

SAFETY DIGEST 2014 : STEPS BACK

We have had a bad year for accidents in 2014. If in our 2013 Safety Review we could say that major airlines were absent from fatal accidents list, we cannot affirm the same referring to 2014. The safety record does not make encouraging reading. Analysts who were worried about what happens when policy has to be made using very few accident data, will find 2014 an interesting year.

First the figures referring to scheduled services:

TABLE 1): FATAL ACCIDENTS TO PASSENGER SCHEDULED SERVICES (unlawful acts included)

Query Time Range - Year 2014 - Category: SCH													
Nº	Date	Aircraft	Airline	CD	Location	Area	Phase	O.B.	O.G.	REG	C.N.	CAT	Remarks
1	16/02/2014	DHC6	Nepal Airlines	9N	Enroute Pokhara-Jumla, Nepal	SEA	En Route	18	0	9N-ABB	302	SCH	-
2	08/03/2014	B777	Malaysian Airlines	9M	South China Sea, Pacific Ocean	SEA	En Route	239	0	9M-MRD	28420/404	SCH	HOS
3	24/06/2014	A310	Pia	AP	Peshawar Airport, Pakistan	SEA	Approach	1	0	AP-BGN	676	SCH	HOS
4	17/07/2014	B777	Malaysian Airlines	9M	Grabovo, Ukraine	EEU	En Route	298	0	9M-MRD	28411	SCH	HOS
5	23/07/2014	ATR72	Transasia	B-1	Magong Airport, Taiwan	SEA	Approach	48	0	B-22810	642	SCH	-
6	24/07/2014	MD83	Air Algerie	7T	North Of Aguelhok, Mali	AFI	En Route	116	0	EC-LTV	53190	SCH	-
7	10/08/2014	AN140	Sepahan Airlines	EP	Teheran Mehrabad A/P, Iran	MID	Climbing	39	0	EP-GPA	9005	SCH	-
8	24/12/2014	Cessna 206	Alas Colombia	HK	Piedecuesta, Colombia	SAM	En Route	7	0	HK-4892	20700646	SCH	-
9	28/12/2014	A320	AirAsia Indonesia	PK	Java Sea	SEA	En Route	162	0	PK-AXC	3648	SCH	-

Query Time Range - year 2014 - Total Fatalities: On Board 928 - On Ground 0

The circumstances of MH370 disappearance suggest deliberate action by a person/persons on board.

Table 2: FATAL ACCIDENTS TO SCHEDULED SERVICES (2012:2014):

	(unlawful acts excluded)		(unlawful acts included)	
	Events	Fatalities	Events	Fatalities
2012	9	362	11	365
2013	12	196	12	196
2014	6	390	9	928

As the reader will see we had to make a distinction between unlawful acts (“included or excluded”) as the two MH occurrences fall undoubtedly under the category of hostile acts; actually also excluding them, 2014 safety shows higher fatalities in the last three years.

The major accidents of the year

- **MH370** disappeared 8 March on a regular flight from Kuala Lumpur to Beijing. Its movements were consistent with deliberate action by someone on the aircraft. The search to find the missing plane has become one of the most expensive in aviation history.

As at today, ten months after the Malaysia Airlines flight vanished, there is still no trace of wreckage or debris from the Boeing 777.

Undoubtedly new lessons will be learned from MH370 and new solutions will have to be found preventing a future airliner from vanishing off radar and search and rescue operation.

In June 2014 Iata said it was working on implementing new measures to track aircraft in flight in real time. A special panel was considering a range of options including the production of equipment

especially designed to ensure real time tracking. There was a call for automated transponders after the events of September 2001 but no changes have been made as aviation community preferred flexible control, in case of malfunctions or electrical emergencies. Having said that it has to be admitted that it is unusual for an aircraft to be lost in the sea without leaving a trace. Somebody has said that the disappearance will be explained simply with a pair of boots on the ground. In a paper published October, London-based Inmarsat said that a new possible flightpath had been determined but a “significant uncertainty” remains regarding the exact location.

Actually this is not an unprecedented occurrence: on 30 January 1979 a Varig Boeing 707 freighter (PP-VLU) disappeared on Pacific Ocean while flying from Tokyo to Rio de Janeiro. The aircraft, with on board a double flight-deck crew of six to cover the long route, disappeared 30 minutes after departure when had reported 30.000 feet in a routine message. Cargo included 153 paintings by Manabu Mabe, returning from a Tokyo exhibition, valued at US\$1.24 million. Neither the wreck nor the paintings were ever found.

● **MH17** was a scheduled passenger flight from Amsterdam to Kuala Lumpur that crashed on 17 July, shot down, killing all 283 passengers and 15 crew on board. According to US intelligence sources, intelligence assembled in the five days after the crash pointed overwhelmingly to pro-Russian separatists having shot down the plane using a Buk surface-to-air missile fired from the territory which they controlled, same has been stated by German secret service. The Dutch Safety Board is leading the investigation and issued a preliminary report on 9 September while a final accident report is expected in 2015. According to the report based on the preliminary findings, *“there is no indications of any technical or operational issues were found with the aircraft or crew prior to the ending of the CVR and FDR at 13.20:03 hrs. The damage observed in the forward section of the aircraft appears to indicate that the aircraft was penetrated by a large number of high-energy objects from outside the aircraft. It is likely that this damage resulted in a loss of structural integrity of the aircraft, leading to an in-flight break up.”*



Photos from page 23 of the Dutch Safety Board Preliminary Report issued on September 2014

●A PIA, Pakistan International Airlines, Airbus A310-300, registration AP-BGN performing flight **PK-756** from Riyadh (Saudi Arabia) to Peshawar (Pakistan) with 178 passengers and 12 crew, was on short final to Peshawar's runway 35 at about 22:30L (17:30Z), descending through about 300 feet AGL, when the aircraft was hit by a number of bullets, the bullets penetrating the fuselage belly at the right hand side and entering the cabin. A female passenger was hit in her head and received fatal injuries, the purser received serious injuries and another flight attendant minor injuries. The crew continued for a safe landing on the runway.

●Preliminary information from the investigation of the **TransAsia** ATR72 crashed on 23 July shows that the crew abandoned the ILS for a non-precision approach. Weather conditions at Magong were critical with visibility down to 800 meters, tailwind gusting to 11 knots. Only 10 of the 58 occupants survived. The flight was travelling from Kaohsiung International Airport to Magong Airport, Penghu Island, Taiwan.

●About **Swiftair MD83**, which was operating an Air Algerie flight from Ouagadougou to Algiers and crashed on 24 July, French investigators determined that the aircraft entered in a rapid spiral descent. Unfortunately no information could be extracted from the cockpit voice recorder, while the FDR has allowed the investigators to draw up a flightpath. All 110 passengers and six crew died in the accident.

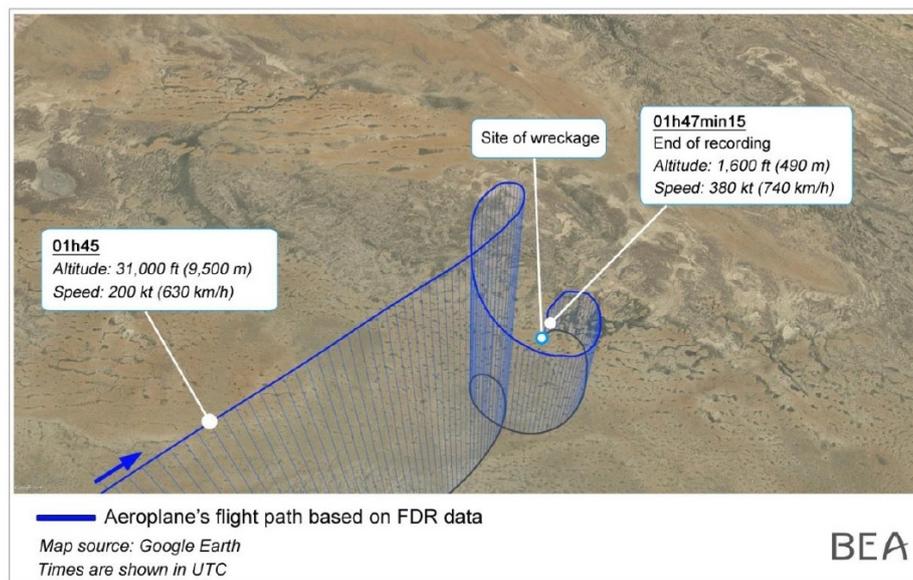


Image from page 5 of the BEA "Presentation of Information" on EC-LTV accident

●On 28 December **AirAsia Indonesia flight QZ8501** went missing with 162 onboard. The Airbus 320 (PK-AXC) departed Surabaya with destination Singapore. The aircraft was in the Indonesian FIR when the contact was lost more than 200 nautical miles southeast of the Singapore-Jakarta FIR boundary. Debris and bodies of dead passengers were found 30 December on the late evening 100 miles south west of Pangkalabun in the Java Sea, not distant from the last reported contact point. From the findings of bodies that do not have life jackets on, it was not a controlled ditching. At this point similarities with AF447 are emerging.

Investigation Reports referring to previous years

● Among investigation reports released during 2014 referring to previous years there is UPS flight 1354. The aircraft, an Airbus A300-600, crashed in a field short of runway in Birmingham, Alabama, on August 14, 2013. The captain and the first officer, the only occupants of the cargo flight, both lost their lives.

The National Transportation Safety Board, NTSB, on September 9 released a first report stating that the flight crashed because the crew continued an unstabilized approach into the airport. In addition, the crew failed to monitor the altitude and inadvertently descended below the minimum descent altitude when the runway was not yet in sight.

● On 1st December 2014 the Namibian investigators released a preliminary report on the accident occurred on 29 November 2013. On that date the Embreair ERJ-190 C9-EMC departed Maputo International Airport on a scheduled flight to Luanda, Angola. The flight operations were normal and the aircraft was cruising at FL380 (38000 ft).

The Namibian Radar Data playback revealed that at position EXEDU, which is a mandatory reporting point in the Gaborone FIR (Flight information region) the aircraft commenced a sudden descent from the cruising level of FL380. The aircraft's mode was switched from "altitude hold" to "flight level change" with no evidence of FMS's failure "therefore it is possible to infer that these transitions were manually commanded" says the Report. The aircraft crashed on the ground at Bwabwata National Park, Namibia, after 6 minutes and 42 seconds of descent. None of the 33 onboard survived. The captain, left alone in the cockpit, was 49 and his medical certificate was valid until September 2, 2014. Although the investigation have not brought to any conclusion, there is little in the preliminary report to counter suspicions that the flight was deliberately sabotaged by the captain.

Investigation reports referring to non fatal events

On September 2014 the Dutch Safety Board (DSB) has released the investigation report on a serious incident occurred to a Boeing 737 during the ILS approach to Eindhoven Airport. The date of the event was 31 May 2013.

A Ryanair Boeing 737-800 was radar vectored by air traffic control for an ILS approach flown under instrument meteorological conditions and with autopilot activated. The published approach was shortened by air traffic control, causing the aircraft to fly above the standard 3 degree glide slope area. The ILS was thus intercepted from above with help of the automated systems on board. During the glide slope intercept, the nose of the aircraft rose rapidly causing a stick shaker warning. After completion of the required stall warning recovery procedure, the crew performed a successful go-around and landed the aircraft uneventfully. Based on this investigation a second investigation was launched to pitch up upsets due to ILS false glide slope.

The DSB has identified a dangerous response of the autopilot to the instrument landing system (ILS): aircraft landing on the autopilot may receive a reversed signal from the ILS. Instead of the expected descent, an unexpected pitch-up will cause the aircraft to climb. The resulting loss of airspeed may cause the aircraft to stall.

The 3-degree glide slope is prescribed to ensure a stable and safe landing. However, if the aircraft approaches from a higher than usual altitude and aims to capture the 3-degree glide slope from above, it risks intercepting a 'false' glide slope. This term is used in aviation to denote the non-prescribed 6 and 9-degree glide slopes. The ILS may send a reversed signal to the aircraft when it crosses a false glide slope.

Findings from the incident revealed unusual characteristics of ILS signals that were not known. During the investigations it became clear that the Eindhoven event was not unique: four other incidents with autopilot commanded pitch-up during ILS approaches from above the 3 degree G/S have already occurred with different types of aircraft, in different airports, with different carr

CARGO/COURIER SERVICES

On 2014, we did not have accidents involving big airliners in cargo/courier services. The record shows five occurrences, four in Africa and one in Colombia with a total of 23 fatalities.

Table 3

Query Time Range - Year 2014 - Category: CGO							
Date	Aircraft	Airline	CO	Location	Area	Phase	O.B.
08/05/2014	DC3	Aliansa Colombia	HK	San Vicente Del Caguan, Colombia	SAM	En Route	5
02/07/2014	F50	Skyward International Aviation	5Y	Embakasi, Nairobi, Kenya	AFI	Climbing	4
23/08/2014	LET410	Doren Air Congo	9Q	Enroute Between Bukavu And Kama; Congo D.R.	AFI	En Route	4
30/08/2014	AN12	Ukraine Air Alliance	UR	Tamanrasset, Algeria	AFI	Climbing	7
31/08/2014	F27	Safari Express Cargo	5Y	Serengeti Park, Tanzania	AFI	En Route	3
Query Time Range - year 2014 - Total Occurrences: 5 - Total Fatalities: On Board 23 - On Ground 0							

On 2013 we had one accident to a Boeing 747 of National Air Cargo and another one to the UPS A300 as well as to other minor aircraft.

A team of safety experts has recently proposed to insert gels or other types of cooling materials between lithium batteries carried on commercial planes to reduce batteries' flammability and explosion risks. The focus is not on batteries carried by passengers, but on bulk shipments. On 2010 a UPS B747 crashed in Dubai, killing both pilots, after a fire started in the bulk containing also lithium batteries, this is only the last event of a long series.

TABLE 4) PERIOD 2001-2014 : SAFETY PER REGION OF CARRIERS' REGISTRATION

Region Carrier Registration	Take Off N°	Fatal accidents occurred	1 Event every take off :
EUROPE+EASTERN EUROPE	98.940.000	57	3.664.000 (excluding EEU)* 1.735.789 (including EEU)*
AFRICA	8.898.000	94	94.660
MIDDLE EAST	9.794.000	17	576.118
ASIA/PACIFIC	76.000.000	89	853.932
NORTH AMERICA	142.894.000	55	2.598.070
CAR AND SOUTH AMERICA	26.660.000	85	313.647

(Fatal accidents herein reported refer to scheduled, charter and cargo services excluding hostile acts)
To see the list of countries included under EEU (Eastern European Countries) please refer to www.air-accidents.com
<http://www.air-accidents.com/frame.asp?qr=stats&sh=tkp&id=1>

(*) 30 of 57 accidents occurred to EEU countries (former Eastern European countries)

Safety per region statistics cover 14 years from 2001 to 2014. Under this table number of fatal accidents occurred on each area is compared to number of take off (Icao data) produced in the regions. Africa, Central and South America are the less safer regions. Excluding Eastern European Countries, Europe is the safest region, if we include EEU it goes to second position after North America.

Caution must be observed evaluating this table. The number of departures refer to *all* airlines registered under that region, number of accidents, by contrast, refer to fatal events occurred under the geographical area even if the carrier's nationality is of another area.

E.g. under the 17 events reported in MID area is included the UPS accident (i.e. US carrier) occurred in Dubai on 2010.

TABLE 5): 2012:2014 SAFETY X PHASE OF FLIGHT

	N° of occurrences	%
TAKE OFF/INITIAL CLIMBING	4	15%
CRUISE	7	26%
APPROACH/LANDING	16	59%
PARKING	0	

(Scheduled services only, hostile acts excluded)

Table 5: More than half of all scheduled services' accidents (unlawful acts excluded) occurred in the approach and landing phase, including take-off about two-thirds of all accidents. Period considered is the triennium 2012:2014.

TABLE 6):

FIVE YEARS 2010:2014 – SAFETY X COUNTRY

FATAL ACCIDENTS VS TKP PRODUCED BY EACH COUNTRY

List shows the first 25 countries whose airlines performed more TKP Tonn-Km-performed (millions)

Accidents include scheduled, charter and cargo services excluding hostile acts

Country	TKP(million)	Fatal Accidents	Ratio
1) USA	800.538	18	1: 44.474
2) CHINA (Peking)	382.255	1	1: 382.255
3) UAE	181.048	0	0: 181.048
4) GERMANY	145.215	0	0: 145.215
5) UK	139.286	0	0: 139.286
6) KOREA SOUTH	106.777	2	1: 53.389
7) FRANCE	100.094	0	0: 100.094
8) JAPAN	96.883	0	0: 96.883
9) SINGAPORE	86.289	0	0: 86.289
10) RUSSIAN FED.	83.910	9	1: 9.323
11) AUSTRALIA	76.098	0	0: 76.098
12) CANADA	74.928	7	1: 10.704
13) NETHERLANDS	73.711	0	0: 73.711

14) INDIA	57.098	1	1: 57.098
15) TURKEY	56.859	0	0: 56.859
16) BRAZIL	55.535	2	1: 27.668
17) QATAR	52.165	1	1: 52.165
18) IRELAND	51.432	0	0: 51.432
19) THAILAND	48.680	0	0: 48.680
20) MALAYSIA	46.234	1	1: 46.234
21) SPAIN	45.372	1	1: 45.372
22) INDONESIA	38.139	5	1: 7.628
23) SWITZERLAND	29.732	0	0: 29.732
24) SAUDI ARABIA	27.528	0	0: 27.528
25) LUXEMBOURG	24.636	0	0: 24.636

Countries Rank is based on ratio between TKP performed by airlines belonging to a certain country (Icao data), with the fatal accidents occurred to that country's carriers. It is startling to note that more reliable countries are **the ones which have performed an high TKP value and have recorded zero accidents**. Rank includes the first 25 positions (Italy is on the 26th with a total of 24.214 tkp and zero accidents).

Country with the highest production rate and zero accident is United Arab Emirates, followed by Germany and U.K.

Countries with a low ratio due to fatal accidents are highlighted in red. As usual several factors must be considered in evaluating the rank. Accidents involving Canadian registration mostly refer to domestic services performed by DHC6/DHC3 or Cessna 208 operating on local airfield. Also for USA the high number of accidents is influenced by events referring to courier and local charter services.

As ICAO data refer to all commercial services, number of accidents herein reported cover scheduled, cargo and charter services. **The complete list showing the rank of all countries is reported under www.air-accidents.com ; statistics section, "TKP".**

- On December 2014 the European Commission has updated for the 24th time the European list of airlines subject to an operating ban or operational restrictions within the European Union — better known as "the EU air safety list". The updated list includes all airlines certified in 21 states, for a total of 308 airlines fully banned from EU skies: Afghanistan, Angola, Benin, Republic of the Congo, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Gabon (with the exception of 3 airlines which operate under restrictions and conditions), Indonesia (with the exception of 5 airlines), Kazakhstan (with the exception of one airline which operates under restrictions and conditions), Kyrgyzstan, Liberia, Libya, Mozambique, Nepal, Philippines (with the exception of two airlines), Sierra Leone, São Tomé and Príncipe, Sudan and Zambia. The list also includes two individual airlines: Blue Wing Airlines (Suriname) and Meridian Airways (Ghana), for an overall total of 310 airlines. Additionally, the list includes 10 airlines which are subject to operational restrictions. These airlines can only fly to the Union with specific aircraft types: Air Astana (Kazakhstan), Afrijet, Gabon Airlines and SN2AG (Gabon), Air Koryo (Democratic People's Republic of Korea), Airlift International (Ghana), Air Service Comores (the Comoros), Iran Air (Iran), TAAG Angolan Airlines (Angola) and Air Madagascar (Madagascar).

●In the 2014 when **in the world** we have had 928 casualties in air accidents, **in Italy** the number of death in road accidents is 3,400(*)

(*)actually this number refers to 2013 and it is the latest data released on June 2014.

*Further info on each accident as well as various statistics can be found in our database www.air-accidents.com
We recommend the users to discover the remarkable utilities of our tool “Search and compare”*

AAR- Safety Newsletter (1/15), 2 January 2015