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October 30, 2009

The Honorable John D. Rockefeller IV  
Chairman  
The Honorable Kay Bailey Hutchison  
Ranking Member  
Committee on Commerce, Science, and Transportation  
United States Senate

The Honorable James L. Oberstar  
Chairman  
The Honorable John L. Mica  
Ranking Member  
Committee on Transportation and Infrastructure  
House of Representatives

Subject: *Aviation Safety: Information on the Safety Effects of Modifying the Age Standard for Commercial Pilots*

The Fair Treatment for Experienced Pilots Act<sup>1</sup> (the act) extended the federal age standard for pilots of large commercial aircraft<sup>2</sup> from 60 to 65 years of age.<sup>3</sup> The act

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<sup>1</sup>Pub L. No. 110-135, December 13, 2007.

<sup>2</sup>By large commercial aircraft, we mean those aircraft regulated under part 121 of title 14 of the Code of Federal Regulations. Part 121 applies to air carrier operations involving airplanes with a seating capacity of more than 30 passengers or a maximum payload capacity of more than 7,500 pounds. The act does not apply to commercial pilots who fly planes operating pursuant to C.F.R. part 135, which governs small aircraft that have a seating capacity of less than 30 passengers and a payload of less than 7,500 pounds. Most commuter, air tour, and air taxi operators and medical services (when a patient is on board) fall under the purview of part 135. Also, noncommercial pilots, such as private and student pilots operating under 14 C.F.R. part 91, are not subject to the act.

<sup>3</sup>49 U.S.C. §44729(a). The Fair Treatment for Experienced Pilots Act also provided that a pilot who has attained age 60 may serve as pilot-in-command on an international flight only if another pilot in the flight crew is younger than 60. The act prohibits subjecting pilots to different, greater, or more frequent medical examinations or different medical standards because of their age unless such action is necessary to ensure an adequate level of safety. Contradicting this provision is the requirement that pilots who have attained 60 years of age may not serve as a pilot unless they have a first-class medical certificate. Pilots are required to obtain a medical certificate that indicates they have passed a physical exam by a FAA-authorized doctor. Depending on a pilot's age, a first-class medical certificate is valid for 6 to 12 months. Additionally, the act requires air carriers to (1) continue to provide FAA-approved training to pilots, with a specific emphasis on initial and recurring training and the qualification of pilots who have attained 60 years of age; and (2) evaluate every 6 months the performance of pilots who have attained 60 years of age through an actual flight test—referred to as a “line check.”

also requires us to report—no later than 24 months after its enactment—on the effect, if any, of this change on aviation safety.<sup>4</sup> This report responds to that requirement.

To perform our work, we reviewed relevant literature, interviewed senior officials from the Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB), and obtained and reviewed FAA and NTSB aviation accident and incident data for commercial passenger airline flights from December 2007 through September 2009. We conducted this performance audit from September 2009 to October 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Because we are familiar with and have previously determined that FAA's and NTSB's data were sufficiently reliable for the nationwide descriptive information used in this report, we did not further assess the data's reliability; however, we did interview agency officials knowledgeable about the databases to determine that the accident and incident data used in this report continue to be sufficiently reliable for the analysis that we performed.<sup>5</sup> (See app. I for more detailed information on our scope and methodology.)

## Summary

Our review of FAA's accident and incident data and NTSB's accident data from December 2007, when the act was enacted, through September 2009 showed that no accidents or incidents<sup>6</sup> resulted from the health conditions of pilots 60 years or older. However, for a more definitive assessment, a longer period of time would be required to collect data for similar groups—both pilots 60 years or older and younger pilots—to determine if the act's change in the age standard for commercial pilots has any effect on aviation safety. Such a study is not yet feasible because the act is too recent for flight records to be available for a sufficient number of pilots 60 years or older.

## Background

In 1960 FAA established 60 as the age limit for pilots of large commercial aircraft out of concern for public safety. At that time, FAA stated that certain important physiological and psychological functions progressively deteriorated with age, that significant medical defects attributed to the aging process occurred at an increasing rate as an individual grew older, and that sudden incapacity due to such medical

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<sup>4</sup>49 U.S.C. §44729(h)(3).

<sup>5</sup>FAA and NTSB provided us with sufficient documentation of their database reviews to satisfy our data reliability standards (see app. I).

<sup>6</sup>NTSB defines an accident as an event in which any person suffers death or serious injury, or in which the aircraft receives substantial damage. NTSB defines an incident as an occurrence, other than an accident, associated with the operation of an aircraft that affects or could affect the safety of operations.

defects became more frequent in any group reaching age 60.<sup>7</sup> The benefits of experience in the cockpit may, however, offset the potential for health issues related to age. The value of such experience was recently demonstrated when a 57-year-old<sup>8</sup> pilot safely landed his U.S. Airways jetliner in New York's Hudson River on January 15, 2009, after the aircraft was crippled by bird strikes while taking off from LaGuardia International Airport.

In November 2006, the International Civil Aviation Organization, the United Nations aviation organization that develops standards for international aviation activities, increased the age limit for certain pilots—i.e., those pilots engaged in operations with more than one pilot—to 65 years, provided the other pilot in the cockpit is under age 60.

FAA has established a number of rules regarding pilots of large commercial aircraft to help ensure safety. For example, pilots-in-command, also referred to as captains, must have medical checkups—including an electrocardiogram—every 6 months and first officers must have them annually.<sup>9</sup> Depending on the crew configuration of the aircraft, FAA regulations restrict the amount of time pilots can spend in flight or crew duty status during a 24-hour consecutive period as well as the number of hours they are allowed to fly in 12 calendar months.<sup>10</sup> Generally, pilots are allowed only 8 hours of flight deck duty during any 24-hour period. These rules help reduce the affects of pilot fatigue on safety. FAA rules also require both the captain and the first officer<sup>11</sup> to be in their seats during critical phases of the flight, including takeoffs and landings. This rule helps ensure that even in the event of a sudden death at such a juncture, the surviving pilot would be able to keep the plane flying safely.

### **Early Indications Are that Increasing the Age Limit for Commercial Airline Pilots Has No Effect on Aviation Safety**

FAA's and NTSB's accident and incident data showed no adverse safety effects attributable to the increase in the age limit for pilots. At our request, both agencies reviewed their respective databases for the period from December 2007 through September 2009 and found that no accidents or incidents during that period resulted from the health conditions of pilots 60 years or older. FAA's Accident and Incident Data System (AIDS) captured seven incidents involving captains aged 60 and 61, but no health or cognitive issues of any kind were reported for these incidents. Table 1

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<sup>7</sup>See GAO, *Aviation Safety: Information on FAA's Age 60 Rule for Pilots*, [GAO/RCED-90-45FS](#) (Washington D.C.: Nov. 9, 1989) for a detailed discussion of the history, development, and challenges to the age 60 rule.

<sup>8</sup>The pilot turned 58 years old 8 days after the incident.

<sup>9</sup>14 C.F.R. §61.23.

<sup>10</sup>14 C.F.R. §121.471.

<sup>11</sup>The captain is the pilot in the left seat of the cockpit who flies the airplane, makes all the command decisions, and is responsible for the flight's safety. Sitting in the right seat and acting as a copilot is the first officer, who has an independent set of controls and instruments to operate the aircraft and may fly the plane about half the time, usually swapping duties with the captain after each segment of the flight.

summarizes information about these seven incidents. The data from FAA’s and NTSB’s databases during that period showed a total of 460 events, consisting of 54 accidents and 406 incidents, for pilots of large commercial aircraft who were younger than 60.<sup>12</sup> NTSB’s Accident Database included no health-related events—accidents—involving pilots 60 years or older that occurred during our review period.<sup>13</sup>

**Table 1: Aviation Incidents Involving Pilots 60 Years or Older, December 2007 through September 2009**

Date and location of incident	Age of pilot	Summary of incident
February 12, 2008, Cleveland, Ohio	60	The aircraft was taxiing when it lost brake and directional control. To bring the aircraft to a stop, the crew applied reverse thrust, which caused the aircraft to rotate approximately 30 degrees. Assistance was required, and the aircraft was towed to the gate.
February 22, 2008, Memphis, Tennessee	61	At liftoff, the aircraft began to roll without being directed to do so by the pilot. The pilot corrected the roll by applying opposite control pressure. The pilot then retracted the wing flaps and continued the flight. South of Memphis at 10,000 ft, the pilot declared an emergency and landed at Memphis without the aid of wing flaps.
March 7, 2008, Columbus, Ohio	60	The aircraft landed and slid off the departure end of the runway, stopping approximately 267 feet off the end of the runway in the snow. The passengers and crew suffered no injuries and the aircraft sustained only minor damage.
March 8, 2009, Milwaukee, Wisconsin	60	The aircraft landed in deteriorating weather conditions. When cleared to exit the runway to the taxiway, the aircraft turned too soon for the intersection and became stuck in the snow off the pavement.
April 19, 2009, Windsor-Locks, Connecticut	60	The aircraft landed and was instructed to taxi via various runways and taxiways to the terminal. Since the last time the crew had landed at this airport, construction had changed the runways’ configuration. The crew was unaware of this change and taxied off the end of the runway causing the aircraft to become stuck in the mud.
January 16, 2009, Huslia, Alaska	61	Upon landing, the pilot reported that he had overrotated and bounced the aircraft, landing with an unusually nose-high attitude. No passengers were injured, but the tail section of the aircraft sustained minor damage.
February 18, 2009, Savannah, Georgia	60	The aircraft touched down on the runway, proceeded into the overrun area, and stopped 750 feet from the runway. The crew indicated that the runway was wet and the aircraft had no braking action, which the crew suspected was due to hydroplaning.

Source: GAO presentation of data from FAA’s AIDS database.

Although FAA’s AIDS database did not include any accident or incident involving the health of a pilot aged 60 or older, FAA officials told us that on June 18, 2009, a 60-year-old pilot of a Boeing 777 aircraft who was serving as captain died en route from Brussels, Belgium, to Newark, New Jersey. The first officer landed the aircraft in Newark without incident. According to FAA’s Deputy Federal Air Surgeon, an

<sup>12</sup>Due to the recency of the act, pilots who are 60 and older are a very small proportion of the total population. According to the FAA data, there have been generally been more than 100,000 active air transport pilots during each of the last several years.

<sup>13</sup>See appendix I for descriptions of FAA’s and NTSB’s databases.

autopsy of the deceased pilot found evidence of moderate coronary artery disease, as well as old and recent heart attacks. However, this official said that there was nothing that aeromedical screening could have reasonably done to prevent this event, as the airman had an unremarkable physical on March 11, 2009. The pilot did have a history of high blood pressure and elevated cholesterol, but both conditions were well controlled with medication. The Deputy Federal Air Surgeon also said that the electrocardiogram at the time of the pilot's last physical was unremarkable.

According to FAA, this June 18, 2009, death of the pilot while airborne was the sixth such incident reported since 1994 for a commercial passenger airline pilot. According to FAA records, five pilots died while in control of a commercial passenger aircraft from 1994 through December 2007. During that entire period, the retirement age was 60, and the pilots ranged in age from 48 to 57. According to FAA, none of these in-flight pilot deaths resulted in an accident. Furthermore, these deaths need to be considered in the context of the millions of flights that take place every year. In that context, the six deaths that have been reported for the almost 155 million departures since 1994 translate into about 1 chance per 26 million departures that a pilot will die in flight.

Less than 2 years have passed since the act's enactment, and therefore the record is limited. FAA's existing medical certification requirements and regulations requiring redundancy in staffing aircraft have continued to help ensure flight safety even when a pilot has died in flight. According to the Executive Director of the Aerospace Medical Association,<sup>14</sup> to definitively determine whether advancing age—in this case, reaching age 60 or older—presents an added risk to flight safety because of cognitive or neurophysiological changes or sudden incapacitation due to a medical condition, one would need data for a large enough cohort of commercial pilots under age 60 and a similar cohort of commercial pilots aged 60 or older to compare their respective flying records over a period of years. However, sufficient data are not yet available for such a comparison because of the recency of the act. We note that other factors, such as flight conditions, would also have to be considered in such a comparison. Therefore, it is premature to conclude that the increase in the age limit for pilots to age 65 will or will not have an impact on a pilot's performance and aviation safety. As stated in the act, carriers are required to monitor the performance of all pilots with a special emphasis on pilots who have attained 60 years of age.

### **Agency Comments**

We provided a draft of this report to the Department of Transportation and NTSB for review and comment. Both agencies had no comments.

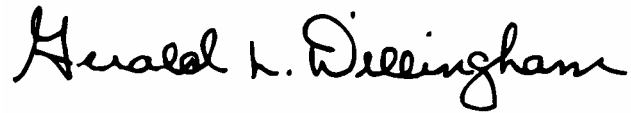
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We are sending copies of this report to the appropriate congressional committees, the Secretary of Transportation, the FAA Administrator, and the NTSB Chairperson. The report will also be available at no charge on the GAO Web site at <http://www.gao.gov>.

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<sup>14</sup>The Aerospace Medical Association represents approximately 3,300 physicians, scientists, and flight nurses engaged in the practice of aerospace medicine or related research.

If you or your staffs have any questions about this report, please contact me at (202) 512-2834 or by e-mail at [dillingham@gao.gov](mailto:dillingham@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff that made key contributions to this report include Bess Eisenstadt, Brandon Haller, David Hooper, Taylor Reeves, and Teresa Spisak.

A handwritten signature in black ink that reads "Gerald L. Dillingham". The signature is written in a cursive style with a large initial 'G' and 'D'.

Gerald L. Dillingham, Ph.D.  
Director, Physical Infrastructure Issues

## **Appendix 1: Scope and Methodology**

To address our mandate to determine the effect on aviation safety, if any, of the increase in the age limit for pilots required by the Fair Treatment for Experienced Pilots Act (the act), we reviewed relevant literature, interviewed senior officials in the Federal Aviation Administration's (FAA) Office of Aviation Safety, including its Office of Aviation Safety Analytical Services. We also interviewed a senior official from the National Transportation Safety Board's (NTSB) Office of Safety Research and Data Analysis.

To identify accidents and incidents involving pilots aged 60 or older, we obtained aviation accident and incident data from FAA's Accident and Incident Database (AIDS) and NTSB's Accident Database for large commercial aircraft flights from December 2007 through September 2009. These data capture the most current information available on flight safety since the act's enactment.

FAA's AIDS database contains incidents that occurred since 1978. FAA defines incidents as events that do not meet the thresholds for personal injury or aircraft damage contained in NTSB's definition of an accident. NTSB defines an "aircraft accident" as an occurrence associated with the operation of an aircraft that (1) takes place from the time any person boards an aircraft with the intention of flight through the time all such persons have disembarked and (2) any person suffers death or serious injury, or in which the aircraft receives substantial damage. NTSB's Accident Database includes data and causal factors for aviation accidents that have occurred since 1982.

Because we are familiar with and have previously determined that FAA's and NTSB's data were sufficiently reliable for the nationwide descriptive information used in this report, we interviewed agency officials knowledgeable about the databases to determine that the accident and incident data used in this report continue to be sufficiently reliable for the analysis that we performed.

We considered the level of evidence available to definitely determine whether advancing age—in this case, reaching age 60 or older—presents an added risk to flight safety. We concluded that because of the recency of the act, sufficient data were available to provide only a limited answer.

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