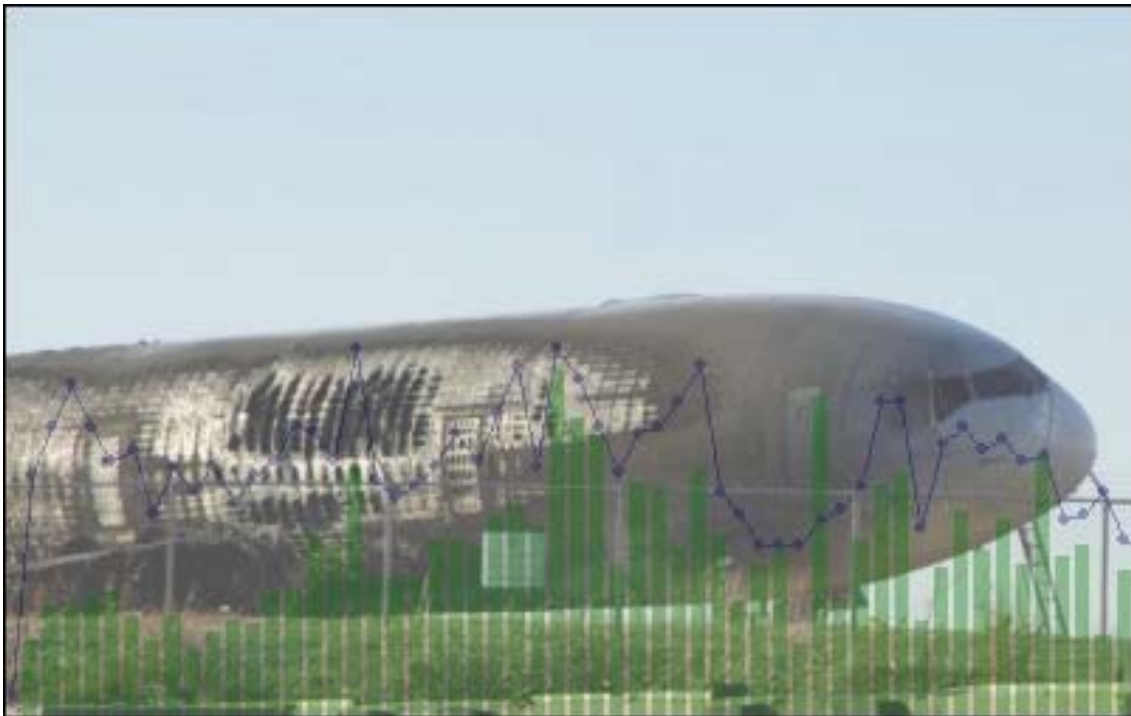


Airliner Accident Statistics 2006

Statistical summary of fatal multi-engine airliner accidents in 2006



Aviation**Safety**Network



Airliner Accident Statistics 2006

Statistical summary and analysis of world-wide fatal multi-engine airliner accidents in 2006

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front page photo: non-fatal MD-10 accident at Memphis, December 18, 2003 © Dan Parent, kc10.net

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SUMMARY

Over the year 2006 the Aviation Safety Network recorded a total of 27 fatal airliner accidents¹, resulting in 888 fatalities and 4 ground fatalities. This is significantly lower than the ten-year average of 36 accidents and 1005 fatalities.

The moving 10-year average trends show a decrease in the average number of fatal accidents for all continents. All regions have recorded a steadily decreasing accident rate over the past seven years, except for Africa. In 2006 Africa was again the most unsafe region: 18,5% of all fatal airliner accidents happened in Africa, while the continent only accounts for approximately 3 percent of all world aircraft departures.

Eleven fatal passenger flight accidents in 2004 was an all-time low. After a brief spike in 2005, the number of accidents in 2006 decreased to 15, which is below the five-year average of 17 accidents. Where in 2004 cargo planes were reason for concern, 2006 showed a continuing decrease in cargo plane crashes to 6.

A notable figure in 2006 was the high number of 'loss of control' accidents. Seventeen aircraft crashed as a result of a loss of control, killing over 800. Six accidents were attributed to loss of control on landing or takeoff. The in-flight 'loss of control' accidents were, amongst others, attributed to midair collisions, loss of situational awareness, weather and mechanical problems. Controlled flight into terrain (CFIT) accidents remained very low at five.

The year 2006 recorded three (attempted) hijackings, which is below the five-year average of 5,6.

The year 2006 recorded no fatal criminal occurrences; the tenth year without any occurrences since 1945.

The figures have been compiled using the airliner accident database of the Aviation Safety Network, the Internet leader in aviation safety information. The Aviation Safety Network uses information from authoritative and official sources like NTSB, ICAO etc. The goal of the Aviation Safety Network is to provide everyone with a (professional) interest in aviation with up-to-date, complete and reliable authoritative information on airliner accidents and safety issues.

More information: <http://aviation-safety.net/>

¹ for definitions see the chapter "Scope and definitions"

0. SCOPE & DEFINITION

The Aviation Safety Network's *Aviation Safety Database* (<http://aviation-safety.net/database/>) covers descriptions of over 12,500 accidents, incidents and hijackings involving airliners, corporate jets and military transport planes. To be able to analyse data over a 60+-year period of time, and to ascertain that the selection of data is complete, clear and distinctive criteria have to be defined. Thus, this analysis has been limited to airliner accidents using the following definitions:

Accident

"An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which a person on the airplane is fatally injured and the airplane is damaged beyond repair."

Airliner

"Commercial multi-engine airplane model which, in certificated maximum passenger configuration, is capable of carrying 14 or more passengers."
A list of aircraft types covered can be found in Appendix 1.

Hijack

"Hijack means the unlawful (attempt of) seizure or wrongful exercise or control of the aircraft (or the crew thereof)."

Phases of flight

The flight phases are in accordance with the phases defined by the CAST/ICAO Common Taxonomy Team (CICTT), as laid down in the *Phase of Flight Definitions* document (October, 2002): <http://66.89.54.147/Documents/PhaseofFlightDefinitions.pdf>

1. FATAL ACCIDENTS

1.1 Fatal accidents summary

The year 2006 recorded 27 fatal airliner hull-loss accidents, causing 888 fatalities and 4 fatalities on the ground. Last year recorded the first Boeing 737NG written off in a fatal accident. Around 1700 Boeing 737-600, -700, -800 and -900 series have been built since 1997.

A detailed description of each accident can be found in Appendix 2.

	Date	Aircraft type	Operator	Location	Fatalities
1	05 FEB	Shorts 360	Air Cargo Carriers	near Watertown	3
2	08 FEB	Swearingen Metro II	TriCoastal Air	near Paris	1
3	18 MAR	Beechcraft C.99	Ameriflight	near Butte	2
4	31 MAR	Let 410	TEAM	near Saquarema	19
5	16 APR	Fokker F-27	TAM	Guayaramerín	1
6	24 APR	Antonov 32	US Dep't of State	Lashkar Gah	2+3
7	27 APR	Convair CV-580	LAC - SkyCongo	Amisi	8
8	03 MAY	Airbus A.320	Armavia	off Adler/Sochi	113
9	14 MAY	Convair CV-580	Saskatchewan Gov.	near La Ronge	1
10	23 MAY	DHC-6 Twin Otter	Air São Tomé	off São Tomé Island	4
11	21 JUN	DHC-6 Twin Otter	Yeti Airlines	near Jumla	9
12	07 JUL	Antonov 12	Mango Airlines	near Sake	6
13	09 JUL	Airbus A.310	S7 Airlines	Irkutsk	125
14	10 JUL	Fokker F-27	PIA	near Multan	45
15	29 JUL	DHC-6 Twin Otter	Quantum Leap Skydiving	Sullivan	6
16	03 AUG	Antonov 28	TRACEP	near Bukavu	17
17	04 AUG	Embraer 110 Bandeirante	AirNow	near Bennington	1
18	13 AUG	Lockheed L-100 Hercules	Air Algérie	near Piacenza	3
19	22 AUG	Tupolev 154	Pulkovo	near Donetsk	170
20	27 AUG	Canadair CRJ100ER	Comair	Lexington	49
21	01 SEP	Tupolev 154	Iran Air Tours	Mashad	28
22	29 SEP	Boeing 737-800	GOL	near Peixoto Azevedo	154
23	10 OCT	BAe-146-200	Atlantic Airways	Stord	4
24	26 OCT	CASA 212 Aviocar	Kustbevakning	Falsterbokanalen	4
25	29 OCT	Boeing 737-200	ADC Airlines	Abuja	96+1
26	17 NOV	DHC-6 Twin Otter	Trigana Air Service	Puncak Jaya	12
27	18 NOV	Boeing 727	Aerosucre Colombia	near Leticia	5
					888+4

Table 1 – Fatal airliner accidents 2006

Other fatal occurrences

One occurrences resulted in a ground casualty, without any fatal injuries to the occupants of the airplane. This accident has not been included in the analysis.

	Date	Aircraft type	Operator	Location	Fatalities
1	09 NOV	Let 410	Goma Air	Walikale	0+1

Table 2 – Other fatal occurrences 2006

1.2 The year 2006 in historical perspective

From a historical perspective, 2006 was an average year.

Although the number of fatal accidents (27) was significantly lower than the ten-year average (36), the number of fatalities was almost equal to the 1996-2005 ten-year average.

- The 2006 death toll of 888 was far below the 1986-2005 average death toll of 1088 casualties
- The 2006 death toll of 888 was well below the 1996-2005 average death toll of 1005 casualties
- The 2006 number of occupants involved in fatal airliner accidents of 1156 was lower than the 1996-2005 average of 1379.
- The 2006 fatality rate (percentage of occupants killed in fatal airliner accidents) of 77% was slightly lower than the 1996-2005 average of 79%
- The 2006 number of 27 fatal airliner accidents was far below the 1986-2005 average number of fatal airliner accidents of 43,2 per year
- The 2006 number of 27 fatal airliner accidents was far below the 1996-2005 average number of fatal airliner accidents of 36,3 per year
- The 2006 number of accidents resulting in 100 or more fatalities was high: 4, which is the ninth highest number in aviation history

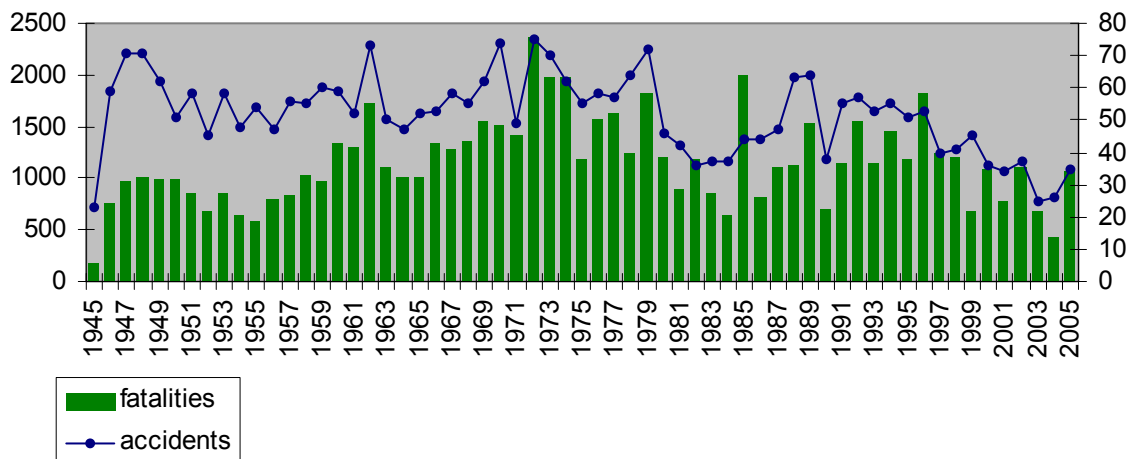


Figure 1 – Number of fatal airliner accidents 1945-2006

- The 2006 number of 9 fatal jet airliner accidents was below the 1976-2005 average of 15,3 accidents per year
- The 2006 number of 18 fatal prop airliner accidents was lower than the 1976-2005 average of 23,3 accidents per year
- The 2006 number of 0 fatal piston airliner accident was far below the 1976-2005 average of 8,5 accidents
- The 2006 number of 0 fatal piston airliner accident was below the 1996-2005 average of 2,9 accidents

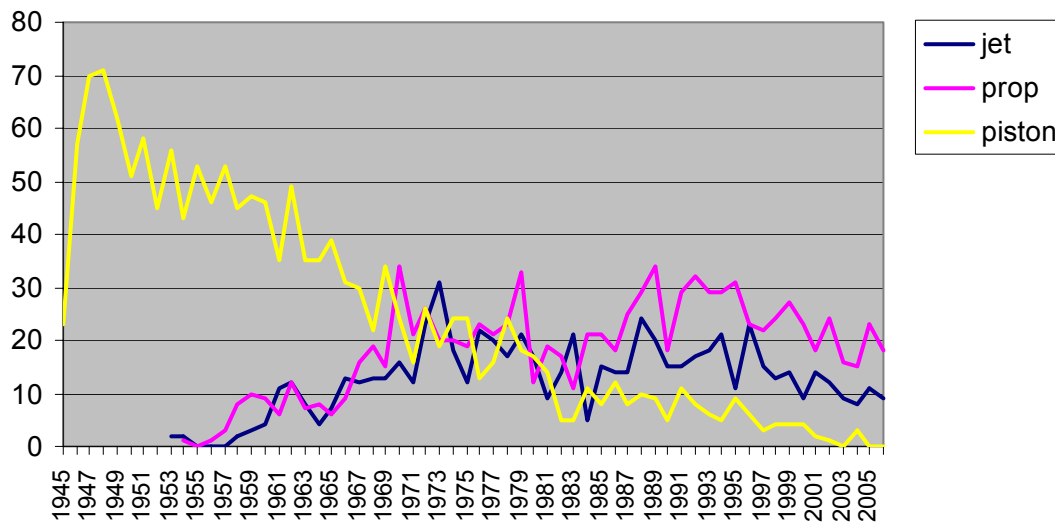


Figure 2 – Number of fatal airliner accidents 1945-2006 per aircraft propulsion

1.3 Accident locations

1.3.1 Countries

In 2006, the United States suffered the highest number of fatal airliner accidents: six. Despite the measures taken by the Congolese Ministry of Transport in 2005, still three aircraft crashed in the Democratic Republic of Congo.

Having suffered two serious accidents in 2005 and another one in 2006, Nigerian authorities continued taking steps to make aviation safer. A new Civil Aviation Act was signed into law. The new law seeks to establish aviation safeguards, enforce safety guidelines, improve security checks, prescribe ministerial powers during emergencies, define offences that endanger safety and also enact penalties for violation. Almost immediately four airlines had their Air Operator Certificates (AOC) suspended pending re-certification.

Country	2006	2005	2004	2003	2002
Afghanistan	1	2	0	0	0
Algeria		0	1	1	0
Argentina		0	0	1	0
Australia		1	0	0	0
Azerbaijan		1	1	0	0
Benin		0	0	1	0
Bolivia	1				
Brazil	2	0	2	0	2
Canada	1	0	1	1	0
Central African Rep.		0	0	0	1
China		0	2	0	1
Colombia	1	1	1	1	3
Comoros		0	0	0	1
Congo (Brazzaville)		1	0	0	0
Congo (Dem. Rep.)	3	4	0	0	0
Djibouti		0	0	0	1
East Timor		0	0	1	0
Egypt		0	1	0	0
Equatorial Guinea		1	0	0	0

Estonia		0	0	1	0
France (incl. overseas):		1	0	1	0
Gabon		0	1	1	0
Germany		0	0	0	1*
Greece		1	0	0	0
Guyana		0	0	1	0
Haiti		0	0	1	0
Indonesia	1	2	1	1	2
Iran	1	1	0	0	2
Italy	1	3	0	0	0
Kenya		0	1	2	1
Liberia		0	0	0	1
Luxembourg		0	0	0	1
Mexico		0	0	0	1
Morocco		0	0	0	1
Nepal	1	0	1	0	2
New Zealand		1	0	1	0
Nigeria	1	2	0	0	2
Norway	1				
Pakistan	1				
Papua New Guinea		1	1	0	0
Peru		1	0	1	0
Philippines		0	0	0	1
Romania		1	0	0	0
Russia	2	1	1	1	2
Sao Tomé et Príncipe	1				
Spain		0	0	0	2
South Africa		0	0	0	1
South Korea		0	0	0	1
Sudan		3	3	2	0
Sweden	1				
Taiwan		0	0	0	1
Tanzania		1	0	0	0
Tunisia		0	0	0	1
Turkey		0	0	2	0
Uganda		1	0	0	0
Ukraine	1				
United Arab Emirates		0	1	0	0
USA	6	2	4	3	3
Uzbekistan		0	1	0	0
Venezuela		1	1	1	0
Atlantic Ocean		0	1	0	0
Pacific Ocean		0	0	0	1
Total	27	35	26	25	37
	*) collision				

Table 3 – Number of fatal airliner accidents per country



Figure 3 – Fatal airliner accident locations in 2006 [© Google]

1.3.2 Regions

The moving 10-year average trends show a decrease in the average number of fatal accidents for all regions. All regions have recorded a steadily decreasing accident rate over the past seven years, except for Africa.

In 2006 Africa was again the most unsafe continent: 18,5% of all fatal airliner accidents happened in Africa, while the continent only accounts for approximately 3 percent of all world aircraft departures.

Region	2006	2005	2004	2003	2002	5-yr average	10-yr average
Africa	5	13	7	7	10	8	7,4
Asia	5	6	7	2	10	5,8	8,3
Australia	0	3	1	1	0	1	1,2
Central America	0	0	1	1	0	0,6	1,2
Europe	6	7	1	5	7	5,8	6,5
North America	7	3	5	4	4	4,2	5,9
South America	4	3	4	5	5	4,6	5
Int'l waters	0	0	0	0	1	0,6	0,8
Total	27	35	26	25	37	30,6	36,3

Table 4 – Number of fatal airliner accidents per region

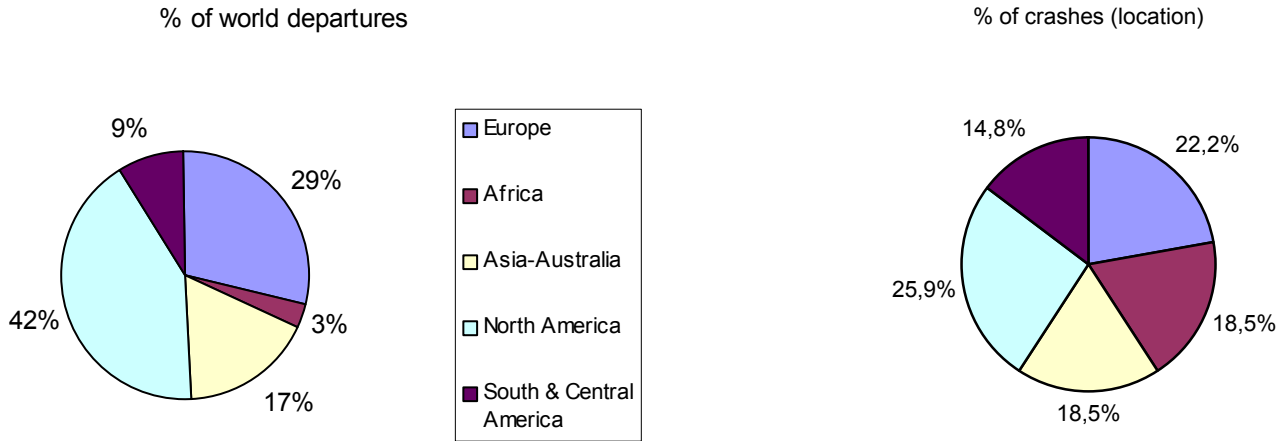


Figure 4 – Fatal airliner accident percentage per region in 2006 compared to world departure percentage

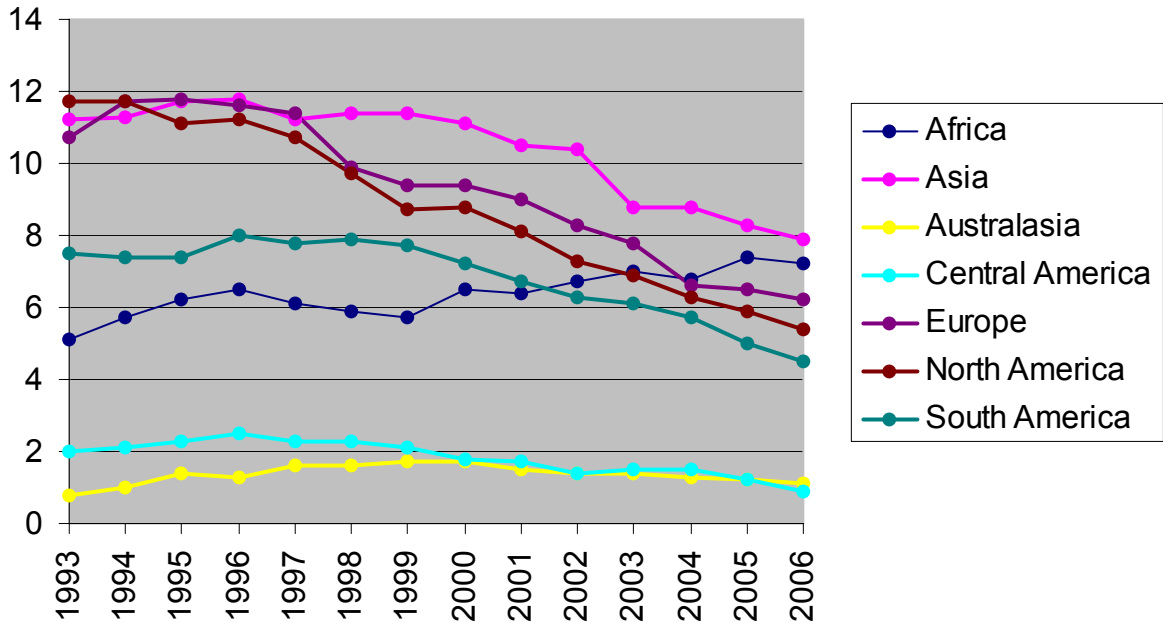


Figure 5 – Moving 10-year average number of fatal airliner accidents per region

1.4 Flight nature

Eleven fatal passenger flight accidents in 2004 was an all-time low. After a brief spike in 2005, the number of accidents in 2006 decreased to 15, which is below the five-year average of 17 accidents.

Where in 2004 cargo planes were reason for concern, 2006 showed a continuing decrease in cargo plane crashes to 6.

Nature	2006	2005	2004	2003	2002	5-year average	10-year average
Scheduled Passenger	11	14	8	8	13	10,4	13,8
Non Scheduled Passenger	3	5	3	5	4	4,8	5,8
Passenger ²⁾	1	2	0	0	4	1,8	1,3
Cargo	6	8	13	7	9	8,4	10,4
Ferry/positioning	1	0	1	2	5	1,6	1,7
Training	2	1	0	0	0	0,6	0,5
Other ³⁾	3	2	1	3	2	2,2	1,9
Unknown		3	1	0	0	0,8	0,9
Total	27	35	27	25	37	30,6	36,3

Table 5 – Number of fatal airliner accidents per flight nature

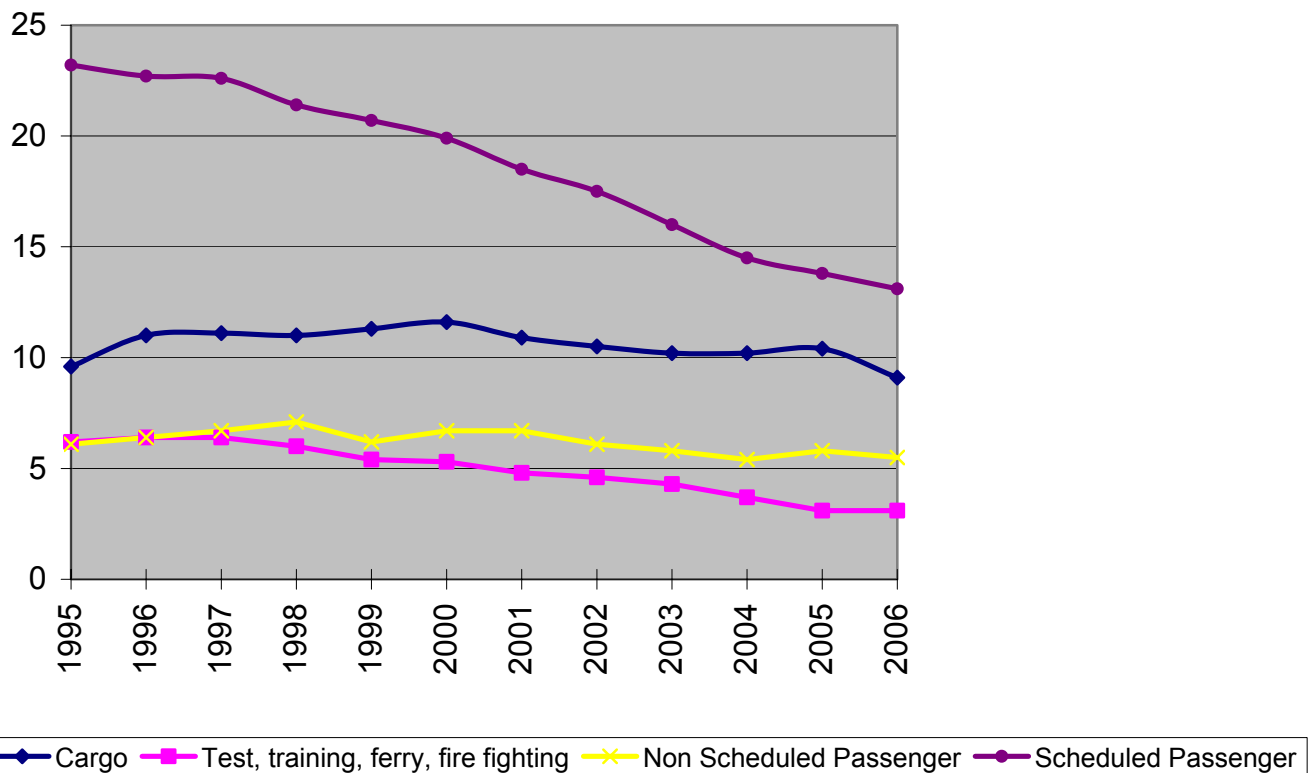


Figure 6 – Moving 10-year average number of fatal airliner accidents per flight nature

1.5 Flight phase

The number of approach and landing accidents decreased to nine. As the September 1 accident involving an Iranian Tupolev 154 showed, the survival-rate of approach and landing accidents is relatively high. The airplane swerved off the runway in landing and caught fire. 120 of the 148 occupants survived the crash. Statistics show that in the last ten years 33% of all occupants survived approach and landing accidents.

Most accidents happened in the en route phase of flight. Fourteen accidents was higher than the five- and ten-year averages.

² unknown if these flights were a scheduled or non-scheduled passenger flights.

³ Ambulance, Executive, Fire fighting, Skydiving, Survey, Test flights

Phase	2006	2005	2004	2003	2002	5-year average	10-year average
Standing (STD)	0	0	0	0	0	0,2	0,1
Takeoff (TOF)	1	1	2	2	2	2,2	2,3
Initial climb (ICL)	3	5	2	4	0	2,4	3
En route (ENR)	14	14	8	9	14	10,8	11,9
Maneuvering (MNV)	0	1	0	2	2	1	1,1
Approach (APR)	4	8	9	8	17	11	13,2
Landing (LDG)	5	4	3	0	2	2	3,5
Unknown (UNK)	0	2	2	0	0	1	1,2
Total	27	35	26	25	37	30,6	36,3

Table 6 – Number of fatal airliner accidents per flight phase

Average survival percentage per flight phase:

Phase	2006	10-yr average
Standing (STD)		
Takeoff (TOF)	2%	50,1%
Initial climb (ICL)	7%	14,5%
En route (ENR)	0,5%	9,2%
Maneuvering (MNV)	0%	31,4%
Approach (APR)	0%	17,7%
Landing (LDG)	61,3%	82%
Total	23,2%	25,9%

Table 7 – Average survival percentage of fatal airliner accidents per flight phase

1.6 Accident classification

The probable cause for most accidents has not been established yet. However, for most accidents the factual information known at this stage makes it possible to classify these accidents.

The number of 'loss of control' accidents shows a marked increase to 17. Controlled flight into terrain (CFIT) accidents remained very low at five.

	2006	2005	2004	2003	2002	5-yr average	10-yr average
Loss of control	17	13	14	11	15	12,6 (54%)	15,6 (59%)
CFIT - Hill, mountain	4	6	3	5	12	5,6 (24%)	5,4 (21%)
CFIT - Level ground	1	2	2	4	1	2,8 (12%)	2,8 (11%)
CFIT - Water	0	0	0	0	0	0	0,3 (1%)
Emergency/forced landing - Ditching	0	1	2	0	2	1,2 (5%)	0,9 (3%)
Emergency/forced landing - Outside airport	0	0	1	2	2	1 (4%)	0,5 (2%)
Runway mishap	0	1	0	0	0	0,2 (1%)	0,8 (3%)
Unknown	5	12	4	3	5		
Total	27	35	26	25	37		

Table 8 – Number of fatal airliner accidents per accident type

2. HIJACKINGS

2.1 Hijackings overview

The year 2006 recorded three (attempted) hijackings, which is below the five-year average of 5,6.

	Date	Aircraft type	Operator	Location	Fatalities
1	17 JUN	Boeing 737?	South African	Cape Town	0
2	03 OCT	Boeing 737-400	THY	Brindisi	0
3	28 DEC	Airbus A.321	Aeroflot	Prague	0

Table 9 – Airliner hijackings in 2006

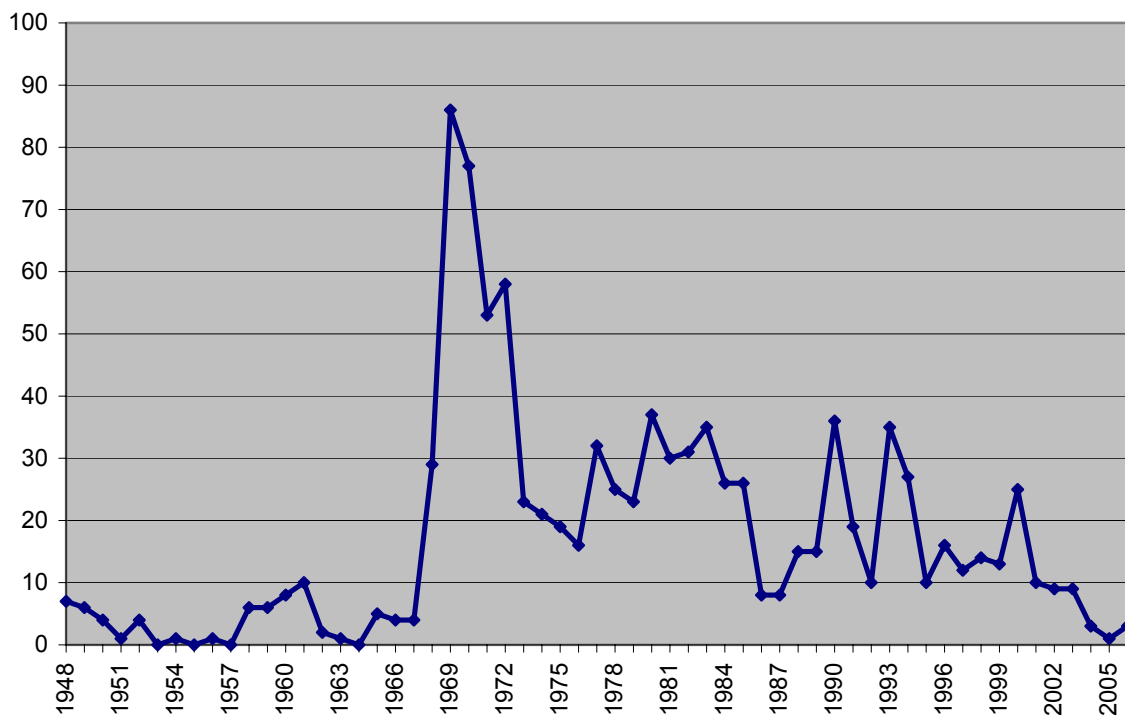


Figure 7 – Number of airliner hijackings 1948-2006

2.2 Hijackings outcome

Outcome	2006	2005	2004	2003	2002	5-yr average	10-yr average
Hijacker(s) surrendered / arrested	1	1	2	4	1	1,4	3,6
Hijacker(s) overpowered by occupants	3	0	1	3	8	3	4,5
Plane stormed	0	0	0	2	0	0,6	1
Hijacker(s) escaped	0	0	0	0	1	0,4	1,5
Accident	0	0	0	0	0	0,4	0,5
Total	3	1	3	9	10	5,6	11,1

Table 10 – Number of airliner hijackings per outcome

2.3 Originating country

Originating country	2006	2005	2004	2003	2002	2001	2000	Total
Afghanistan							1	1
Albania	1							1
Algeria				2				2
Australia				1				1
Azerbaijan							1	1
Belgium							1	1
Brazil					1		1	2
China			1	2	3		3	9
Colombia		1			1	1	2	5
Congo (D.R.)							1	1
Cuba				2				2
Egypt							1	1
Ethiopia					1	1		2
Guyana						1		1
India					1			1
Iran							2	2
Israel					1			1
Italy					1	1		2
Jordan							1	1
Libya			1					1
Mexico							1	1
Morocco			1					1
Norway			1					1
Pakistan							1	1
Papua New Guinea							1	1
Philippines							1	1
Qatar							1	1
Russia	1						1	1
Saudi Arabia							1	1
South Africa	1							
Spain							1	1
Sudan					1			1
Switzerland							1	1
Thailand						1		1
Turkey				2		1		3
U.K.							1	1
USA						4	1	5
Yemen						1	1	2
Total	3	1	4	10	10	11	26	

Table 10 – Number of airliner hijackings per originating country

3. FATAL CRIMINAL OCCURRENCES

3.1 Criminal occurrences

Criminal occurrences are cases where an airliner was sabotaged (e.g. by the detonation of an explosive device on board) or the victim of an in-flight attack (e.g. shot down using ground-based weapons or shot down by another airplane).

Hijackings, also those that resulted in a (deliberate) crash, are not listed here. Please refer to Chapter 2 – Hijackings.

The year 2006 recorded no fatal criminal occurrences; the tenth year since 1945.

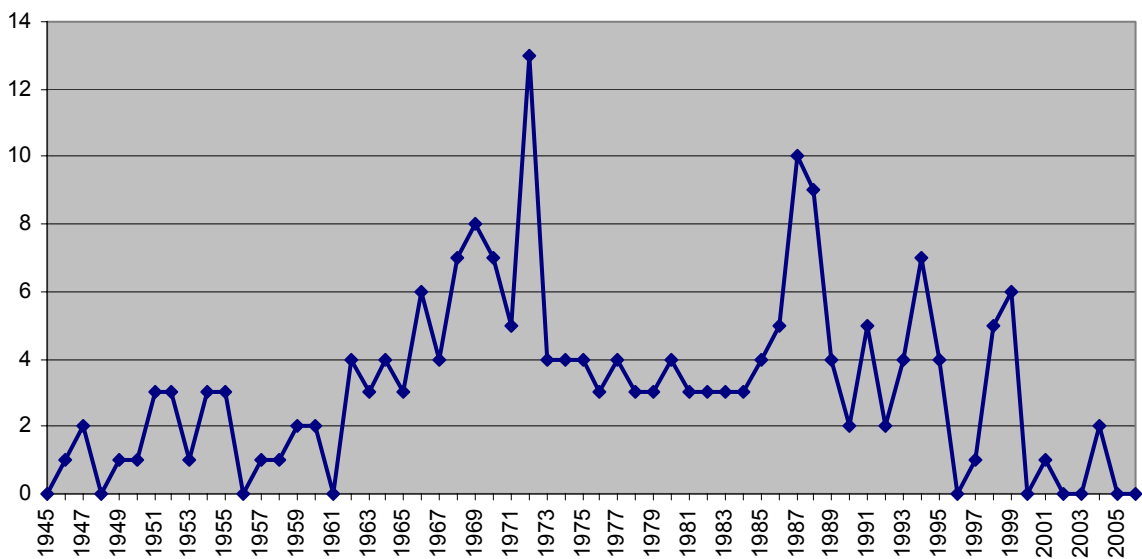


Figure 8 – Number of fatal criminal occurrences 1945-2006

4. AVIATION SAFETY PRIORITIES

Analyzing last year's accidents and comparing them with the four aviation safety priorities, identified by the Flight Safety Foundation (FSF), it can be concluded that much work still needs to be done:

Controlled flight into terrain (CFIT)

CFIT occurs when an airworthy aircraft under the control of the flight crew is flown unintentionally into terrain, obstacles or water, usually with no prior awareness by the crew. CFIT accidents in 2006 were probably responsible for five of all 27 fatal accidents.

Approach and landing

The number of approach and landing accidents decreased to nine. As the September 1 accident involving an Iranian Tupolev 154 showed, the survival-rate of approach and landing accidents is relatively high. The airplane swerved off the runway in landing and caught fire. 120 of the 148 occupants survived the crash.

Loss of control

A notable figure in 2006 was the extremely high number of 'loss of control' accidents. Seventeen aircraft crashed as a result of a loss of control, killing over 800. Six accidents were attributed to loss of control on landing or takeoff. The in-flight 'loss of control' accidents were, amongst others, attributed to midair collisions, loss of situational awareness, weather and mechanical problems.

Human factors

As most accident investigations are not completed yet, it's too early to tell in what cases human actions were a causal factor in accidents in 2006. However the investigation into the May 3rd crash of an Armenian Airbus A.320 in the Black Sea indicates certain human factors issues. The flight crew lost situational awareness during a night-time aborted approach procedure in poor visibility.

It must be stressed that human factors does not mean "pilot error"; in human factors it is important to determine which mistakes were made, why, under what circumstances etc.

APPENDIX 1 – List of airliner types covered

ATR-42, ATR-72
Airbus A.300, A.310, A.318, A.319, A.320, A.321, A.330, A.340, A.380
Airspeed AS.57 Ambassador
Antonov 8, 10, 12, 22, 24, 26, 28, 30, 32, 38, 70, 72, 74, 124, 140, 225
Armstrong Whitworth Argosy
Aviation Traders ATL-98 Carvair
Avro 685 York, 688 Super Trader, Tudor, 691 Lancastrian
BAC One-Eleven
BAC/Aérospatiale Concorde
Beechcraft 99, 1900
Boeing C-97, 307, 314, 377, 707, 720, 717, 720, 727, 737, 747, 757, 767, 777
Breguet Br.763 Provence
Bristol 170, 175 Britannia
British Aerospace ATP, BAe-146, Jetstream 31, Jetstream 41
Canadair Argonaut, CL-215, CL-415, CL-44, RJ100/200/700
CASA/Nurtanio 212 Aviocar, CN.235
Consolidated Liberator, PB4Y-2 Privateer, PBY-5A Catalina
Convair CV-240, CV-300, CV-340, CV-440, CV-580, CV-600, CV-640, CV-880, CV-990
Curtiss C-46
Dassault Mercure
de Havilland Canada DHC-4 Caribou, DHC-5 Buffalo, DHC-6 Twin Otter, DHC-7, DHC-8
de Havilland DH-86 Express, DH-106 Comet, DH-114 Heron
Dornier Do-228, Do-328, Do-328JET
Douglas DC-2, DC-3, DC-4, DC-6, DC-7
Embraer 110 Bandeirante, 120 Brasilia, ERJ-135/140/145, 170
Fairchild C-82 Packet, C-119 Flying Boxcar, F-27, FH-227
Fiat G.212
Focke-Wulf FW.200 Condor
Fokker F.XII, F-27 Friendship, F-28 Fellowship, 50, 70, 100
Ford AT-5 Tri-Motor
GAF Nomad
Grumman G-159 Gulfstream I, G-73T Turbo Mallard
Handley Page HP.68/81/82 Hermes, HP-137 Jetstream, HPR.7 Herald
Hawker Siddeley HS-121 Trident, HS-748
Hindustan Aeronautics Ltd. HAL-748
Howard 250, 500
IAI Arava
Ilyushin 12, 14, 18, 62, 76, 86, 96, 114
Junkers Ju-52/3m
Latécoere 631
Let 410, 610
Lockheed 18 Lodestar, Hercules, L-049/149 Constellation, L-649/749 Constellation, L-1049 Super Constellation, L-1649 Starliner, L-188 Electra, L-1011 TriStar
Martin 130, 2-0-2, 4-0-4, Mars, Mariner
McDonnell Douglas DC-8, DC-9/MD-80s/MD90, DC-10, MD-11
Miles Marathon
NAMC YS-11
Nord 2501 Noratlas, 262
Pilatus Britten Norman BN-2A Trislander
SAAB Scandia, 340, 2000
Saunders ST-27
Savoia-Marchetti SM.95
Scottish Aviation Twin Pioneer
Short S.25 Mk.5 Sandringham, S.26 G Class, S.45 Solent, 330, 360, SC.7 Skyvan
Sikorsky S.42, S.43
SNCASE SE.161 Languedoc, SE.2010 Armagnac
SNCASO SO.30
Sud Aviation SE-210 Caravelle

Swearingen Merlin IV, Metro
Transall C-160
Tupolev 104, 114, 124, 134, 144, 154, 204, 234, 334
VFW-614
Vickers Vanguard, Varsity, VC-10, Viking, Viscount
Yakovlev 40, 42
Yunshuji Y-12

APPENDIX 2 – Descriptions of all fatal airliner accidents

05 FEB 2006	Shorts 360-100 N3735W Air Cargo Carriers	near Watertown, WI United States of America	3(3)
<p>Two Air Cargo Carriers Shorts 360 cargo planes, N372AC and N3735W, had been in maintenance for the installation of some auxiliary fuel tanks. Flights were planned to verify the fuel flow rates for those tanks. Prior to departure, both flight crews decided that they would join-up after departure in order to take video and still photography of each airplane. N3735W and N372AC departed Milwaukee (MKE) at 15:55 and 16:15, respectively. After departure and clearing MKE airspace, the flight crew of N372AC established radio and visual contact with N3735W. N3735W then proceeded to perform several fly-bys past N372AC who remained on constant headings and altitude. N3735W then came up along the other Shorts' left side and flew in formation with approximately 100-150 feet lateral separation. A pilot of N3735W then announced over the radio that they would turn right and descend below N372AC. During that manoeuver N3735W's left wing impacted the left wing and engine of the other plane. The captain of N372AC attempted to climb in an attempt to avoid impacting N3735W. The outboard 3/4 of the left wing of N372AC separated and the airplane crashed out of control, into a field southeast of the intersection of Highway Q and Highway 19 and caught fire. After the collision, N372AC rolled to the left and pitched down significantly before the flight crew regained control of the airplane. The flight crew declared an emergency and diverted to Juneau-Dodge County Airport, WI (UNU) for an emergency landing. N372AC experienced a complete hydraulic failure and was losing hydraulic fluid. The flight crew performed an emergency landing on runway 08 (5,069 feet by 100 feet, asphalt) with flaps retracted and a partially extended landing gear. The airplane overran the end of the runway, coming to rest about 100 feet from the departure threshold.</p>			
08 FEB 2006	Swearingen SA.226TC Metro II N629EK TriCoastal Air	near Paris, TN United States of America	1(1)
<p>The Metro cargo plane departed Toledo Express (TOL) at 10:16, arriving at Dayton (DAY) at 10:50 EST. The Metro was to transport auto parts to Harlingen (HRL) and departed again at 11:48. The aircraft climbed to a cruising altitude of FL160 which it reached at 11:56 EST. En route the pilot requested and was cleared to make a 360-degree turn to the left. Shortly after this, the pilot requested a 360-degree turn to the right. The pilot then requested radar vectors to the closest airport. Controllers gave the pilot a vector to the closest airport and asked if he had an emergency. The pilot reported he had an asymmetric fuel condition. The pilot then asked for a lower altitude. Controllers cleared the flight to 4,000 feet. About a minute later the pilot transmitted "Mayday" six times. The airplane descended fast in a near vertical attitude and crashed next to a pasture in a heavily wooded area.</p>			
18 MAR 2006	Beechcraft C.99 N54RP Ameriflight	13 km SW of Butte, MT United States of America	2(2)
<p>The Beech 99 departed Helena (HLN) at 14:35 on flight to Butte (BTM) and was carrying only about 10 pounds of freight. The aircraft was cleared for the VOR B approach to Butte at 14:48. A weather front had been approaching the area from the south to the north/northeast. Weather conditions included icing</p>			

conditions followed by heavy snow fall with poor visibility and variable winds in the mountains. During the descent the airplane collided with trees and subsequently the terrain.

Search crews found the wreckage of the plane on March 20.

31 MAR 2006	Let 410UVP-E20 PT-FSE TEAM Transportes Aéreos	near Saquarema, RJ Brazil	19(19)
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TEAM Flight 6865 departed Macaé (MEA) at 17:19 on a scheduled flight to Rio de Janeiro (SDU). The airplane was expected to arrive at 18:02. Contact was lost and the flight appeared to have crashed between the cities of Saquarema and Rio Bonito.

16 APR 2006	Fokker F-27 Friendship 400M FAB-91 Transporte Aéreo Militar - TAM	Guayaramerín Airport (GYA) Bolivia	1(31)
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The Fokker F-27 departed Riberalta (RIB) at 11:23 on a flight to Guayaramerín (GYA). It was raining when the airplane landed at Guayaramerín. The F-27 ran off the runway, causing substantial damage to the undercarriage and wings. An 80-year old woman died of a heart attack a few hours after the accident.

24 APR 2006	Antonov 32B ZS-PDV ? US Department of State	Lashkar Gah Afghanistan	2(16)+3
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The US Department of State had leased an Antonov 32 plane for duties in Afghanistan. It was carrying a team from the Bureau of International Narcotics and Law Enforcement Affairs when it landed at Lashkar Gah. Reportedly a truck crossed the runway when the airplane landed. The Antonov swerved off the runway, and slid headlong into a nearby nomad settlement.

27 APR 2006	Convair CV-580F ZS-SKH LAC - SkyCongo	Amisi Airport Congo (Democratic Republic)	8(8)
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The Convair CV-580 departed Goma (GOM) at 07:30 UTC on a cargo flight to Amisi. The airplane carried telecom equipment on behalf of the Vodacom company. The Convair was one of two planes used by LAC - SkyCongo, a subsidiary of Skyhaul (South Africa).

03 MAY 2006	Airbus A.320-211 EK-32009 Armavia	6 km SW off Adler/Sochi Airport (AER) Russia	113(113)
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Armavia flight 967 departed Yerevan (EVN) at 00:47 on a scheduled flight to Sochi (AER). Weather at Sochi was poor with rain and poor visibility. Radio contact with Sochi was established at 01:10. The flight crew discussed the current weather conditions at Sochi with the approach controller. At 01:26 the crew decided to return to Yerevan due to the below minima weather conditions at Sochi. At 01:30 the crew again requested the latest weather information. Visibility now was reported as 3600 m with a cloud base at 170 m. The captain now decided to continue to Sochi instead. Clearance was give to descent to an altitude of 3600 m. At 02:00 further descent instructions for 1800 m were issued by the air traffic controller. Weather conditions for an approach to runway 06 were now equal to the airport minima. Sochi Tower then cleared the flight to descend to 600 m. The glideslope was captured and

the gear was lowered at 02:10. The crew reported ready and were cleared for landing. Weather was reported as 4000 m visibility with a cloud base at 190 m. Weather deteriorated quickly and thirty seconds later the controller reported that the cloud base was now at 100 m. He instructed the flight to abort the approach and told the crew to make a climbing right hand turn to an altitude of 600 m. The aircraft was flying at 300 m and performed a climbing turn to 450 m. Simultaneously the groundspeed dropped and the Airbus descended until it contacted the water and broke up. Wreckage sank to a depth of 700 m.

Weather around the time of the accident (22:15Z, May 2) was reported as: URSS 022200Z VRB01MPS 4000 -SHRA BR BKN006 OVC027CB 11/11 Q1018 TEMRO 1500 BR VV005 RMK G/~Z QFE762 SC05= [wind variable at 1m/sec, visibility 4000m, light rain showers, mist 5-7 oktas cloud at 600ft, 8 oktas overcast cloud at 2700ft with thunder clouds, temperature 11C dewpoint 11C, QNH 1018hPa, visibility 1500m mist vertical visibility 500ft]

14 MAY 2006	Convair CV-580 C-GSKJ Saskatchewan Government Northern Air Operations	1,5 km NW of La Ronge Airport, SK (YVC) Canada	1(3)
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Convair CV-580 C-GSKJ was converted to an air tanker and bought by the Saskatchewan Government just three months earlier. The airplane departed its La Ronge base for a training mission at 12:01. Several touch and goes were performed on runway 36. At 12:32 the airplane's wheels touched the runway and the Convair became airborne again. The nr.1 propeller was seen windmilling. It climbed slowly, turning left onto the crosswind leg. Altitude could not be maintained and the aircraft descended until it struck terrain in a swampy area.

23 MAY 2006	de Havilland Canada DHC-6 Twin Otter 300 S9-BAL Air São Tomé	3 km off São Tomé Island Airport (TMS) Sao Tome and Principe	4(4)
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The Twin Otter crashed into the Baía Ana Chaves, two miles offshore during a training flight. The aircraft was probably approaching runway 29 over sea.

21 JUN 2006	de Havilland Canada DHC-6 Twin Otter 300 9N-AEQ Yeti Airlines	near Jumla Airport (JUM) Nepal	9(9)
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Servicing remote airports in Nepal, the Yeti Airlines Twin Otter departed Nepalganj (KEP) for a flight to Jumla (JUM) via Surkhet (SKH). The flight to and from Surkhet was uneventful. On approach to runway 09 at Jumla Airport the pilot apparently decided to go around. The airplane crashed into a mountainside on the eastern side of the airport. Jumla is situated in the mountains at an elevation of 9,400 ft (2875 m).

In November 2006 the commission constituted to probe the crash submitted its report to Minister for Culture, Tourism and Civil Aviation. According to the report, negligence on part of the crew had led to the accident. Other contributing factors leading to the accident were violation of company standard operating procedures by the flight crew, insufficient monitoring of its flight training programme and line operations by Yeti management and also inadequate oversight of Yeti Airlines by the CAAN.

07 JUL 2006	Antonov 12B 9Q-CVT Mango Airlines	10 km NW of Sake Congo (Democratic Republic)	6(6)
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The Antonov departed Goma (GOM) on a cargo flight to Kisangani (FKI). En route the airplane suffered problems with one engine. The pilot decided to return to Goma. The airplane crashed into a hill, broke up and caught fire.

09 JUL 2006	Airbus A.310-324 F-OGYP S7 Airlines	Irkutsk Airport (IKT) Russia	125(203)
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Sibir flight 778 departed Domodeovo (DME) at night for a flight to Irkutsk (IKT). Weather at Irkutsk was poor. It was raining, overcast clouds at 600 feet and a thunderstorm in the area. The Airbus landed on runway 30 (concrete, 3165 m / 10343 feet long). Since the no.1 engine thrust reverser on the airplane was de-activated, this engine's thrust was brought

back to idle. The no.2 engine thrust reversers were deployed normally. While handling the throttles, the pilot inadvertently touched the no.1 power lever, increasing engine thrust. The co-pilot did not adequately monitor the engine parameters and failed to note the lack of deceleration. At a speed of approx. 80 km/h the Airbus overran the runway. It collided with a concrete barrier and burst into flames.

Weather around the time of the accident (23:00 UTC / 08:00 local) was: UIII 082300Z 28005MPS 3500 -SHRA OVC006CB 11/09 Q1002 NOSIG RMK QBB190 QFE707/0943 30290250= (Wind 280 degrees at 5m/sec visibility 3500m, light rain showers, 8 oktas overcast cloud at 600ft with thunder clouds, temperature 11C dewpoint 9C, QNH 1002hPa no significant weather)

10 JUL 2006	Fokker F-27 Friendship 200 AP-BAL Pakistan International Airlines	near Multan Airport (MUX) Pakistan	45(45)
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Shortly after takeoff the airplane reportedly suffered engine problems. It struck an electric power line before crashing in a field. The F-27 broke up and caught fire.

29 JUL 2006	de Havilland Canada DHC-6 Twin Otter 100 N203E Quantum Leap Skydiving	Sullivan Regional Airport, MO United States of America	6(8)
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Twin Otter N203E departed Sullivan Regional carrying seven skydivers. Immediately after takeoff from runway 6 witnesses heard a popping sound. The Twin Otter lost height, contacted a utility pole, a tree and crashed next to a house at 1039 North and South Road, just northwest of the airport.

03 AUG 2006	Antonov 28 9Q-COM TRACEP	15 km from Bukavu Congo (Democratic Republic)	17(17)
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The Antonov descended towards Bukavu in low clouds and struck a mountainside. It crashed in a forest and caught fire.

On 9 August 2006, the Antonov Aviation Scientific Technical Complex informed the State Administration of Ukraine for Aviation Safety Oversight of Antonov aircraft whose service life had expired and which, therefore, were no longer considered to be airworthy. The crashed An-28 (1AJ008-21) was one of those aircraft.

04 AUG	Embraer 110P1 Bandeirante	8 km E of Bennington-William	1(1)
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2006	N59BA AirNow	H. Morse State Airport, VT United States of America	
<p>AirNow Flight 59 departed Binghamton (BGM) about 08:20 for a flight to the company base at Bennington (KDDH) where it was to undergo maintenance. The pilot climbed to the cruising altitude of 9000 feet. At 08:40 the descent for Bennington was started. The pilot was cleared for a VOR runway 13 approach. This approach was aborted because of poor visibility conditions. (The METAR at 08:54 local time at Bennington included a report of light rain with 5-7 oktas clouds at 500 feet and 8 oktas overcast clouds at 1300 feet.) The airplane then rejoined the approach course, at 3,400 feet, inbound to the VOR. It subsequently passed over the VOR, on course, about 3,400 feet, but instead of descending, maintained that altitude until reaching the airport. At the airport, the airplane began a descent. The airplane continued to travel outbound from the airport, along the same course, until last radar contact. The Bandeirante flew into tree-covered, rising terrain at an elevation of approximately 2,100 feet.</p>			
13 AUG 2006	Lockheed L-100-30 Hercules 7T-VHG Air Algérie	near Piacenza Italy	3(3)
 <p>The Hercules cargo plane departed Algiers (ALG) on a flight to Frankfurt (FRA), Germany. The airplane was en route over Italy when at an altitude of 24000 feet the crew received an "A/P Fail" warning, indicating a problem with the autopilot. After twelve seconds the autopilot was switched off. The aircraft then immediately lost directional and longitudinal control. Control was not regained and the plane collided with terrain some 73 seconds after the "A/P Fail" warning. Calculations showed that the airplane struck the ground in a 45/50 degrees nose-down attitude at a speed of approximately 850/900 km/h.</p>			
22 AUG 2006	Tupolev 154M RA-85185 Pulkovo Aviation Enterprise	45 km NW of Donetsk Ukraine	170(170)
 <p>Pulkovo flight 612 departed Anapa (AAQ) for St. Petersburg (LED) at 15:05. The Tupolev climbed to the cruise altitude of 10.700 m (35,100 feet). Because of storm cells ahead, the pilot decided to change course laterally by 20 km and attempted to climb over the storm cells. However, the thunderstorm front was unusually high, extending up to 15 km (49,000 feet). The Tu-154 entered an area of severe turbulence, pushing up the airplane from 11.961 m to 12.794 m within just 10 seconds. The angle of attack increased to 46 degrees and the airspeed dropped to zero. It entered a deep stall from which the crew could not recover. The plane crashed and burned in a field.</p>			
27 AUG 2006	Canadair CRJ100ER Regional Jet N431CA Comair/Delta Connection	Lexington-Blue Grass Airport, KY (LEX) United States of America	49(50)



Weather at Lexington (LEX) was fine on the morning of Augst 27 (METAR for 05:54 local: KLEX 270954Z 20007KT 8SM FEW090 SCT120 24/19 A3000) with a small shower approaching from the West.

It was still dark just after 06:00 as Comair flight 5191 taxied out for takeoff. The crew were cleared for a runway 22 departure, which is Lexington's main runway. Because the runway was repaved just recently with an added safety area at the approach end of runway 22, one taxiway was no longer in use. Since August 20 the taxi route to runway 22 was changed. Apparently the crew lined up on the shorter (3500 x 75 feet) and unlit runway 26. The first officer commenced the takeoff roll. Preliminary investigation results indicate that one of the pilots made a remark about the lack of runway light illumination, but the takeoff was continued. The fully laden CRJ was not able to rotate within the 3500 feet runway distance and continued past the runway end. It knocked down a metal fence and continued onto a field. The airplane struck several trees and burst into flames on a working farm.

01 SEP 2006	Tupolev 154M EP-MCF Iran Air Tours	Mashad Airport (MHD) Iran	28(148)
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The Tupolev suffered a mishap (some reports say a nose gear tyre burst) while landing on runway 14L. The airplane swerved and caught fire.

29 SEP 2006	Boeing 737-8EH PR-GTD Gol Transportes Aéreos	30 km from Peixoto Azevedo, MT Brazil	154(154)
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On September 29, an Embraer Legacy 600 executive jet (N600XL) was scheduled to be delivered from the Embraer factory at São José dos Campos Airport (SJK) to the United States. An intermediate stop was planned at Manaus (MAO). The Legacy took off at about 14:51. The filed flight plan included a routing via the OREN departure procedure to Pocos beacon, then airway UW2 to Brasilia VOR (BRS), airway UZ6 to Manaus. The cruise altitude was filed as FL370, with a planned change to FL360 at BRS, and to FL380 at the TERES navigational fix, approximately 282 miles north of BRS. Meanwhile, at 15:35, GOL Flight 1907, a Boeing 737-800, departed Manaus (MAO) on a scheduled flight to Brasilia (BSB) and Rio de Janeiro (GIG). The flight was also routed via UZ6 to BRS. Cruising altitude was FL370, which was reached at 15:58. At that time, Legacy N600XL had just passed BRS, level at FL370. There is no record of a request from N600XL to the control agencies to conduct a change of altitude after passing BRS. There is also no record of any instruction from air traffic controllers at Brasilia Center to the aircraft, directing a change of altitude. When the airplane was about 30 miles north-northwest of BRS, at 16:02, the transponder of N600XL was no longer being received by ATC radar. Between 15:51 and 16:26, there were no attempts to establish radio communications from either the crew of N600XL or ATC. At 16:26 the CINDACTA 1 controller made a "blind call" to N600XL. Subsequently until 16:53, the controller made an additional 6 radio calls attempting to establish contact. The 16:53 call instructed the crew to change to frequencies 123.32 or 126.45. No replies were received. Beginning at 16:48, the crew of N600XL

made a series of 12 radio calls to ATC attempting to make contact. They heard the 16:48 call, but the pilot did not understand all of the digits, and requested a repeat. No reply from ATC was received. The pilot made 7 more attempts to establish contact.

Both the GOL Boeing 737 and the Legacy were now on a head on collision course on airway UZ6 at the same altitude. At FL370, over the remote Amazon jungle, both aircraft collided. The left winglet of the Legacy (which includes a metal spar) contacted the left wing leading edge of the Boeing 737. The impact resulted in damage to a major portion of the left wing structure and lower skin, ultimately rendering the 737 uncontrollable. The Boeing 737 was destroyed by in-flight breakup and impact forces.

The Embraer's winglet was sheared off and damage was sustained to the vertical stabilizer tip. The crew made numerous further calls to ATC declaring an emergency and their intent to make a landing at the Cachimbo air base. At 17:02, the transponder returns from N600XL were received by ATC. At 17:13, an uninvolved flight crew assisted in relaying communications between N600XL and ATC until the airplane established communication with Cachimbo tower.

A safe emergency landing was made.

10 OCT 2006	British Aerospace BAe-146-200A OY-CRG Atlantic Airways	Stord-Sørstokken Airport (SRP) Norway	4(16)
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The Atlantic Airways Flight RC670 was chartered by the Norwegian industrial concern Aker Kværner to fly personnel from Stavanger (SVG) to Molde (MOL) via Stord (SRP). The airplane departed Stavanger at 07:17 and positioned for an approach to runway 33 at Stord around 07:30. The 1200 m long runway was damp and on landing the wing spoilers did not deploy.

It overran, continued down a rocky slope close to the sea and caught fire. METAR at the time of the accident (07:37 local): ENSO 100520Z 11006KT 9999 FEW025 10/10 Q1021=

26 OCT 2006	CASA 212 Aviocar 200 SE-IVF/585 Kustbevakning	Falsterbokanalen Sweden	4(4)
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The Swedish Coast Guard CASA 212 was on an operational mission when it performed a low level fly-by near the Falsterbo channel. During this fly-by, the left wing ruptured near the fuselage and separated from the aircraft. The CASA then crashed into the canal and sank to a depth of about 6 metres. The ongoing technical investigation has revealed a major

fatigue crack in the lower part of the wing primary structure. The fatigue crack, which on the wing outer side is covered by a doubler, has developed and grown under a long period. Due to the size and location of the crack the remaining strength of the wing was significantly reduced.

29 OCT 2006	Boeing 737-2B7 5N-BFK ADC Airlines	near Abuja International Airport (ABV) Nigeria	96(105)+1
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ADC Airlines Flight 53 departed Lagos (LOS) on a scheduled domestic flight to Sokoto (SKO) with an intermediate stop at Abuja (ABV). At Abuja at 11:14 local time, the crew of the aircraft requested start-up clearance. This was given along with the prevailing weather information. At 11:21, the crew

requested clearance to taxi to the holding point and a wind check; both were given. Over the following six minutes Abuja Tower gave a series of six wind reports, including a statement emphasising the gusty nature of the wind. A thunderstorm was approaching the airport and weather was worsening. At 11:26 am, the crew of flight 053 requested clearance for immediate take-off, and the controller re-emphasized the deteriorating weather condition and gave latest wind check, which they acknowledged.

Immediately after takeoff from runway 22, the Boeing 737 contacted the ground, broke up and caught fire in a corn field. A woman working on the field was reportedly killed after being struck by debris from the crash.

The Abuja weather reported at the day of the accident included:

DNAA 290800Z 00000KT CAVOK 27/24 Q1012 NOSIG=

DNAA 291000Z 27006KT 9999 BKN012 30/24 Q1011 NOSIG=

DNAA 291300Z 00000KT 9999 FEW010 FEW020CB BKN100 25/22 Q1009

NOSIG=

DNAA 291400Z 00000KT 9999 FEW010 FEW020CB BKN100 26/23 Q1008

TEMPO 06022G35KT 5000 TS=

17 NOV 2006	de Havilland Canada DHC-6 Twin Otter 300 PK-YPY Trigana Air Service	Puncak Jaya Indonesia	12(12)
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The Trigana aircraft was chartered by the regency administration to take officials to talk with residents in several districts. It flew into a mountain an altitude of 3,180 metres (10,500 feet). The wreckage was found the next morning.

18 NOV 2006	Boeing 727-23F HK-3667X Aerosucre Colombia	near Leticia-Alfredo Vásquez Cobo Airport (LET) Colombia	5(5)
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The Boeing 727 was on approach to Leticia when the cargo plane hit an antenna and crashed near the village of San Sebastián de los Lagos. Weather at 21:00 at Leticia was reported to be: temperature 24 deg C, pressure 1011.1 hPa, visibility 10 km, wind calm with patches of fog.

Hijackings

17 JUN 2006	Boeing 737? South African Airways – SAA	Cape Town International Airport (CPT) South Africa	0()
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A 21-year old Zimbabwean student, allegedly tried to hijack the flight by forcing his way into the cockpit armed with a hypodermic needle. He was overpowered by passengers, including an off-duty Captain, and crew. The student wanted to force the flight to divert to Maputo.

03 OCT 2006	Boeing 737-4Y0 TC-JET Türk Hava Yollari – THY	Brindisi-Papola Casale Airport (BDS) Italy	0(113)
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Some 15-20 minutes after takeoff from Tirana (TIA) an unarmed 27-year-old Turk hijacked the THY flight. He threatened to blow himself up if the pilot did not divert the flight to Italy. After the plane landed at Brindisi (BDS), he requested political asylum. The man apparently wanted to avoid military service in Turkey.

28 DEC	Airbus A.321-211	Praha-Ruzyně Airport (PRG)	0(168)
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2006	Aeroflot Russian International Airlines	Czech Rep.
<p>A 32-year old Russian male passenger reportedly started a fight with other passengers. He threatened that he had a bomb and demanded the crew fly to Cairo. He was overpowered and the crew diverted to Prague (PRG) where the man was arrested.</p>		

APPENDIX 3 – Sources used

Aviation Safety Network database

Accident investigation boards, government information

National Transportation Safety Board (NTSB)
 Federal Aviation Administration (FAA)
 Ministry of Emergency Situations (MChS) of Russia
 MAK Interstate Aviation Committee, Russia
 Agenzia Nazionale per la Sicurezza del Volo (ANSV), Italy
 CAA Norway
 Statens havarikommisjon for transport, Norway
 Swedish Accident Investigation Board

Operators' press releases

GOL
 Atlantic Airways
 Kustbevakningen

Media

AP
 El Tiempo
 Flight International
 Folha Online
 IRNA
 Jornal de São Tomé e Príncipe
 Kantipur Report
 Radio Okapi
 Reuters
 The Jakarta Post
 This Day