

Airways in USA are the safest ever

Updated 6/30/2006 12:49 PM ET

Aviation experts say the stretch for U.S. airlines of no deaths in over four years has not happened by chance.

Enlarge By Tim Dillon, USA TODAY

Aviation experts say the stretch for U.S. airlines of no deaths in over four years has not happened by chance.

MAKING JET TRAVEL SAFER

AUDIO

FATAL JET AIRLINE CRASHES

/news/graphics/air_safety/fatalcrashes_05.gif

FLIGHT RISKS AROUND THE WORLD ARE FALLING

Flying safety is getting better around the world, though flying into or within developing nations remains more dangerous than in developed countries.

Risk of airline death

Type of flights In the 1990s 2000-2005

Domestic flights inside developed nations* 1 in 13 million 0**

International flights from developed nations 1 in 6 million 1 in 8 million

Flights between developed and developing nations 1 in 1 million 1 in 1.5 million

Domestic flights inside developing nations 1 in 500,000 1 in 2 million

* - United States, Canada, Japan and Europe

** - The only fatal accidents involving airlines in developed nations were on international flights.

Source: Arnold Barnett, George Eastman Professor of Management Science, Massachusetts Institute of Technology

By Alan Levin, USA TODAY

The descent to Tucson was spectacular, the airline pilots recalled later, as the Boeing 737 glided between a canopy of stars and the sparkling lights of the city. The beautiful conditions masked a deadly hazard ahead in the darkness.

Despite charts showing a 4,687-foot mountain peak in their path, the pilots eased the jet to just below 4,000 feet. Only seconds away from a collision, the flight crew noticed the city's lights slowly disappearing behind a vague dark shape rising above the cockpit.

ACCIDENT RATES:U.S. on pace to cut accidents by 80%

In an earlier era, this flight in January 2002 would have crashed, killing the more than 100 people aboard. It would have been tallied as yet another case of a pilot accidentally flying a plane into the ground — the leading cause of aviation deaths around the world. Instead, a new safety device saved their lives, according to federal documents reviewed by USA TODAY.

As the jet bore down on the mountain, a mechanical voice boomed in the cockpit: "Terrain, terrain! PULL UP! PULL UP!" It was a computer that keeps an eye on every hilltop and mountain in the world, and it warned the crew just in time. The pilots climbed over the mountain and landed safely.

According to the documents, the close call in Tucson was one of at least eight incidents in the USA since 2000 in which crashes may have been averted by the safety device. Although the records don't identify the airlines involved, they include detailed accounts of the near-crashes.

It's because of this warning device and other safety enhancements that the airline industry is enjoying its safest period ever, both here and elsewhere around the world.

A passenger hasn't died in a U.S.-registered airline jet accident in more than 41/2 years, the longest stretch in the modern history of aviation.

Even accounting for the death of a 6-year-old boy in a car that was struck by a Southwest Airlines jet last December in Chicago and other accidents involving small planes, the risks of flying are at an all-time low.

Risks in the airways have hardly disappeared. In addition to incidents such as the one above in Tucson, there have also been several instances in the past 16 months in which planes nearly crashed or little-publicized accidents occurred but no one was hurt.

But there is also little doubt that safety is improving dramatically. The risk of a passenger dying on an airline jet flight has fallen sharply this decade compared with the 1990s, according to a USA TODAY analysis of accident statistics.

The risk from 2000 through 2005 was one flight in 22.8 million, a 60% drop from the 1990s.

The odds are almost too minute to comprehend. At that rate, a traveler would have to fly every day for more than 64,000 years before dying in an accident.

There have been close calls

In the backrooms of government aviation agencies, airlines and aircraft manufacturers where crash investigators work, a nervous hush descends whenever anybody mentions the long period without fatal crashes.

The people who investigate accidents, who have to walk through the smoldering hulks of planes, have seen such periods before. And each time, the record was interrupted by a spate of deadly accidents.

These investigators, who say they cannot speak publicly because of the sensitive nature of their work, know as well as anyone that there have been some close calls.

Several incidents in recent months highlight the potential dangers:

- On June 2, an engine exploded on an American Airlines Boeing 767 in Los Angeles while workers ran some tests.

The explosion showered the plane with shrapnel. Fiery fuel leaked from wing tanks, and one piece of the engine struck the jet's second engine. The investigation is not complete, but the failure could have been catastrophic if it had occurred in flight.

- On May 10, 2005, two Northwest Airlines jets collided on the ground in Minneapolis. The impact sliced open the wing fuel tank of an Airbus A319 and fuel gushed into the cockpit of the other plane, a Boeing DC-9.

The captain of the DC-9 was seriously injured, but the fuel did not ignite and the passengers safely evacuated both planes.

- On March 6, 2005, pilots aboard a Canadian airline flight from Cuba to Quebec heard a loud bang followed by vibrations that lasted several seconds. The Air Transat Airbus A310 carrying 271 people was able to return to Cuba, but it had lost its rudder, a moveable panel at the tail that keeps a jet stable.

The rudder tore loose so violently that it nearly took with it a larger section of the tail, which would have caused the jet to plummet and crash, according to Canadian and U.S. accident investigators.

And, yet, mistakes such as these have not been as disastrous as in previous decades.

Most-recent crashes

The overall safety record in recent years is staggering. From 2000 through 2005, there were 46 million airline flights on U.S.-based airline jet aircraft.

Only two crashed and killed passengers: an Alaska Airlines plane that plunged into the ocean off California on Jan. 31, 2000, after a mechanical malfunction, and an American Airlines flight that crashed in New York City on Nov. 12, 2001, after a pilot maneuvered so roughly that the jet lost its tail shortly after takeoff. No passengers have died on a jet flight since then.

(The toll does not include small propeller plane crashes, the Sept. 11 terrorist attacks or accidents that killed airline workers or bystanders. But even counting crashes on smaller planes, the record is impressive: The risk of passenger death for all airline flights from 2000 through 2005 was one flight in 13 million.)

It is even becoming difficult for federal officials to identify areas of risk. "Fatal airline accidents are such rare events that there are no longer what qualifies as 'common causes,'" Nicholas Sabatini, the Federal Aviation Administration's head of safety and regulation, said in a recent speech.

The notion that the airline industry could have somehow accomplished this by a string of lucky years is highly unlikely, according to Arnold Barnett, a professor at the Massachusetts Institute of Technology Sloan School of Management. Barnett jokes that his own fear of flying prompted him to study its risks.

He compared the rate of crashes in the 1990s in the United States, Canada, Europe and Japan with the period 2000 to 2005. If safety patterns had continued in those regions without improvement, there would have been an additional 10 fatal crashes since 2000, Barnett says. "I don't think anybody believes that crashes are extinct," he says. "But the people who have achieved this record deserve credit for it."

Manufacturers, airlines and government regulators agree. "I definitely think that what we're seeing is real," says John Lauber, the head of safety for Airbus, the European aircraft manufacturer. "I think it's a continuation of a trend that started many, many years ago."

Life-saving devices

Dozens of safety enhancements have driven the accident rate down. Devices now warn pilots of possible midair collisions. Pilot training has wiped out deadly windshear crashes. And growing numbers of airlines track every flight with

computers, allowing them to spot previously unseen problems and correct them before they create accidents.

If any single creation deserves credit for making jet travel safer, it is the "Enhanced Ground Proximity Warning System," the device that saved the flight in Tucson.

From 1987 to 2004, the leading cause of death by far in airline accidents around the world was accidentally flying into terrain or water, such as mountains, hills, trees and the ocean. Out of 9,541 deaths in that period, 3,631 were attributed to this type of crash, according to Boeing.

Despite improved navigation equipment and attempts to better train pilots, it's still possible to fly into a darkened ridge or a storm-shrouded mountain.

Past efforts paying off

In the late 1960s, a blunt-talking engineer working for a Seattle-based aviation electronics firm began trying to solve the problem. Don Bateman first created a system in the early 1970s that aimed to warn pilots if they were flying too low. But the system was crude and easily fooled.

In the 1990s, two developments made dramatic improvements possible. Cheaper, faster computers revolutionized cockpits.

Then, the fall of the Soviet Union made maps of the world's terrain affordable. "We ran out and bought as many as we could," recalls Bateman, 74.

Bateman and a small team at AlliedSignal created a device that kept tabs on every hillside, radio tower and ridge in the world. If pilots ignored a succession of warning signs and got too low, the device essentially ordered them to fly to safety.

By the late 1990s, thousands of the devices, which cost from \$11,000 to \$80,000, were being voluntarily installed on aircraft by airlines. The government followed with a mandate that required their installation on all turbine-powered planes by March 2005.

Since then, not a single plane equipped with Bateman's invention (or similar models built by competitors) has accidentally run into the ground.

"A lot of things that were started 10, 15, 20 years ago are really starting to pay off," says Bateman, who is still at work to improve the device and to create other

safety systems. Honeywell, where Bateman now works, estimates that the warning system has prevented as many as 50 accidents around the world.

USA TODAY found at least eight cases in the USA in which the device issued a warning when pilots strayed too low, possibly preventing crashes, according to reports provided by NASA's Aviation Safety Reporting System.

In December 2004, pilots of a Boeing 757 mistook a hotel's lights for the runway at New York's LaGuardia Airport.

In October 2003, the crew of a Bombardier regional jet accidentally misadjusted the altimeter and descended too low near State College, Pa.

In December 2002, the pilots of a 737 leaving Las Vegas had to climb abruptly after a controller directed them toward a mountain.

The captain of the flight into Tucson, who was not identified, told NASA that the incident was prompted by a series of mistakes. The crew did not discuss the approach to the airport, a safety precaution required by most airlines. After a long day, the clear, smooth conditions had made them complacent, the captain admitted. And air traffic could have reminded them about the mountain.

By the time the alarm sounded, the plane was set up for a tragedy, he said.

But, he added, "technology saved the day."

Posted 6/29/2006 11:49 PM ET

Updated 6/30/2006 12:49 PM ET [E-mail](#) | [Save](#) | [Print](#) | [Reprints & Permissions](#) |

Copyright 2006 USA TODAY, a division of Gannett Co. Inc.