

# A Statistical Fluke

**A non-Europe-based airline's accident in Russia raised the number of 'European' fatalities for 2006 because of the state of registration.**

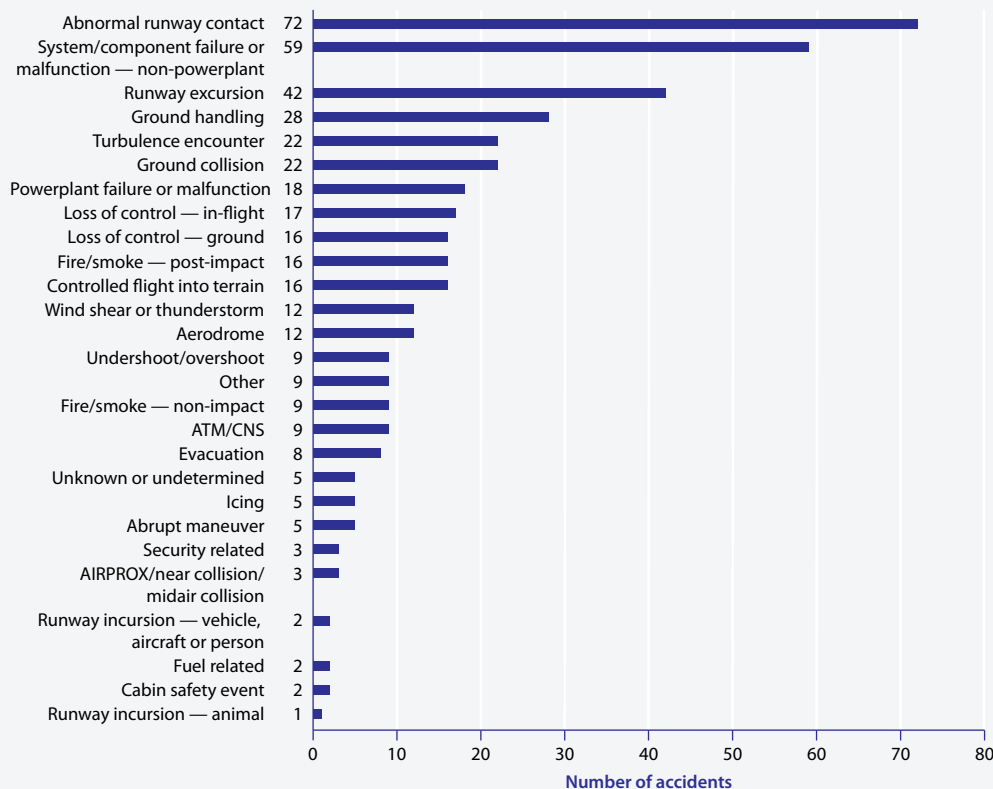
BY RICK DARBY

“European aviation safety performance is high, although the number of fatal accidents slightly increased since 2004,” the European Aviation Safety Agency

(EASA) says in its 2006 annual safety review.<sup>1</sup> “This review also shows that Europe’s accident improvement rates are lower than in the rest of the world.”<sup>2</sup>

## European Accident Categories, 1997–2006

Accidents involving aircraft registered in EASA member states, used in public transport operations or general aviation, turbine powered airplanes, over 5,700 kg/12,500 lb



Although the top three categories were the same for “foreign” airplanes — those not registered in one of the EU states — the order was different.

ATM/CNS = air traffic management/communications, navigation, surveillance; MTOW = maximum certificated takeoff weight

Note: Accidents could involve multiple categories.

Source: EASA

Figure 1

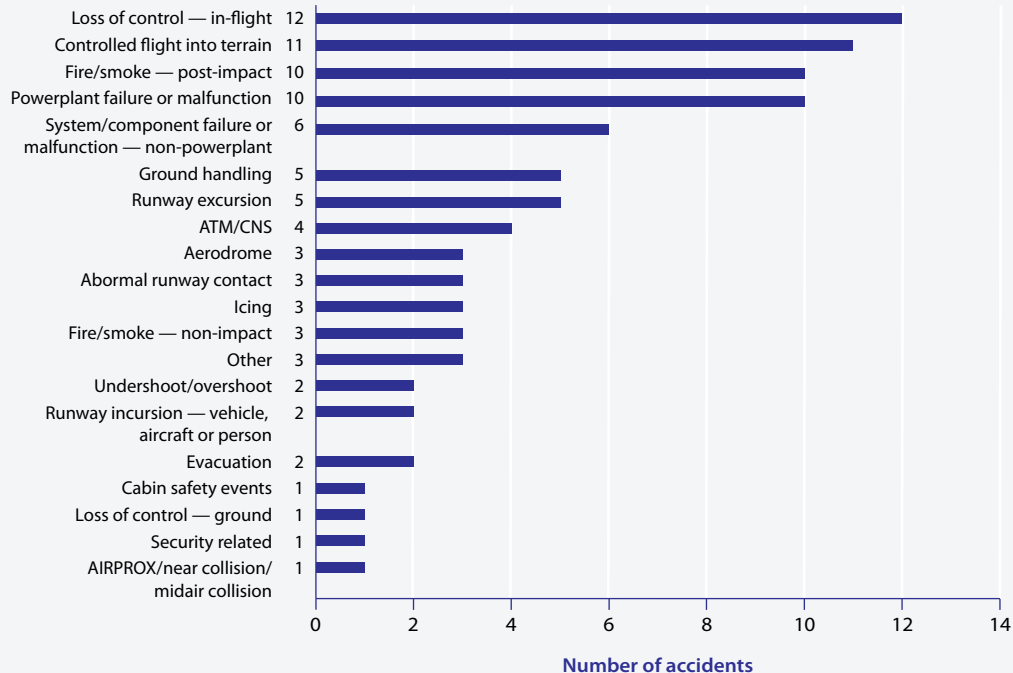
In 2006, six fatal accidents involving airplanes in public transport operations occurred in Europe, compared with five in 2005 and two in 2004.<sup>3</sup> “However, the number [for 2006] is equal to the average of fatal accidents for the decade 1997–2006,” the review says.

The number of on-board fatalities increased from 127 in 2005 to 147 in 2006, above the average for the 1997–2006 decade (105.3). But the apparent increase in fatalities for 2006 was the result of a technicality involving a single accident, the landing overrun of an Airbus A310 in Irkutsk, Russia, with 126 fatalities. The circumstances were unusual for Europe because the airplane was registered in an EASA member state, France, but was operated by Sibir Airlines, based in Russia, a non-member state.

The review analyzes accident categories for EASA member states over a 10-year period based on the CAST-ICAO (U.S. Commercial Aviation Safety Team-International Civil Aviation Organization) taxonomy.<sup>4</sup> Figure 1 (p. 49) shows the numbers of accidents by category for 1997 through 2006. “Abnormal runway contact,” “system/component failure or malfunction, non-powerplant” and “runway excursion” were the three most frequent categories. Although the top three categories were the same for “foreign” airplanes — those not registered in one of the EU states — the order was different: “Runway excursion” was the category with the largest number, followed by “abnormal runway contact” and “system/component failure or malfunction, non-powerplant.”

### European Fatal Accident Categories, 1997–2006

Fatal accidents involving aircraft registered in EASA member states, used in public transport operations or general aviation turbine powered airplanes, 5,700 kg/12,500 lb MTOW



ATM/CNS = air traffic management/communications, navigation, surveillance; MTOW = maximum certificated takeoff weight

Note: Accidents could involve multiple categories.

Source: EASA

Figure 2

For fatal accidents (Figure 2), “loss of control in flight” and “controlled flight into terrain” were the two predominant categories, consistent with worldwide data for large commercial jets published by Boeing Commercial Airplanes.

For public transport operations from 2000 through 2006, the three most significant accident categories by rate were “controlled flight into terrain” (Figure 3), “loss of control in flight” (Figure 4) and “accidents related to aircraft/aircraft systems or aircraft engine failures” (Figure 5, p. 52).

European public transport helicopter operations resulted in 18 accidents, six of them fatal, in 2006 (Figure 6, p. 52). More than half of the 20 fatalities occurred in two accidents, one in an offshore operation and one in a positioning flight.

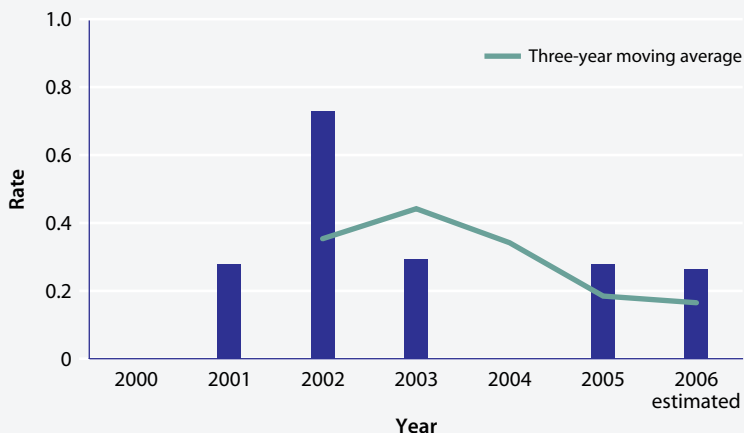
The review analyzed the dominant CAST-ICAO accident categories for European-registered large aircraft — greater than 5,700 kg/12,500 lb — in terms of numbers of fatalities for the 1997–2006 period. The largest number of fatalities, 386, was associated with “system/component failure or malfunction — non-powerplant.” The second largest number of fatalities, 338, involved “fire/smoke — non-impact.”

“Fire/smoke — post-impact” ranked third, with 303 associated fatalities, followed by “aerodrome,” with 239 fatalities.

Once again, however, the perennial problem of small numbers in aviation fatal accident statistics can give a misleading picture. “As only [a] few accidents with a large number of fatalities occur with European-registered aircraft, a single accident can influence the order of the categories,” the review says. “The large number of fatalities related to the category of non-impact fires is the result of two accidents: Swissair MD-11 (1998) and the Air France Concorde (2000). Both accidents also account for almost all of the fatalities in the ‘system and component failure or malfunction — non-powerplant’ category.”

### European Controlled Flight Into Terrain Accidents, 2000–2006

Rate per million departures of fatal accidents, airplanes over 2,250 kg/5,000 lb MTOW, registered in Europe, public transport operations



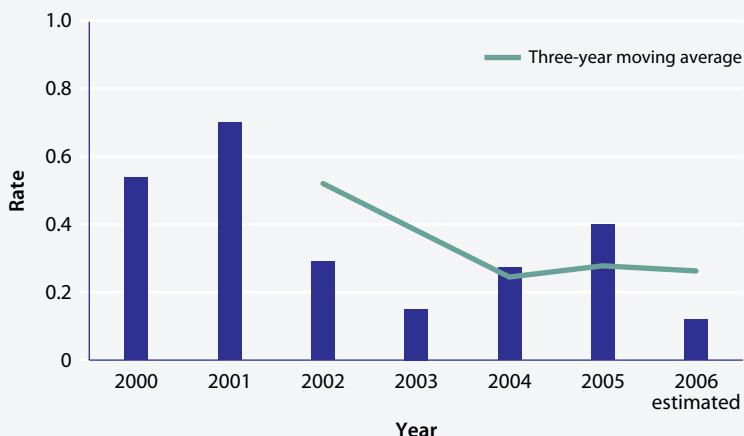
MTOW = maximum certificated takeoff weight

Source: EASA

Figure 3

### European Loss of Control in Flight Accidents, 2000–2006

Rate per million departures of fatal accidents, airplanes over 2,250 kg/5,000 lb MTOW, registered in Europe, public transport operations



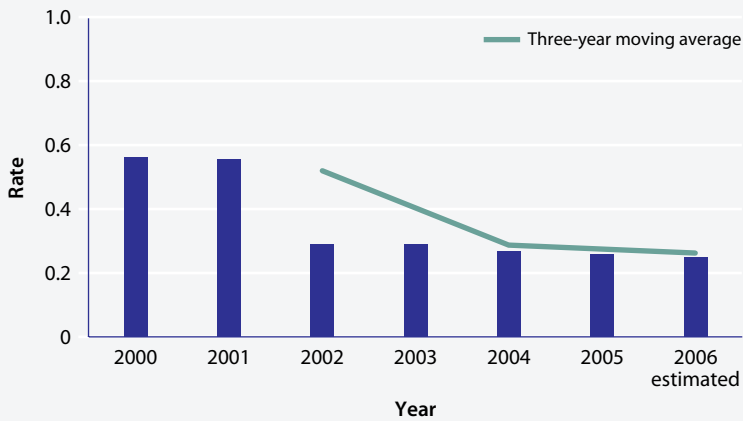
MTOW = maximum certificated takeoff weight

Source: EASA

Figure 4

### European Accidents, Aircraft Systems/ Components/Engine Failures, 2000–2006

Rate per million departures of fatal accidents, airplanes over 2,250 kg/5,000 lb MTOW, registered in Europe, public transport operations



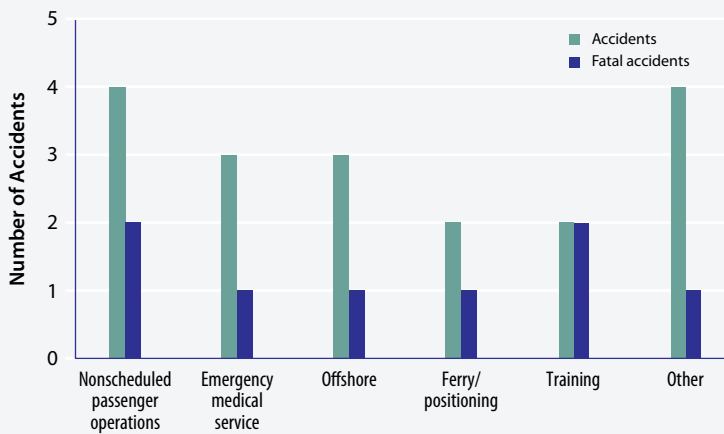
MTOW = maximum certificated takeoff weight

Source: EASA

Figure 5

### European Public Transport Helicopter Accidents, 2006

Accidents and fatal accidents per type of public transport operation, helicopters, registered in EASA member states



Source: EASA

Figure 6

The unusually high ranking for “aero-drome” was similarly brought about by two major accidents: at Milan, Italy, in 2001 involving an SAS MD-80, resulting in 137 fatalities, and the Concorde accident, resulting in 162 fatalities.

For non-EASA member state large aircraft, the greater number of fatal accidents over the 10-year period produced a distribution more in line with expectations. “Controlled flight into terrain” produced the largest number of fatalities, 2,763. “Loss of control in flight” ranked second, with 2,573 associated fatalities.

“The data show that the safety level of European aviation is high and that there is a trend towards continuing improvement,” the review says. “Nevertheless, there are concerns: Improvement rates are lower than in the rest of the world, there is a persistent [although] low number of accidents and some accident categories are almost exclusively dominated by accidents of European aircraft.” ●

#### Notes

1. EASA. *Annual Safety Review 2006*. The review in portable document format (PDF) can be accessed via the Internet through a link on the EASA home page, <[www.easa.europa.eu/home/index.html](http://www.easa.europa.eu/home/index.html)>.
2. The area considered to be Europe in this report comprises the 27 European Union (EU) member states plus EASA member states Iceland, Liechtenstein, Norway and Switzerland. The definition of Europe has been expanded since 2005 to include the four non-EU EASA members plus the recently added EU states Bulgaria and Romania.
3. Data are for airplanes with a maximum certificated takeoff weight exceeding 2,250 kg, considered equivalent to 5,000 lb.
4. For CAST-ICAO taxonomy analysis, data include accidents involving turbine-powered airplanes with a maximum certificated takeoff weight exceeding 5,700 kg, considered equivalent to 12,500 lb.