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Safety Survey 2012

A good year in global Aviation Safety

OVERVIEW

The following report presents a global Aviation Safety Analysis for the calendar year 2011¹. According to Flight Safety Foundation (FSF) and Aviation Safety Network (ASN) database, during 2011 a total of 113 hull loss multi-engine civil airlines accidents (fatal and non-fatal) and occurrences were recorded. Over the year 2011 the ASN recorded a total of 28 fatal airliner accidents, resulting in 507 fatalities and 14 ground fatalities. The following Table 1 presents the 28 airliner's fatal accidents breakdown with some additional IATA general remarks:

<i>Year 2011² : A fatal hull loss multi engine civil airlines accident's breakdown and additional remarks</i>		
Fatal accidents according to flight phase	Fatal accidents according to flight nature	Additional IATA General Remarks³
0 Take off	15 Scheduled passenger	The 2011 total number of accidents is 2% lower than 2010
2 Initial Climb	8 Non scheduled passenger	37% of all accidents involved IATA members
11 Enroute	5 Cargo	The number of accidents involving Western-built Jet Hull Losses decreased by 35%
11 Approach	0 Ferry/Positioning	The 2011 number of fatalities decreased by 38% compared to 2010
4 Landing	0 Training /Other	The 2011 global Western-built jet accident rate of 0.37 is the best ever recorded
<i>Worst fatal hull loss accident for 2011</i>		
<p><i>The worst 2011 accident occurred on 09 Jan 2011. An Iran Air Boeing 727 passenger jet was damaged beyond repair in an accident about 8 km from Urmia (Orumiyeh) Airport (OMH), Iran.</i></p> <p><i>There were 94 passengers and eleven crew members on board. The airplane operated on flight IR277 from Tehran-Mehrabad Airport (THR) to Urmia (Orumiyeh) Airport (OMH).</i></p> <p><i>It left Tehran at 18:15, after a delay of over two hours due to severe weather at the destination.</i></p> <p><i>77 people were killed, 26 people were injured and two went missing. The Deputy Minister of Roads and Transportation indicated that the accident occurred during a forced landing outside the airport⁴.</i></p>		

Table 1: Year 2011 accident's breakdown and additional remarks.

1. Military accidents, corporate jet accidents, hijackings (and/or other criminal occurrences) are not included in the retrieved data.

2. Data's Source: Aviation Safety Network, an exclusive service of Flight Safety Foundation.

3. IATA, 2011 Safety Performance.

4. Aviation Safety Network (ASN) Database.

Compared to the ten years worldwide average 2001 – 2010 (i.e. year average 31 fatal accidents / 855 fatalities), in year 2011 there has been a further improvement for aviation safety (i.e. years average 30 fatal accidents / 758 fatalities). The following chapters I, II and III present a more detailed statistical analysis of the year 2011 and compares them with last decade's fatal accidents/occurrences, while chapter IV adds an IATA's fruitful perspective.

I. STATISTICAL INFORMATION REGARDING THE GLOBAL AVIATION SAFETY DATA

a. Overall Data for years 2001-2011

The following table and charts present useful statistical information regarding global aviation safety. The overall data of worldwide fatal airliner hull-loss accidents and fatalities per year (2001-2011) are presented in Table 2. These data do not include corporate jet and military transport accidents.

<i>Fatal Airliner Hull -loss accidents and fatalities per year (2001-2011)</i>												
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Fatal Hull Loss	28	37	27	28	36	27	26	32	30	29	28	
Fatalities	768	1101	684	431	1062	889	750	577	757	831	507	

Table 2: Worldwide Fatal Airliner Hull -loss accidents and fatalities per year (2001-2011).

b. Run Charts for years 2001-2011

The run charts in the following figures 1 and 2 illustrate respectively the airliner fatal hull loss accidents and fatalities for the years 2001-2011.

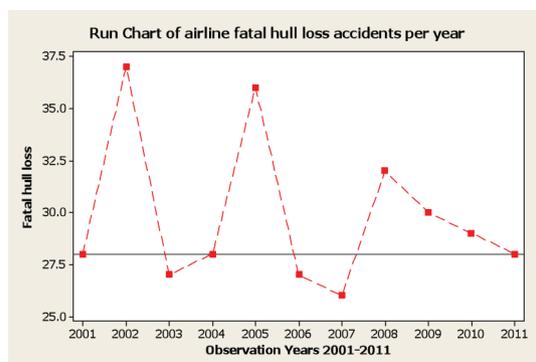


Figure 1: Airliner Hull Loss Accidents.

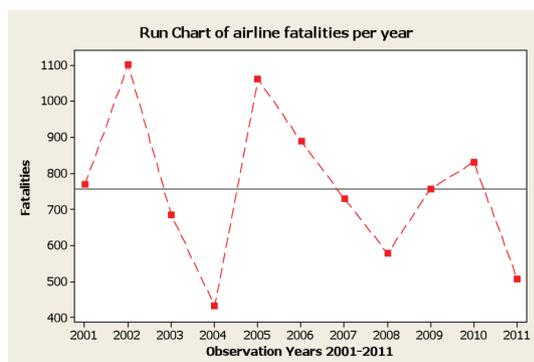


Figure 2: Airliner Fatalities.

c. Moving Average Charts for years 2001-2011

The next moving average charts illustrate that the worldwide airliner fatal hull loss accidents and fatalities for year 2011 are slightly below the moving average of 29.82 accidents and 758 fatalities for the years 2001-2011, as shown in figures 3 and 4 respectively.

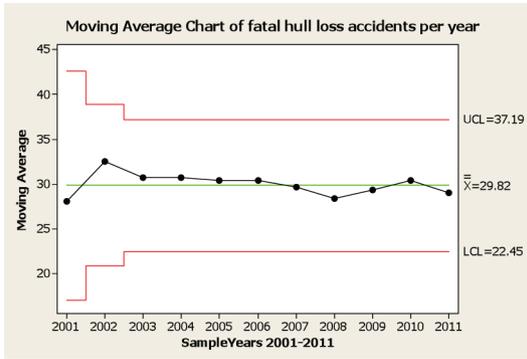


Figure 3: Airliner Hull Loss Accidents Average .

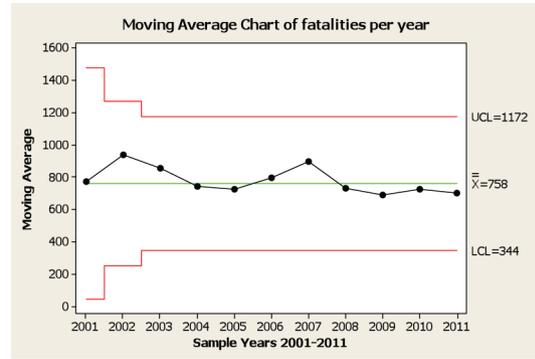


Figure 4: Airliner Fatalities Average.

d. Trend Analysis Plots for years 2001-2011

The following trend analysis plots in figures 5 and 6 illustrate correspondingly a continuing declined slope for worldwide airliner fatal hull loss accidents and fatalities for the years 2001-2011 .

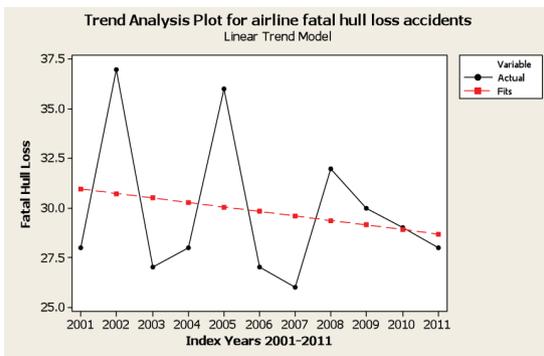


Figure 5: Trend Analysis - Hull Loss Accidents .

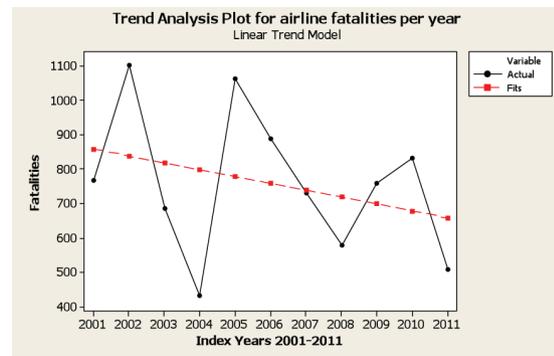


Figure 6: Trend Analysis - Fatalities .

II. STATISTICAL INFORMATION ON GLOBAL AVIATION SAFETY ACCORDING TO FLIGHT PHASE

a. Statistical Information regarding the Take Off flight phase

i. Overall Data / Take Off

The following table and plots presents useful statistical information regarding the Take off flight phase. The overall data of worldwide fatal airliner hull-loss accidents and fatalities at Take off flight phase per year (2001-2011) are presented in Table 3. The data does not include corporate jet and military transport accidents.

<i>Fatal Airliner Hull –loss accidents and fatalities per year (2001-2011), regarding the Take Off flight phase</i>											
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fatal Hull Loss	3	2	3	2	1	1	1	4	3	0	0
Fatalities	131	17	165	13	7	49	1	162	9	0	0

Table 3: Worldwide Fatal Hull –loss accidents/fatalities regarding the take off phase (2001-2011).

ii. Trend Analysis Plots / Take Off

Besides, the next figures 7 and 8 illustrate respectively the trend analysis and down warded plots of worldwide airliner fatal hull loss accidents and fatalities regarding the Take Off flight phase, for years 2001-2011.

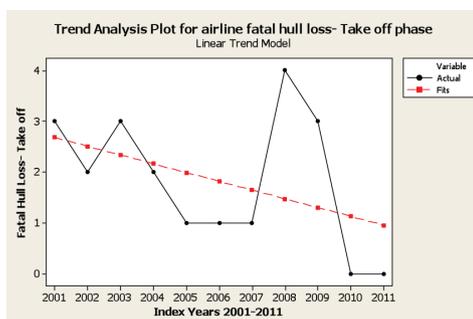


Figure 7: Fatal Hull Loss Accidents –Take Off.

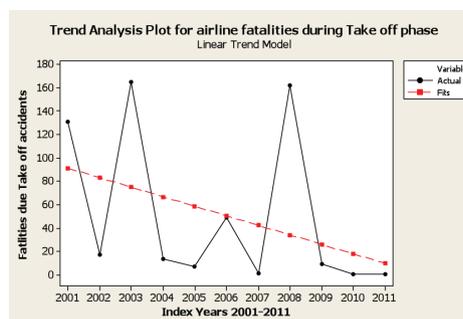


Figure 8: Fatalities – Take Off.

b. Statistical Information regarding the Initial Climb flight phase

i. Overall Data / Initial Climb

The following table and plots presents useful statistical information regarding the Initial Climb flight phase. The overall data of worldwide fatal airliner hull-loss accidents and fatalities at Initial Climb flight phase per year (2001-2011) are presented in Table 4. The data does not include corporate jet and military transport accidents.

<i>Fatal Airliner Hull –loss accidents and fatalities per year (2001-2011)</i>											
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fatal Hull Loss	3	2	3	2	1	1	1	4	3	0	0
Fatalities	131	17	165	13	7	49	1	162	9	0	0

Table 4: Worldwide Fatal Hull –loss accidents/fatalities regarding the initial climb phase (2001-2011).

ii. Trend Analysis Plots / Initial Climb

The next figures 9 and 10 illustrate the trend analysis plots of worldwide airliner fatal hull loss accidents and fatalities regarding the Initial Climb flight phase respectively for years 2001-2011.

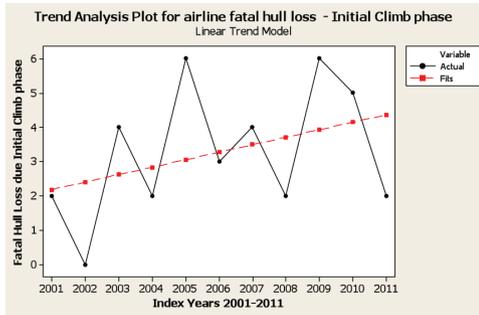


Figure 9: Fatal Hull Loss Accidents –Initial Climb.

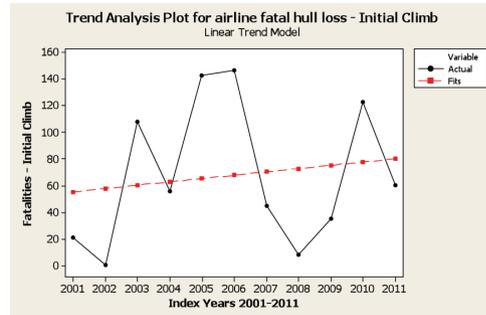


Figure 10: Fatalities – Initial Climb.

c. Statistical Information regarding the Enroute flight phase

i. Overall Data / Enroute

The following table and plots presents useful statistical information regarding the Enroute flight phase. The overall data of worldwide fatal airliner hull-loss accidents and fatalities at Initial Climb flight phase per year (2001-2011) are presented in Table 5. The data does not include corporate jet and military transport accidents.

<i>Fatal Airliner Hull –loss accidents and fatalities per year (2001-2011), Regarding the Enroute flight phase</i>											
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fatal Hull Loss	9	14	9	8	14	14	11	12	8	10	11
Fatalities	383	484	62	185	678	397	283	135	461	171	99

Table 5: Worldwide Fatal Hull –loss accidents/fatalities regarding the enroute phase (2001-2011).

c. Statistical Information regarding the Enroute flight phase

ii. Trend Analysis / Enroute

The next figures 11 and 12 illustrate respectively the trend analysis plots of worldwide airliner fatal hull loss accidents and fatalities regarding the Enroute flight phase, for years 2001-2011.

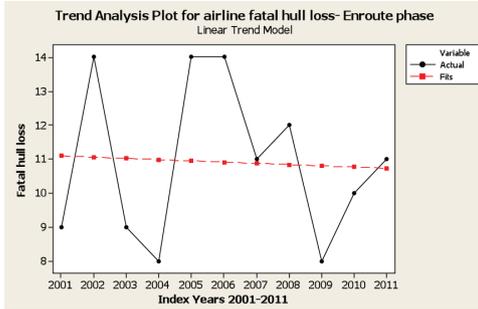


Figure 11: Fatal Hull Loss Accidents – Enroute.

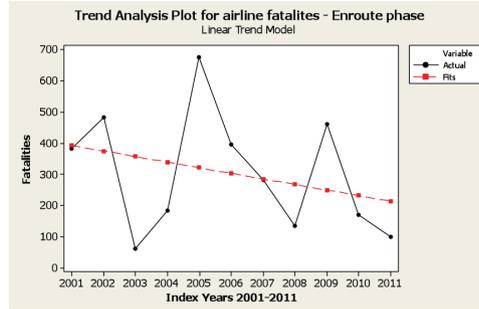


Figure 12: Fatalities – Enroute.

d. Statistical Information regarding the Approach flight phase

i. Overall Data / Approach

The following table and plots presents useful statistical information regarding the Approach flight phase. The overall data of worldwide fatal airliner hull-loss accidents and fatalities at Approach flight phase per year (2001-2011) are presented in Table 6. The data does not include corporate jet and military transport accidents.

<i>Fatal Airliner Hull –loss accidents and fatalities per year (2001-2011), Regarding the Approach flight phase</i>											
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fatal Hull Loss	12	17	9	10	8	3	3	10	7	9	11
Fatalities	231	589	336	106	114	136	103	208	222	317	230

Table 6: Worldwide Fatal Hull –loss accidents/fatalities regarding the approach phase (2001-2011).

ii. Trend Analysis Plots – Approach

The next figures 13 and 14 illustrate respectively the trend analysis plots of worldwide airliner fatal hull loss accidents and fatalities regarding the Approach flight phase, for years 2001-2011.

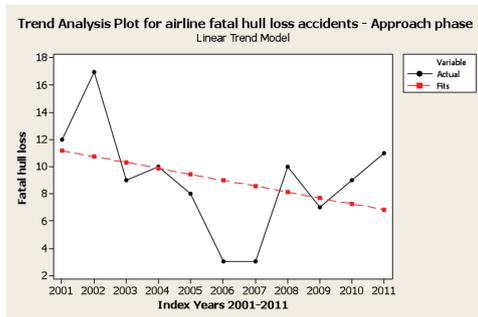


Figure 13: Fatal Hull Loss Accidents –Approach.

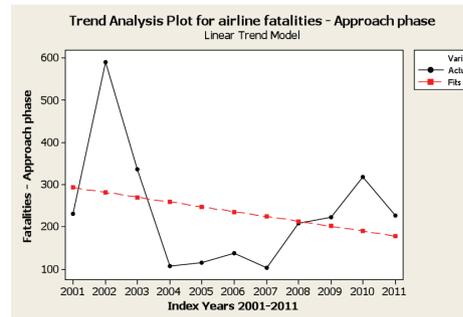


Figure 14: Fatalities – Approach.

e. Statistical Information regarding the Landing flight phase

i. Overall Data / Landing

The following table and plots presents useful statistical information regarding the Landing flight phase. The overall data of worldwide fatal airliner hull-loss accidents and fatalities at landing flight phase per year (2001-2011) are presented in Table 7. The data does not include corporate jet and military transport accidents.

<i>Fatal Airliner Hull –loss accidents and fatalities per year (2001-2011), regarding the Landing flight phase</i>											
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fatal Hull Loss	1	2	0	3	4	5	7	4	4	5	4
Fatalities	1	6	0	66	114	160	318	64	28	210	118

Table 7: Worldwide Fatal Hull –loss accidents/fatalities regarding the landing phase (2001-2011).

ii. Trend Analysis Plots / Landing

The next figures 15 and 16 illustrate respectively the trend analysis plots of worldwide airliner fatal hull loss accidents and fatalities regarding the Landing flight phase, for years 2001-2011.

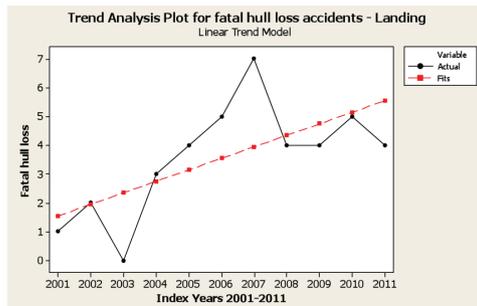


Figure 15: Fatal Hull Loss Accidents –Landing.

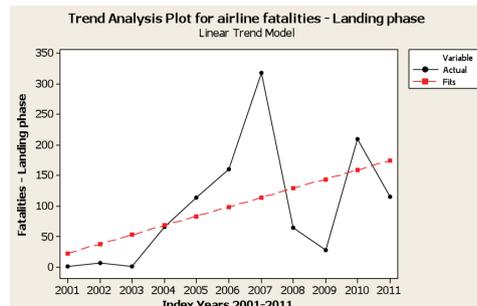


Figure 16: Fatalities – Landing.

III. STATISTICAL INFORMATION ON GLOBAL AVIATION SAFETY ACCORDING TO FLIGHT NATURE⁵

a. Statistical Information regarding the Domestic & International Scheduled Passenger flight accidents.

i. Overall Data / Domestic and International Scheduled Passenger

The following table and plots presents useful statistical information regarding the Domestic & International Scheduled Passenger flight accidents.

5. Due to small data numbers Ferry/Positioning and Training flight nature accidents are not statistically examined.

The overall data of worldwide fatal airliner hull-loss accidents and fatalities of this nature per year (2001-2011) are presented in Table 8. The data does not include corporate jet and military transport accidents.

<i>Fatal Airliner Hull –loss accidents and fatalities per year (2001-2011), regarding the Domestic & International Scheduled Passenger flight accidents</i>											
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fatal Hull Loss	9	13	8	8	14	11	11	11	11	15	15
Fatalities	573	743	524	227	744	809	642	459	676	754	370

Table 8: Worldwide Fatal Hull –loss accidents/fatalities regarding the Domestic & International Scheduled Passenger flight accidents (2001-2011).

ii. Trend Analysis Plots / Domestic and International Scheduled Passenger

The figures 17 and 18 that follow illustrate respectively the trend analysis plots of worldwide airliner fatal hull loss accidents and fatalities regarding the Domestic & International Scheduled Passenger flight accidents, for years 2001-2011.

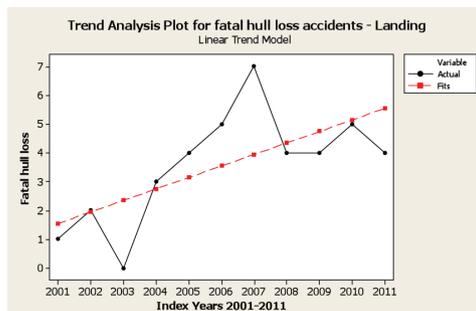


Figure 17: Fatal Hull Loss Accidents –Scheduled.

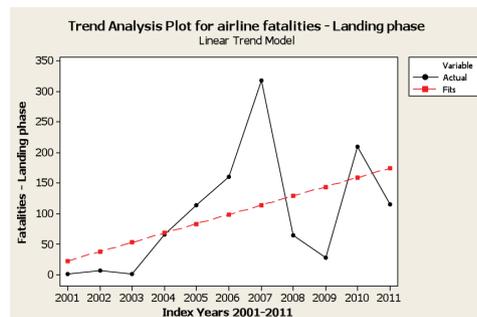


Figure 18: Fatalities – Scheduled.

III. STATISTICAL INFORMATION ON GLOBAL AVIATION SAFETY ACCORDING TO FLIGHT NATURE⁶

b. Statistical Information regarding the Domestic & International Non Scheduled Passenger flight accidents.

i. Overall Data / Domestic and International Non Scheduled Passenger

The following table and plots presents useful statistical information regarding the Domestic & International Non Scheduled Passenger flight accidents. The overall data of worldwide fatal airliner hull-loss accidents and fatalities of this nature per year (2001-2011) are presented in Table 9. The data does not include corporate jet and military transport accidents.

Fatal Airliner Hull –loss accidents and fatalities per year (2001-2011), regarding the Domestic & International Non Scheduled Passenger flight accidents

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fatal Hull Loss	7	4	5	3	5	3	2	7	5	2	8
Fatalities	122	145	99	151	208	18	45	66	14	32	104

Table 9: Worldwide Fatal Hull –loss accidents/fatalities regarding the Domestic & International Non Scheduled Passenger flight accidents (2001-2011).

ii. Trend Analysis Plots / Domestic and International Non Scheduled Passenger

The next figures 19 and 20 illustrate respectively the trend analysis plots of worldwide airliner fatal hull loss accidents and fatalities regarding the Domestic & International Non Scheduled Passenger flight accidents for years 2001-2011.

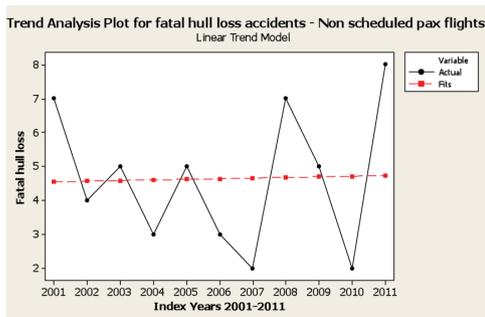


Figure 19: Fatal Hull Loss Accidents –Non Scheduled.

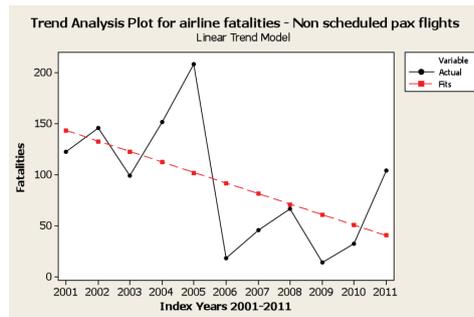


Figure 20: Fatalities – Non Scheduled.

c. Statistical Information regarding Cargo flight accidents

i. Overall Data / Cargo

The following table and plots presents useful statistical information regarding the Cargo flight accidents. The overall data of worldwide fatal airliner hull-loss accidents and fatalities of this nature per year (2001-2011) are presented in Table 10. The data does not include corporate jet and military transport accidents.

Fatal Airliner Hull –loss accidents and fatalities per year (2001-2011), regarding the Cargo flight accidents

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Fatal Hull Loss	5	9	7	13	9	6	7	10	10	8	5
Fatalities	18	51	32	43	40	26	56	29	45	36	33

Table 10: Worldwide Fatal Hull –loss accidents/fatalities regarding the Cargo flight accidents (2001-2011).

ii. Trend Analysis Plots / Cargo

The next figures 21 and 22 illustrate respectively the trend analysis plots of worldwide airliner fatal hull loss accidents and fatalities regarding the Cargo flight accidents, for years 2001-2011.

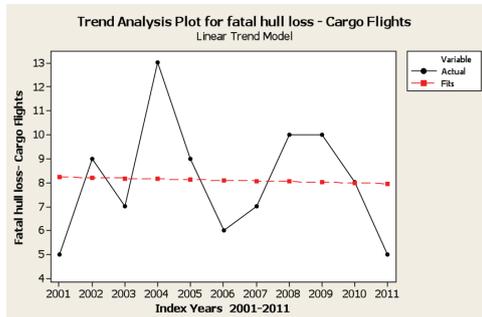


Figure 21: Fatal Hull Loss Accidents –Cargo.

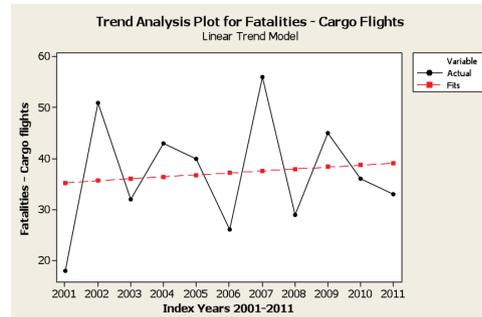


Figure 22: Fatalities – Cargo.

IV. AN IATA'S FRUITFUL PERSPECTIVE FOR WESTERN-BUILT JET AIRCRAFT⁶

a. Overview analysis

The International Air Transport Association (IATA) published the aviation safety performance for 2011 showing that this year's accident rate was the lowest in aviation history. With a total of 92 IATA accidents/occurrences, the following Table 11 presents the final IATA's aviation safety perspectives of year 2011 along with a short comparison with previous years 2009 and 2010.

<i>IATA's absolute numbers</i>			
Accident's breakdown	Year 2009	Year 2010	Year 2011
Hull loss accidents for Western – built jet aircraft	19	17	11
Total Accidents (Eastern and Western built)	90	94	92
Fatal accidents (all aircraft types)	18	23	22
Fatalities	685	786	486
IATA members accidents	28	26	34
IATA members hull loss rate	0.62	0.25	0.41
Runway excursions (of all accidents)	26% (actual 23)	21% (actual 20)	18% (actual 17)

Table 11: IATA's absolute numbers.

According to IATA, the 2011 global accident rate⁷ (measured in hull losses per million flights) was 0.37. That is equal to one accident for every 2.7 million flights. This is a significant improvement of the 0.61 rate recorded in 2010 (one accident for 1.6 million flights). The 2011 rate was the best ever recorded in aviation history, for Western built jet aircrafts and still marginal above the world's accidents rate of 0.25 for year 2009. Compared to 10 years ago, the accident rate has been cut 39% from the rate recorded in 2001.

b. Regional perspective

The following figure 23 presents the regional differences in the Western built jet hull loss accident rates⁸ for years 2010 and 2011 respectively.

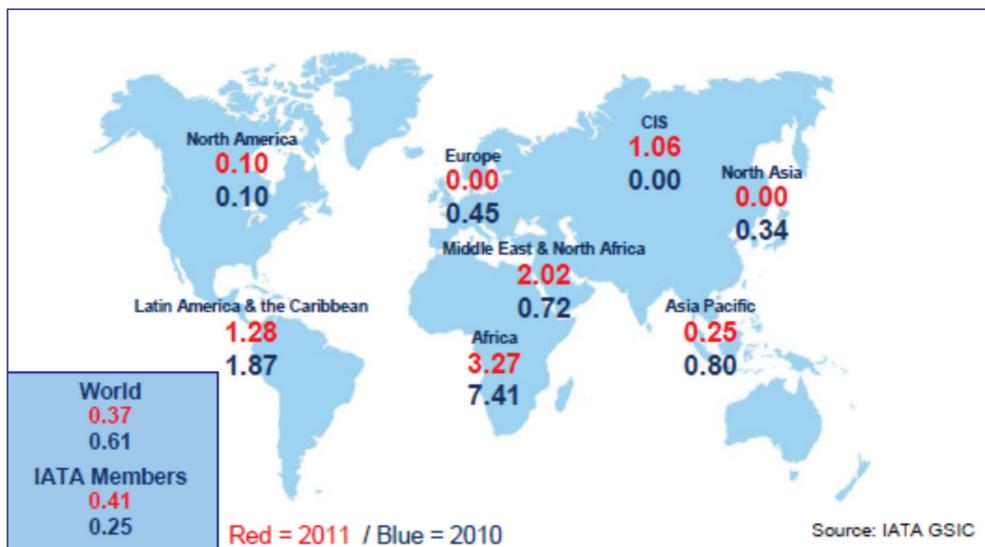


Figure 23: Regional differences in the Western built jet hull loss accident rate.

In 2011, Africa had a significant reduction of the number of total accidents compared to 2010. Middle East & North Africa and North America also had less number of total accidents than in 2010. Asia-Pacific, the Commonwealth of Independent States, Europe, Latin America & the Caribbean had a higher number of accidents than in 2010 and the total number of accidents in North Asia remained unchanged⁹.

Asia-Pacific, Europe and North Asia recorded improvements compared to their performance in 2010, while North America stayed the same. Latin America and the Caribbean performed better than 2010 (1.28 in 2011 vs.1.87 in 2010), but were still almost 3.5 times worse than the global average.

The rate for the Middle East and North Africa region worsened to 2.02 from 0.72 in 2010. The rate for Africa improved by 56 per cent to 3.27 from 7.41 in 2010 but still was the worst performing region in the industry. IOSA carriers in Africa had a zero hull loss rate in 2011.

7. The intention of the flight is limited to normal commercial aviation activities, specifically scheduled/charter passenger or cargo service. Executive jet operations, positioning or maintenance/test flights are all excluded, multi-engine, turbine powered, and has a certificated Maximum Take-Off Weight (MTOW) of at least 5,700KG (12,540 lbs) for Turboprops and 15,000KG (33,000 lbs) for Jets.

8. IATA, *ibid*.

9. *Ibid*.

CONCLUSIONS

Although the tables, charts and plots speak quite clearly, a couple of comments are worth pointing out for the year 2011 (by number of fatal/hull loss accidents):

- ▶ **Overall, airliner aviation safety has achieved an improvement regarding 2001-2010 accident averages.**
- ▶ **According to Flight Safety Foundation the year 2011 the second safest year by number of fatalities and the third safest year by number of accidents.**
- ▶ **According to IATA the year 2011 was the safest year ever, by total accident's rate.**
- ▶ **The estimated average for years 2001-2011 is 29.82 fatal multi-engine civil airliner accidents, resulting in an average of 758 fatalities.**
- ▶ **There is a significant fatal accident rate improvement (worldwide).**
- ▶ **Although there was only a slight reduction in the number of fatal accidents the fatalities number fell significantly.**
- ▶ **About 1 airliner fatal accident happened for every 1.52 million flights worldwide.**
- ▶ **A significant percentage of accidents occurred on the enroute and approach phases. However, the overall 2001-2011 trend is continuing to go down.**
- ▶ **Initial climb and Landing phase accidents/fatalities trends are still remaining upwards.**
- ▶ **There is no significance trend change for cargo fatal accidents and fatalities.**
- ▶ **More than 55% of fatal accidents occurred with scheduled passenger flights.**
- ▶ **No airliner fatal accident occurred in Europe and North Asia. Over the last decade, Europe and North America still remains as the safest civil airliner continent while Africa, once again had the worst accident rate record in the world. In the words of the ex Secretary General of AEA (Association of European Airlines) Ulrich Schulte-Strathaus: "Last year was the best year for European safety ever. It is a fantastic achievement. It is an indication that safety is not jeopardised by high degrees of intense competition and there is a significant overcapacity on the market. Safety is not been compromised and that is very good news".**
- ▶ **Unfortunately, runway excursions were again the most common cause of accidents (fatal, non fatal and by number of casualties, all included). However, the absolute number of runway excursions decreased from 23 in 2009 to 17 in 2011.**
- ▶ **The accident rate for airlines on the IATA Operational Safety Audit (IOSA) registry was 52 per cent better than for non-IOSA operators. According to Günther Matschnigg, Senior Vice President, Safety, Operations & Infrastructure of IATA (International Air Transport Association) "the IOSA registered airlines outperformed the the non-IOSA registered airlines by 52%." He added that "2/3 out of all flights are done by airlines that have come through the IOSA program" He emphatically stressed that "the safety performance of the airline industry was remarkable, it was the lowest in history".**
- ▶ **The majority of airline jet aircrafts involved in fatal hull loss accidents in 2011 were old aircrafts (i.e. B727s, B737-200, Tu-154 and Yak-42).**

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