

The trend of an impressive but non-improving safety record continued in 2010.

The accident rate for commercial jets in 2010 was 0.54 major accidents per million departures. That was almost identical to the average rate of 0.55 for the previous five years and slightly better than the 0.57 rate for the previous decade. Five of the 19 major commercial jet accidents — two controlled flight into terrain (CFIT) accidents, two loss of control (LOC) accidents and one

runway excursion accident — accounted for 96 percent of the fatalities.

The business jet fleet, which normally averages about 10 major accidents a year, had a good year, with only eight major accidents. The commercial turbo-prop fleet had its best year ever in terms of number of major accidents, but CFIT accidents continue to dominate the turbo-prop accident and fatality numbers.

Approximately 6 percent of the turbojet fleet is Eastern-built, while 20 percent of the turboprop fleet is

Eastern-built. The commercial turbojet numbers increased approximately 2 percent from 2009, and the commercial turboprop numbers grew almost 2 percent, the first time in several years they have shown an increase. As usual, the business jet numbers increased the most, approximately 4 percent. These numbers reflect the total fleets. The active fleets, the aircraft actually in service, are somewhat smaller. Approximately 9 percent of the turbojet fleet is inactive, and that number is growing.

Commercial jet accident rates were good in 2010, just not better.

# Leveling Off

BY JAMES M. BURIN

Approximately 14 percent of the turboprop fleet is inactive. Four percent of the business jets were inactive, the second year in a row that there were more than just a few inactive business jets.

There were 19 major accidents involving commercial jet operations in 2010 (Table 1), which includes all scheduled and unscheduled passenger and cargo operations for Western- and Eastern-built commercial jet aircraft. Fifteen of these involved Western-built aircraft. Fifteen of the 19 major accidents were approach and landing accidents (ALAs). There were two CFIT accidents and two LOC accidents. Five of the 19 commercial jet major accidents were runway excursions.

The major accident rate for Western-built commercial jets has virtually leveled off, as has the five-year running average (Figure 1). These accident rates are 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 only eight major accidents involving corporate jets in 2010 (Table 2, p. 18). A comparison with the yearly number of corporate jet major accidents since 2001 highlights the fact that corporate jets had an excellent year safety-wise (Figure 2, p. 18). Although worldwide exposure data are not available for

**Major Accidents, Worldwide Commercial Jets  
January 1, 2010–December 31, 2010**

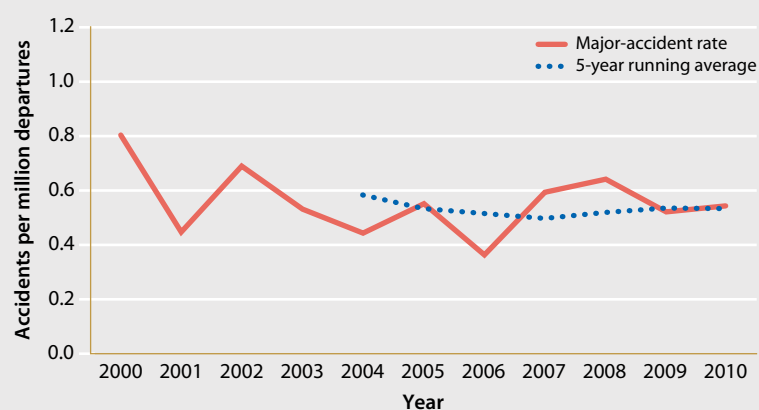
Date	Operator	Aircraft	Location	Phase	Fatalities	
Jan. 2, 2010	CAA	727	Kinshasa, DRC	Landing	0	●
Jan. 24, 2010	Taban Air	TU-154	Mashhad, Iran	Landing	0	
Jan. 24, 2010	Ethiopian Airlines	737	Beirut, Lebanon	Climb	90	●
March 22, 2010	Avistar-TU	TU-204	Moscow	Approach	0	
April 13, 2010	Merpati Airlines	737	Manokwari, Indonesia	Landing	0	●
April 13, 2010	AeroUnión	A300	Monterrey, Mexico	Approach	5	
May 5, 2010	Satena	EMB-145	Mitú, Colombia	Landing	0	●
May 12, 2010	Afriqiyah Airways	A330	Tripoli, Libya	Approach	103	●
May 22, 2010	Air India Express	737	Mangalore, India	Landing	158	●
July 27, 2010	Lufthansa	MD-11F	Riyadh, Saudi Arabia	Landing	0	
July 28, 2010	Airblue	A321	Islamabad, Pakistan	Approach	152	●
July 28, 2010	Mauritania Airways	737	Conakry, Guinea	Landing	0	●
Aug. 16, 2010	Aires	737	San Andrés, Colombia	Landing	2	
Aug. 24, 2010	Henan Airlines	EMB-190	Yichan, China	Approach	42	●
Aug. 25, 2010	Passaredo Linhas Aéreas	EMB-145	Vitória da Conquista, Brazil	Approach	0	
Sept. 3, 2010	UPS	747	Dubai, UAE	Approach	2	
Sept. 24, 2010	Windjet	A319	Palermo, Italy	Landing	0	
Nov. 28, 2010	Sun Way	IL-76	Karachi, Pakistan	Climb	8	
Dec. 4, 2010	Dagestan Airlines	TU-154	Moscow	Climb	2	

● Loss of control accident ● Controlled flight into terrain (CFIT) accident ● Runway excursion  
DRC = Democratic Republic of Congo; UAE = United Arab Emirates

Source: Ascend

**Table 1**

**Western-Built Commercial Jet Major Accident Rates, 2000–2010**



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

Source: Ascend

**Figure 1**

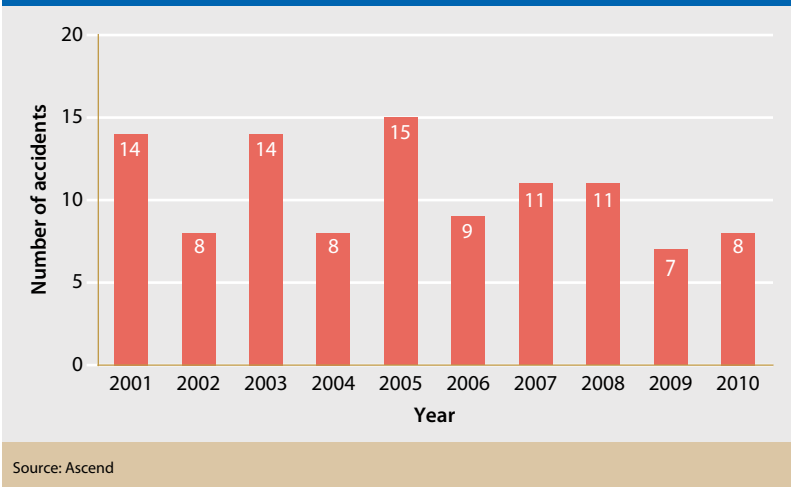
**Major Accidents, Worldwide Corporate Jets  
January 1, 2010–December 31, 2010**

Date	Operator	Aircraft	Location	Phase	Fatalities
Jan. 5, 2010	Royal Air Freight	Lear 35	Chicago	Approach	2
Feb. 14, 2010	Time Air	Citation Bravo	Schöna, Germany	En route	2
July 15, 2010	Prince Aviation	Citation Bravo	Bol, Croatia	Landing	0
Aug. 12, 2010	Ocean Air Taxi	Lear 55	Rio de Janeiro, Brazil	Landing	0
Aug. 31, 2010	Trans Air	Citation II	Misima, PNG	Landing	4
Oct. 6, 2010	Aviones Taxi	Citation I	Veracruz, Mexico	En route	8
Nov. 19, 2010	Frandle Aviation Ptn	Citation I	Birmingham, U.K.	Landing	0
Dec. 19, 2010	Windrose Air	Hawker Premier	St. Moritz, Switzerland	Approach	2

PNG = Papua New Guinea  
Source: Ascend

**Table 2**

**Major Accidents, Corporate Jets, 2001–2010**



**Figure 2**

corporate jets, the number of aircraft and the number of departures have been increasing steadily throughout the decade, so their accident rate is estimated to be decreasing.

There were 20 major accidents involving Western- and Eastern-built commercial turbo-prop aircraft with more than 14 seats in 2010 (Table 3). This is the lowest-ever number of major accidents for turboprops. The most significant safety challenge for commercial turboprops continues to be CFIT accidents. In 2008, seven of the 29 turboprop major accidents were CFIT accidents. In 2009, seven of the 21 turboprop major accidents were CFIT accidents. For 2010, four of the 20 turboprop major accidents were CFITs.

CFIT has not been eliminated among commercial jets, but we are making progress in reducing it. The story is not so positive for turboprops.

As in the past 20 years, CFIT, ALA, and LOC accidents continue to account for the majority of accidents and cause the majority of fatalities. Normally, ALAs account for 50 to 60 percent of the

major accidents each year for any type of aircraft (commercial jets, business jets, turboprops or general aviation). In 2010, there was an unusually high percentage of ALAs involving commercial jets and business jets. The recently released updated *Approach and Landing Accident Reduction (ALAR) Tool Kit* <[flightsafety.org/current-safety-initiatives/approach-and-landing-accident-reduction-alar/alar-tool-kit-cd](http://flightsafety.org/current-safety-initiatives/approach-and-landing-accident-reduction-alar/alar-tool-kit-cd)> will, it is hoped, help reduce the risk of this type of accident. In 2010, ALAR training using the updated tool kit was conducted in Singapore; Manila, Philippines; Bangkok, Thailand; and Tripoli, Libya.

The number of CFIT accidents involving commercial jet aircraft since 1998 shows the slow but positive progress we are making in reducing the risk. In the past two years, we have suffered the first CFIT accidents involving aircraft with functioning terrain awareness and warning systems (TAWS). In those cases, the TAWS functioned normally and gave the flight crews sufficient warning of the impending CFIT accident. Those warnings, however, were not acted upon with enough urgency to prevent the disasters.

In 2006, LOC accidents took over from CFIT as the leading killer in commercial aviation. Unfortunately, that class of accidents is lengthening its lead. Unlike with CFIT, we have never had a year with zero LOC accidents.

The term “loss of control” actually does not accurately describe many of the accidents. About

half of recent “loss of control” accidents have been what is more accurately described as “lack of control” (LAC) accidents because the crews had full control of the aircraft at all times.<sup>1</sup> Since LOC accidents are normally not survivable, even a low number of LOC accidents usually results in a high number of fatalities. The two LOC accidents in 2010 accounted for over one-third of the total commercial jet fatalities for the year.

Some common elements are emerging in many of the loss or lack of control accidents. First, the autopilot is normally involved. Either the crew thinks it is on and it is not, or they try to turn it on and it will not engage. Second, there are no visual references — for example, in instrument meteorological conditions or at night with few or no outside visual references. Finally, many times the pilot monitoring is aware of the deteriorating situation, but waits too long or is unable to relay this information to the pilot flying.

The Foundation’s goal is “to make aviation safer by reducing the risk of an accident.” We have achieved great success toward that goal, but as can be seen from the recent safety record, there are still challenges to be addressed. The commercial jet accident rate is low and very impressive, but it has stopped improving. CFIT continues to be a challenge for commercial turboprops, and loss of control accidents continue to dominate the fatality

**Major Accidents, Worldwide Commercial Turboprops  
January 1, 2010–December 31, 2010**

Date	Operator	Aircraft	Location	Phase	Fatalities
Jan. 22, 2010	Alaska Central Express	B-1900	Sand Point, AK, U.S.	Takeoff	2
Jan. 25, 2010	Piquiatuba Táxi Aéreo	EMB-110	Senador José Porfirio, Brazil	Approach	2
March 18, 2010	EXIN	AN-26	Tallinn, Estonia	Go around	0
March 22, 2010	Airnorth	EMB-120	Darwin, Australia	Takeoff	2
April 21, 2010	Interisland Airlines	AN-12	Pampanga, Philippines	Approach	3
May 15, 2010	Blue Wings Airlines	AN-28	Poeketi, Suriname	En route	8
May 17, 2010	Pamir Airways	AN-24	Salang Pass, Afghanistan	En route	44
June 19, 2010	Aero Service	CASA-212	Yangadou, Congo	En route	11
July 18, 2010	Cebu Air	ATR-72	Manila, Philippines	Landing	0
Aug. 3, 2010	Katekavia	AN-24	Igarka, Russia	Approach	12
Aug. 24, 2010	Agni Air	DO-228	Bastipur, Nepal	Enroute	14
Aug. 25, 2010	Filair	LET -410	Bandundu, DRC	Approach	20
Sept. 13, 2010	Conviasa	ATR-42	Puerto Ordaz, Venezuela	Approach	17
Oct. 12, 2010	Transafrik	C-130	Kabul, Afghanistan	Enroute	8
Oct. 21, 2010	TRACEP	Let 410	Bugulumisa, DRC	Climb	2
Nov. 4, 2010	Aerocaribbean	ATR-72	Guasimal, Cuba	En route	68
Nov. 5, 2010	JS Air	Beech 1900	Karachi, Pakistan	Climb	21
Nov. 11, 2010	Tarco Airlines	AN-24	Zalingei, Sudan	Landing	6
Dec. 3, 2010	Kaya Airlines	Beech 1900	Maputo, Mozambique	Approach	0
Dec. 15, 2010	Tara Air	DHC-6	Lamidanda, Nepal	En route	22

● Controlled flight into terrain (CFIT) accident  
DRC = Democratic Republic of Congo

Source: Ascend

**Table 3**

numbers for commercial jets. In an industry where risk will never be zero, we face the public’s expectation of perfection as the minimum acceptable standard. However, the aviation industry continues to successfully address that challenge and is constantly working to make aviation safer by reducing the risk of an accident. ➔

#### Note

1. The Foundation uses this definition of an LOC accident: “An accident in which an aircraft is unintentionally flown into a position from which the crew is unable to recover due to aircrew, aircraft, environmental or a combination of these factors.” This is the definition of an LAC accident: “An accident in which a fully controllable aircraft is unintentionally flown into a position from which the crew is unable to recover. A ‘fully controllable aircraft’ responds to control inputs in an appropriate manner.”