrier's system or operating environment, and that the safety purpose of the programs is achieved. Specifically, inspectors are required to:

- **verify** that an air carrier is capable of operating safely and complies with the FAA's regulations **before approving or accepting** an exit seating program;
- **re-verify** that an air carrier continues to meet regulatory requirements when environmental changes occur by conducting periodic reviews; and
- **continually validate the performance** of an air carrier's approved and accepted programs for the purpose of continued operational safety.[18]

This FAA safety assurance oversight ensures that air carriers effectively implement their FAA-approved exit seating programs. This oversight also ensures that the effectiveness of the programs is not undermined by, among other things, changes in passenger demographics, changes in any related procedures or safety requirements, or changes in the business needs of the air carrier.

FAA safety monitoring shows no increased safety risk from unoccupied exit seats.

Insofar as the FAA's oversight of air carrier exit seating programs provides for validation of the level of safety achieved by the approved programs and includes assessment of the air carrier's history of compliance, results from FAA oversight activities (including inspections) should indicate any potential risks that could be associated with exit seating practices. Of particular interest during the FAA's review for this report were the following questions included in the SAS audits that indicate the scope of the inspections in addressing risk reduction, the interaction of different operational processes that could impact safety, and the definition of safety roles:

- Do controls exist, within this element, that ensure risks are reduced to an acceptable level?
- Does the certificate holder have a method to evaluate the impact of changes on related processes (interfaces) for this element?
- Does the process design require that individuals understand their safety role and how it contributes to the safety performance of this element?

Recognizing the importance of the safety validation issues addressed in the SAS program, the FAA reviewed data from its SAS inspection reports related to air carriers' exit seating programs for indications of potential risks associated with unoccupied exit seating. These reports indicated that, for at least the last three years, there had been no increased safety risks identified related to unoccupied exit seats.

Solicitation of Industry Input

FAA established the Exit Seat Working Group to provide input to the FAA's review.

Consistent with the direction in section 323, the FAA established the Exit Seat Working Group (ESWG) to support its review of the provisions of 14 CFR § 121.585 and related guidance and to advise the FAA regarding any challenges that the air carriers face in their implementation of exit seating programs. Representatives from several air carriers with approved exit seat programs, as well as aviation trade groups and labor unions, comprised the ESWG. Diverse types of

[18] OpsSpec A022.

operations, aircraft configurations, and business models ensured the ESWG would benefit from a range of perspectives. See ESWG roster in Appendix B.

The ESWG met bi-weekly during a five-month period to review current operational procedures related to exit seating and address the topic of unoccupied exit seats. The ESWG reviewed information gathered from diverse sources, including de-identified voluntary safety reports and reports from the air carriers' internal evaluation programs, to advise whether present procedures used by air carriers provide adequate safety information to passengers or should be improved. Additionally, the ESWG reviewed several accident databases and NTSB safety studies, as well as SAE International's published guidance on exit briefings. See Appendix A.

FAA tasked the Exit Seat Working Group to address specific operational safety issues.

At the FAA's request, the ESWG focused on seven specific issues related to operational aspects of exit seat program implementation for this report:

- Are empty seats in exit rows detrimental to the evacuation of the airplane?
- Are the requirements and responsibilities associated with sitting in an exit row adequately represented to passengers at the time when the ticket is purchased, and seat selection is made?
- Do exit seat passengers have adequate comprehension of the safety duties that they may be called upon to perform?
- Does the designation of exit seating as premium seating, available to passengers as an upgrade, either purchased or complimentary, impact the perception of the importance of the safety functions performed by exit row passengers?
- Does reseating passengers who do not meet the acceptance criteria to sit in an exit seat or decline to do so have the potential to delay flight operations?
- What exit seat program mitigations and safety controls are used by air carriers to comply with regulatory requirements that govern the seating of passengers in exit seats?
- Does consumption of alcohol during the flight reduce the capacity of passengers in exit seats to perform safety functions during landing?

Perspectives Obtained from Industry

Empty seats in exit rows are not detrimental to the evacuation of the airplane.

The ESWG advised that, from an operational perspective, unoccupied exit seats should not be detrimental to a successful passenger emergency evacuation. Even in an evacuation when one or more exit seats are unoccupied, trained and qualified crewmembers would provide instructions to the passengers, operate the emergency exits, and direct passengers to the emergency exits, including the Type III exits. Crewmembers' instructions during an emergency evacuation would also include instructions to passengers near any unstaffed exit to perform necessary operations.

The ESWG also noted that, in certain situations, an unoccupied exit seat or series of seats could even be beneficial in an evacuation.[19] For example, if a large hatch is brought into the cabin during an evacuation, it can be positioned on an unoccupied exit seat or can be rotated for placement outside the exit opening using the extra space provided by an unoccupied seat. Figure 1 below provides an example from a safety information card pictorial that shows the use of an unoccupied exit seat to safely stow the Type III exit hatch after the hatch was removed.

[19] The FAA notes that, in evacuation trials, and in actual evacuations, a queue forms quickly at each door, which negates any benefit provided by initially-empty seats. Nevertheless, the FAA recognizes the possibility that unoccupied exit seats may have a benefit for the first passengers to arrive at the exit row.

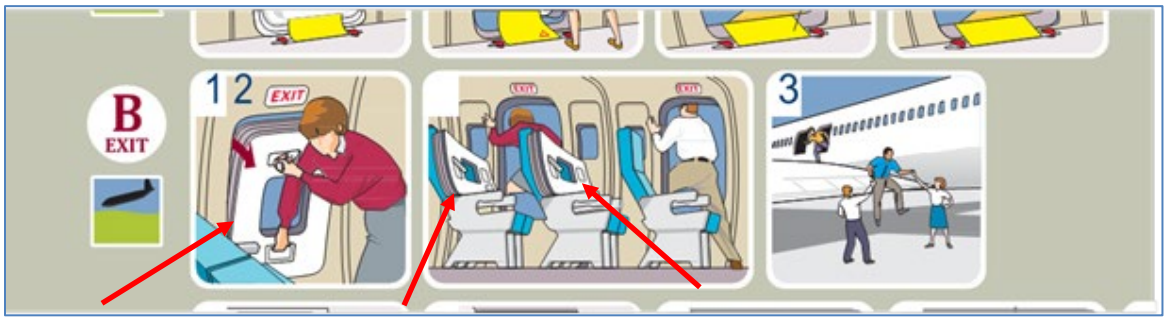

Figure 1 – Type III Hatch Stowed on Empty Exit Seats

Air carriers explain requirements associated with exit seating when the ticket is purchased.

The ESWG confirmed that all air carriers provide notices to passengers about the status of their seats as exit seats during ticket purchase and seat selection. Members of the ESWG provided examples of these notices, including the example shown in Figure 2, which calls for purchaser affirmation that the passenger meets the air carrier's exit seating requirements.

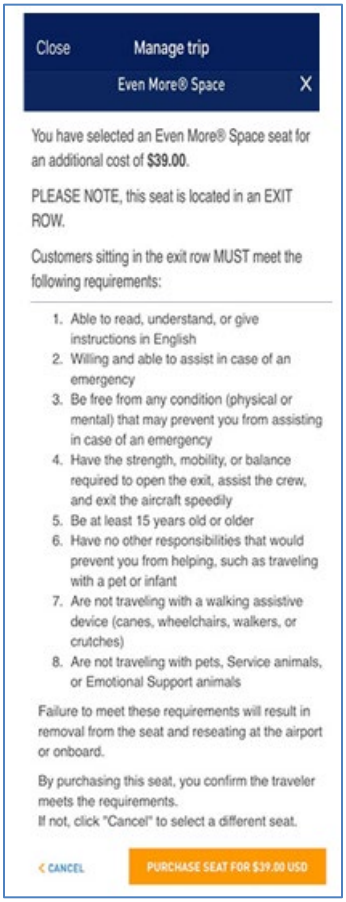

Figure 2 – Example of Exit Seat Agreement

Exit seat passengers do not always fully comprehend their safety duties.

Noting that lack of comprehension can make it necessary to relocate passengers to non-exit seats, which can result in exit seats being unoccupied, the ESWG addressed the importance of screening to ensure that exit seat passengers will be able to comprehend the safety information

they will receive. This safety information is presented during preflight safety briefings when the use of the safety equipment on the aircraft is explained and demonstrated. Exit seat passengers, in particular, need to understand their safety role to assist during an emergency evacuation, as explained in briefings that they receive and on the safety information cards they are provided.[20]

Passenger comprehension of safety information has been studied extensively, and studies have shown that typical passengers, even those who report that they pay attention to passenger safety briefings and briefing cards, have little personal knowledge and understanding of the information they have been given to improve their chances of survival.[21] The ESWG reviewed accident reports and submissions to the NASA Aviation Safety Reporting System, suggesting that passenger comprehension of safety information presented in briefings and on information cards remains a persistent challenge. The ESWG also noted instances when exit seat passengers had been observed not complying with instructions that were provided. For example, one air carrier that participated in the ESWG reported that the manufacturer's instructions for opening a Type III window exit are clearly written to state that the window is to be stowed on adjacent seats. Figure 3 shows instructions for opening an MD88/90 window exit and properly stowing the window. This information was provided on the safety information card as well.

To open MD 88/90 window exits:
1. Assess conditions (redirect if necessary).
2. Facing aft, grasp top handle with one hand and lower handle with the other.
3. Pull top handle in.
4. Tilt and lift window in.
5. Stow window on adjacent seats.

Figure 3 - MD88/90 Window Exit Instructions from Manufacturer

Nevertheless, during an actual MD-90 evacuation performed by this air carrier, the passenger who removed the window exit placed it outside the aircraft, contrary to the instructions provided in the safety information card. This could have created a potential trip hazard for the evacuating passengers. See Figure 4.

[20] Passenger information cards must state that exit seat passengers may be called upon to "comprehend the instructions for operating the emergency exit." 14 CFR § 121.585(d)(3).

[21] Airline Passenger Safety Education: A Review of Methods Used to Present Safety Information, (Safety Study NTSB/SS-85-09). See also *Many Passengers in Exit Seats Benefit from Additional Briefing* (Cabin Crew Safety, v.36), Flight Safety Foundation (May/June 2001); *Safety Briefings for Passengers in Exit Rows*, Aerospace Information Report SAE 5655, SAE International (2014; *Effective Presentation Media for Passenger Safety I: Comprehension of Briefing Card Pictorials and Pictograms.* (DOT/FAA/AA-08/20).

Figure 4 - Exit Door is Improperly Placed Outside, Creating Trip Hazard

In addition, the passenger who removed the window exit also wore his carry-on baggage while evacuating the aircraft, and in doing so, was noncompliant with the instructions that the crew provided in the pre-departure safety briefing. See Figure 5.

Figure 5 - Exit Seat Passenger Evacuates with Carry-on Baggage

Members of the ESWG related instances when passengers did not appear to pay attention as the crew was arming or disarming emergency evacuation slides and assessing outside conditions prior to departure. Paying attention to these tasks as performed by the crew would greatly aid the exit seat passenger in doing the same tasks in an emergency situation.

The importance of passenger comprehension of exit seat safety information can be illustrated by considering the tasks required for exit door operation. The following figures show several examples of exit door mechanisms that passengers need to be able to use when performing exit seat safety tasks. These mechanisms may differ for Type I, Type II, and Type III doors. The images provided reflect the variations in door and hatch types that exit seat passengers may need to comprehend.[22]

Figure 6 shows a Type I exit door.

[22] One ESWG member stated that its flight attendant training facility has 11 door and hatch types.

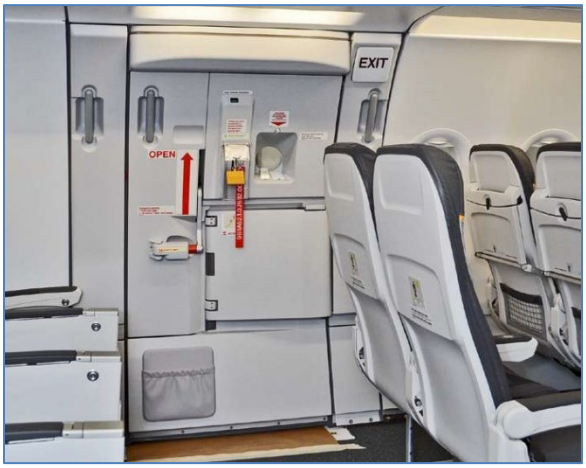

Figure 6 – Type I Unstaffed Exit Door Configuration Exit Seat

Figure 7 shows a Type I exit door with a co-located flight attendant jump seat.

Figure 7 - Type I Exit Door with Flight Attendant Jump Seat and Passenger Exit Seats

Figure 8 shows one kind of Type III exit as it is being opened. This hatch type of exit is then placed outside the aircraft.

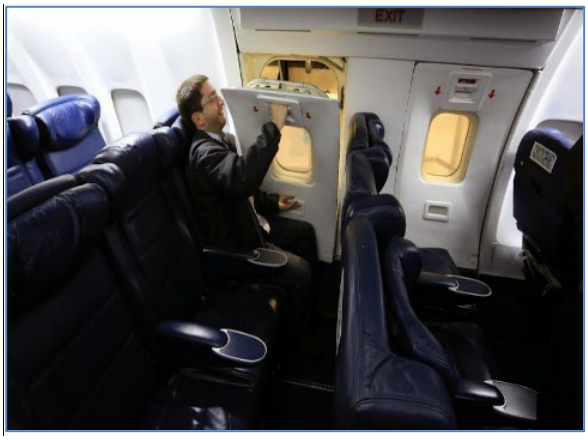

Figure 8 – Unlocking Type III Hatch Mechanism

Figure 9 shows two different placards with instructions for operating one Type III exit shown in Figure 8, above, and another Type III exit shown below in Figure 10.

Figure 9 - Type III Door Hatch Pictograms

The Type III exit shown in Figure 10 is an automatic over-wing hatch exit that opens upwards and is attached by a hinge.

Figure 10 - Type III Hatch with Hinge

Figure 11 shows a Type III automatic over-wing exit as viewed from outside the aircraft when open.

Figure 11 - Type III Hatches Opening Upwards

Members of the ESWG also reported their impressions that exit seat passengers would not appear to comprehend their role to aid other passengers in evacuating the airplane once the hatch is open. Post-accident investigations[23] show that passengers do not have the experience, knowledge, or skills to effectively discourage other passengers from bringing carry-on baggage with them to the emergency exit or to verbally guide passengers to the arrow markings on the trailing edge of the wing to expedite the evacuation.

The ESWG considered whether passenger lack of attention to the information provided in safety briefings and on safety information cards contributes to their lack of comprehension. The ESWG reached a consensus on the following observations regarding passenger behavior and motivation:

Passengers, in general, are not highly motivated to be attentive to safety information.

- Many passengers may think that aviation accidents are generally not survivable, which adversely impacts their motivation to master the preflight safety information provided.
- For most passengers, the primary motivation to sit in an exit seat is not altruistic but reflects passenger interest in additional comfort, legroom, and baggage space.
- For many passengers, the primary objective in passenger seat selection is to obtain the most comfort and convenience within the passenger's price range.
- Exit seat passengers are typically motivated to be the first off of the aircraft in an emergency evacuation and do not always assist fellow passengers at the base of the evacuation slide, even though a flight attendant instructed them to do so.
- Passengers generally perceive that sitting in an exit seat gives them access to first-class amenities at coach prices, e.g., better meal choices and unlimited and/or free alcoholic beverages.
- Passengers generally do not conduct a self-assessment and consider how their knowledge of exit seating requirements could impact fellow passengers or whether they

[23] *Uncontained Engine Failure and Subsequent Fire, American Airlines Flight 383 Boeing 767-323, N345AN, Chicago, Illinois, October 28, 2016*(NTSB/AAR-18/01); *Fire/Smoke (non-impact), Dynamic International Airways, Flight 405, October 29, 2015*(Accident Number DCA16FA013; *Runway Excursion During Landing Delta Air Lines Flight 1086 Boeing MD-88, N909DL, New York, New York, March 5, 2015* (NTSB/AAR-16/02); *AAIB investigation to Airbus A330-323, N276AY* (AAIB Bulletin 12/2017).

would be able to perform the necessary evacuation tasks if the flight attendant were incapacitated.

- If a flight attendant is co-located with passengers at an emergency floor-level exit, passengers may assume that the flight attendant will perform the necessary safety functions. Figure 12 shows the co-location of passenger exit seating with a flight attendant's jump seat.

Figure 12 - Exit Seat Passenger Seated Opposite Flight Attendant Jump Seat

Distractions, familiarity, and mixed signals can undermine passenger attentiveness.

- Exit seat passengers are aware that the comprehension of their safety role is evaluated by a one-word answer to a question, which they hear as "do you know you are in the exit row and are you willing to help? I'll need a verbal 'yes' from each of you." Frequent flyers have been heard to say "yes" before being asked a question in anticipation of the required verbal verification question.
- Passengers are likely to be distracted from the safety briefing due to their use of portable electronic devices (PEDs). Flight attendants spend significant time during the briefings coaxing passengers to pause conversations; remove headphones, earbuds, or virtual reality glasses; stop reading their smartphones or tablets, and direct their attention to the exit seat briefing. Flight attendants constantly remind exit seat passengers to stow oversize PEDs in preparation for takeoff or landing.
- Passenger attention is lost in some cases due to the length of the exit briefing.
- Passengers who frequently fly often do not give attention to flight attendants during the safety briefing unless repeatedly asked. The feedback from such passengers is that they have heard it all before. Passengers have been observed to not comprehend and even challenge flight attendant requests to have window shades in the open position for takeoff and landing, which for some air carriers is a safety precaution necessary for assessment of outside conditions prior to the opening of an emergency exit. Passengers have been observed challenging flight attendant instructions to secure and or stow service items by holding water bottles and other beverages during the taxi phase of flight.
- Passengers admit that they do not view the safety information card, unless the flight attendant hands it to them or they are encouraged to review the card to ensure the comprehension of their potential duties.[24]

[24] *Emergency Evacuation of Commercial Airplanes*. (Safety Study NTSB/SS-00-01).

Passengers are challenged to master safety information from briefings and cards.

- After boarding and prior to takeoff, passengers do not always familiarize themselves with briefing cards. During these times, passengers are primarily occupied with stowing carry-on baggage, using PEDs, making themselves comfortable, and observing fellow passengers.
- Some passengers prefer not to think about accidents or the possibility of an accident.
- Some passengers do not want other passengers to think that they are a "first-time" flyer or are nervous or anxious because they are studying the safety information card.

Attentive and responsible exit seat passengers set a standard for other passengers.

- The behavior of exit seat passengers is observed by other passengers and can influence other passengers' conduct. Specifically, when exit seat passengers respond positively to crewmember instructions, this behavior reinforces the perceived importance of the crewmember's safety role prior to takeoff and also prior to landing.

The ESWG attributed these deficiencies to a dual failure. First, the air carrier fails to provide operating instructions with a feedback mechanism to ensure passenger comprehension of exit seat procedures. Second, the exit seat passenger fails to read the safety card, ask clarifying questions, comprehend the emergency procedures, and be able to perform the exit seat tasks.

Designation of exit seating as premium can undermine appreciation of the safety role.

The ESWG considered the issue of possible conflict between the designation of exit seating as premium seating and the safety role that passengers seated in exit seats would have if an emergency evacuation were to occur. Members reached concurrence on the following points:

- Association of premium status with exit seating may create a false impression that air carriers are charging for volunteer safety assistance.
- Provision of first-class amenities, including free alcoholic beverage service, without a re-assessment prior to landing to ensure that the exit seat passengers still meet exit seat criteria, is an unacceptable safety risk.

Reseating passengers from an exit seat to a non-exit seat can potentially delay a flight.

The ESWG considered the challenges associated with passengers, including passengers with "conditions or responsibilities, such as caring for small children" that might prevent them from performing exit seat safety functions. See 14 CFR § 121.585(b)(7)(i). ESWG members noted that some passenger groups present particular challenges that can potentially lead to flight delays.[25] Examples include delays caused by reseating families traveling with children who cannot occupy an exit seat but who were inadvertently assigned an exit seat, reseating a group of non-English speaking exchange students, and reseating a passenger with a leg cast. In such cases, customer service agents can be expected to assign alternative seating to accommodate an exit seat passenger who does not meet the exit seat criteria, which may ultimately leave one or more exit seats unoccupied.[26]

The ESWG considered the following situations that revealed some of the difficulties associated with reseating situations, which can cause delay in the airplane's pushback from the gate:

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[25] 14 CFR 121.585(g) requires that prior to taxi or pushback, the crew has verified that no exit seat is occupied "by a person the crewmember determine[d] is likely to be unable to perform the exit seat safety functions."

[26] The ESWG noted that exit seat assignments are also sometimes adjusted when there has been an aircraft change, including a scheduling change that resulted in an aircraft change. In such cases, differences in the exit seating configuration, seating arrangement, and exit seat numbering on the replacement equipment could also contribute to delays.

- Frequent flyers sometimes express a sense of entitlement to their exit seat selection based on their mileage accumulation status, even though they were not assigned to an exit seat on that particular flight. Flight attendants also report passengers becoming confrontational, combative, threatening, and using intimidating language to challenge a "premium status" passenger being reseated in a non-exit seat.
- In one reported incident, a family of five, consisting of two adults and three minor children under the age of 15, used frequent flyer status to obtain an exit seat for one of the two parents. This separated the family and left one parent and the three children assigned to a different row of seats. During the en-route segment of the flight, the parent in the exit seat switched seats with the other parent. Throughout the flight, one or two of the children approached the parent at the exit seat to visit or receive comfort, leading to complaints from passengers in surrounding seats. The flight attendant later submitted a report about the incident and requested clarification on how to comply with the limitations of 14 CFR § 121.585(b)(7)(i), which prohibits a certificate holder from seating a person with a "condition or responsibilities, such as caring for small children that might prevent the person from performing one or more of the applicable functions listed in paragraph (d) of [§ 121.585]" in an exit seat.
- An exit seat incident involved a collegiate volleyball team. A member of the team with a leg cast and crutches accepted the air carrier's offer to pre-board the flight. However, prior to boarding, the gate agent realized this passenger had been assigned a seat in an exit row, contrary to regulations. This incident resulted in the reseating of several passengers and caused one exit seat to be left unoccupied.

Air carriers' approved exit seating programs emphasize exit seating safety functions.

The ESWG reviewed the safety controls used by air carriers to ensure their compliance with the provisions of 14 CFR § 121.585. Air carriers apply these controls to passenger interactions at ticketing, check-in, boarding, and prior to takeoff to ensure passenger understanding of the requirements and responsibilities associated with being seated in an exit row.

Exit seating restrictions are communicated multiple times during ticketing and boarding.

Air carriers use a number of communication controls related to exit seating, beginning at ticket purchase and continuing through the boarding process, to ensure that passengers understand the restrictions and responsibilities associated with exit seating. First, during the reservation and ticket purchasing processes, air carriers notify passengers of the special requirements associated with being seated in an exit row. In addition, a link to the air carrier's exit seating policy is typically provided on the reservation screen, and a passenger who wishes to do so can print a copy of the policy. Information about the air carrier's exit seat procedures is also made available for inspection by passengers at the ticket counter and at loading gates, as required by 14 CFR § 121.585(f). Then, the air carrier's computer system typically provides prompts to the gate agent at check-in to remind passengers in exit seats of the requirements and responsibilities associated with exit seating. Finally, during pre-boarding and early boarding, announcements about exit seating are made in the boarding area as an additional reminder of requirements and responsibilities that apply to passengers seated in exit seats.

Assessment and verification are performed by flight attendants during boarding and prior to takeoff.

During and after boarding but prior to takeoff, additional controls apply to assessment and briefing by a flight attendant about expectations and responsibilities related to exit seating. These safety controls include the following air carrier procedures:

- When there is more than one flight attendant, one flight attendant remains at the boarding position, and the others are positioned at locations with exit seats until all exit seats are occupied.

- Prior to obtaining verification of the passengers' capability and willingness to perform emergency safety functions, flight attendants perform a verbal assessment of their suitability based on a casual conversation with the passengers in the exit seats.
- The flight attendant performs a visual assessment, noting any exit seat passengers that have difficulty moving down the aisle to their seats or placing carry-on baggage in the overhead bin.[27] Such passengers could have a difficult time assessing conditions outside the exit, opening or securing an exit, locating and operating an inflation slide lanyard, or performing other duties described on the safety information card.
- The flight attendant briefs the exit seat passengers and requests that they read the safety information briefing cards that include the requirements, criteria, and functions associated with exit seating.
- The flight attendant requests that the passengers ask to be reseated if they cannot perform exit row safety functions or do not wish to do so.
- The flight attendant reports to the purser or pilot in command of compliance based on assessment and the verbal statement from passengers of their capability and willingness to perform emergency safety functions.

Assessment can result in a determination that a passenger should be reseated in a non-exit seat.

During the visual and verbal assessment of the passengers seated in an exit seat, flight attendants may determine that a passenger would be unable to perform one or more of the functions the passenger may be called upon to perform during an evacuation, [28] which may lead to a decision that a passenger should be reseated to a non-exit seat. Circumstances that may lead to such a determination and reseating include:

- Passengers who require a seat belt extender. Passengers who require a seat belt extender may, on some air carriers, not be permitted to sit in an exit seat, particularly at Type III exits. When a seat belt extender is used, the length of the seatbelt with the extender could present a tripping hazard for exiting passengers. In addition, the use of the extender can interfere with the correct positioning of the armrest in accordance with company safety procedures. See Figure 14.

Figure 13 - Passenger Using Seatbelt Extender

[27] One ESWG air carrier does not station a flight attendant at exit rows during boarding, therefore its exit seat passengers are not observed walking and managing their carry-on baggage. That air carrier's flight attendants are responsible for completing preflight checks of emergency equipment during passenger boarding.

[28] 14 CFR § 121.585(b) and (d).

Figure 14 - Armrest Cannot be Fully Lowered

- Passengers traveling with service animals. Note: pets and emotional support animals that are not service animals are now prohibited from all passenger areas.
- Passengers under the age of 15 or passengers with a lap-held child. Some air carriers extend the limitations on the seating of passengers with a lap-held child to any seat that faces a flight attendant jump seat.
- The use of a child restraint system. Some air carriers extend the limitations on the seating of passengers using a child restraint system to the row immediately forward or aft of an exit seat. See Figure 15.

Figure 15 - Child Restraint System

- An unaccompanied minor.
- A passenger with an orthotic positioning device.
- Portable oxygen concentrators cannot be used while occupying an exit seat. See Figure 16.

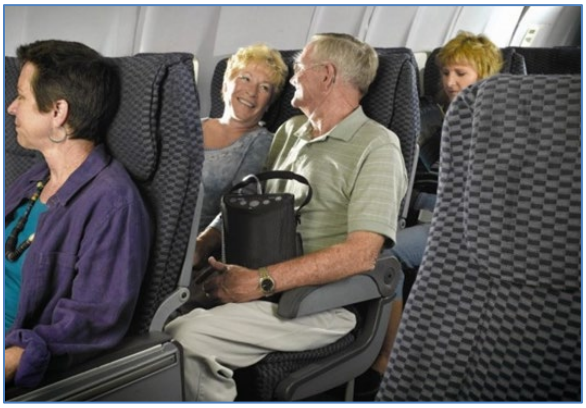

Figure 16 - Passenger Using Portable Oxygen Concentrator

- Passengers who require the use of a wheelchair.

Use of alcohol during flight can impede passenger performance of safety functions.

Data regarding the reduced capacity of passengers occupying exit seating was not available to the ESWG. However, several FAA Certificate Management Offices, which are responsible for the certification, surveillance, and inspection of part 121 air carriers, have issued letters of concern when air carriers have advertised marketing initiatives involving unlimited alcohol for passengers seated in exit seats. Members of the ESWG expressed concern about observations of an increase in the consumption of alcoholic beverages by exit seat passengers, as well as instances in which exit seat passengers appeared to be intoxicated. Such situations can result in the crew reseating a passenger from an exit seat to a non-exit seat during the flight. Of note, this reseating could potentially result in an unoccupied exit seat.

Findings from the Review

In this review of current safety procedures related to unoccupied exit seats, the FAA reviewed its regulations and guidance, evaluated data from safety assurance reporting, and considered the contributions of the ESWG.

Based on its review, the FAA finds that unoccupied exit row seats do not pose a safety hazard and would not negatively impact the success of an emergency evacuation of an aircraft. There is no requirement for exit seats to be occupied. In the event that an exit seat is not occupied and an evacuation is needed, it is conceivable that the passenger or passengers in the closest proximity to the exit may assess conditions and operate the exit. Flight attendants have the latitude to move a passenger to an exit seat when they deem it necessary, based on their risk assessment of the situation.

The FAA finds there is a potentially greater hazard of an unqualified person in an exit row seat than no person at all. Some factors that may lead to this situation include a general lack of passenger understanding regarding safety duties, premium seating perceptions leading to difficulty removing a person deemed insufficient for the emergency tasks, and marketing of seat perks to include free alcohol by some air carriers.

The FAA also finds that the FAA should continue to evaluate air carriers' approved exit seating programs to ensure that the air carriers' policies and procedures are capable of ensuring safe operation and compliance with the regulations and standards prescribed by the FAA for management of designated exit seats. Further FAA evaluation of approved exit seat programs will help to address the potential impact of changes to seating configurations that could contribute to regulatory non-compliance.

Conclusions

Section 121.585(b) prohibits an air carrier from allowing a passenger to occupy an exit seat if the carrier determines that the passenger is unlikely to be able to perform certain functions in an

emergency. These functions include being able to open the exit, being able to hear and understand commands from the flight attendants, being able to exit the aircraft, and being able to assist other passengers. By adhering to the § 121.585(b) prohibition, airlines minimize the likelihood of passenger-caused delays during an evacuation.

In 1990, when the FAA developed the exit row seating requirements in 14 CFR § 121.585, the agency considered whether airlines should ensure that at least one seat is occupied in each emergency exit row. The FAA did not find that such a requirement was necessary because when exit seats are not occupied, nearby passengers who are able to do so could quickly move into the empty row and perform the safety tasks. Based on the review conducted for this report, and a lack of evidence to the contrary, the FAA again finds that evacuations would not be hindered due to unoccupied exit seats. Crewmembers must reseat passengers from exit to non-exit seats in accordance with § 121.585 when necessary, which in some situations may result in unoccupied exit seats.

The FAA is committed to its oversight of air carrier exit seat programs and to monitoring for indications of elevated risk. Accordingly, the FAA will continue to work with air carriers, manufacturers, and labor organizations to address the above findings and strive for improvement in the management of safety issues related to exit seating and remains open to considering the results of any new research that addresses exit seat safety including air carrier exit seat programs. These efforts are consistent with the FAA's ongoing commitment to its safety mission.

Appendices

Appendix A, Sources Reviewed

Appendix B, ESWG Roster

Appendix A – Sources Reviewed

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Appendix B – Exit Seat Working Group Roster (includes both primary and alternate participants)

Cari Smith Allen
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Alaska Airlines

Steven Bereznak
Manager Cabin Safety / ASAP Program Manager
American Airlines

Giff Beuker
Senior Manager, Inflight Systems Analysis and Regulatory Compliance
United Airlines

Alan Burgess
Sr. Analyst, Policy and Procedures
American Airlines

Linda Connors
MD Inflight Policies and Procedures
American Airlines

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