



WORKING PAPER

**SPECIAL AFRICA-INDIAN OCEAN (AFI)
REGIONAL AIR NAVIGATION (RAN) MEETING**

Durban, South Africa, 24 to 29 November 2008

Agenda Item 4: Current status of aviation safety and related activities in the Africa-Indian Ocean (AFI) Region (Safety Committee)

ASSESSMENT OF LEVELS OF SAFETY IN THE AFI REGION

(Presented by the Secretariat)

SUMMARY

This paper provides an assessment of the safety situation in the AFI Region and proposes a programme to improve the flow of safety data, aiming at improving aviation safety.

Action by the meeting is in paragraph 5.

1. INTRODUCTION

1.1 To assess the safety situation in the AFI Region, the available occurrence statistics in the ICAO accident/incident data reporting (ADREP) system were analyzed. Although the ADREP system does not provide a complete assessment of the safety levels in the region, it does provide an indication of the major deficiencies of the safety system.

1.2 It is known that the AFI Region has the highest accident rate in the world. During the ICAO Safety Briefing to the Air Navigation Commission in June 2008, the accident rate in the AFI Region was calculated at 4.5 accidents per million departures for scheduled operations involving aircraft with maximum take-off mass (MTOM) above 2 250 kilograms. It was also estimated that the region had a 90 per cent probability of not meeting the ICAO safety goal of having no ICAO region exceeding twice the world accident rate by 2011. The world accident rate was calculated at 0.5 accidents per million departures for the period from 1 January 2003 to 31 December 2007.

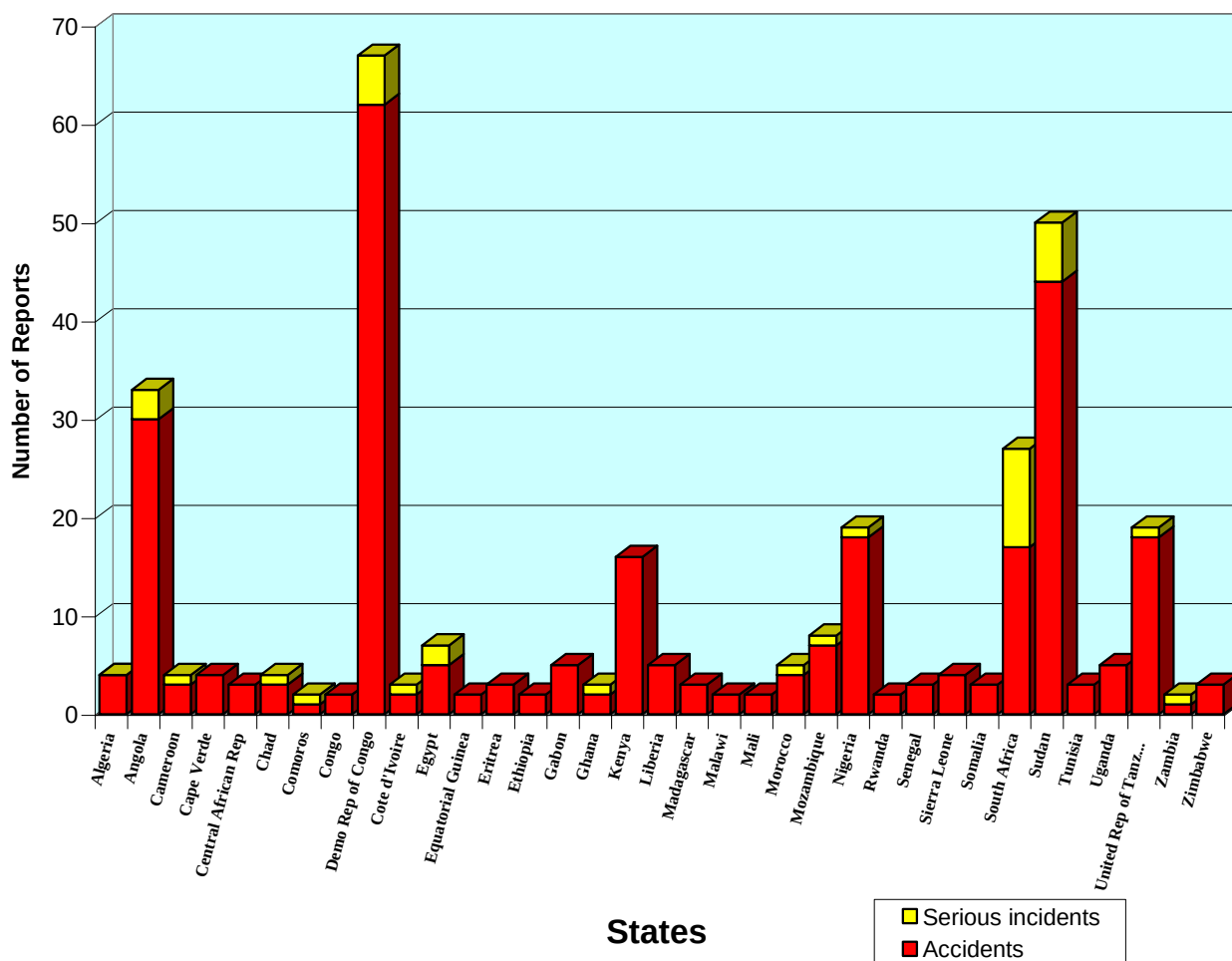
2. BACKGROUND

2.1 ADREP data was analyzed for accidents and serious incidents over a ten-year period in the AFI Region, from 1 January 1998 to 30 June 2008. The following criteria were taken into consideration:

- a) a total of 339 reports were accessed which included all accident and serious incident reports available for the time period under consideration;
- b) in order to simplify the graph below, eighteen Contracting States were not included as they had either no or only one record of reported occurrence in the ADREP system for the period; and

- c) the information reviewed was for accidents and serious incidents involving aircraft above 2 250 kg MTOM in scheduled and non-scheduled operations.

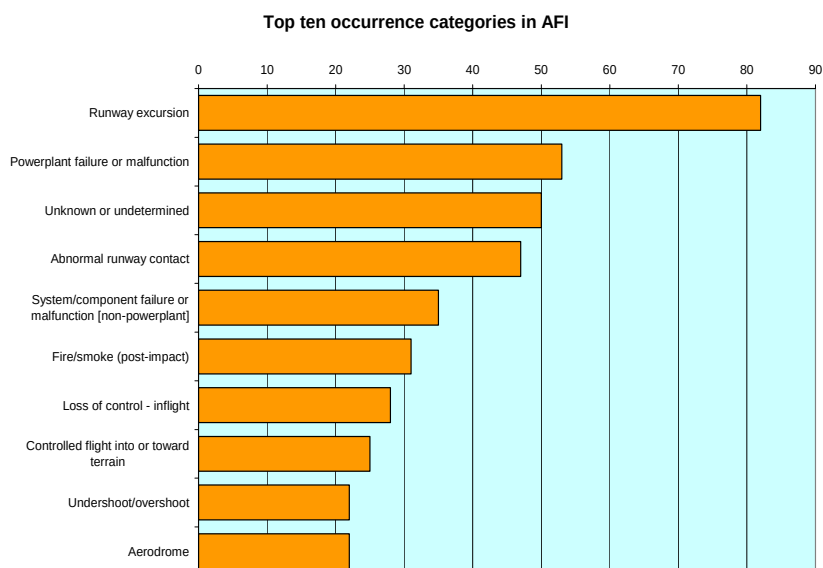
**Total AFI Accident/Serious Incident reports in ADREP system
1 January 1998 to 30 June 2008**



3. DISCUSSION

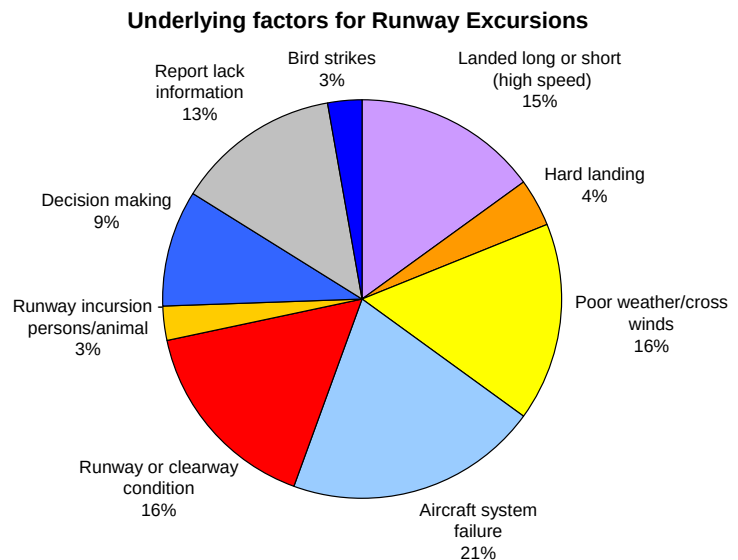
3.1 Considering the graph above it is evident that three States suffered more than thirty occurrences during the time period under discussion and that the occurrences mainly took place in seven AFI States.

3.2 To further assess the significance of the 339 occurrence reports, the associated occurrence categories according to the ADREP taxonomy



were queried. The graph above depicts the top ten occurrence categories in the AFI Region. (Noting that some occurrences may relate to more than one category). According to this graph, the top category in the AFI Region is “runway excursion” (eighty-two occurrences). A further concern is the high number of occurrences relating to “powerplant failure or malfunction”, which may be associated with aircraft airworthiness issues.

3.3 Due to the high number of occurrences in the category “runway excursion”, relevant records were further analyzed. The results were categorized as indicated in this pie chart (in some occurrences more than one category was assigned). In 21 per cent of the cases, aircraft system failures contributed to the aircraft exiting the runway. This, again, may suggest airworthiness issues with the aircraft and how the system failure was handled by the crew. The other contributing factors relating to meteorological conditions and aircraft landing long or short on the runway, are estimated at approximately 16 per cent each. Considering the aforementioned it is likely that the underlying contributing factors could be found in the decision-making processes of the crew. All these contributing factors could be mitigated by appropriate training, that includes Human Factors principles, and company procedures. Another contributing factor with a relative high incidence deals with runway or clearway condition, which could be mitigated by proper aerodrome certification procedures in the AFI Region. Unfortunately, the data was limited and further analysis to identify other issues such as organizational factors, was not possible.



3.4 It appears that there may be a relationship between the high accident rate in Africa, the failure of aircraft systems and the decision-making skills of the crews during aircraft operations. These contributing factors eventually manifest themselves in take-off and landing occurrences. Referring to the Universal Safety Oversight Audit Programme (USOAP) data, it is noted that the lack of implementation of Critical Element 3: *State Civil Aviation System and Safety Oversight Functions* in the AFI Region was identified to be approximately 62 per cent. The USOAP report analyzing audit results for the period April 2005 to May 2007 indicates a very strong relationship between the level of implementation of the critical elements CE-8: *Resolution of safety concerns*, CE-6: *Licensing, certification, authorization and/or approval obligations*, CE-7: *Surveillance obligations*, CE-3 and the accident rate in States.

4. REPORTING CULTURE IN THE AFI REGION

4.1 According to Annex 13 — *Aircraft Accident and Incident Investigation*, Chapters 4 and 7, States are required to notify and report to each other and ICAO at different stages during the investigation of accidents and those serious incidents that are being investigated. To assess the data in the ADREP system related to AFI States for the time period under consideration, the reports that were received from unofficial sources (e.g. industry, media) were filtered out of the dataset. The number of reports then decreased from 339 to 116 (34 per cent of the total), all other criteria being equal.

4.2 Comparing the information obtained in the filtered dataset mentioned in the paragraph above, to the total AFI reports available in the ADREP system for the time period under consideration, it was determined that approximately 66 per cent of the data was obtained from sources other than the States reporting to ICAO. Of the ADREP reports forwarded to ICAO, only 27 (8 per

cent) could be considered as completed, while the remaining 89 (26 per cent) reports were either notifications or preliminary reports, which still need to be finalized.

4.3 In 2004, ICAO adopted the European Co-ordination Centre for Aviation Incident Reporting Systems (ECCAIRS) software as its platform to operate the ADREP system. The ADREP system has the ability to collect accident and incident data in a uniform set of taxonomies so that such information can be analyzed on a timely basis and shared between States and between States and ICAO. As the ADREP system develops and incorporates more incident data, it will become more comprehensive and enable States to better refine the performance of their State Safety Programme (SSP) and benchmark it with global data.

4.4 The ECCAIRS software is available free-of-charge to States. ICAO has delivered numerous ADREP/ECCAIRS training courses in States and endeavours to continue to provide training courses upon request from States.

4.5 As a result of the foregoing, and in order to help improve the level of safety in the AFI Region, the meeting is invited to adopt the following recommendations:

Recommendation 4/x — Improved oversight

That the AFI Comprehensive Implementation Programme (ACIP) as a matter of urgency, proceed with the efforts to assist the AFI States (especially those with high accident rates), Cooperative Development of Operational Safety and Continuing Airworthiness Programmes (COSCAPs) and Regional Safety Oversight Organizations (RSOOs) to improve the States' oversight capabilities of aircraft airworthiness, flight operations and aerodrome certification.

Recommendation 4/x — Institute State Safety Programme

That the AFI Comprehensive Implementation Programme (ACIP) urge the AFI States, with assistance from COSCAPs and RSOOs, to implement a State Safety Programme that incorporates effective occurrence investigations, the gathering of such safety data in a database compatible with ADREP and to share and analyse the data.

Recommendation 4/x — ADREP/ECCAIRS implementation

That ACIP proceed with efforts to assist States, COSCAPs and RSOOs in cooperation with the Regional Offices and ICAO Headquarters, in the planning of ADREP/ECCAIRS training courses to empower the AFI States to share safety data and effectively report to ICAO.

5. ACTION BY THE MEETING

5.1 The meeting is invited to approve the draft Recommendations at paragraph 4.5 above.

— END —