



**Twenty-Sixth Pan America — Regional Aviation Safety Team Meeting (PA-RAST/26)
of the Regional Aviation Safety Group — Pan America (RASG-PA)
San Jose, Costa Rica, 30 November to 2 December 2016**

Agenda Item 4: Participant Presentations (Topics of Interest to the Meeting)

FACTORS RELATED TO RUNWAY EXCURSIONS (RE) OCCURRENCES AND PREVENTIVE MEASURES FOR ITS MITIGATION – SOUTH AMERICA AIG REGIONAL COOPERATION MECHANISM (ARCM)

(Presented by the Secretariat)

EXECUTIVE SUMMARY

This information paper addresses the AIG Regional Cooperation Mechanism (ARCM) project on the analysis of contributing factors or system deficiencies that are present in the runway-excursion (RE) - related accidents or incidents. Likewise, addresses the preventive measures considered necessary to be promptly implemented in order to enhance safety in the region based on the preliminary reports of RE accidents and incidents that took place in the SAM Region up to June 2016.

<i>Strategic Objectives:</i>	<ul style="list-style-type: none"> • Safety
<i>References:</i>	<ul style="list-style-type: none"> • Annex 13 – <i>Aircraft Accident and Incident Investigation</i> • Annex 14 – <i>Aerodromes</i> • Preliminary reports of runway excursion accidents of the SAM Region in the year 2016 • ICAO 2016 Safety Report, available in: www.icao.int • FAA Advisory Circular (AC) No. 91-79A: Mitigating the Risks of a Runway Overrun upon Landing, available in: https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/1025626 • State AIG Regulations, developed by the ARCM. • SAM States AIG Regulations. • Research conducted by the University of La Plata, Argentina.

1. Introduction

1.1 In the First ARCM Accident Investigators Workshop, held in Lima, Peru, 20 to 24 June 2016, the participants addressed several issues, among others, runway excursions (RE) related events that occurred in the SAM Region in the year 2016.

1.2 The issue was addressed due to the significant increase of this accident category in the SAM Region in the year 2016.

1.3 In the last years, ICAO has given higher priority to the treatment of this type of event that occurs when an aircraft overruns the sides of the runway, or exceeds the assigned runway on landing as well as on take-off, resulting in an accident or incident.

1.4 Taking into account that one of the ARCM functions is to support the initiatives with regard to prevention of accidents and incidents of their member States and of the region, and considering that one of the goals of Bogota Declaration is reducing RE accidents, the development of this project has the intention of raising the alert levels in the SAM Region regarding this accidents category.

1.5 Moreover, Paragraph 6.8 of Annex 13 points out that the accident or incident investigation authorities of the State conducting the investigation **shall recommend**, in a dated transmittal correspondence to the appropriate authorities, including those in other States, **at any stage of the accident or incident investigation**, any necessary immediate preventive action to enhance aviation safety.

1.6 Likewise, Paragraph 6.9 notes that any State conducting investigations of accidents or incidents shall address, when appropriate, any safety recommendations arising out of its investigations in a dated transmittal correspondence to the accident investigation authorities of other State(s) concerned and, when ICAO documents are involved, to ICAO.

2. Analysis of the problem

2.1 The accidents category related to runway safety (RS) is still one of the three high-risk accident categories with the highest accident rate worldwide according to ICAO 2016 safety report. The high-risk accidents category related to runway safety (RS) includes abnormal runway contact, bird strikes, ground collision, ground handling, **runway excursions (RE)**, runway incursions, loss of control on ground, collision with obstacles, undershoot, overshoot and aerodromes.

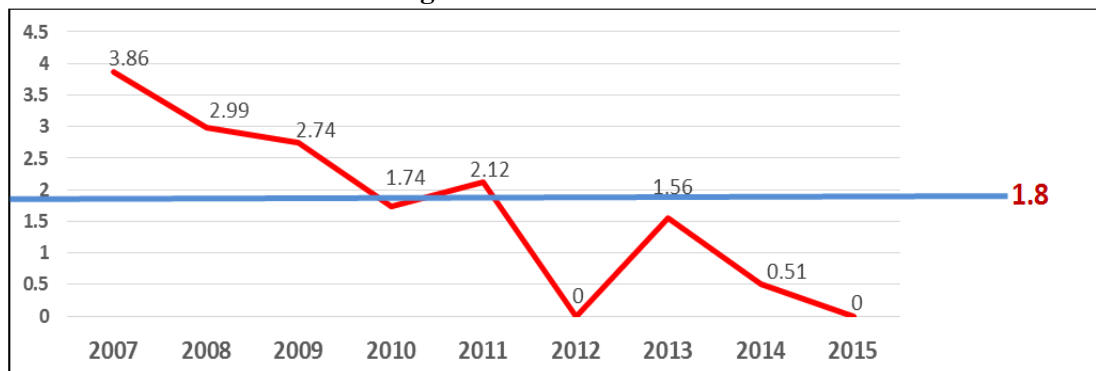
2.2 According to **Figure 1-SAM-RE Accidents Rate**, the RE accidents have decreased in the last years in South America in relation to the goal stated in the Bogota Declaration (To reduce 20% of the average rate of the SAM Region for the period 2007-2012).

2.3 The table also shows that in 2012 and 2015 no accidents were recorded with aircraft over 5700 kg used in scheduled commercial air transport operations; however, in the first semester of 2016, the SAM Region has experienced a significant increase in RE events. Until June 2016, the following events have been reported:

- ✓ Ciudad del Cuzco, Peru, 20 March 2016. Boeing B-737-500, Registration OB-2041P, operated by PERUVIAN AIR LINE from Peru. Excursion at the end of landing runway after rejected take-off (Overrun).
- ✓ Ciudad del Este, Paraguay, 21 March 2016. Airbus A-320, Registration PR-MBO, operated by LATAM from Brazil. Excursion at the right side of the Runway 05 (Veer off).

- ✓ Ciudad de Rio Grande, Tierra el Fuego, Argentina, 22 March 2016. Fairchild SA-226-TC, Registration LV-ZEB, operated by AP Gobernador Ramón Trejo de Argentina. Excursion at the right side of the Runway 07 (Veer off).
- ✓ Cuenca, Ecuador, 28 April 2016. Embraer ERJ 190, Registration HC-COX, operated by TAME from Ecuador. Excursion at the end of the Runway 23 (Overrun).
- ✓ San Fernando, Buenos Aires, Argentina, 14 June 2016. Learjet 25D, Registration LV-WLG, operated by Centro de Emergencias y Derivaciones Médicas Aéreas S.R.L. Excursion at the end of Runway 05 (Overrun).
- ✓ Ciudad de Rionegro, Colombia, 16 June 2016. Gulfstream 150, Registration N963CH, operated by Almacenes Olímpica de Colombia. Excursion at the left side of the Runway 01 (Veer off).

Figure 1 - SAM-RE accidents rate



2.4 Considering the aforesaid, RE occurrences are still a high-risk trend in South America, thus it is necessary to address this problem based on the events that occurred in 2016, allowing the ARCM to establish preventive measures to enhance safety in its member States.

2.5 In order to carry out this project, it will be necessary to identify the root causes and to study the contributing factors of the RE accidents and incidents (accidents and incidents that occurred during take-off, accidents and incidents that occurred during landing, and accidents and incidents that occurred when an aircraft overran the sides of the runway). The problem will be determined in specific terms in relation with the accidents and incidents that already occurred in the region and other regions worldwide.

2.6 Then, the phase where the problem arises shall be identified and its potential to cause harm. This will help to focus all the enhancement efforts. Whenever possible, the magnitude of the problem should be identified, as well, in measurable terms.

2.7 The problem will be able to be exemplified using the contributing factors established up to date in the preliminary reports of the runway excursion events that occurred in the States of the SAM Regions until June 2016.

2.8 In the conclusions the well-founded findings arising from the investigation of occurrences will be presented, which could assist in the establishment of preventive measures for the region.

2.9 The project shall include safety problems data that have been already verified, safety measures already applied, safety recommendations proposals and other measures considered necessary to be applied in all ARCM member States.

3. Dissemination of safety preventive measures

3.1 At any time in an accident or incident investigation process, the State investigative authority carrying out the investigation will recommend the preventive measures considered to be promptly adopted to strengthen aviation safety.

3.2 Aircraft accidents prevention mostly depends on the information arising from accident investigations, their causes and factors contributing to the occurrence of accidents. Therefore, the fast dissemination of the results of the aircraft accident investigations among all the States can greatly contribute to enhance safety in the SAM Region.

3.3 ICAO also encourages States to exchange information about safety recommendations that were issued before the finalization of the final report according to Paragraph 6.8 of Annex 13 aforementioned.

3.4 Besides safety recommendations arising from accident and incident investigations, safety recommendations can arise from several sources, even from safety studies.

4. Activities and results of the project

4.1 To implement this project, the ARCM has carried out the following actions:

- ✓ has conformed a task force with investigators from Argentina, Brazil, Ecuador, Colombia, Paraguay and Peru, who are directly involved in the investigations of RE events occurred in their respective States;
- ✓ the taskforce has held four (04) virtual meetings where contributing factors of occurrences have been established and mitigation actions of the five (5) occurrences being analysed within the framework of this project have been defined. The taskforce has also defined recommendations for Civil Aviation Authorities and air operators.

4.2 Among the results that this work will produce, the following can be mentioned:

- ✓ enhancement of the infrastructure of involved aerodromes;
- ✓ crew training regarding fundamental parameters to be considered in a stabilized approach;
- ✓ recommendations for Civil Aviation Authorities to ensure that flight crews from their States are trained according to CRM principles;

- ✓ recommendations for maintenance teams to reinforce failures follow up focussing in historical data and based on traceable records, allowing to deepen in root causes of systemic failures that, in occurrences as those studied, require more attention in systems directly related to a RE;
- ✓ correct application of standards and recommended practices of the Annexes to the Convention on International Civil Aviation, generating efficient audit plans oriented to detect deviations in the condition of runways and aerodromes through adequate corrective actions that ensure observed deviation notification to guarantee effective use of airport infrastructure in which air operations are carried out;
- ✓ improvement of the evaluation of meteorological conditions in a real time, in order to permit informing flight crews about present conditions when applying landing procedures;
- ✓ improvement in aerodromes and control organisms to ensure that wind information and runway exact conditions be provided to flight crews precisely and in due time during landing, and the operations limitations be correctly established when these factors are combined; and
- ✓ review of hiring, experience and competence requirements for flight crewmembers, especially for pilots in command and co-pilots.

4.3 To disseminate and control the implementation of preventing measures, the ARCM will carry out the following actions:

- ✓ maintain the work of the ARCM RE task force on a continuously basis;
- ✓ develop and circulate a brochure on the study of RE events in the SAM Region occurred in 2016 and in each subsequent year;
- ✓ hold monthly virtual meetings with AIG authorities and Civil Aviation Authorities of the ARCM States members in order to follow up the implementation of preventive measures agreed at a regional level; and
- ✓ organise regional seminars every two years from 2019 to address SAM Region RE occurrences.

5. Proposed actions

- a) Take note of the South American AIG Regional Cooperation Mechanism (ARCM) project on the analysis of factors associated to RE occurrences and corresponding preventive measures for their mitigation; and
- b) due to the contribution this could represent to the enhancement of safety through RASG-PA, consider PA-RAST support for this project.