

The global major accident rate in 2011 for Western-built commercial jets was the lowest ever recorded, at 0.27 accidents per million departures.

Last year, the static accident rate that has existed for a decade started downward. And 2011 was the first year with no commercial jet loss of control accidents. The corporate jet fleet, which normally averages about 10 major accidents a year, showed an improvement, with seven major

accidents in which 12 people died, compared with 18 fatalities in 2010.

Not all the data were so encouraging. The number of Eastern-built commercial jet accidents was above average.¹ Four of the 14 commercial jet major accidents were controlled flight into terrain (CFIT), the largest number of this type of accident involving commercial jets in eight years. CFIT accidents continue to dominate the turboprop fatality numbers.

The commercial turboprop fleet had an average year, with 23 major accidents, just slightly below the five-year average of 23.4. Deaths in those accidents declined from 262 in 2010 to 177 last year.

In 2011, approximately 6 percent of the turbojet fleet was Eastern-built, while 21 percent of the turboprop fleet was Eastern-built. The commercial turbojet numbers increased approximately 2.5 percent from the 2010 numbers, while the

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Down Time

Accidents involving Western-built commercial jets reached a new low in 2011, but CFIT accidents cast a shadow on commercial jet and turboprop safety.

Major Accidents, Worldwide Commercial Jets, 2011

Date	Operator	Aircraft	Location	Phase	Fatal
Jan. 1	Kolavia	TU-154	Surgut, Russia	Taxi	3
Jan. 9	Iran Air	727	Orumiyeh, Iran	Landing	78
March 5	VASO	AN-148	Garbuzovo, Russia	En route	6
April 4	Gegorian Airways (UN)	CRJ-100	Kinshasa, DRC	Approach	32
May 18	Omega Air Refueling	707	Point Mugu, CA, USA	Takeoff	0
June 20	RusAir	TU-134	Petrozavodsk, Russia	Landing	45
July 6	Silk Way Airlines	IL-76	Bagram, Afghanistan	Approach	9
July 8	Hewa Bora Airways	727	Kisangani, DRC	Landing	83
July 28	Asiana Airlines	747F	Jeju, South Korea	En route	2
July 30	Caribbean Airlines	737	Georgetown, Guyana	Landing	0
Aug. 20	First Air	737	Resolute Bay, Canada	Approach	12
Sept. 7	YAK Service	YAK-42	Yaroslavl, Russia	Takeoff	44
Sept. 16	TAME	EMB-190	Quito, Ecuador	Landing	0
Dec. 28	Kyrgyzstan	TU-134	Osh, Kyrgyzstan	Landing	0

● Controlled flight into terrain (CFIT) accident ● Runway excursion

Source: Ascend

Table 1

Western-Built Commercial Jet Major Accident Rates, 1999–2011



Note: Total departure data are not available for Eastern-built aircraft.

Source: Ascend

Figure 1

commercial turboprop numbers grew 1 percent. As usual, the business jet numbers grew the greatest amount, approximately 3 percent. These numbers reflect the total fleets.

The active fleets, the aircraft actually in service, are somewhat smaller. Approximately 9 percent of the turbo-jet fleet is inactive. That includes 40 percent of the Eastern-built commercial jet fleet. Approximately 15 percent of the turboprop fleet is inactive. Four percent of the business jets were inactive, the third year in a row that there were inactive business jets.

There were 14 major accidents involving commercial jets in 2011 (Table 1), killing 314 people, down from 564 in 2010.² Eight of these involved Western-built aircraft. Eight major accidents

were approach and landing accidents.³ There were four CFIT accidents. Two of the 14 commercial jet major accidents were runway excursions.

The past two years have not been good for Eastern-built commercial jets. From 2000 to 2009, they averaged 2.4 major accidents a year. In 2010, they accounted for four of the 19 major accidents, or 21 percent, and in 2011, six of 14, or 43 percent. Although Eastern-built commercial jets made up only 3 percent of the active commercial jet fleet in 2011, they accounted for 43 percent of the major accidents. This does not reflect directly on the safety of these aircraft, but does raise concerns about the operators, their regulators and the regions in which the aircraft were operating.

The major accident rate for Western-built commercial jet aircraft in 2011 was 0.27 accidents per million departures. This rate is a great improvement from the 0.57 rate for the past decade, and the 0.54 rate of 2010. The decreasing trend from the 1990s had leveled off in the last

decade, but the rate again has an encouraging downward trend (Figure 1). This accident rate is only for Western-built aircraft because, even though we know the number of major accidents for Eastern-built aircraft, we do not have reliable worldwide exposure data to calculate rates for them.

There were seven major accidents involving corporate jets in 2011 (Table 2), below the 2000–2011 average of 9.9 per year. Although accurate worldwide exposure data are not available for corporate jets, the number of aircraft and the number of departures have been increasing steadily, so their accident rate is estimated to be decreasing.

There were 23 major accidents involving Western- and Eastern-built commercial turboprop aircraft with more than 14 seats in 2011 (Table 3). This is almost identical to the average of 23.4 over the previous five years.

The most significant safety challenge for commercial turboprops continues to be CFIT accidents. Over the previous three

Major Accidents, Worldwide Corporate Jets, 2011

Date	Operator	Aircraft	Location	Phase	Fatal
Jan. 6	Priester Aviation	Learjet 35	Springfield, Illinois, U.S.	Landing	0
Feb. 4	Sky Lounge	Hawker 900	Sulaymaniyah, Iraq	Climb	7
Feb. 18	Escuela de Aviación	Learjet 24	Villasana, Mexico	Landing	2
March 28	Hong Fei General	Citation II	(Missing) China	En route	3
May 5	Jorda	HS-125	Loreto Bay, Mexico	Approach	0
May 25	Jet Suite Air	EMB Phenom	Sedona, Arizona, U.S.	Landing	0
Nov. 29	Wings Over Africa	Gulfstream II	Huambo, Angola	Takeoff	0

Source: Ascend

Table 2

Major Accidents, Worldwide Commercial Turboprops, 2011

Date	Operator	Aircraft	Location	Phase	Fatal
Feb. 10	Flightline	Metro III	Cork, Ireland	Landing	6
Feb. 12	Sabang Air Charter	CASA 212	Bintan, Indonesia	En route	5
Feb. 14	African Air Services	LET-410	Mont Biega, DRC	En route	2 ●
Feb. 14	Central American Airways	LET-410	Cerro de Hula, Honduras	En route	14 ●
March 4	Air Iceland	DHC-8	Godthab, Greenland	Landing	0
March 8	Desert Sand Leasing	DHC-6	Clayton County, Georgia, U.S.	Takeoff	2
March 21	Trans Air Congo	AN-12	Pointe Noire, Congo	Landing	9
April 1	Fugro Aviation Canada	CASA-212	Saskatoon, Saskatchewan, Canada	Approach	1
May 7	Merpati Nusantara	MA-60	Kaimana, Indonesia	Approach	25 ●
May 18	SOL Líneas Aéreas	SAAB 340	Prahuaniyeu, Argentina	En route	22
June 6	Solenta Aviation	AN-26	Libreville, Gabon	Approach	0
July 11	Angara Airlines	AN-24	Strezheov, Russia	Approach	6
July 11	Trans Maldivian	DHC-6	Male, Maldives	Landing	0
July 13	Noar	LET-410	Recife, Brazil	Approach	16
Aug. 8	IrAero	AN-24	Blagoveshchensk, Russia	Landing	0
Aug. 9	Avis Amur	AN-12	Omsukchan, Russia	En route	11
Sept. 6	Aerocon	Metro III	Trinidad, Bolivia	Approach	8
Sept. 20	Salsa d'Haiti	Beech 99	Milot, Haiti	En route	3
Sept. 22	Arctic Sunwest Charters	DHC-6	Yellowknife, Northern Territories, Canada	Approach	2
Sept. 25	Buddah Air	Beech 1900	Kathmandu, Nepal	Approach	19 ●
Sept. 29	Nusantara Buana Air	CASA 212	Medan, Indonesia	En route	18
Oct. 12	National Regional Transport	EMB-120	Port Gentil, Gabon	Landing	0
Oct. 13	Airlines PNG	DHC-8	Madang, PNG	Approach	28

● Controlled flight into terrain (CFIT) accident
Note: Accidents involved aircraft with more than 14 seats.
 Source: Ascend

Table 3

CFIT Accidents, Worldwide Commercial Jets, 1998–2011



CFIT = controlled flight into terrain

Source: Flight Safety Foundation

Figure 2

years, 18 of the 70 turboprop major accidents, or 26 percent, were CFIT. To put it another way, one of every four turboprop major accidents involved CFIT. CFIT has not been eliminated in commercial jets, but the industry is making progress in reducing it. For turboprops, it is not the same positive story.

The worst year in the past eight years for commercial jet CFIT accidents was 2011 (Figure 2). None of the eight commercial aircraft involved in a CFIT accident in 2011 — jets and turboprops combined — had a functioning terrain awareness and warning system (TAWS). In fact, in the more than 50 commercial aircraft CFIT accidents over the past five years involving jets and turboprops, only two of the aircraft were equipped with TAWS. In both cases, the TAWS functioned normally and gave the flight crews sufficient warning of the impending CFIT accident.

As has been the case for the past 25 years, CFIT, approach and landing, and loss of control continue to account for the majority of accidents and cause the majority of fatalities. As identified in Flight Safety Foundation's early work on approach and landing accidents, unstabilized approaches and a failure to go around when warranted are major risk factors.

Failure to go around was a factor in 83 percent of approach and landing accidents,⁴

and it was the leading cause of landing runway excursions.⁵ Data show a consistent, disturbing trend. From multiple studies involving millions of flights, we know that 3 to 4 percent of all approaches are unstabilized. These same data reveal that more than nine of every 10 unstabilized approaches continue to landing. To address this challenge, the Foundation has developed safe landing guidelines (ASW, 10/11, p. 14). These are an extension of the Foundation's 20-year approach and landing accident reduction (ALAR) effort and came about after the completion of the recent runway excursion risk reduction project. That project revealed some gaps that were not addressed sufficiently in the ALAR effort.

The Foundation does not advocate that the safe landing guidelines be copied and handed out to crews. They should be used as their title indicates — as guidelines for an organization to use, in conjunction with information from its aircraft manufacturer, to create its own rules and policy. Every operator should have a standard operating procedure (SOP) addressing this high-risk area and should monitor its operational data to determine the effectiveness of its SOP. ➤

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Notes

1. "Eastern-built" means manufactured in the Soviet Union, its satellite countries, the Russian Federation or China.
2. The data include all scheduled and unscheduled passenger and cargo operations for Western- and Eastern-built commercial jet aircraft.
3. The Jan. 9 accident is not considered an approach and landing accident because it seems to have been caused by fuel exhaustion.
4. "Killers in Aviation: FSF Task Force Presents Facts About Approach-and-landing and Controlled-flight-into-terrain Accidents." *Flight Safety Digest* 17(11–12)/18(1–2). November–December 1998/January–February 1999.
5. Flight Safety Foundation. "Reducing the Risk of Runway Excursions." June 2009.