Civil Aviation Authority of Fiji

GUIDANCE MATERIAL

Establishment of Runway Safety Teams (GM – ERST)

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PREFACE

This Guidance Material (GM) is published by the Civil Aviation Authority of Fiji for purposes of promulgating supplementary material to that published in the Authority's Standards Documents.

This GM provides guidance to aerodrome operators and regulatory staff on the establishment of runway safety teams as well as air traffic service providers, air operator certificate holders, and air navigation service providers, including any other groups, which may have direct involvement in runway operations.

This GM explains certain regulatory requirements by providing interpretive and explanatory material.

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Chief Executive

Civil Aviation Authority of Fiji

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1 Introduction

1.1 Overview

1.1.1 This GM provides guidance for aerodrome operators on the establishment of a Runway Safety Team (RST) in coordination with air traffic service providers and air operators to satisfy relevant provisions of ICAO Annex 6, 11, 14 and Doc 9870.

1.1.2 Runway Safety Programmes, together with Runway Safety Teams, provide for a runway safety enhancement system that basically identifies hazards, ensures the implementation of remedial actions necessary to maintain or enhance safety performance, provides for continuous monitoring, reporting, data gathering and analysis, and regular assessment of the safety performance of stakeholders, and aims at a continuous improvement of the risk mitigation measures of the Runway Safety Programme. This document provides guidance material from the ICAO's Manual on the Prevention of Runway Incursion, Doc 9870 and supplements the CAAF Guidance Material *on Runway Incursion Prevention Programme*.

1.1.3 Aviation Safety Programmes have a common goal to reduce hazards and mitigate and manage residual risk in air transportation. Runway operations are an integral part of aviation; the hazards and risks associated with runway operations need to be managed in order to prevent runway incursions that may lead to accidents. Runway incursion prevention was closely examined by the Eleventh Air Navigation Conference (An-Conf/11) (Montreal, September-October 2003). The Conference recommended that States take actions to improve runway safety worldwide through the implementation of runway safety programmes.

1.1.4 An aerodrome operator should have in place a Runway Safety Team (RST) that is acceptable to CAAF. The establishment of an RST should commensurate with the size and complexity of aerodrome operations. In Fiji's small domestic aerodromes, the establishment of a separate RST may not be feasible and as such the functions of an RST would be discharged by the aerodrome's safety action group/safety team.

1.1.5 Since the Runway Safety Programme requires the collaboration of air traffic controllers, pilots, vehicle drivers and aerodromes management, this GM is applicable to aerodrome operators, air traffic service providers, air operator certificate holders, and air navigation service providers, including any other groups, which may have a direct involvement in runway operations.

1.2 Definition of a runway incursion

1.2.1 The Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444) defines a runway incursion as:

"*Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft*."

2 Contributory Factors

2.1 Pilots, controllers and drivers can all be involved in runway incursions. Mitigation strategies that address all three parties should be included in systemic solutions.

2.2 Runway incursions can be divided into several recurring scenarios. Common scenarios include:

a) an aircraft or vehicle crossing in front of a landing aircraft;

b) an aircraft or vehicle crossing in front of an aircraft taking off;

c) an aircraft or vehicle crossing the runway-holding position marking;

d) an aircraft or vehicle unsure of its position and inadvertently entering an active runway;

e) a breakdown in communications leading to failure to follow an air traffic control instruction; and

f) an aircraft passing behind an aircraft or vehicle that has not vacated the runway.

2.3 Statistics show that most runway incursions occur in visual meteorological conditions during daylight hours; however, most accidents occur in low visibility or at night. All runway incursions should be reported and analysed, whether or not another aircraft or vehicle is present at the time of the occurrence.

3 Breakdown in communications

3.1 A breakdown in communications between controllers and pilots or airside vehicle drivers is a common factor in runway incursions and often involves:

a) use of non-standardized phraseology;

b) failure of the pilot or the vehicle driver to provide a correct readback of an instruction;

c) failure of the controller to ensure that the readback by the pilot or the vehicle driver conforms with the clearance issued;

d) the pilot and/or vehicle driver misunderstanding the controller's instructions;

e) the pilot and/or vehicle driver accepting a clearance intended for another aircraft or vehicle;

f) blocked and partially blocked transmissions; and

g) overlong or complex transmissions.

4 Airside Vehicle Driver factors

4.1 The most common driver-related factors identified in several studies are:

a) failure to obtain clearance to enter the runway;
b) failure to comply with ATC instructions;
c) inaccurate reporting of position to ATC;
d) communication errors;
e) inadequate training of airside vehicle drivers;
f) absence of radiotelephony equipment;
g) absence of radiotelephony training;
h) lack of familiarization with the aerodrome;
i) lack of knowledge of aerodrome signs and markings; and
j) lack of aerodrome maps for reference in vehicles.

5 Aerodrome Design Factors

5.1 Complex or inadequate aerodrome design significantly increases the probability of a runway incursion. The frequency of runway incursions has been shown in many studies to be related to the number of runway crossings and the characteristics of the aerodrome layout.

5.2 Common factors include:

a) the complexity of the airport layout including roads and taxiways adjacent to the runway;
b) insufficient spacing between parallel runways;
c) departure taxiways that fail to intersect active runways at right angles; and
d) no end-loop perimeter taxiways to avoid runway crossings.

6 Pilot Factors

6.1 Pilot factors that may result in a runway incursion include inadvertent non-compliance with ATC clearances. Often these cases result from a breakdown in communications or a loss of situational awareness in which pilots think that they are at one location on the aerodrome (such as a specific taxiway or intersection) when they are actually elsewhere, or they believe that the clearance issued was to enter the runway, when in fact it was not.

6.2 Other common factors include:

a) inadequate signage and markings (particularly the inability to see the runway-holding position lines);

b) controllers issuing instructions as the aircraft is rolling out after landing (when pilot workload and cockpit noise are both very high);

c) pilots performing mandatory head-down tasks, which reduces situational awareness;

d) pilots being pressed by complicated and/or capacity enhancement procedures, leading to rushed behaviour;

e) a complicated airport design where runways have to be crossed;

f) incomplete, non-standard or obsolete information about the taxi routing to expect; and

g) last-minute changes by ATC in taxi or departure routings.

7 Air Traffic Control Factors

7.1 The most common controller-related actions identified in several studies are:

a) momentarily forgetting about:
   1) an aircraft;
   2) the closure of a runway;
   3) a vehicle on the runway; or
   4) a clearance that had been issued;

b) failure to anticipate the required separation, or miscalculation of the impending separation;

c) inadequate coordination between controllers;

d) a crossing clearance issued by a ground controller instead of an air/tower controller;

e) misidentification of an aircraft or its location;

f) failure of the controller to provide a correct readback of another controller's instruction;

g) failure of the controller to ensure that the readback by the pilot or the vehicle driver conforms with the clearance issued;

h) communication errors;

i) overlong or complex instructions;

j) use of non-standard phraseologies; and

k) reduced reaction time due to on-the-job training.

7.2 Other common factors include:

a) distraction;

b) workload;

c) experience level;

d) inadequate training;

e) lack of a clear line of sight from the control tower;

f) human-machine interface; and

g) incorrect or inadequate handover between controllers.

8 Establishment of Runway Safety Teams

8.1 A Runway Incursion Prevention Programme starts with the establishment of Runway Safety Teams at individual airports. The requirement for establishing the Runway Safety Team and terms and reference of the team are given in the ensuing paragraphs.

8.2 Airport operators should establish Runway Safety Teams at individual aerodromes.

8.3 The Runway Safety Team shall comprise of representatives from aerodrome operations, air traffic service providers, airlines or aircraft operators, pilots and air traffic controller associations and any other groups with a direct involvement in runway operations.

8.4 The Team shall be headed by the Airport General Manager or his designate.

8.5 The Runway Safety Team shall develop a terms of reference. Guidance on this is provided in section 9 of this GM.

8.6 Information on the composition of the RST shall be provided to the CAAF.

8.7 The primary role of the runway safety team shall be:

a) To develop action plan for runway safety;

b) Identify potential runway incursion issues;

c) Recommend strategies for hazard removal and mitigation of individual risk;

d) The Team shall meet at least once in every three (3) months. The frequency of meetings may be increased as the need arises.

9 Generic Terms of Reference (TOR) of a Runway Safety Team

The generic terms of reference for a runway safety team formed at individual aerodromes should be, but not limited to:

a) Determining the number, type and, if available, the severity of runway incursions;

b) Considering the outcome of investigation reports in order to establish local hot spots or problem areas at the aerodromes;

c) Working as a cohesive team to better understand the operating difficulties of personnel working in other areas and recommending areas for improvement;

d) Ensuring that the recommendations contained in the Manual on the Prevention of Runway Incursions (ICAO Doc 9870) and applicable on the various aspects of aerodrome operation are implemented;

e) Identify any local problem areas and suggest improvements;

f) Conduct a runway safety awareness campaign that focuses on local issues, for example, producing and distributing local hot spot maps or other guidance material as considered necessary; and

g) Regularly review the airfield to ensure its adequacy and compliance with regulatory requirements contained in the SD-AD and other guidance material issued by the Authority.

h) Reporting of runway incursion and casual factor identification by the Safety Manager to the Authority.

10 Objectives of the Runway Safety Teams

Once the overall number, type and severity of runway incursions have been determined, the team shall establish goals to improve the safety of runway operations. Examples of possible goals are:

a) To improve runway safety data collection, analysis and dissemination;

b) To check that signage and markings are compliant with SD-AD and visible to pilots and drivers;

c) To develop initiatives for improving the standard of communication. To identify potential new technologies that may reduce the possibility of runway incursion;

d) To ensure that procedures are compliant with the SD-AD and other guidance material issued by the Authority from time to time; and

e) To initiate local awareness by developing and distributing runway safety education and training material to controllers, pilots, personnel driving vehicles on the airside and personnel working at aerodromes.

11 Action items to be prepared and monitored by the Runway Safety Team

11.1 The outcome of the meetings of the runway safety team shall be the development of an action plan containing action items for mitigating runway safety deficiencies. The action plan would be aerodrome specific and linked to a runway safety concern, issue or problem at that particular aerodrome. Action items may include suggested changes to the physical features of, or facilities at, the aerodrome; air traffic control procedures; air field access requirements; pilot and vehicle operator awareness; and production of hot spot maps.

11.2 Each action item shall have a designated person or organization which is responsible for completing the relevant tasks. There may be more than one person or organization affected by an action item; in such cases the head of the safety team, shall co-ordinate with such persons or organizations for the completion of all tasks associated with the action item. A realistic time frame to accomplish the work should also be associated with each action item.

11.3 Periodically the effectiveness of the implemented and/or completed action items should be assessed. This can be accomplished by comparing the results of the initial analysis and the current runway incursion status. For example, if an action item was to provide training for controllers, pilots or vehicle drivers, the effectiveness of such training should be evaluated by the team. If the analysis shows little or no improvement in the number, type or severity of runway incursions, the team should re-evaluate the implementation of that action item.

11.4 Education and awareness material such as newsletters, posters, stickers and other educational information are invaluable tools for reducing the risk of runway incursions. These should be used by the runway safety teams for the guidance and education of controllers, pilots, vehicle drivers and personnel working at the aerodromes.

11.5 Identification of Hot Spots. Suitable strategies should be implemented to remove the hazard associated with hot spots. When this is not immediately possible, action should be initiated by adopting strategies to manage and mitigate the risk. These strategies may include:

a) Awareness campaigns;

b) Additional visual aids (signs, markings and lighting);

c) Use of alternative routings;

d) Construction of new taxiways;

e) The mitigation of blind spots in the aerodrome control tower; and

f) Aerodrome charts showing hot spots should be produced by the aerodrome operator, checked regularly for accuracy, revised as needed, distributed locally and published in the Aeronautical Information Publication (AIP).

12 Monitoring

12.1 The CAAF Ground Safety Department shall monitor the activities of the Runway Safety Teams. Programmed visits will be conducted by this section as part of its aerodrome safety oversight duties.

12.2 Reports of the meetings and mitigating actions by the runway safety teams including runway incursion and casual factor identification reports shall be readily available and submitted to the CAAF as requested.

13 References

1. Standards Document - Aerodromes (SD - AD)

2. ICAO Annex 6 (Operation of Aircraft)

3. ICAO Annex 11 (Air Traffic Services)

4. ICAO Annex 14 – Volume 1 (Aerodrome Design & Operations)

5. ICAO Doc 9870 (Manual on the Prevention of Runway Incursions)

6. ICAO Doc 9476 (Manual of Surface Movement Guidance and Control Systems)

7. ICAO Doc 9859 (Safety Management Manual)