



International Civil Aviation Organization

Third Meeting of the Asia Pacific Regional Aviation Safety Team (APRAST/3)
(Bangkok, Thailand, 7 – 10 May 2013)

Agenda Item 3: Review RASG APAC/2 and APRAST/2 Conclusions, the work of its subsidiary bodies and related safety initiatives

AP-SRP AD-HOC WORKING GROUP REPORT

(Presented by the SRP Ad-Hoc Working Group)

SUMMARY

The Safety Reporting and Programme Ad-Hoc Working Group has completed the development of the draft Asia/Pacific Annual Safety Report for 2002 to 2011. The draft report is circulated at APRAST/3 for review.

1. INTRODUCTION

1.1 The Asia Pacific Safety Reporting and Programme Ad-Hoc Working Group (AP-SRP AWG) was formed to gather information from a variety of available sources, determine the main aviation safety risks in the Asia Pacific (APAC) region, and above all, develop the Asia Pacific Regional Safety Report. The Working Group convened the first meeting from 13–15 June 2012, and made an action plan for the production of the first Asia/Pacific Annual Safety Report. They also amended the Terms of Reference for the group (see attached).

1.2 At APRAST/2, the report format was circulated and that the first edition of the safety report will only focus on reactive information. Since then a large amount of data and information were gathered in different formats from Boeing, CAST, ICAO, and IATA and processed by the processing team, championed by Bangladesh with technical assistance from CTA COSCAP SEA. The analysing group (championed by Singapore and assisted by Australia and China) further re-generated the data from ICAO's integrated Safety Trend Analysis and Reporting System (iSTARS) to ensure completeness and consistency of information.

1.3 The development of the draft report has now been completed and Australia, champion for the editing and publishing group, is well into the final phase of the report generation.

2. KEY SUMMARIES OF REPORT

2.1 The collated data and information was compared with ICAO GASP (2007) targets i.e. **ICAO Safety Targets for 2008-2011:**

- a) Reduce the number of fatal accidents and fatalities worldwide irrespective of the volume of air traffic.
- b) Achieve a significant decrease in accident rates, particularly in regions where these remain high.
- c) No single ICAO region shall have an accident rate* more than twice the worldwide rate by the end of 2011. (* *Based on a five-year sliding average*)

2.2 APAC region met the ICAO second and third safety target. For the second target, APAC accident rate in 2011 stands at 2.44 per million departures compared with the global rate of 4.3 per million departures. For the third target, APAC 5 year sliding average accident rate as of end 2011 is 3.43 per million departures compared with the global rate of 4.13 per million departures. These achievements are largely a result of favourable improvements from 200 to 2011 where there has been a significant decrease in the number of accidents in APAC region. APAC did not meet ICAO first target relating to reduction of the number of fatal accidents and fatalities worldwide irrespective of the volume of air traffic.

2.3 Though the number of fatalities dropped from 441 in 2010 to 48 in 2011, APAC had constantly 4 fatal accidents in 2010 and 2011 without any reduction. Furthermore, the fatalities for 2010 and 2011 combined made up for almost 50% of the total fatalities experienced between 2002 and 2011.

2.4 At the sub regional level, South East Asia (SEA) region had the highest number of accidents and fatal accidents between 2002 and 2011. SEA region also has the highest 5 year sliding average accident rate of 6.22 per million departures as of 2011, higher than the global number of 4.13 per million departures. At the same time SEA region also had the highest number of fatal accidents from 2002 to 2011, representing 36% of the fatal accidents experienced in APAC during the same period.

2.5 Analysis of the contributed data and information concluded that the top three frequent accident categories in APAC are;

- Controlled Flight into Terrain
- Runway Safety (specifically runway excursion)
- Loss of Control in-flight

2.6 As such APRAST current focus on safety enhancement initiatives on CFIT, RS and LOC-I for APAC are in the right direction. The analysis further reviewed that there is no clear indications which other accident category is trending upwards but noted that the next most common accident category seen between 2002 and 2011 is System/Component Failures.

3. MOVING FORWARD

3.1 It is anticipated that the lessons learned and procedures developed from the production of the first report will be documented to enable subsequent Annual Safety Reports to be developed. The next edition of the report would also endeavour to include proactive information, such as USOAP results of APAC States/Administrations.

3.2 As the quality of the analysis is very much dependent on the processed information and also the availability of the raw data the SRP AWG will allocate more time for the processing of the contributed data and information. This would allow for detailed clarifications with the various

contributors to ensure some level of coherency between the contributed data. SRP AWG would also plan for a session for the processing group and analysing group to sieve through the contributed information together and work on the presentation of the information. In doing so, both group will be able to cross pollinate ideas in safety data analysis.

4. **ACTION BY THE MEETING**

4.1 The meeting is invited to:

- a) Note the key summaries of the draft Asia Pacific Annual Safety Report (2002-2011) and recommend the draft report be presented to RASG APAC for approval;
- b) Note the proposed actions by AP-SRP AWG moving forward and comment as required; and
- c) Note the revised TORs of AP-SRP AWG and submit it to the next RASG for approval.

**REVISED TERMS-OF-REFERENCE
ASIA PACIFIC – SAFETY REPORTING AND PROGRAMME AD HOC WORKING
GROUP (AP-SRP AWG)**

A) Purposes of the AP - SRP AWG:

- Gather safety information from different available sources to determine the main aviation safety risks in the Asia and Pacific Regions;
- Develop and organize an Annual Safety Report in three main Sections, one for each safety information category:
 - a) Reactive Information;
 - b) Proactive Information; and
 - c) Predictive Information.
- Based on the risk areas identified in the annual report, make recommendations to the RASG-APAC, through the APRAST, for safety enhancement initiatives; and
- ~~—Prepare a draft progress report to the ANC based on the Annual Safety Report, the safety enhancement initiatives and detailed implementation plans.~~

B) Membership:

- The 40 States/Administrations accredited to the ICAO APAC Office and Industry Partners

C) Roles and Responsibilities:

- ICAO HQ – Support;
- ICAO APAC Regional Office – Support; and
- Working group Partners – Provide technical expertise and collaborate in the development of the report as requested by the Champions.

— END —

ANNUAL SAFETY REPORT

ASIA PACIFIC REGION

(2002 - 2011)

Disclaimer:

“This document is disseminated under the sponsorship of the Regional Aviation Safety Group – Asia Pacific (RASG-APAC) in the interest of information exchange. The RASG-APAC assumes no liability for its contents or use thereof.”

Contents

1. Foreword.....	3
2. Introduction	5
3. Executive Summary.....	7
4. Safety Information	9
4.1 Approach for Analysis	9
4.2 Reporting Culture and Accidents in the Asia Pacific Region	11
4.3 Reactive Safety Information	11
4.3.1 Worldwide/Regional Accident Information - ICAO	12
4.3.2 Worldwide/Regional Accident Information - IATA	17
4.3.3 Worldwide Accident Categories Information – CAST/Boeing.....	20
4.3.4 Most Frequent Accident Categories within Asia Pacific – ICAO iSTARS.....	21
4.3.5 Most Frequent Accident Categories within Asia Pacific – IATA.....	24
4.3.6 Most Frequent Accident Categories within Asia Pacific – CAST/Boeing.....	25
4.3.7 Top 3 frequent Accident Categories within Asia Pacific	27
4.3.8 Other Emerging Accident Category	27
4.4 Proactive Safety Information - reserved.....	28
4.5 Predictive Safety Information - reserved	28
5 Final Conclusions.....	28
List of Acronyms.....	29
Appendix A – CAST/Boeing list of Hull Loss and/or Fatal Accidents – APAC Commercial Jet Fleet 2002 to 2011	31
Appendix B – ICAO iSTARS list of Occurrences attributed to APAC from 2002 to 2011	32

1. Foreword

Regional Aviation Safety Group – Asia Pacific (RASG-APAC) Background

The establishment of Regional Aviation Safety Group – Asia Pacific (RASG-APAC) was endorsed at the 47th DGCA conference as the focal point to ensure harmonization and coordination of efforts aimed at reducing aviation safety risks for the Asia Pacific region.

RASG-APAC supports implementation of the ICAO Global Aviation Safety Plan (GASP) and the Industry Safety Strategy Group (ISSG) Global Aviation Safety Roadmap (GASR). In addition, it was the first multi-regional body in the world unifying government aviation agencies and industry that is established to address flight safety issues.

RASG-APAC membership includes representatives from the 40 States/Administrations that are associated with the ICAO Asia Pacific regional office.

RASG-APAC has established the Asia Pacific Regional Aviation Safety Team (APRAST) to implement its work programme. The objective of the APRAST includes is to recommend interventions to the RASG-APAC which will reduce aviation risks. To do so, APRAST will

- review, for application within the Asia and Pacific regions, existing safety interventions which have already been developed through the efforts of well-established, multinational safety initiatives;
- review, for application within the Asia and Pacific regions, the best practices and metrics defined in the GASP/GASR, and
- review regional accidents, significant incident trends and other areas of local concern to determine unique issues which may warrant locally-developed interventions. The focus and priority for APRAST will be to introduce, support, and develop actions, which have the potential to effectively and economically reduce the regional aviation risk.

Supporting the works of the APRAST, are two Ad Hoc working group formed in ;

- a) APRAST – Accident Investigation Ad-Hoc working group (APRAST – AIG AWG); and
- b) APRAST – Asia Pacific Safety Reporting Programme Ad-Hoc working group (APRAST – AP SRP AWG).

The APRAST-AIG AWG is to review the Global Aviation Safety Plan/Roadmap (GASP/R) GSI 3 /Focus Area 3, “Impediments to Reporting of Errors and Incidents”, and GSI 4/Focus Area 4, “Ineffective Incident and Accident Investigation” and propose the necessary recommendations to addressing this two focus areas. The APRAST-AIG will:

- review, for application within Asia and Pacific regions, existing policies and procedures related to the reporting of errors and incidents; and accident investigation, which have already been developed;
- review, for application within Asia and Pacific regions, the best practices and metrics defined in Global Safety Initiative/ Focus Area 3 and 4 of the GASP/GASR; and
- review, regional accidents and significant incident trends and other areas of local concern to determine unique issues that may warrant locally developed policies and procedures to effectively capture information for study and for the development of recommendations. The focus and priority for APRAST-AIG AWG will be to introduce, support, and develop actions, which have the potential to effectively and economically reduce the regional aviation accident risk.

The APRAST-AP SRP AWG is to gather safety information from different available sources to determine the main aviation safety risks in the Asia and Pacific Region. This will include the development of an Annual Safety Report comprising of

- i) Reactive Information;
- ii) Proactive Information; and
- iii) Predictive Information.

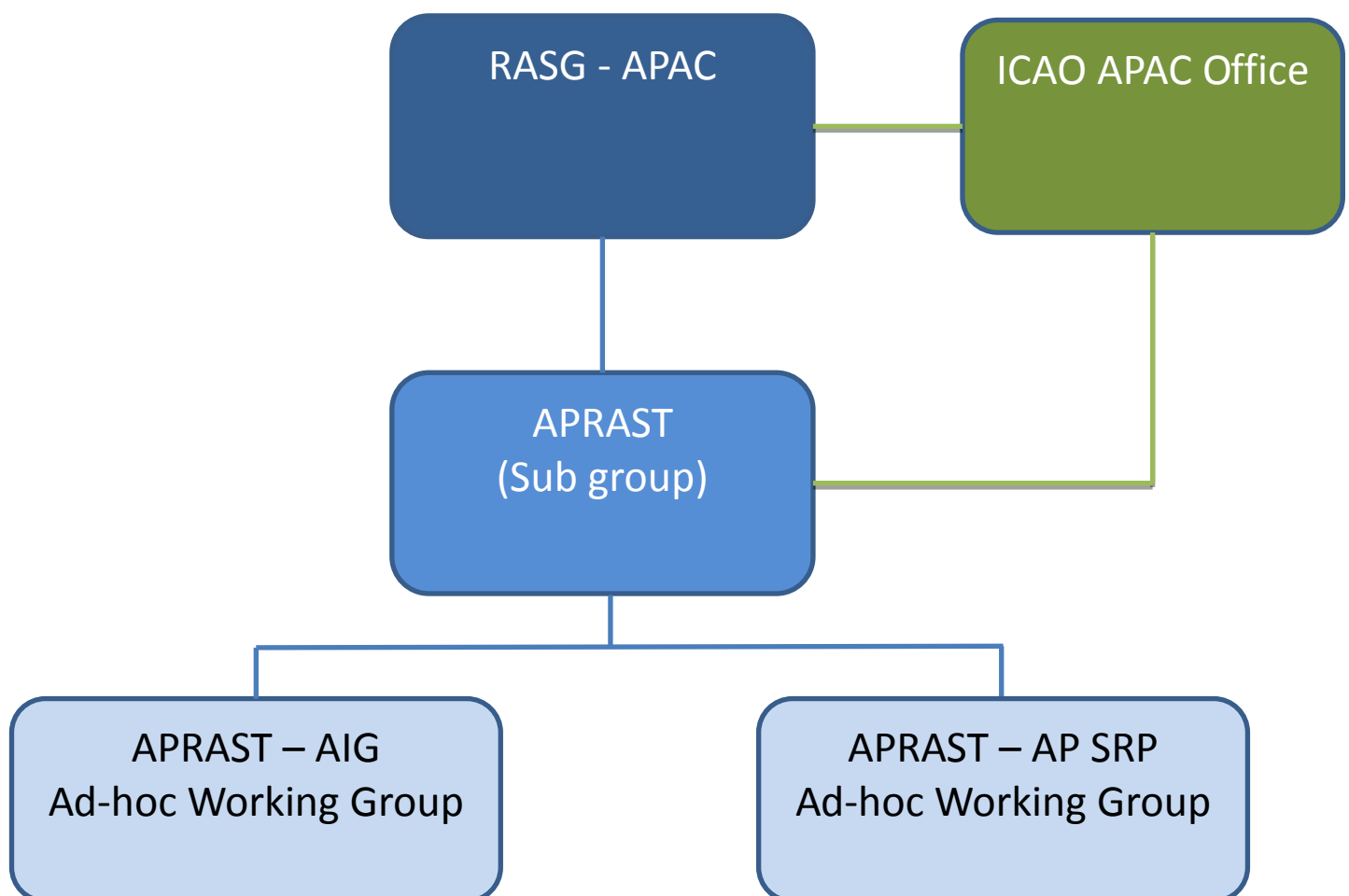
Based on the risk areas identified in the annual report, APRAST-AP SRP AWG will make recommendations to the RASG-APAC, through the APRAST, for safety enhancement initiatives.

The organisation structure of RASG-APAC and its subsidiary setups are depicted in Figure 1.1. International Civil Aviation Organisation (ICAO) Asia Pacific regional office in Bangkok provides the secretariat support necessary for RASG-APAC to function.

The 2011 Annual Safety Report is developed by the APRAST-AP SRP AWG and published by RASG-APAC, is the first exclusive Safety Report for the Asia Pacific Region based on data provided by ICAO, CAST, Boeing and IATA. The analysis of this aviation safety data was completed through in-kind contributions of aviation safety personnel from RASG-APAC member States/Administration and industry partners. This report is envisioned to be an annual publication providing updated yearly aviation safety information.

Copies of this report can be downloaded from the following web site; www.icao.bangkok.int. For clarification or additional information you send in your request to this email contact; rasgapac@bangkok.icao.int.

Figure 1.1 - RASG-APAC Organisation



2. Introduction

The objective of the Regional Aviation Safety Group – Asia Pacific (RASG-APAC) Annual Safety Report is **to gather safety information** from different stakeholders and **to identify the main aviation safety risks** in the Asia Pacific Region in order to identify possible actions for enhancing aviation safety in a coordinated manner.

The safety information presented in this report is based on the compilation and analysis of data provided by ICAO, International Air Transport Association (IATA), Commercial Aviation Safety Team (CAST) and Boeing.

This first edition of the RASG-APAC Annual Safety Report will only focus on **Reactive** Information relating to hull loss and fatal accidents (both on ground and in flight) involving commercial aeroplanes and operated by or registered with the members States/Administrations of RASG-APAC, i.e. States/Administrations that is associated with the ICAO Asia Pacific Regional Office.

In the future, this RASG-APAC Annual Safety Report will also include the compilation and analysis of Proactive and Predictive information for the Asia Pacific Region so that effective mitigation can be directed towards the prevention of occurrence of an accident.

In this report the top three accident categories, in accordance with ICAO/CAST taxonomy, related to fatality risks and other significant emerging safety hazards in the Asia Pacific Region are identified.

Figure 2.1 - Asia Pacific Region associated to ICAO – Asia Pacific Regional Office

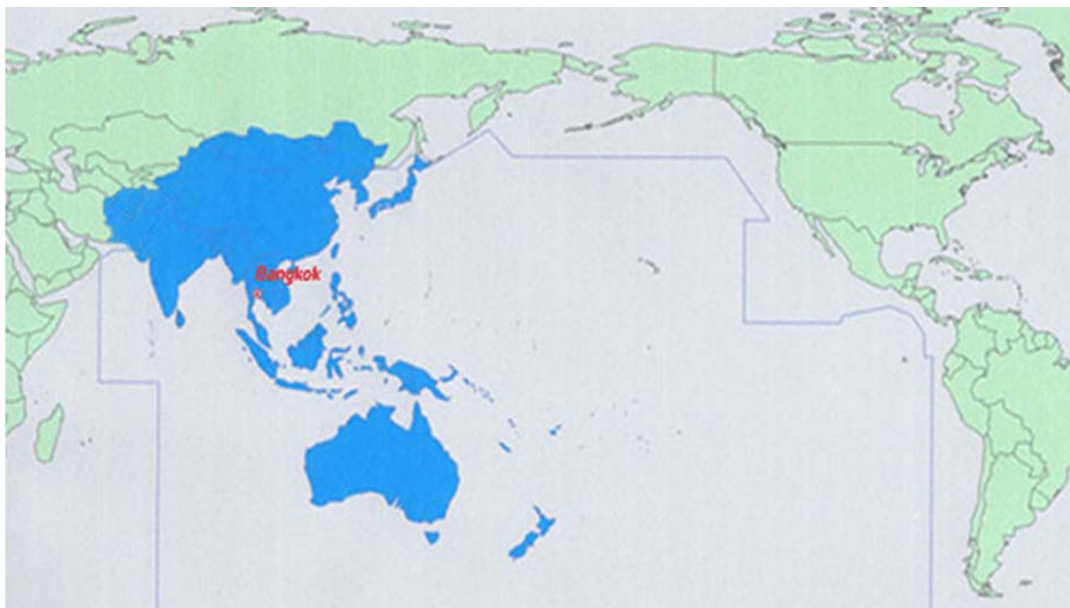


Table 2.1 – Member States/Administration associated to ICAO – Asia Pacific Office

Afghanistan	Australia	Bangladesh
Bhutan	Brunei Darussalam	Cambodia
China	Hong Kong, China	Macao, China
Cook Islands	Democratic People's Republic of Korea	Fiji
India	Indonesia	Japan
Kiribati	Lao People's Democratic Republic	Malaysia
Maldives	Marshall Islands	Micronesia (Federated States of)
Mongolia	Myanmar	Nauru
Nepal	New Zealand	Pakistan
Palau	Papua New Guinea	Philippines
Republic of Korea	Samoa	Singapore
Solomon Islands	Sri Lanka	Thailand
Timor Leste	Tonga	Vanuatu
Viet Nam		

3. Executive Summary

The RASG-APAC Annual Safety Report – First Edition collates and presents the analysis made by the Group about aviation accidents in the Asia Pacific (APAC) Region by extracting safety information collected from ICAO, IATA, CAST and Boeing.

The analysis of this information showed a strong correlation in the following categories as the top fatal accident categories for the 2002-2011 period:

1. Controlled Flight Into Terrain
2. Runway Safety (specifically runway excursion)
3. Loss of Control In-flight

No other obvious emerging accident categories were identified during the analysis. However, the next possible accident category that could be dealt with relates to System/Component Failures which has seen the next highest occurrence other than the 3 accident categories already identified.

Table 3.1 Aviation Accidents and Fatalities in Asia Pacific Region between 2002 and 2011.

ASIA PACIFIC	Accidents ¹	Fatal Accidents	Fatalities on board	Fatalities on ground
2002-2011 avg.	20	3.2	93.3	4.9
2010	21	4	441	0
2011	19	4	48	0

In the APAC region the number of accidents in 2011 was 19, 2 accidents less than that recorded in 2010, a slight improvement. However the number of fatalities for 2010 and 2011 was almost half the total number of fatalities recorded between 2002 and 2011.

The compiled information was then compared with ICAO GASP (2007) targets i.e. **ICAO Safety Target for 2008-2011;**

1. Reduce the number of fatal accidents and fatalities worldwide irrespective of the volume of air traffic.
2. Achieve a significant decrease in accident rates, particularly in regions where these remain high.
3. No single ICAO region shall have an accident rate* more than twice the worldwide rate by the end of 2011. (** Based on a five-year sliding average*)

APAC has met target 2 and 3. For target 2, APAC accident rate in 2011 stands at 2.44 per million departures compared with the global rate of 4.3 per million departures. For target 3, APAC 5 year sliding average accident rate as of end 2011 stands at 3.43 per million departures compared with the global rate of 4.13 per million departures.

These achievements are largely a result of favourable improvements from 2009 to 2011 where there has been a significant decrease in the number of accidents in APAC region. In 2008, the APAC accident rate was 4.34 per million departures, just a shade lower than the global rate of 4.6 per million departures, reducing to 2.44 per million departures in 2011.

¹ Source: ICAO iSTARS. Accidents as defined in ICAO Annex 13.

Unfortunately, from 2008 to 2011, the percentage of global fatal accidents attributed to APAC region has increased from 11% to 25%. Furthermore, the number of fatalities for 2010 and 2011 made up almost 50% of the total fatalities that were experienced between 2002 and 2011. This recent poor performance in reducing the number of fatalities further distanced APAC region from meeting ICAO Safety Target 1.

Moving forward, information relating to accidents involving a States or Administration associated so continue to be tracked and collated for comparison of APAC safety performance against that of the ICAO GASP targets. In particular those accidents that involve fatalities will be given more focus since APAC region did not meet ICAO Safety Target 1 relating to reduction of the number of fatal accidents and fatalities irrespective of the volume of air traffic. APAC States or Administration should continue to, in accordance to obligations under ICAO Annex 13, notify and submit relevant information relating to the occurrence of accidents to ICAO. This will ensure information taken from ICAO iSTARS can be more comprehensive and resultant analysis will be more realistic.

4. Safety Information

Safety information is an important input for any safety management process. With adequate and accurate safety information, hazards can be identified through robust processing and analysis of this safety information. Identified hazards and its associated risk can then be prioritized and be dealt with when appropriate mitigation actions are taken.

RASG-APAC can be viewed as a regional safety management process or a regional safety program (RSP) in the same way a State Safety Program (SSP) is a national safety management process and a Safety Management System is a service provider's safety management program. The utilisation of safety information provided by ICAO, IATA, CAST and Boeing assist the region in identifying where the areas of greater safety concerns are and thus be able to collectively focus the effort in addressing these identified areas.

The following sections show the results of the analysis of safety information.

4.1 Approach for Analysis

The approach for the analysis is to process the accident information provided by ICAO, IATA, CAST and Boeing, involving commercial aeroplane operated by or registered with the members States/Administrations of RASG-APAC. The analysis will firstly focus on accident rate from the global perspective zooming into Asia Pac and then further zooming into sub regions of North Asia, South Asia, South East Asia and Pacific. The next step will be to identify accident categories that are prevalent in the APAC region. The above process is depicted in Figure 4.1.

The grouping of States/Administrations into the 4 sub regions will firstly be based on their membership with the respective COSCAP and if there is not affiliated membership with any sub regional body, the grouping of that State/Administration will be based on geographical association. The results of the analysis for each of the sub-region can therefore be used by the various COSCAP or sub-regional grouping to identify work programmes. Moreover, each of COSCAP would have mechanisms in place to provide assistance in implementation and training.

The grouping of the States/Administrations to the 4 sub regions is as such;

North Asia (NA) sub region

- States/Administrations which are members of COSCAP-NA
 - China
 - Democratic People's Republic of Korea
 - Mongolia
 - Republic of Korea
- Japan

South Asia (SA) sub region

- States/Administrations which are members of COSCAP-SA
 - Afghanistan
 - Bangladesh
 - Bhutan
 - India
 - Maldives
 - Nepal
 - Pakistan
 - Sri Lanka

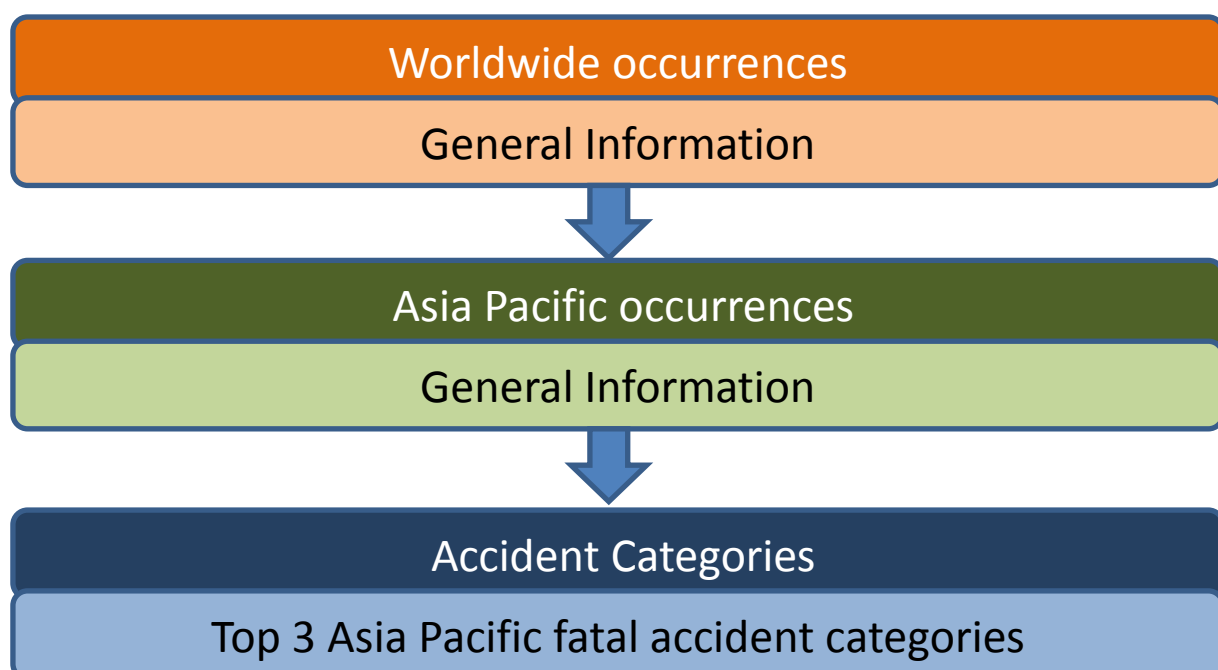
South East Asia (SEA) sub region

- States/Administrations which are members of COSCAP-SEA
 - Brunei Darussalam
 - Cambodia
 - Hong Kong, China
 - Macao, China
 - Indonesia
 - Lao People's Democratic Republic
 - Malaysia
 - Myanmar
 - Philippines
 - Singapore
 - Thailand
 - Timor Leste
 - Viet Nam

Pacific sub region

- States/Administrations which are members of Pacific Aviation Safety Office (PASO)
 - Australia
 - Cook Islands
 - Fiji
 - Kiribati
 - Nauru
 - New Zealand
 - Papua New Guinea
 - Samoa
 - Solomon Islands
 - Tonga
 - Vanuatu
- Marshall Islands
- Micronesia (Federated States of)
- Palau

Figure 4.1 - Approach for Analysis



4.2 Reporting Culture and Accidents in the Asia Pacific Region

Note: This report will not focus on the analysis of the reporting culture of APAC region. This will be included in the next edition.

4.3 Reactive Safety Information

As defined in the second edition of the ICAO Document 9859, “**Reactive method**” responds to events that have already happened, such as incidents and accidents. Once an incident or accident has occurred, information relating to the incident or accident is collected. As such reactive safety information simply relates to safety information of an accident or incident. In the context of this report, the reactive safety information that are analysed are those relating to an accident.

The reactive safety information analysed below are obtained from ICAO, IATA, CAST and Boeing. The organisation of the this information will be based on the sources and in the case of CAST and Boeing’s supplied information, they will be discussed together since Boeing is also a member of the CAST and those information supplied by CAST would have somewhat incorporated those of Boeing.

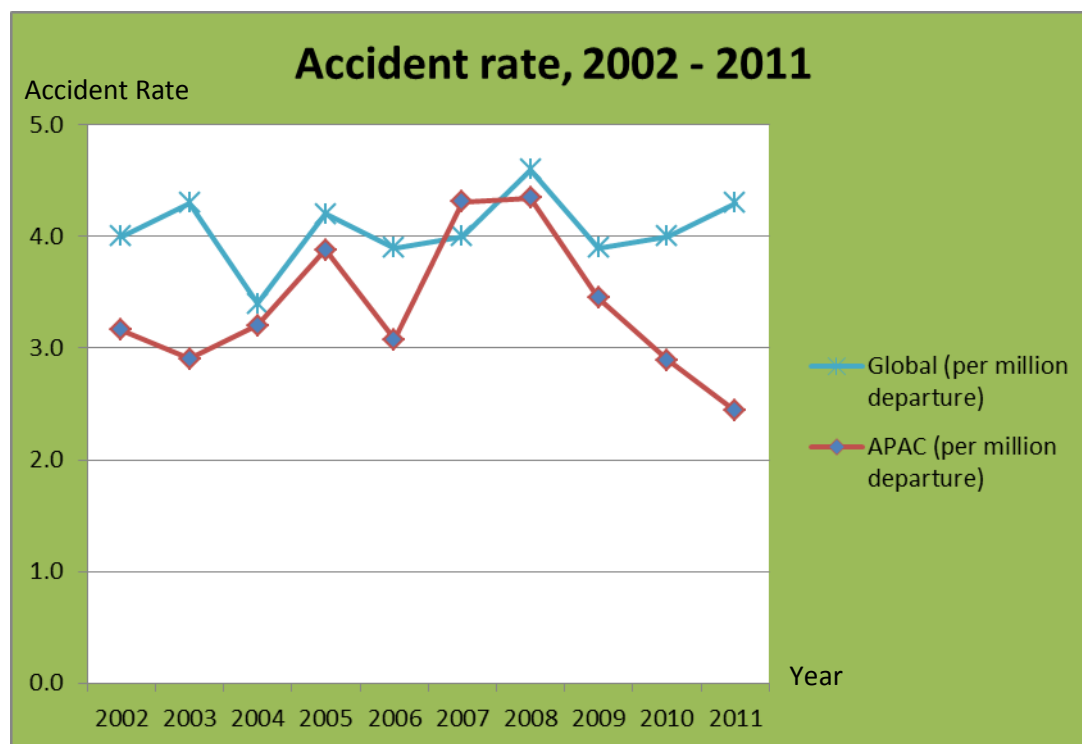
To note:

1. ICAO’s reactive safety information is derived from the iSTARS, which is essentially a depository of accident information supplied by its Member States’ investigation body. The definition of accident is based on ICAO Annex 13.
2. IATA’s reactive safety information relates to accidents which results in Hull Loss, Fatalities and substantial damages to aeroplanes.

4.3.1 Worldwide/Regional Accident Information - ICAO

Through the ICAO iSTARS, the global accident rate, APAC accident rate and the accident rate for the 4 APAC sub regions were computed.

Chart 4.3.1.1 – Global Accident Rate versus APAC Accident Rate



From the above chart, it can be noted generally APAC accident rate has been below that of the global accident, except for year 2007. Most noticeably, for the last 4 years APAC accident rate has been improving, with a downward trend, at an encouraging rate while the global accident rate is on the rise. On the average, APAC accidents made up 18% of the total global accidents.

Based on raw data, APAC accounted for around 15% of the total number of global accidents while contributing close to 26% of the world's total departures as of 2011. The 2011 figures contrast sharply with that of 2007 when APAC accidents number was 22% of the global number of accidents but only contributed to slightly more than 20% of the global traffic. Taking reference to the ICAO GASP (2007) safety target number 2, achieving a significant decrease in accident rates, particularly in regions where these remain high, APAC would have met this target even though APAC region may not be considered a region with particularly high accident rate.

Chart 4.3.1.2 – 5 years Sliding Ave of Global Accident Rate and APAC Accident Rate

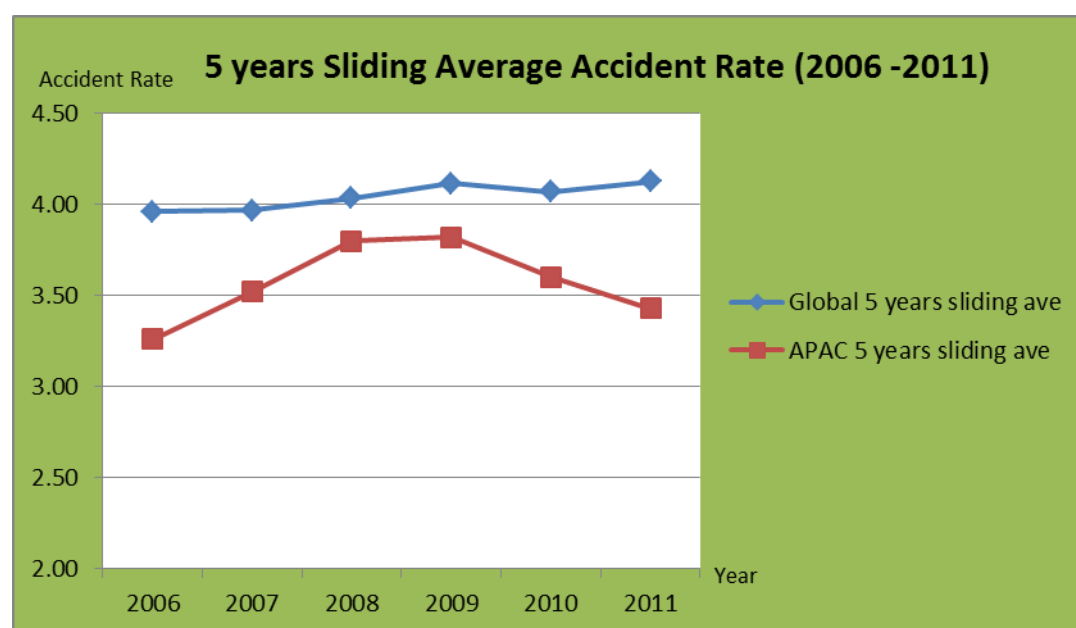
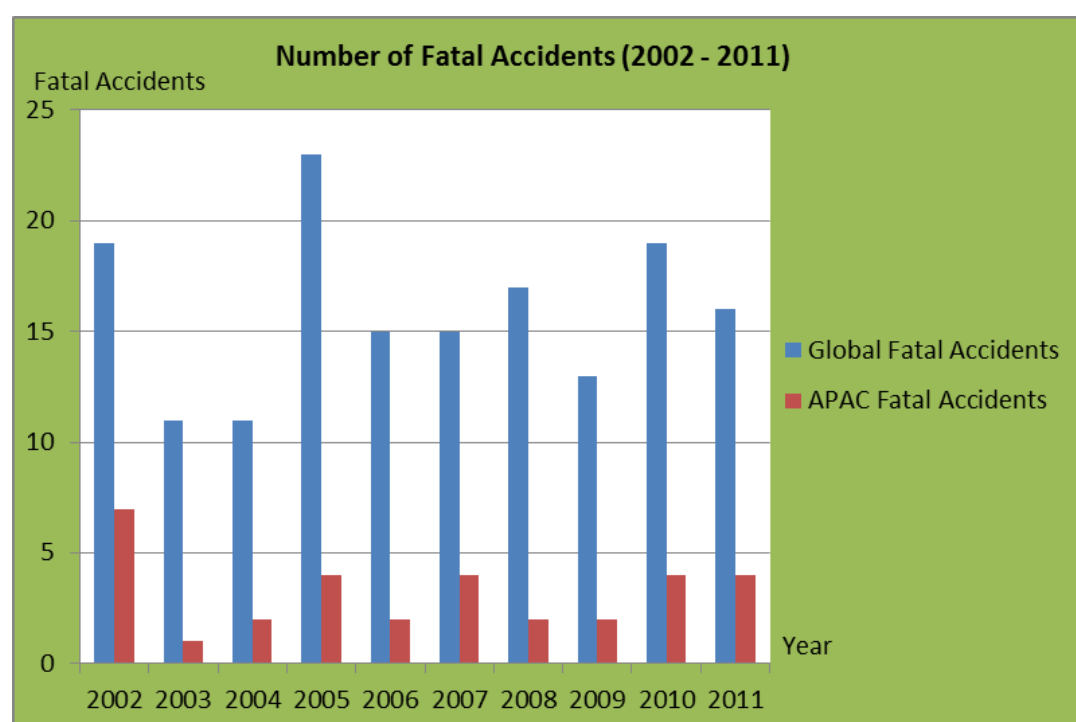


Chart 4.3.1.2 mirroring the positive improvement as seen for the last four years in the previous chart. Based on this chart, it can be concluded that APAC as a whole has met ICAO GASP (2007) safety target number 3; where no region will have an accident rate, based on five-year sliding average, more than twice the global rate by the end of 2011.

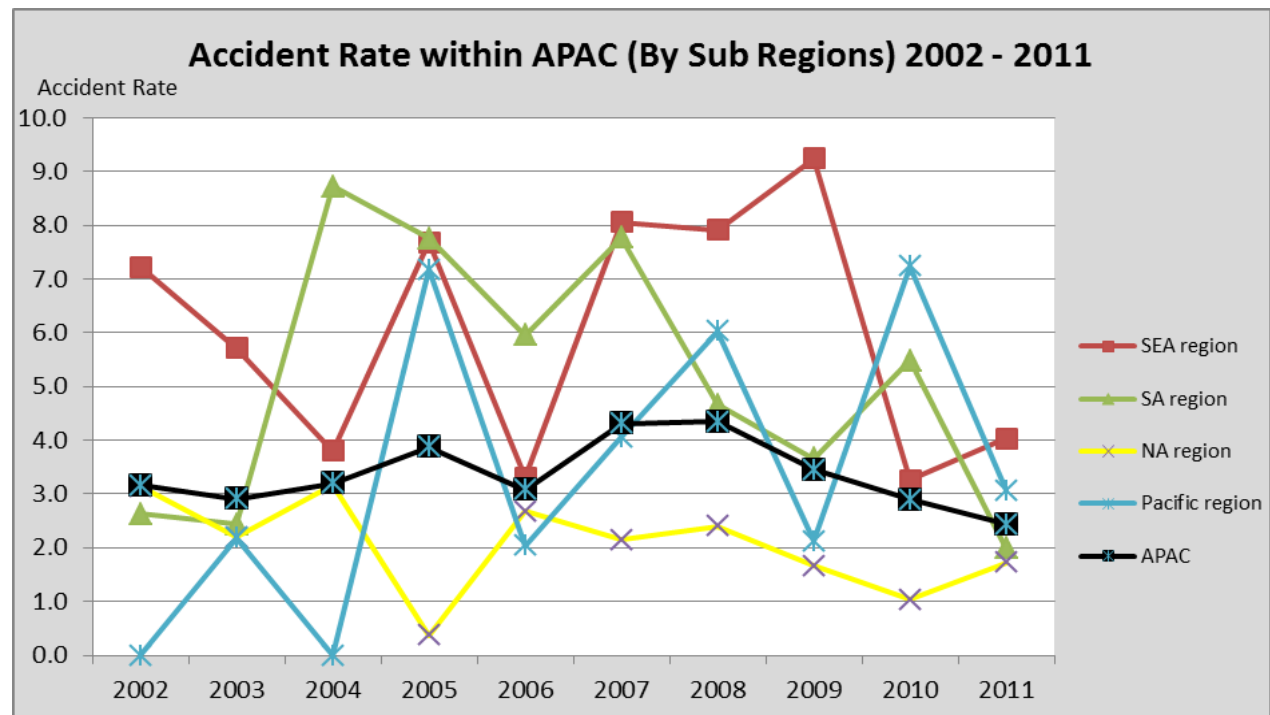
Chart 4.3.1.3 – Number of Global Fatal Accidents and APAC Fatal Accidents



Over the last 10 years, APAC number of fatal accidents accounts for an average of 20% of the global fatal accidents. More significantly, in the recent 5 years from 2007 to 2011, there has not be any

significant reduction in the number of fatal accidents. Thus while in terms of total accident number and rate, APAC is doing comparately well against the global numbers, the number of fatal accidents has not seen any improvement. Taking reference to the ICAO GASP (2007) safety target number 1, to reduce the number of fatal accidents and fatalities worldwide irrespective of the volume of air traffic, APAC has not met this stated GASP target. Thus one of the focuses of this report will be on fatal accidents and the determination of the prevalent accident categories.

Chart 4.3.1.4 – Accident Rates within APAC by sub regions.



Note: Under the iSTARS, the departure statistics for Hong Kong, China, and Macao, China, are embedded in China's departures. As a result the accident rate shown for SEA should be slightly lower than indicated in the above chart while for NA region it should be slightly higher.

Chart 4.3.1.4 presents a picture which indicates that the occurrences of accidents within each sub region are rather sporadic and between sub regions there is no clear interrelations. However, it can be seen for the last 6 years the accident rate for NA region remains rather stable and on the downward trend.

Applying a 5 year moving average to the accident rates of each sub region, as shown in Chart 4.3.1.5 below, all sub regions experience a downward trend except for the Pacific sub region. Also notably, SEA region has the highest 5 years moving average accident rate within the APAC which stands at 6.22 per million departures as of 2011.

Chart 4.3.1.5 – 5 years Sliding Average Accident Rate sub regions.

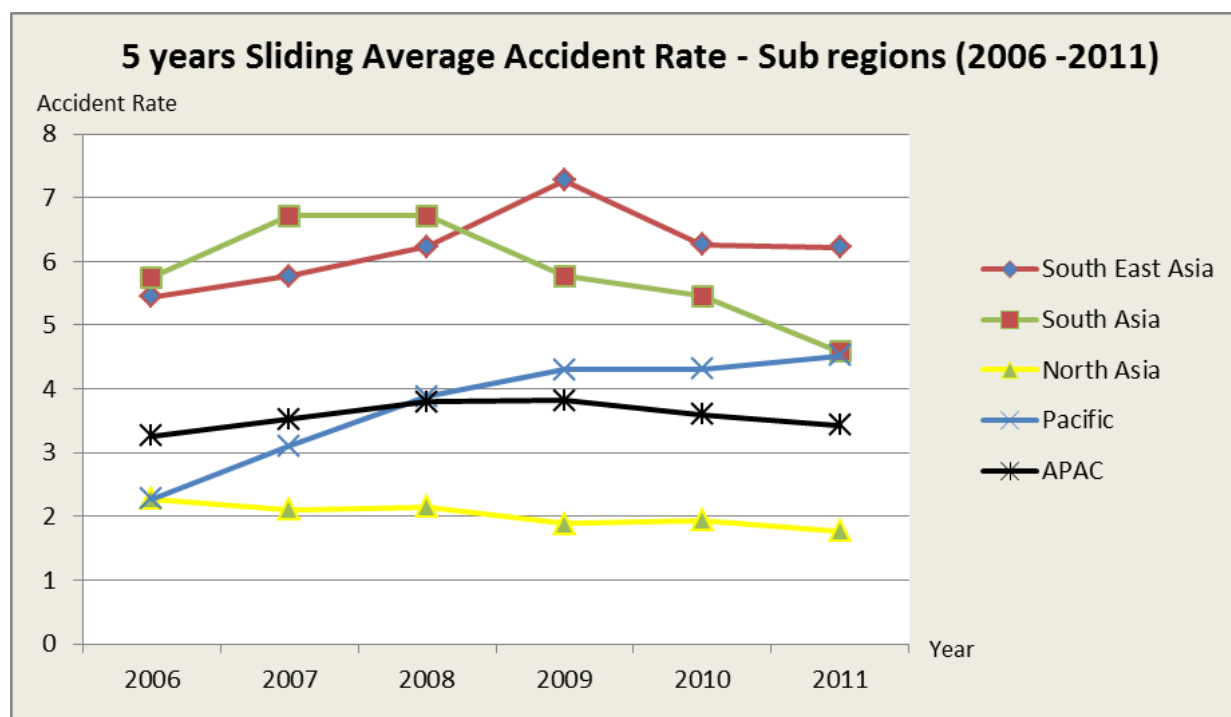
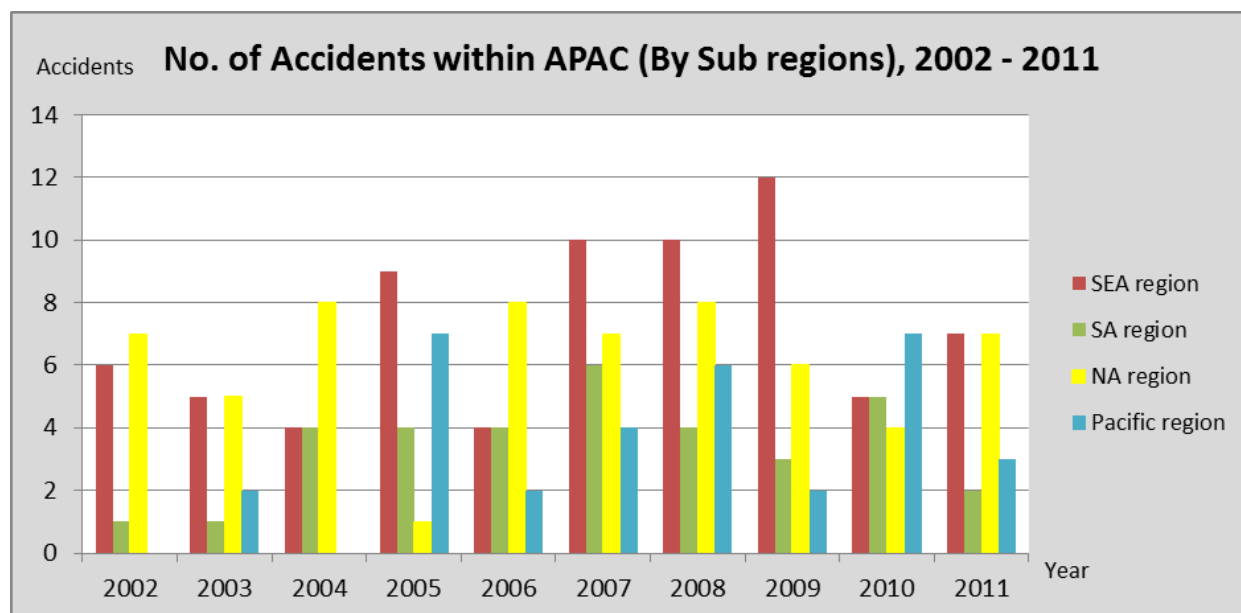
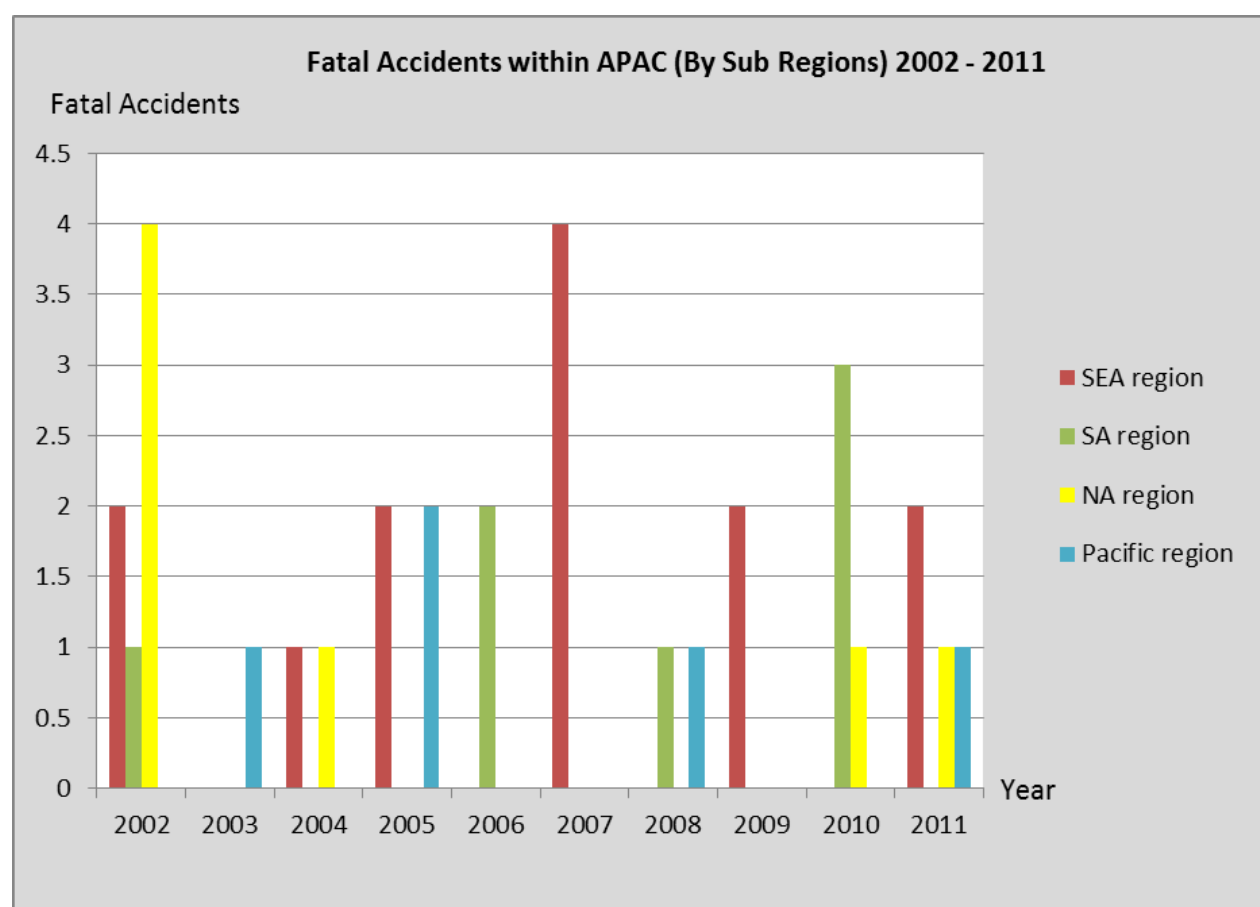


Chart 4.3.1.6 – Number of Accidents within APAC by sub regions.



The distribution of the accidents as shown in Chart 4.3.1.6 indicates that SEA sub region had the highest number of accidents for the last few years, accounting for 36% of the total number of accidents in APAC from 2002 to 2011. The NA sub region accounted for around 30% while SA and Pacific sub regions accounted for 17% each of the total number of accidents.

Chart 4.3.1.7 – Number of Fatal Accidents within APAC by sub regions.



The chart shows a breakdown of the number of fatal accidents occurring between 2002 and 2011 for each of the sub regions. Again the SEA sub region accounted for the highest number of fatal accidents amounting to 41% of the total number of fatal accidents in APAC. SA and NA sub regions accounted for 22% each and the remaining 15% by the Pacific region.

Concluding from the iSTARS reactive safety information, APAC has met 2 of the 3 ICAO GASP safety targets with improvement in its accident rates over the last 5 years. However, the number of fatal accidents occurring in APAC has not seen much improvement resulting in APAC not being able to meet the first safety target of the ICAO GASP. From the recorded accident attributed to the APAC region, SEA sub region had the highest number of accidents and fatal accidents among the 4 sub regions.

4.3.2 Worldwide/Regional Accident Information - IATA

The following breakdown depicts IATA's computation of Total Accident Rates per Region and includes Hull Loss and Substantial Damage for all aircraft types (Eastern-built and Western-built Jet and Turboprop aircraft) **per million sector² flown**. These rates are assigned by the State of the Operator involved in the accident.

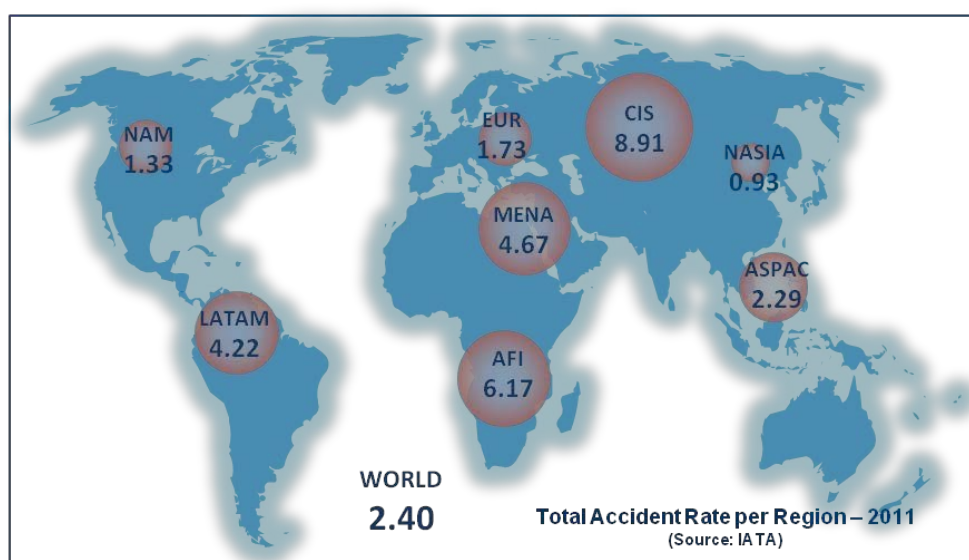
In IATA's context, NASIA and ASPAC regions when combined will equate to ICAO's APAC region.

Table 4.3.2.1 Total Accident Rates per Region

	NAM	LATAM	EUR	MENA	AFI	CIS	NASIA	ASPAC
2011	1.33	4.22	1.73	4.67	6.17	8.91	0.93	2.29
2010	1.43	3.54	1.45	5.41	15.69	7.15	0.99	2.24
2009	1.11	3.22	2.04	10.07	12.21	1.76	1.12	3.0

Note : numbers are accidents per million sector flown.

Figure 4.3.2.1 Graphical presentation of Accident Rates in year 2011 for each region.



Based on the 2011 accident rates, both NASIA and ASPAC are below the global average. This is consistent with the conclusion extracted from the result of the analysis of ICAO iSTARS.

IATA stated that in 2011, 60% of the accidents involved jet powered aircraft, and the 40% remaining implicated turboprops. With respect to the types of operation involved in accidents, IATA noted that 86% occurred in passenger transport, 11% in cargo operations and 3% in ferry flights.

² (IATA defines "sector" as the operation of an aircraft between takeoff at one location and landing at another location (other than a diversion))

Note :

To produce the “per million sectors” statistics, the following data was used by IATA:

	Western-build Aircraft		Eastern-build Aircraft	
	Jet	Turboprop	Jet	Turboprop
World Fleet (end of year)	20,814	4,365	898	1,152
Hours Flown (millions)	57.89	6.81	0.71	0.50
Sectors (landings) (millions)	29.52	8.13	0.32	0.35

*World fleet includes in-service and stored aircraft operated by commercial airlines as of 31 December 2011.

Table 4.3.2.2 Breakdown of Number of Accidents per region.

Year of accidents	AFI	CIS	EUR	LATAM	MENA	NAM	ASPAC	NSIA	Total	ASPAC + NSIA
Accidents 2011	8 (8.7%)	13 (14.2%)	15 (16.3%)	15 (16.3%)	8 (8.7%)	17 (18.5%)	13 (14.2%)	3 (3.3%)	92	16 (17.5%)
Accidents 2010	19 (20.2%)	9 (9.6%)	12 (12.8%)	12 (12.8%)	9 (9.6%)	18 (19.2%)	12 (12.8%)	3 (3.2%)	94	15 (16%)
Accidents 2009	14 (15.56%)	2 (2.22%)	17 (18.89%)	10 (11.11%)	15 (16.67%)	14 (15.56%)	15 (16.67%)	3 (3.3%)	90	18 (20%)
Accidents 2008	7 (6.5%)	10 (9.2%)	17 (15.6%)	19 (17.5%)	12 (11%)	24 (22%)	19 (17.5%)	1 (0.9%)	109	20 (19.9%)

Table 4.3.2.2 shows that number of accidents per year within each of IATA demarcated regions. The whole number in each box relates to the number of accidents for that year for that region while the percentage below is the corresponding contributing of accidents for the region towards the global number of accidents.

The highest number of accidents occurs in 2008 (109), similar to what is seen from ICAO iSTARS accident information between 2002 and 2011 albeit with a recorded number of 138 accidents in 2008.

Looking at accidents attributed to North Asia and Asia Pacific in comparison to the global accident number, it can be seen that this average around 18% which tallies closely with that of ICAO iSTARS information.

Table 4.3.2.3 Breakdown of Fatal accidents and Fatalities per region.

Year of accidents	AFI	CIS	EUR	LATAM	MENA	NAM	ASPAC	NSIA	Total	ASPAC + NSIA
Fatal Accidents	5 (21.8%)	3 (13.05%)	0	5 (21.8%)	2 (8.7%)	3 (13.05%)	4 (17.4%)	1 (4.4%)	23	5 (21.8%)
Fatalities (Crew and Pass)	129 (16.42%)	22 (2.8%)	0	100 (12.8%)	147 (18.7%)	12 (1.6%)	334 (42.5%)	42 (5.4%)	786	376 (47.9%)

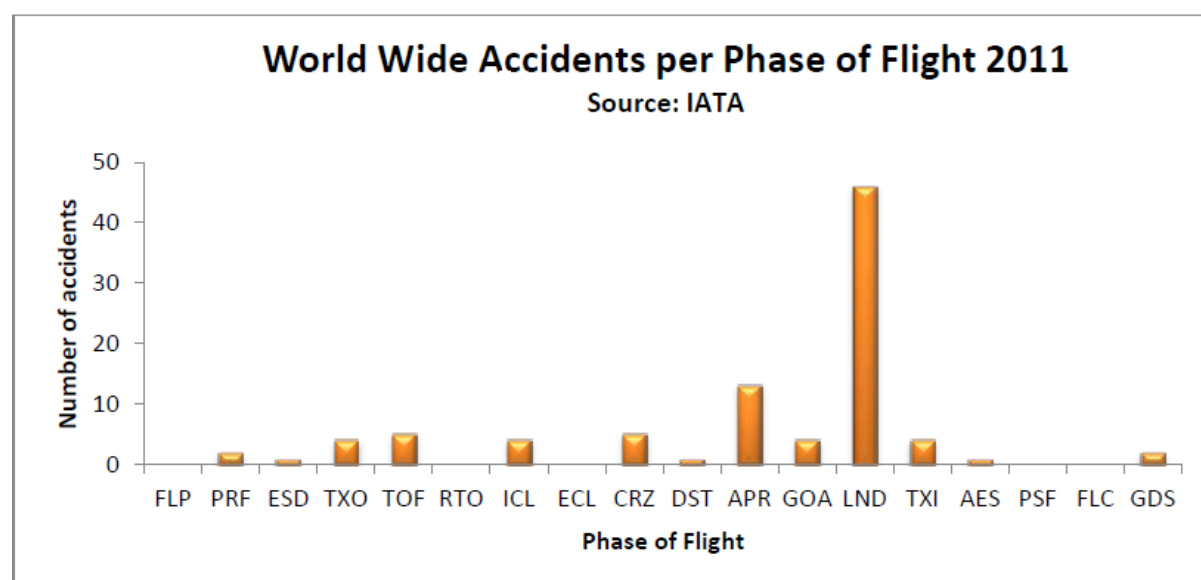
In the last 4 years, from 2008 to 2011, North Asia and Asia Pacific accounted for 21.8% of the total number of fatal accidents globally but accounted for a much higher portion of the number of fatalities. This implies that most of the fatal accidents occurring in North Asia and Asia Pacific involved larger aeroplanes.

Table 4.3.2.4 Accidents categories comparison world-wide by the Year of 2009-2011

Risk category	2009	2010	2011
Runway Excursion	26%	0	0
Gear up landing/gear collapse	18%	0	0
Ground damage	10%	23%	18%
Loss of Control – In flight	10%	13%	17%
In flight damage	10%	12%	16%
Undershoot	4%	12%	9%
Controlled Flight Into or Toward Terrain	3%	9%	5%
Hard landing	13%	8%	1%
Off airport landing/Ditching	0	7%	12%
Tail strike	4%	6%	10%
Other	2%	5%	4%
Runway collision	0	3%	8%
Mid air collision	0	2%	0
Total	100%	100%	100%

Table 4.3.2.4 shows world wide accidents categories from 2009 to 2011. In 2009, the most common accidents category is **runway excursion** (26% of the total accidents) while accidents due to ground damage was the most common accident category for 2010 (23%) and 2011(18%). **Loss of control in flight** has featured constantly between 2009 and 2011 as the top few most common accident categories world-wide.

Chart 4.3.2.1 World Wide Accidents per Phase of Flight for 2011



From Chart 4.3.2.1, a large proportion of the accidents happened during the landing and approach phases of a flight thereby suggesting that these are phases of flights where more focus can be leveled to ensure safe operations.

4.3.3 Worldwide Accident Categories Information – CAST/Boeing

Chart 4.3.3.1 World-Wide Hull Loss and Fatal Accidents between 1987 and 2011

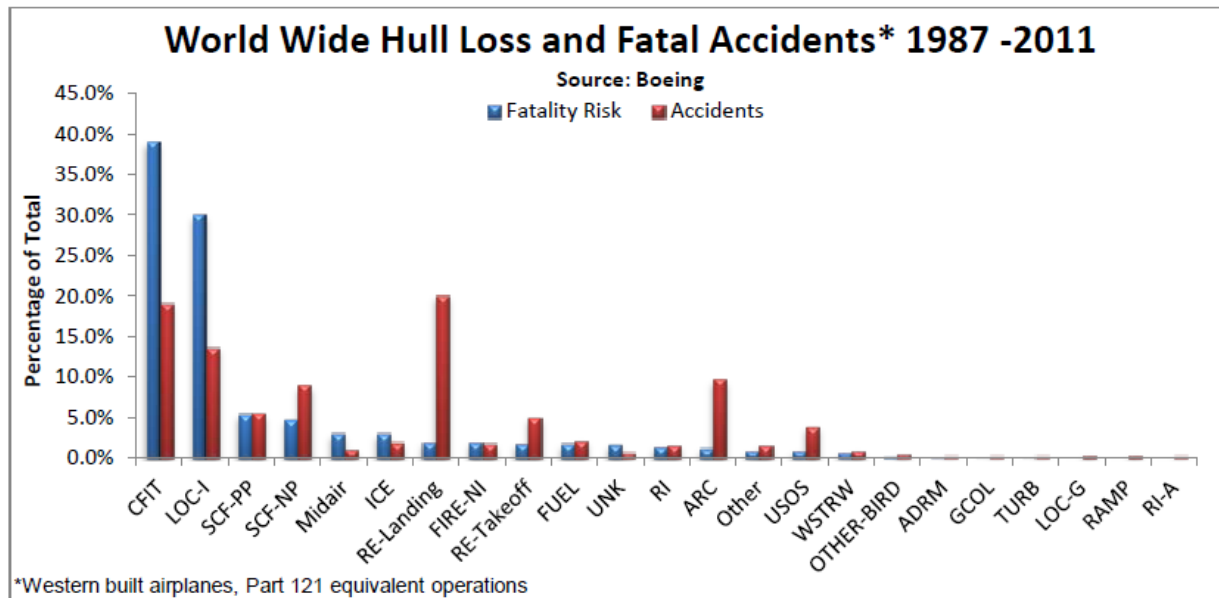


Chart 4.3.3.1 shows that occurrences during landing phases such as runway excursions and abnormal runway contact represent 30% of the total accidents (1987-2011). This is consistent with the Chart 4.3.2.1.1 by IATA, which shows that the most common phases of flight for 2011 were landing (50%) and approach (14.1%).

This chart also identified runway excursion (**RE-Landing**), controlled flight into terrain (**CFIT**) and loss of control in-flight (**LOC-I**) as the three most frequent accident categories world-wide.

4.3.4 Most Frequent Accident Categories within Asia Pacific – ICAO iSTARS

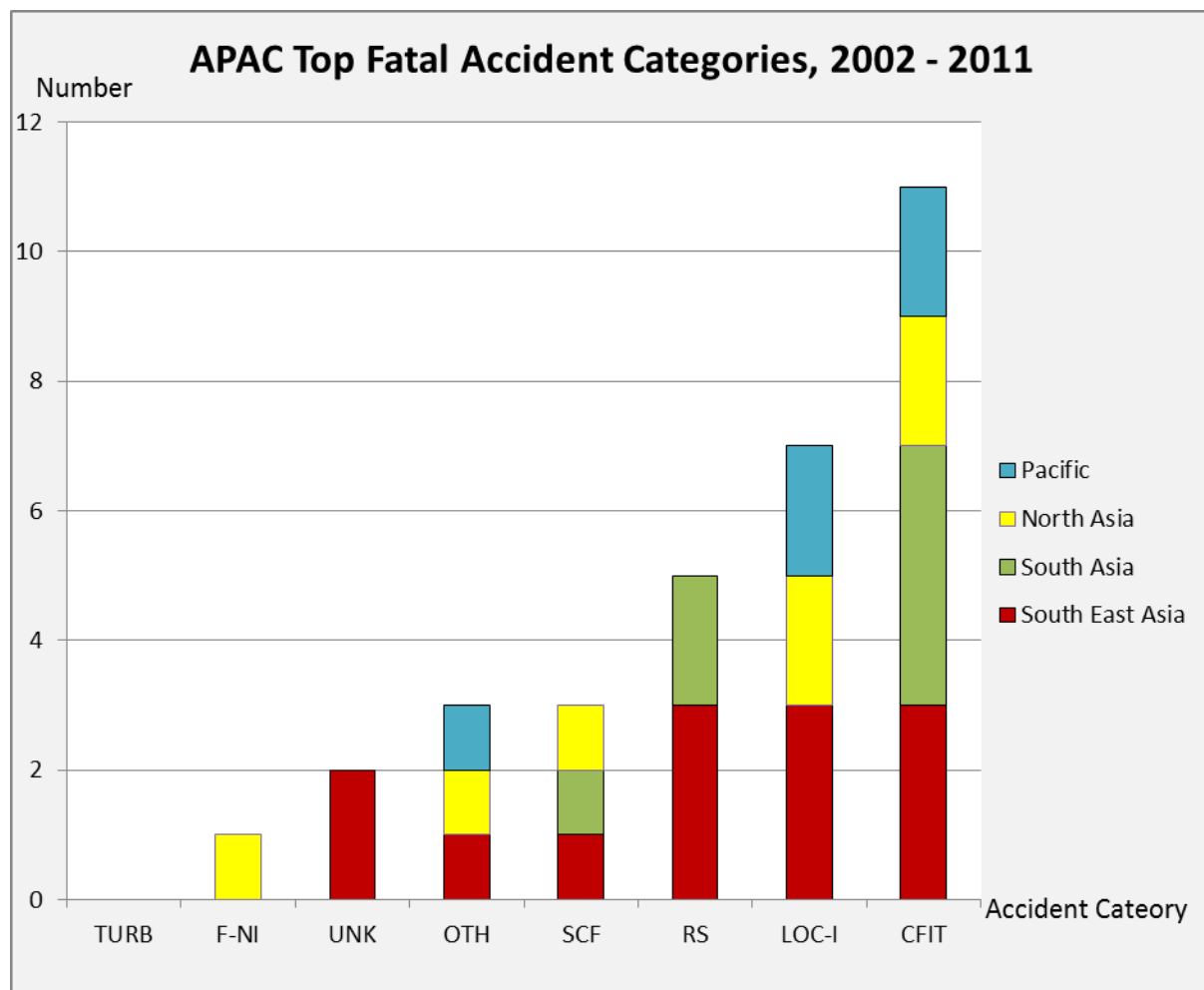
Table 4.3.4.1 APAC Top Fatal Accident Categories from 2002 to 2011

	ICAO APAC States								
Year	TURB	F-NI	UNK	OTH	SCF	RS	LOC-I	CFIT	Total
2002	0	0	0	2	2	0	1	2	7
2003	0	0	0	0	0	0	1	0	1
2004	0	0	0	0	0	1	1	0	2
2005	0	0	0	0	0	0	2	2	4
2006	0	0	0	0	1	0	0	1	2
2007	0	0	0	0	0	1	2	1	4
2008	0	0	0	0	0	1	0	1	2
2009	0	0	0	0	0	1	0	1	2
2010	0	0	0	0	0	1	0	3	4
2011	0	1	2	1	0	0	0	0	4
Total	0	1	2	3	3	5	7	11	32

Table 4.3.4.1 provides a representation of the distribution of the various accident categories from 2002 to 2011. In line with the world-wide top three common accident categories as shown in the CAST/Boeing data, **CFIT, LOC-I and Runway Safety (RS)**, which includes runway excursion and runway incursion) are the three most common accident categories in APAC. The top 3 accident categories accounted for almost 3 quarters of the total number of accidents for APAC over 2002 to 2011.

Between 2002 and 2006 the prevalent types of accident categories are CFIT and LOC-I whereas between 2007 and 2011, RS has become more prevalent while CFIT continues to feature as a common accident categories. CFIT appears to continue to be a common accident category which we should provide focus on even though there is a reprieve in 2011 where there was no accident attributable to a CFIT. While the total number of RS type of accident category is lesser than that of LOC-I, however RS accident category had been more prevalent in the recent years as compared to LOC-I.

Chart 4.3.4.1 APAC Top Fatal Accident Categories by sub regions



The distribution of the top 3 most common accident categories for SEA sub region is even at 3 each. In terms of RS, other than SEA sub region, the other sub region which had such accident category is SA sub region and all accidents of this category had occurred during the last 5 years.

Table 4.3.4.2 APAC sub region top 3 Accident Categories from 2002 to 2011

	SEA sub region				SA sub region				NA sub region				Pacific sub region			
Year	RS	LOC-I	CFIT	Total	RS	LOC-I	CFIT	Total	RS	LOC-I	CFIT	Total	RS	LOC-I	CFIT	Total
2002	0	0	0	0	0	0	1	1	0	1	1	2	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
2004	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0
2005	0	1	1	2	0	0	0	0	0	0	0	0	0	1	1	2
2006	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
2007	1	2	1	4	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1
2009	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	1	0	2	3	0	0	1	1	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	3	3	3	9	2	0	4	6	0	2	2	4	0	2	2	4

SEA sub region has the most number of occurrences of accidents related to RS, LOC-I and CFIT. Notably, in the recent last 5 years, SEA sub region continued to see the highest number of such occurrences with 2 each for each of the accident categories.

SA sub region most common accident categories are RS and CFIT with 2 each for the recent last 5 years. Both NA and Pacific sub region saw 1 occurrence of CFIT accident categories between 2007 and 2011.

4.3.5 Most Frequent Accident Categories within Asia Pacific – IATA

Table 4.3.5.1 APAC Top Accident Categories by IATA's sub regions of ASPAC and NASIA

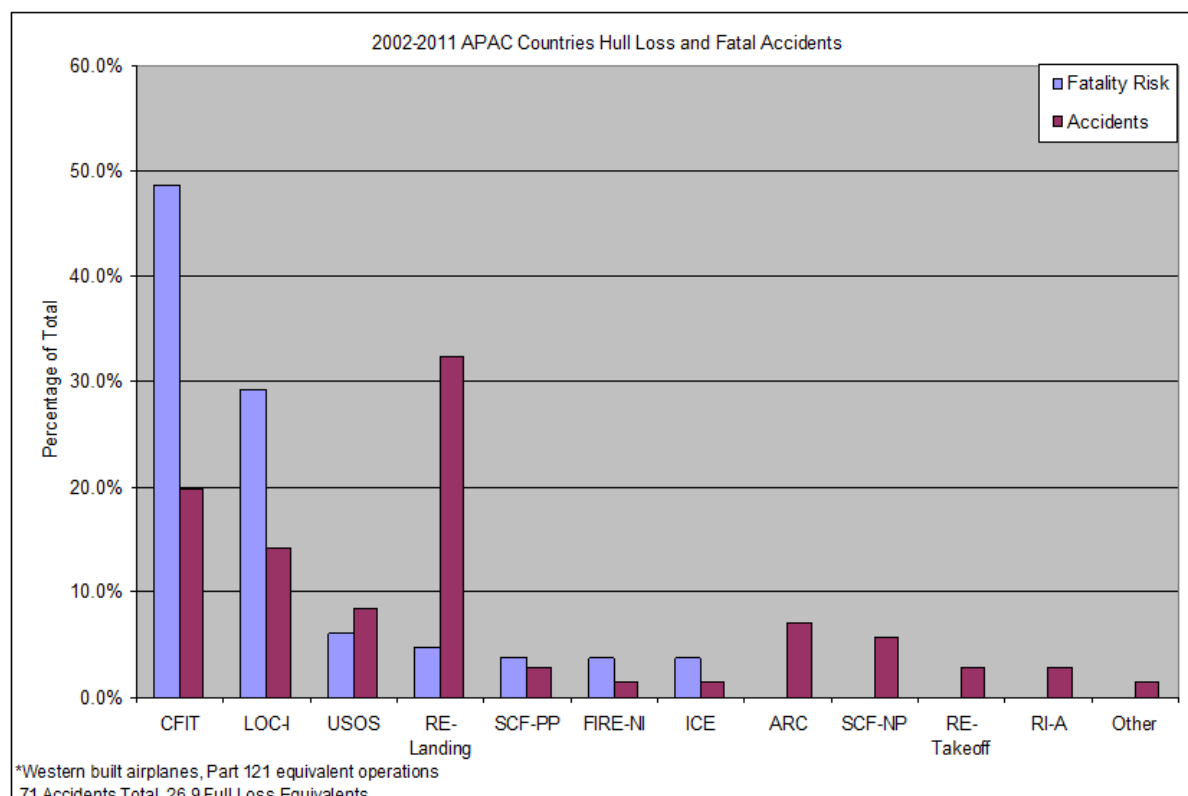
Accident Category	2007		2008		2009		2010		2011		Total
	ASPAC	NASIA	ASPAC	NASIA	ASPAC	NASIA	ASPAC	NASIA	ASPAC	NASIA	
<i>Total Accidents by Region</i>	23	4	19	1	15	3	12	3	13	3	96
CFIT	1		1		1		1	1	3		8
Loss of Control In-flight	4		1				1				6
Runway Excursion	8		5		6	1	4		5		29
In-flight Damage	1	1	2	1	1		3		2		11
Ground Damage	1	3	4		1		1		1	1	12
Undershoot	1		1		1						3
Hard Landing	4		1			1			1	1	8
Tailstrike			1			1		1		1	4
Runway Collision			2								2
Ditching							2				2
Unknown								1			1
Off Airport Landing / Ditching									1		1
Gear-up Landing / Gear Collapse	3		1		5						9

Information from IATA, tabulated in Table 4.3.5.1, indicates the highest accident categories in APAC relates to **runway excursion** with a total of 29 occurrences. In-flight and ground damage were the next 2 most common accident categories followed by accident categories relating to gear-up landing/gear collapse and CFIT.

Gear-up landing or gear collapse was prevalent in 2009 but has since then not occurred for the next 2 years. Similarly, ground damage accident category was only common in 2007 and 2008 and for the subsequent 3 years, from 2009 to 2011, only 1 had occurred for each of the years. However, runway excursion, in-flight damage and CFIT continued to be prevalent between 2009 and 2011 and remained as areas of concern. It is also noted that for CFIT, it has been trending upwards since 2009.

4.3.6 Most Frequent Accident Categories within Asia Pacific – CAST/Boeing

Chart 4.3.6.1 Hull Loss and/or Fatal Accidents – APAC Members Domicile - Commercial Jet Fleet 2002 - 2011



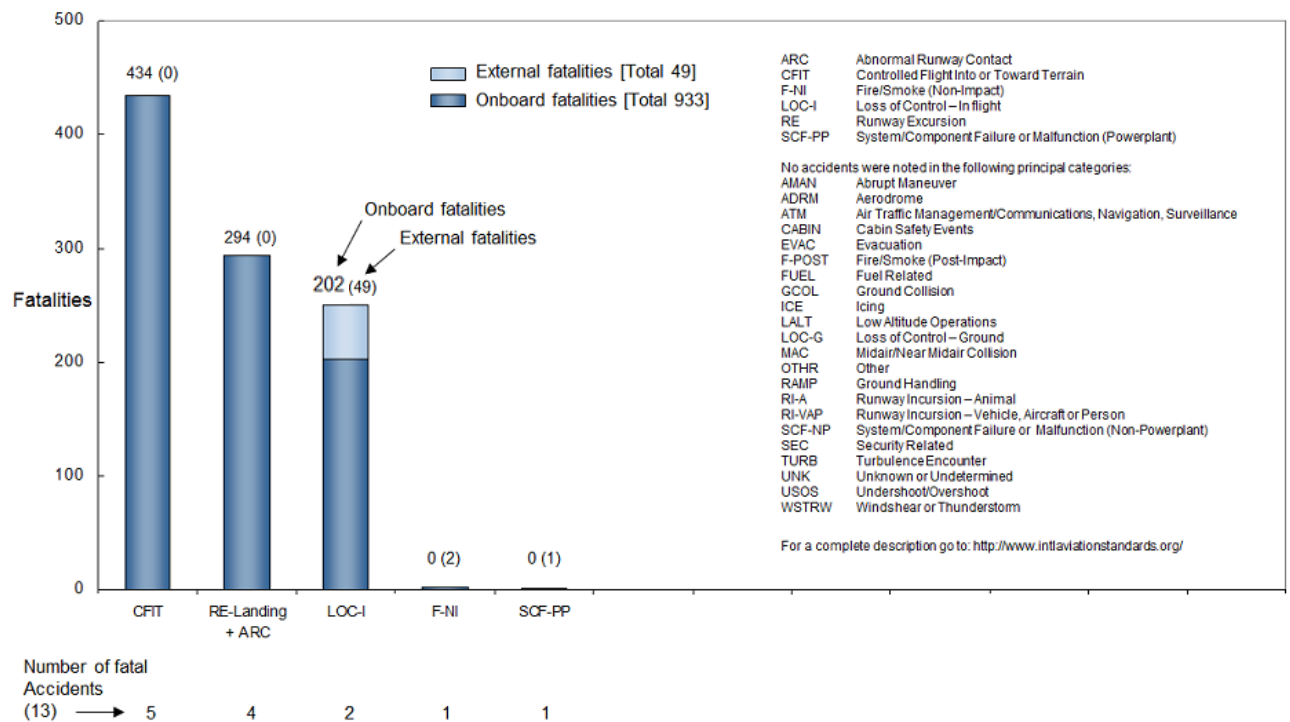
Data from CAST/Boeing, as shown in chart 4.3.6.1, identified **CFIT**, **LOC-I** and **RE-Landing** as the 3 most common accident categories that has resulted in hull loss or fatal accidents within the APAC region. This data tallies consistently with the information of ICAO iSTARS.

Table 4.3.6.1 Fatal accidents by Commercial Aviation safety team/International civil Aviation Organization Common Taxonomy Team (CICTT) Aviation Occurrence Categories by Year in APAC [Boeing]

<i>Risk category</i>	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Controlled Flight Into or Toward Terrain	1	0	0	1	0	0	0	1	2	0	5
Runway Excursion-Landing & Abnormal Runway contact	0	0	1	0	0	2	0	0	1	0	4
Loss of Control – In flight	0	0	0	1	0	1	0	0	0	0	2
Fire/Smoke (Non-Impact)	0	0	0	0	0	0	0	0	0	1	1
System/Component Failure (Power plant failure)	1	0	0	0	0	0	0	0	0	0	1
Total	2	0	1	2	0	3	0	1	3	1	13

Looking specifically at the cause of fatal accidents within APAC region, **CFIT and Runway Excursions-Landing and Abnormal runway contact** are the 2 most common accident categories accounting for close to 70% of these fatal accidents.

Chart 4.3.6.2 Fatal Accidents Categories – APAC Members Domicile - Commercial Jet Fleet 2002 through 2011



Charting the information in table 4.3.6.2 and superimposing the number of fatalities into the same chart 4.3.6.3, it can be seen that CFIT accident accounted for the most number of fatalities due to a higher number of CFIT occurrences and the higher probability of fatalities from CFIT event. The only external fatalities resulted from accidents relating to LOC-I.

Table 4.3.6.2 Fatalities and Hull Loss Accident Categories

<i>Fatalities</i>	Controlled Flight Into or Toward Terrain (CFIT)	Runway Excursion-Landing & Abnormal Runway contact	Loss of Control – In flight	Fire/Smoke (Non-Impact)	System/Component Failure (Power plant failure)	Total
External fatalities	0	0	49 (5%)	0	0	49 (5%)
On board fatalities	434 (44.2%)	294 (30%)	202 (20.6%)	2 (0.2%)	1 (0.1%)	933 (95%)
Total	434	294	251	2	1	982

Table 4.3.6.2 shows number of fatalities in relation to the hull loss accident categories. Most of the fatalities are due to CFIT (44.2%) followed by RE-Landing & Abnormal Runway contact (30%), LOC-I (25.6%). 95% of the fatalities are on board the aircraft while the remaining 5% are external fatalities resulting from LOC-I accident.

4.3.7 Top 3 frequent Accident Categories within Asia Pacific

Collating the information from ICAO iSTARS, IATA and CAST/Boeing, it be concluded that the top 3 frequent accident categories in APAC region are:

- Control Flight into Terrain
- Runway Safety (specifically runway excursion)
- Loss of Control in-flight

Between ICAO iSTARS and CAST/Boeing data, both set of information indicates that CFIT was the top most frequent fatal accident categories while IATA data indicates that the top most frequent accident category is runway excursion.

4.3.8 Other Emerging Accident Category

Based on the data of ICAO iSTARS and that of CAST/Boeing, it can be noted that there is no clear indication which other accident category is trending upwards. As such APAC focus should be on the reduction of CFIT, Runway Safety (specifically runway excursion) and Loss of Control in-flight.

Once the 3 most frequent accident categories has been adequately addressed, APAC region may then choose to attend to the next most common accident category which is System/Component Failures.

4.4 Proactive Safety Information - reserved

4.5 Predictive Safety Information - reserved

5 Final Conclusions

Based on the Reactive Safety information provided by ICAO, IATA and CAST/Boeing, the analysis determined those APAC most common accident categories between 2002 and 2011, and more so for the past few years are:

- Control Flight into Terrain
- Runway Safety (specifically runway excursion)
- Loss of Control in-flight

APAC region should continue to focus its effort on the mitigating and minimising of occurrences relating to CFIT, Runway excursion and LOC-I. Noting that the number of CFIT and LOC-I related accidents are higher than other category and that these accidents resulted in high number of fatalities by effective dealing with such accident categories, APAC region will be able to strive toward meeting ICAO Safety Target of reducing the number of fatal accidents and fatalities worldwide irrespective of the volume of air traffic.

In parallel, runway excursion has been the major cause of accidents in the APAC region which continues to warrant attention to address such accident category.

As there is no obvious emerging accident category from the analysis of this safety information, concerted effort can therefore be channelled to tackle the identified 3 most common accident categories. Once that is achieved, APAC region may then look into the next common accident category, which is System/Component Failures.

List of Acronyms

ACAS	Airborne Collision Avoidance Systems
ADRM	Aerodrome
AFI	Africa (IATA Region)
AIS	Aeronautical Information Service
AMAN	Abrupt manoeuvre
ANSP	Air Navigation Service Provider
AOC	Air Operator Certificate
APAC	Asia Pacific
ARC	Abnormal runway contact
ASIA PAC	Asia/Pacific (ICAO Region)
ASPAC	Asia/Pacific (IATA Region)
ATC	Air Traffic Control
ATM	Air Traffic Management
BIRD	Birdstrike
CABIN	Cabin safety events
CAST	Commercial Aviation Safety Team
CFIT	Controlled flight into terrain
CICTT	CAST/ICAO Common Taxonomy Team
CIS	Commonwealth of Independent States (IATA Region)
CMA	Continuous monitoring approach
CRM	Crew Resource Management
CVR	Cockpit Voice Recorder
DFDR	Digital Flight Data Recorder
DGAC	Directorate General of Civil Aviation
DH	Decision Height
E-GPWS	Enhance Ground Proximity Warning System
ETOPS	Extended Range Operations by turbine- engined aeroplanes
EUR	Europe (ICAO and IATA Region) EVAC Evacuation
FDA	Flight Data Analysis
FLP	Flight Planning (IATA)
F-NI	Fire/smoke (none- impact).
FMS	Flight Management System
FOQA	Flight Operations Quality Assurance
F-POST	Fire/Smoke (post-impact)
FUEL	Fuel related
GASP	ICAO Global Aviation Safety Plan
GCOL	Ground collision
GNSS	Global Navigation Satellite System
GPWS	Ground Proximity Warning System
GSI	Global Safety Initiative
HL	Aircraft destroyed or damaged and not repaired
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICE	Icing

IMC	Instrument meteorological conditions
INOP	Inoperative
IOSA	IATA Operational Safety Audit
LALT	Low altitude operations
LATAM	Latin America and the Caribbean (IATA Region)
LEI	Lack of effective implementation
LOC-G	Loss of control - ground
LOC-I	Loss of control - inflight
LOSA	Line Operations Safety Audit
MAC	AIRPROX/TCAS alert/loss of separation/near miss collisions/midair collisions
MDA	Minimum Descent Altitude
MEL	Minimum Equipment List
MENA	Middle East and North Africa (IATA REGION)
NAM	North America (ICAO and IATA Region)
NASIA	North Asia (IATA Region)
NAVAIDS	Navigational Aids
NOTAM	Notice to Airman
OTH	Other
RA	Resolution Advisory
RAMP	Ground handling operations
RE	Runway excursion (departure or landing)
RI	Runway Incursion
RI-A	Runway Incursion – Animal
RI-VAP	Runway Incursion – vehicle, aircraft or person
RS	Runway Safety
SAM	South America (ICAO Region)
SARPS	Standards and Recommended Practices (ICAO)
SCF-NP	System/component failure or malfunction - Non-Powerplant
SCF-PP	System/component failure or malfunction - Powerplant
SD	Substantial Damage
SEC	Security-related
SMS	Safety Management System
SOP	Standard Operating Procedure
SRVSOP	Regional Safety Oversight System
SSP	State Safety Programme
TAWS	Terrain Awareness Warning System
TCAS	Traffic Collision and Avoidance System
TCAS RA	Traffic Collision and Avoidance System- Resolution Advisory
TEM	Threat and Error Management
TURB	Turbulence encounter
UAS	Undesirable Aircraft State
UNK	Unknown or undetermined
USOAP	Universal Safety Oversight Audit Programme
USOS	Undershoot/Overshoot
WSTRW	Windshear or thunderstorm

Appendix A – CAST/Boeing list of Hull Loss and/or Fatal Accidents – APAC Commercial Jet Fleet 2002 to 2011

Date	Mode	Registry	Operator	Fatality	Location
1/4/2002	737-200	PK-LID	Lion Air		Pekanbaru
1/16/2002	737-300	PK-GWA	Garuda Indonesia	1	Yogyakarta
4/15/2002	767-200	B-2552	Air China	129	(near) Pusan
6/26/2002	767-200	JA8254	Air Nippon Airways		Shim oshima
8/11/2203	F-28	PK-GFT	Garuda Indonesia		Jakarta
3/1/2004	A300	AP-BBA	Pakistan Int'l Airlines		Jeddah
10/8/2004	F-28	S2-ACH	Biman Bangladesh Airlines		Sylhet
11/21/2004	CRJ-200LR	B-3072	China Yunnan Airlines	53	Baotou
11/30/2004	MD-82	PK-LMN	Lion Air	25	Solo
1/4/2005	737-200	PK-YGM	Asia Airlines		Banda Aceh
2/3/2005	737-200	EX-037	Kam Air	105	Kabul
7/1/2005	DC-10-30	S2-ADN	Biman Bangladesh Airlines		Chittagong
9/5/2005	737-200	PK-RIM	Mandala Airlines	100+49	Medan
10/9/2005	737-400	VT-SID	Sahara India Airlines		Bombay
11/4/2005	BAe 146-200	RP-C2995	Asian Spirit		Catarman National Airport
3/4/2006	MD-82	PK-LMW	Lion Air		Surabaya
10/3/2006	737-200	PK-RIE	Mandala Airlines		Tarakan
12/24/2006	737-400	PK-LIJ	Lion Air		Ujung Pandang
1/1/2007	737-400	PK-KKW	Adam Air	102	(near) Sulawesi Island
1/13/2007	737-200	PK-RPX	Gading Sari Aviation Services		Kuching
2/21/2007	737-300	PK-KKV	Adam Air		Surabaya
3/7/2007	737-400	PK-GZC	Garuda Indonesia	21	Yogyakarta
3/12/2007	A310	S2-ADE	Biman Bangladesh Airlines		Dubai
3/23/2007	A300	YA-BAD	Ariana Afghan Airlines		Istanbul
7/1/2007	767-200	B-2553	Air China		Beijing
9/16/2007	MD-82	HS-OMG	One-Two-Go Airlines	90	Phuket
10/26/2007	A320	RP-C3224	Philippine Airlines		Butuan
11/1/2007	737-200	PK-RIL	Mandala Airlines		Milange
3/10/2008	737-400	PK-KKT	Adam Air		Batam, Batu Besar
8/27/2008	737-200	PK-CJG	Sriwijaya Air		Jambi
3/9/2009	MD-90	PK-LIL	Lion Air		Jakarta Soekarno
4/9/2009	BAe 146-300	PK-BRD	Aviastar Mandiri	6	(near) Wamena
6/6/2009	F-28	XY-ADW	Myanma Airways International		Akyab
4/13/2010	737-300	PK-MDE	Merpati Nusantara Airlines		Manokwari
5/22/2010	737-800	VT-AXV	Air India Express	158	Mangalore
7/28/2010	A321	AP-BJB	Airblue Limited	152	(near) Islam abad-Benazir Bhutto Int'l Airport
8/24/2010	ERJ 190	B-3130	Henan Airlines	42	Yichun
7/28/2011	747-400F	HL7604	Asiana Airlines	2	70 miles West of Jeju Island
12/20/2011	737-300	PK-CKM	Sriwijaya Air		Yogyakarta

Appendix B – ICAO iSTARS list of Occurrences attributed to APAC from 2002 to 2011

Date	Aircraft Registration	Aircraft Type	State of Registry	Operator	Flight Phase
20/12/2011	PK-CKM	BOEING 737	Indonesia	Sriwijaya Air	Landing
17/12/2011	HS-PGA	ATR 72-200	Thailand	Bangkok Airways	Standing
03/12/2011	PK-NCZ	NC-212-200 (AVIOCAR)	Indonesia	Merpati	Landing
11/11/2011	B-5536	BOEING 737	China	Shandong Airlines	Standing
13/10/2011	P2-MCJ	DHC8	Papua New Guinea	AIRLINES OF PAPUA NEW GUINEA (APNG)	Approach
29/09/2011	PK-TLF	212 AVIOCAR	Indonesia	Nusantara Buana Air	Approach
25/09/2011	9N-AEK	1900	Nepal	Buddha Air	Approach
28/07/2011	HL7604	747-400	Korea Republic of	Asiana Airlines	En route
27/06/2011	VT-KFT	A320	India	Kingfisher Airlines	Landing
23/06/2011	9N-AGQ	228.5	Nepal	Tara Air	Landing
16/05/2011	B-HLM	A330-200	China	Cathay Pacific	En route
07/05/2011	PK-MZK	MA-60	Indonesia	Merpati Nusantara Airlines P.T.	Approach
20/04/2011	B-3018	CL-600 Regional Jet CRJ-1000	China	Shanghai Airlines	Landing
17/04/2011	B-2078	777-200	China	CHINA CARGO AIRLINES LTD	Landing
11/02/2011	VT-KAB	ATR 72-200	India	Kingfisher Airlines	Landing
09/02/2011	ZK-NEQ	DHC8	New Zealand	Air Nelson Ltd	Landing
10/01/2011	9M-AHH	A320	Malaysia	AirAsia	Landing
03/07/2010	B-MHJ	AW 139	Hong Kong	EAST ASIA AIRLINES LTD	Take-off
21/06/2010	9M-AHK	A320	Malaysia	AirAsia	Landing
07/06/2010	9M-XXB	A330-200	Malaysia	AirAsia X	Taxi
31/05/2010	B-HKH	747-400LCF Dreamlifter	China	Cathay Pacific Airways Ltd.	Standing
22/05/2010	VT-AXV	BOEING 737	India	Air India	Landing
13/04/2010	PK-MDF	737-300	Indonesia	Merpati Nusantara Airlines P.T.	Landing
31/03/2010	VH-OQC	A380	Australia	Qantas	Landing
04/03/2010	B-18723	747-400	China	China Airline	Take-off
11/02/2010	PK-YRP	ATR 42-300	Indonesia	TRIGANA AIR SERVICE, PT.	En route
02/02/2010	EAI	1900	New Zealand		
30/01/2010	B-6612	A320	China	Spring Airlines	Landing
20/01/2010	CS-DXR	560 XL CITATION EXCEL	Macao	NETJETS, TRANSPORTES AEREOS S.A.	Landing

Local_Date	Aircraft Registration	Aircraft Type	State of Registry	Operator	Flight Phase
19/01/2010	PK-LFM	BOEING 737	Indonesia	Lion Air	Landing
07/01/2010		737-200	Indonesia	Sriwijaya Air	Landing
27/12/2009	VN-B220	ATR 72-500	Viet nam	Vietnam Airlines	Landing
21/12/2009	PK-MDH	737-300	Indonesia	Merpati Nusantara Airlines P.T.	Landing
02/12/2009	PK-MJD	100	Indonesia	Merpati Nusantara Airlines P.T.	Landing
15/11/2009	9N-AHT	MI-8	Nepal	Manang Airlines	Approach
10/11/2009	VT-KAC	ATR 72-200	India	Kingsfisher	Landing
28/10/2009	HL7763	A321	Korea Republic of	Asiana Airlines	Landing
22/10/2009	RP-C2282	228.5	Philippines	A Soriano Aviation	Landing
17/10/2009	RP-C550	DC-3 DAKOTA/C-47	Philippines	Victoria Air	Unknown
02/10/2009	9M-MMR	737-300	Malaysia	Malaysian Airlines System	Standing
11/09/2009	JA56AN	737-800	Japan	All Nippon Airways	
04/09/2009	VT-ESM	747-400	India	Air India	Taxi
10/08/2009	JA56AN	737-200	Japan	All Nippon Airways	Landing
04/08/2009	HS-PGL	ATR 72 - NO SERIES SPECIFIED	Thailand	Bangkok Airways	Landing
27/06/2009	VT-ADR	A320	India	Kingfisher Red	
25/06/2009	RP-C8892	MA-60	Philippines	Zest Airways Incorporated.	
14/06/2009	PK-TXN	328	Indonesia	Express Air	Landing
06/06/2009	XY-ADW	F28 MK 4000	Myanmar	Myanma Airways	Landing
03/06/2009	B-2175	MD-11	China	CHINA CARGO AIRLINES	Landing
30/05/2009	AP-BHO	ATR 42-500	Pakistan	Pakistan International Airlines Corporation	Landing
08/05/2009	HL7419	747-400	Korea Republic of		Approach
09/04/2009	PK-BRD	146-300	Indonesia	Aviastar Mandiri	Approach
04/04/2009	B-6556	A321	China	Air China	Landing
09/03/2009	PK-LIL	MD90-30	Indonesia	LION MENTARI AIRLINES	Landing
23/02/2009	PK-LIO	MD90-30	Indonesia	LION MENTARI AIRLINES	Landing
29/01/2009	PK-PUH	AS 332 SUPER PUMA	Indonesia	Pelita Air Service P.T.	Standing
23/01/2009	YA-KAD	AN-12	Afghanistan	Kabul Air	Taxi
11/01/2009	RP-C8893	XAX Y-7H	Philippines	Zest Airways	Landing
30/12/2008	HL7503	560 CITATION V	Korea Republic of	Korea Aerospace University(KAU)	Landing
06/11/2008	PK-TXL	328	Indonesia	Express Air	Landing
07/10/2008	VH-QPA	A330-300	Australia	Qantas Airways Limited	En route
02/10/2008	B-18202	747-400	China	CHINA AIRLINES	En route
27/08/2008	PK-CJG	737-200	Indonesia	SRIWIJAYA AIR, PT.	Landing

Local_Date	Aircraft Registration	Aircraft Type	State of Registry	Operator	Flight Phase
25/07/2008	VH-OJK	747-400	Australia	Qantas Airways Limited	En route
04/06/2008	B-6225	A319	China	AIR CHINA	Take-off
31/05/2008	9M-MGJ	50	Malaysia	MASWings	Approach
06/05/2008	RP-C2195	DHC7	Philippines	Asian Spirit	En route
04/05/2008	AP-BJA	A321	Pakistan	AIRBLUE	Landing
09/04/2008	VH-OZA	SA227 III	Australia	AVTEX AIR SERVICES PTY LTD	En route
27/03/2008	VT-KAO	ATR 72-500	India	Kingfisher Airlines	Take-off
11/03/2008	JA004D	MD90-30	Japan	Japan Air Lines	Take-off
10/03/2008	PK-KKT	737-400	Indonesia	ADAM AIR	Landing
06/03/2008	PK-VTQ	C-160	Indonesia	Manunggal Air	
01/03/2008	B-KAG	747-400	Hong Kong	Dragonair	Landing
24/02/2008	RP-C5328	328	Philippines	South East Asian Airlines	Landing
19/02/2008	XY-AIE	ATR 72-200	Myanmar	Air Bagan	Take-off
07/02/2008	VH-NXE	717-200	Australia	National Jet Systems Group	Landing
26/01/2008	PK-VSE	NC-212-100	Indonesia	Dirgantara Air Service Pt	En route
09/01/2008	4R-ADF	A340-300	Sri Lanka		Standing
02/01/2008	RP-C3592	YS-11A	Philippines	Asian Spirit	Landing
31/12/2007	VH-OZX	737-200	Australia	OZJet Airlines Pty Ltd	En route
29/12/2007	VH-OBN	737-200	Australia	OZJet Pty Ltd	Manoeuvring
14/12/2007	B-2477	747-400	China	AIR CHINA CARGO	Taxi
07/12/2007	VH-LIS	AT-802	Australia	Pay's Air Service Pty Ltd.	
01/11/2007	PK-RIL	737-200	Indonesia	Mandala Airlines Pt	Landing
26/10/2007	RP-C3224	A320	Philippines	Philippine Air Lines Inc. (Pal)	Landing
17/10/2007	XU-365	AN-12	Cambodia	IMTREC AVIATION	En route
20/09/2007	B-16805	737-800	China	CHINA AIRLINES LTD	Standing
16/09/2007	HS-OMG	MD 82	Thailand	One Two Go Airlines	Approach
29/08/2007	XY-AGA	F28 MK 4000	Myanmar	Myanma Airways	Landing
21/08/2007	RP-C5354	35 TRANSCONTINENTAL	Philippines	Other	Landing
20/08/2007	B-18616	737-800	China	China Airlines	Standing
12/08/2007	HL5256	DHC8-400	Korea Republic of	Jeju Air	Landing
01/07/2007	VT-JCE	ATR 72-200	India	Jet Airways, M/S (India) Pvt Ltd	Landing
25/06/2007	XU-U4A	AN-24	Cambodia	Progress Multitrade Co. (PMT Air)	Unknown
25/06/2007	B-HIH	747-100/200	China	Cathay Pacific Airways Ltd.	Taxi
18/06/2007	ZK-EAK	1900	New Zealand	Eagle Airways Ltd., Hamilton, New Zealand	Landing

Local_Date	Aircraft Registration	Aircraft Type	State of Registry	Operator	Flight Phase
03/04/2007	VH-KDO	SA227AC/METRO III	Australia	Pel-Air Aviation Pty Ltd.	
23/03/2007	YA-BAD	A300-B2/B4	Afghanistan	Ariana Afghan Airlines	Landing
13/03/2007	JA849A	DHC8-400	Japan	AIR CENTRAL	Landing
12/03/2007	S2-ADE	A310	Bangladesh	Bangladesh Biman	Take-off
07/03/2007	PK-GZC	737-400	Indonesia	Garuda Indonesia, P.T.	Landing
01/01/2007	PK-KKW	737-400	Indonesia	Adam Air	En route
28/11/2006	HL5229	ATR 72-200	Korea Republic of	Korea, South	Landing
23/09/2006	9N-AHJ	MI-8	Nepal	Shree airlines Pvt. Ltd., Kathmandu, Nepal	En route
31/08/2006	HL5254	Bombardier DHC-8-402	Korea Republic of	Jeju air	Landing
10/07/2006	AP-BAL	F27 FRIEND/FREIGHT SHIP	Pakistan	Pakistan International Airlines Corporation	Take-off
09/06/2006	HL7594	A321	Korea Republic of	Republic of Korea Asiana Air	En route
07/05/2006	9N-ADT	MI-17	Nepal	Simrik Air Pvt. Ltd., Katmandu	Take-off
02/02/2006	VH-OGH	767-300	Australia	Qantas Airways Limited	Taxi
05/09/2005	PK-RIM	737-200	Indonesia	Mandala Airlines Pt	Take-off
09/07/2005	P-313	MI-8	Democratic Peoples Republic of Korea	Air Koryo	Unknown
05/07/2005	VH-TFU	SA227 III	Australia	Other	Approach
01/07/2005	S2-ADN	DC-10-30	Bangladesh	Biman Bangladesh Airlines	Landing
30/06/2005	9N-AEO	228.5	Nepal	Gorkha Airlines	Landing
18/06/2005	9M-SST	AS 332 SUPER PUMA	Malaysia	MHS Aviation	En route
02/06/2005	9N-ADN	MI-8	Nepal	NEPAL AIRWAYS HELICOPTER SERVICES PVT. L	Landing
03/05/2005	ZK-POA	SA227 III	New Zealand	Airwork (New Zealand) Ltd	En route
30/11/2004	PK-LMN	MD80 SERIES	Indonesia	LION MENTARI AIRLINES	Landing
25/11/2004	VH-EEX	SA227 III	Australia	Pel-Air Aviation Pty Ltd	Approach
21/11/2004	B-3072	REGIONAL JET SERIES 100/200	China	China Eastern Airlines	Take-off
08/10/2004	S2-ACH	F28 MK 4000	Bangladesh	Bangladesh Biman	Landing
08/08/2004	HS-TRA	ATR 72-200	Thailand	Thai Airways International Ltd.	Landing
01/03/2004	AP-BBA	A300-B2/B4	Pakistan	Pakistan International Airlines Corporation	Take-off
04/02/2004	EX-105	IL-18	Sri Lanka	Expo Aviation (Pvt)ltd	Landing
01/01/2004	JA8297	MD80 SERIES	Japan	Japan Air Lines	Landing
22/10/2003	JA8191	747-100/200	Japan	Nippon Cargo Airlines	Take-off
07/10/2003	JA709A	777-200	Japan	AI Nippon (ANA)	Taxi
03/10/2003	ZK-KFU	CV 580	New Zealand	AIR FREIGHT NEW ZEALAND	En route
28/05/2003	9N-APD	MI-17	Nepal	SIMRIK AIR PVT	Unknown

Local_Date	Aircraft Registration	Aircraft Type	State of Registry	Operator	Flight Phase
12/03/2003	9V-SMT	747-400	Singapore	Singapore Airlines Limited	Take-off
31/01/2003	RDPL-34141	IL-76	Lao Peoples Democratic Republic	Euro-Asia Air	Approach
19/11/2002	HL9132	214	Korea Republic of	HELI KOREA	Approach
11/11/2002	RP-C6888	F27 MK 500	Philippines	Laoag International Airlines	Take-off
05/09/2002	RP-C2788	DHC7	Philippines	Asian Spirit	Approach
15/08/2002	4R-AIA	AN-12	Sri Lanka	INTERCITY AIRWAYS	Approach
15/04/2002	B2552	767-200	China	Air China	Approach
17/03/2002	B16106	MD-11	China	EVA AIRWAYS CORP	Taxi
16/01/2002	PK-GWA	737-300	Indonesia	Garuda Indonesia, P.T.	Approach
14/01/2002	PK-LID	737-200	Indonesia	Lion Mentari Airline	Take-off

Acknowledgement to Contributors

RASG-APAC thanks the members of the RASG-APAC Annual Safety Reporting and Programme Ad Hoc Working Group that contributed to the elaboration of this 2011 RASG-APAC Annual Safety Report:

- ICAO
- IATA
- CAST
- Boeing