



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

Aviation Safety

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

**JUL - 2 2018**

VIA FEDERAL EXPRESS

Mr. Paul Hudson  
President  
FlyersRights.org  
1440 G Street NW  
Washington, DC 20005

Dear Mr. Hudson:

This letter is in response to the July 28, 2017 decision of the United States Court of Appeals for the District of Columbia Circuit and supplements our responses dated February 1, 2016 and March 14, 2016. The court remanded your petition for a “properly reasoned disposition of [your] safety concerns about the adverse impact of decreased seat dimensions and increased passenger size on aircraft emergency egress.”

In accordance with 14 CFR § 11.73, the FAA considers the following criteria when making a decision about whether to amend current regulations based on a petition for rulemaking:

1. The immediacy of the safety or security concerns you raise;
2. The priority of other issues the FAA must deal with; and
3. The resources we have available to address these issues.

After reconsidering your request in accordance with the Court’s instructions to address the first of these criteria, we have again determined that your request does not merit rulemaking at this time.

**Immediacy of Safety or Security Concerns.**

While your petition asserts that seat width and pitch, in conjunction with passenger size, raise a safety concern, the FAA has no evidence that there is an immediate safety issue necessitating rulemaking at this time. The FAA has no evidence, and nothing in your petition, or the letter you submitted on April 2, 2018, or the “Post-Remand Submission” you submitted on June 1, 2018, demonstrates that current seat dimensions (width and pitch) hamper the speed of passenger evacuation, or that increasing passenger size creates an evacuation issue.

The reason that seat width and pitch, even in combination with increasing passenger size, do not hamper the speed of an evacuation is the timeline and sequence of the evacuation. The time it takes passengers to get out of their seats, even if those seats are relatively narrow and close together, is less than the time it takes for the emergency exits to begin functioning and for the line that begins forming in the aisle to clear. This is demonstrated during evacuation tests, several videos of which are now available for public review by being placed in the docket for your petition.

An evacuation begins when ordered by the flight crew or a flight attendant, or on passengers' own initiative, when the aircraft comes to a stop. The flight attendant must then unbuckle his or her seat belt, stand up, move to the exit, look outside to confirm that the area around the exit is safe, open the door, and verify that the escape slide, if applicable, has deployed and is usable. All of these flight-attendant actions take a minimum of about 10 seconds under the ideal conditions of a demonstration test, and are likely to take significantly longer in an actual accident. Declaration of Jeffrey C. Gardlin, attached ("Gardlin Declaration"), at para. 10. If responsibility falls upon a passenger to open an exit, especially an overwing exit that must be discarded, this time can be even longer. A line then develops at each exit, because passengers can get to the exit faster than they can get through the exit. Passengers in an actual accident or incident likely will experience a delay of more than 10 seconds before being able to use an emergency exit. They can use this time to get out of their seats, and then either enter the aisle or wait to enter the aisle. The key is that the time it takes to stand up from one's seat, even if the seat is relatively narrow and installed at a 28-inch pitch, and even if the passenger is relatively large, is less than the time it will take to get the emergency exits opened and functional and for the line that begins forming in the aisle to clear. *Id.*

This timeline has been repeatedly demonstrated during evacuation tests. Airplane manufacturers typically film these evacuation tests. While the FAA receives and preserves general information about each test, such as whether it was successful and conducted under the required conditions, the FAA does not retain videos of evacuation tests and such data are considered to be proprietary by the manufacturers. However, airplane manufacturers have recently provided the FAA with videos and statements about their evacuation tests and agreed to allow the FAA to make these videos and statements available for review by you and the public. The FAA will place this information in the docket for your petition. These videos of recent tests show that passengers take no more than a second or two to get out of their seats, even from seats as narrow as 16 inches wide and installed as closely as at a 28-inch pitch. Gardlin Declaration at paras. 10, 18, and attachments.

The FAA has no evidence that a typical passenger, even a larger one, will take more than a couple of seconds to get out of his or her seat, or that such time will approach the time necessary to get the emergency exits functional. The FAA also has no evidence that current seat sizes are a factor in evacuation speed, nor that current seat sizes create a safety issue necessitating rulemaking, because the time to stand up from one's seat is less than the time it will take for the exit door to be opened and, for most passengers, for the aisle to clear. Moreover, the FAA does not expect seat pitch to drop so significantly from

current levels that it meaningfully affects evacuation speed. Gardlin Declaration at paras. 21, 22, and 27.

Regarding seat pitch, although some airlines have operated with less than 30-inch average seat pitch for decades, seat pitches below 30 inches are still not common today. Gardlin Declaration at para. 21. Also, seat pitch is unlikely to go below 27 inches under current technology and regulations. FAA regulations (14 CFR § 25.562(c)(8)) require that seats not deform in a crash to the point that they would impede rapid egress. Advisory Circular 25.562-1B, Appendix 2, discusses the FAA's application of this requirement, but it effectively results in a minimum of 9 inches between the front of one seat (the front of the seat cushion) to the nearest point on the back of the next seat. Gardlin Declaration at para. 21. Seat bottoms are typically approximately 18 inches front-to-back, and have been for many years. *Id.* Thus, seat pitch is unlikely to go below 27 inches (9+18), in order to maintain compliance with § 25.562(c)(8), even if a carrier could persuade passengers to purchase tickets for flights with seat pitches that low.

Turning to your particular safety concerns, the FAA has no evidence that your concerns raise an immediate safety issue. Nothing presented in your petition demonstrates that decreases in seat pitch and increases in passenger girth create an immediate safety issue with regard to passenger evacuation that necessitates rulemaking.

*Safety Concern: Evacuation Testing.*

The first safety issue alleged by the petition (p. 6) states that evacuation tests have not been run in airplanes with seat pitch of less than 31 inches. This is not true. The comments of the FAA employee that you cited referred to studies that the FAA itself has conducted, not to evacuation tests conducted by airplane manufacturers for certification. Gardlin Declaration at footnote 3.

*Safety Concern: Seating Capacity.*

The second safety issue alleged by the petition (p. 6) is that the tests are conducted with fewer passengers than can be carried on the aircraft. This is also not true. As noted in the FAA's first response to your petition (p. 2), the number of passengers substantiated for evacuation becomes the certified maximum number of passengers that the airplane can carry in operation. 14 CFR § 25.803.

*Safety Concern: Human Panic.*

Your petition states (p. 7) that "a decreased amount of space between seats would likely increase ... panic, and cause delays in evacuations during an emergency." Your petition offers no support for why a lower seat pitch would increase human panic. And the evidence is to the contrary, as discussed below.

First, numerous successful passenger evacuation tests have been conducted with 28-inch seat pitch, and the FAA did not observe any indication that seats installed at that pitch

affect passenger behavior. Gardlin Declaration at para. 24. In addition, there have been several actual accidents and incidents in recent years in which the passengers successfully evacuated in the presence of an actual or potential post-crash fire. Gardlin Declaration at para. 25.

The FAA and other civil aviation authorities have conducted research testing to assess the effects of “panic-like” behavior during evacuations. These tests simulate the urgency of panic by offering passengers a financial incentive to be among the first out of the emergency exits. From these, the FAA learned the effects of panic-like behavior on evacuation. The FAA learned that performance by test participants is largely driven by whether they paid attention to evacuation instructions. The FAA has no data supporting speculation that current seat widths or pitches increase human panic or otherwise slow evacuations. Gardlin Declaration at para. 24.

#### *Safety Concern: Passenger Demographics.*

Your petition claims that emergency evacuation demonstrations do not consider human factors, such as older passengers, passengers with children, or passengers with disabilities, who may need more time to evacuate. This is true for several reasons, but it does not invalidate those tests.

First, evacuation tests are conducted with volunteers and introduce elements that would increase the safety risk to the test participants. Injuries, even serious ones, occur during emergency evacuation demonstrations. Thus, the FAA has chosen not to require elderly passengers or children in demonstration tests after learning that they are more likely to sustain injury. Gardlin Declaration at para. 13. Second, actual emergency evacuations are subject to a high degree of variability, such as the amount of damage to the airplane, and not every variable can be safely and reliably replicated. Gardlin Declaration at para. 14. Therefore, a key purpose of the 90-second evacuation test is to provide a repeatable comparison of the airplane design to a specific standard, not to simulate every potential variable that may occur in an evacuation such as the amount of airplane damage and the diversity of human ages and abilities. These variables are addressed by several other regulations, including regulations prescribing minimum widths of aisles, cross-aisles, and passageways; minimum sizes of exits; requirements for emergency lighting and exit marking; and the minimum number and location of exits, at 14 CFR §§ 25.815, 25.813, 25.807, 25.812, and 25.811 respectively. While the evacuation tests required by the FAA do not specifically take into account changes in the size of passengers, such tests continue to be conducted with volunteers from the general population who have a variety of sizes and weights. Gardlin Declaration at para. 14.

#### *Safety Concerns Raised by Other Commenters.*

In response to your petition, one commenter stated that current seat spacing made it “necessary to climb onto [her] seat to get out.” Another commenter asserted that, given current seat spacing, “[i]n an emergency, there is no way we would have been able to get to an exit row in less than three or four minutes.” As noted above, the videos of

evacuation tests that the FAA received from airplane manufacturers show that it is not necessary to climb onto one's seat to get out, and that passengers take no more than a second or two to get out of their seats, even from seats as narrow as 16 inches wide and installed as closely as at a 28-inch pitch.

Another commenter said that, given his height, "it is physically impossible for [him] to assume the 'crash position'" in a regular economy-class seat. Decreased seat pitch, however, does not prevent passengers, even taller ones, from assuming a brace position, because an acceptable brace position is leaning forward with your head on the back of the seat in front of you. Gardlin Declaration, footnote 7.

### **Other Two Criteria.**


Neither your petition nor the Court's decision challenged the FAA's decision regarding its two other criteria for rulemaking (the priority of other issues the FAA must deal with, and the availability of rulemaking resources). The FAA continues to regard the issues and requested actions from your petition as having a lower priority than the other issues before the FAA, and, given the FAA's limited rulemaking resources, those resources will be dedicated to higher priorities, as indicated in the Department of Transportation's Regulatory Agenda.

Although we are declining to initiate rulemaking based on your petition, your comments and arguments for the proposed rule change will be placed in a database, which we will examine if we consider future rulemaking in this area. If the FAA does pursue rulemaking in this area in the future, you would be able to track it through one of the two following websites:

- For significant rulemakings, you can find the status on the Department of Transportation's (DOT) website (<http://www.dot.gov/regulations/report-on-significant-rulemakings>).
- For non-significant rulemakings, you can find the status on the DOT's semi-annual regulatory agenda, through the Office of Management and Budget's (OMB) Office of Information and Regulatory Affairs' (OIRA) Unified Agenda website (<http://www.reginfo.gov/public/do/eAgendaMain>).

For the reasons stated herein, we continue to decline to initiate rulemaking based on your petition.

Sincerely,

  
Dorenda D. Baker  
Aviation Safety  
Executive Director  
Aircraft Certification Service

Enclosure