Belize Department of Civil Aviation

ADVISORY CIRCULAR

Subject: Establishment of Runway Safety Teams for Aerodrome Operators.

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Initiated by: AGA Unit BDCA

Revision: Original

1. PURPOSE

This Advisory Circular (AC) provides guidelines for Aerodrome Operators to establish and implement Runway Safety Teams (RST) in conjunction with air traffic providers and air operators in accordance with the relevant provisions of ICAO Annexes 6, 11, 14 and Doc 9870.

Runway Safety Programmes and Runway Safety Teams constitute a runway safety enhancement system that essentially: identifies hazards; ensures the implementation of remedial actions needed to maintain/enhance safety performance; provides for continuous monitoring, reporting, data gathering and analysis, and regular assessment of stakeholder safety performance; and aims to continually improve the risk mitigation measures of the Runway Safety Programme. This AC recommends the application of the guidance material included in 'ICAO Doc 9870: Manual on the Prevention of Runway Incursions' in order to meet these objectives.

2. WHAT CANCELS THIS AC?

This Advisory Circular does not cancel any previous document.

3. APPROVAL:

Nigel Carter
Director
Belize Department of Civil Aviation

4. TABLE OF CONTENTS

5. REFERENCES.

ICAO Annex 14 – Volume 1: Aerodrome Design & Operations,
BCAR 14 - Aerodrome Design & Construction,
BCAR 139.007 - Operational Coordination with Users and Service Providers (c) 3.
IEM 139.007 (b) (3) Runway Safety Team,
ICAO Annex 6 - Operation of Aircraft,
ICAO Annex 11 - Air Traffic Services,
ICAO Doc 9870 - Manual on the Prevention of Runway Incursions,
ICAO Doc 9476 - Manual of Surface movement Guidance and Control Systems,
ICAO Doc 9859 - Safety Management Manual.

6. VALIDITY

a) At the time of publication.

7. BACKGROUND.

The collective goal of Aviation Safety Programmes is to reduce hazards and mitigate/manage residual risk in air transportation. Runway operations are an integral part of aviation; therefore the associated hazards and risks must be managed in order to prevent runway incursions that may lead to accidents. It is recommended that States take appropriate actions to promote runway safety improvement worldwide via the implementation of runway safety programmes.

8. APPLICABILITY

Operators of international airports shall implement a Runway Safety Team (RST) accepted by the Belize Department of Civil Aviation (BDCA) in accordance with BCAR 139.007 (b) (3) and IEM 139.007 (b) (3) Runway Safety Team.

Since effective Runway Safety Programmes require the collaboration of various individuals and organizations involved in airport operations and air travel; this AC is applicable to aerodrome operators, air traffic service providers, air operators, certificate holders, air navigation service providers, and any other group/s which may be directly involved in runway operations.

9. CONTRIBUTORY FACTORS.

Pilots, controllers and vehicle operators can all be involved in runway incursions. Accordingly, mitigation strategies that address these three, (3), parties shall be represented in the systemic solutions implemented. Runway incursions can be divided into several recurring scenarios which include:

a) an aircraft or vehicle crossing the path of a landing aircraft,
b) an aircraft or vehicle crossing the path of an aircraft during take-off,
c) an aircraft or vehicle traversing the runway-holding position marking,
d) an aircraft or vehicle inadvertently entering an active runway,
e) a breakdown in communications leading to failure to follow air traffic control Instruction, and
f) an aircraft passing behind an aircraft or vehicle that has not vacated the runway.

Statistics show that most runway incursions occur in visual meteorological conditions (VMC) during daylight hours. Contrarily, most accidents occur in low visibility conditions or at night. Consequently, all runway incursions shall be reported and analyzed, whether or not another aircraft or vehicle is present at the time of the occurrence.

10. BREAKDOWN IN COMMUNICATIONS

A breakdown in communication between air traffic controllers, pilots, and/or airside vehicle operators is a common factor in runway incursions and often involves the following:

a) use of non-standardized phraseology,
b) failure of the pilot or vehicle operator to provide a correct readback of an instruction,
c) failure of the controller to ensure that the readback by the pilot or vehicle operator conforms to the clearance issued,
d) pilot and/or vehicle operator misunderstanding of controller instructions,
e) the pilot and/or vehicle operator accepting a clearance intended for another aircraft or vehicle,
f) blocked and/or partially blocked transmissions; and

g) lengthy and/or complex transmissions.

11. AIRSIDE VEHICLE OPERATOR FACTORS

The most common driver-related factors identified in relevant 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 operators,
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 reference maps in vehicles.

12. AERODROME DESIGN FACTORS

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 taxiways and the characteristics of the aerodrome layout.

Common factors include:

a) the complexity of the airport layout includes 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.

13. PILOT FACTORS

Inadvertent non-compliance with ATC clearances is an example of a pilot factor that may result in a runway incursion. Often these cases are the result of a breakdown in communications or a loss of situational awareness in which pilots mistakenly believe they are at one location on the aerodrome (such as a specific taxiway) when they are not; or they assume that clearance was issued to enter the runway, when in fact it was not.

Other common pilot factors include:

a) inadequate signage and markings (that can lead to pilots' 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' performance of mandatory head-down tasks, which reduce situational awareness,
d) pilots being pressed by complicated and/or capacity enhancement procedures, leading to rushed behavior,
e) complicated taxiway designs,
f) incomplete, unconventional, or obsolete information provided regarding expected taxi routes; and
g) last-minute changes by ATC in taxi or departure routes.

14. AIR TRAFFIC CONTROL FACTORS

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

a) momentarily overlooking:
   1) an aircraft,
   2) the closure of a runway,
   3) a vehicle on the runway, or
   4) 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 clearance for runway crossing issued by a ground controller instead of an air/tower controller,
e) inaccurate identification of an aircraft or its location,
f) failure of the controller to provide an accurate readback of another controller's instruction.
g) failure of the controller to ensure that pilot or vehicle operator readback conforms to the clearance issued,
h) communication errors,
i) lengthy or complex instructions,
j) use of unconventional phraseologies, and

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

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) faulty human-machine interface, and
g) incorrect or inadequate handover between controllers.

15. ESTABLISHMENT OF RUNWAY SAFETY TEAMS

A Runway Incursion Prevention Programme starts with the establishment of Runway Safety Teams at Individual airports. The requirements for establishing the Runway Safety Team and the applicable terms of reference follow:

a) Airport operators shall establish Runway Safety Teams at individual aerodromes.
b) The Runway Safety Team shall comprise representatives from aerodrome operations, air traffic service providers, airlines or aircraft operators, pilots and any other groups with direct involvement in runway operations. The Team shall be headed by the Apron Supervisor or Officer in Charge,
c) The Runway Safety Team shall the terms of reference provided in paragraph sixteen (16) of this AC.
d) Information on the composition of these Teams shall be provided to BDCA every twelve, (12) months.
e) The primary role of the Runway Safety Team shall be:

1) to develop an action plan for runway safety.
2) identify issues related to potential runway incursion,
3) recommend strategies for hazard removal and mitigation of individual risk,
4) the Team shall meet a minimum of once in every three (3) month period,
5) the frequency of meetings may be increased in keeping with increasing traffic due to capacity enhancement.

16. GENERIC TERMS OF REFERENCE (TOR) FOR RUNWAY SAFETY TEAMS.

The generic terms of reference for the Runway Safety Teams formed at individual aerodromes shall be:

a) determining the number, type, and (if available) the severity of runway incursions,
b) considering the outcome/s of investigative 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 to the varied aspects of aerodrome operations are implemented,
e) identifying any problem areas at the aerodrome and suggest improvements,
f) conducting runway safety awareness campaigns that focus on local issues, for example, producing and distributing local hot spot maps or other guidance material as considered necessary; and
g) routinely reviewing the airfield to ensure its adequacy and compliance with the regulatory requirements contained in the BCARs and other guidance material issued by the BDCA, and
h) reporting of runway incursion and causal factor identification by the Safety Management System Coordinator (SMS) and Chief Operating Officer (COO) to the BDCA.

17. RUNWAY SAFETY TEAM OBJECTIVES

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 the collection, analysis and dissemination of runway safety data,
b) to check that signage and markings are compliant with the BCARs and visible to pilots and vehicle operators,
c) to develop initiatives for improving the standard of communication,
d) to identify potential new technologies that may reduce the possibility of runway incursion,

e) to ensure that procedures are compliant with the BCARs and other guidance material issued by the BDCA from time to time; and
f) to initiate local awareness by developing and distributing runway safety education and training material to controllers, pilots, airside vehicle operators and aerodrome personnel.

18. RUNWAY SAFETY TEAM: PREPARATION & MONITORING OF ACTION ITEMS

The primary outcome of Runway Safety Team meetings shall be the development of an action plan detailing activities for mitigating runway safety deficiencies. The action plan shall be aerodrome specific. This means that it shall be linked to explicit runway safety concerns, issues or problems occurring at the particular aerodrome. Such mitigating activities may include recommended changes to the: physical characteristics of the aerodrome or its facilities; air traffic control procedures; airfield access requirements; pilot and vehicle operator awareness; and production of hot spot maps.

A designated person or organization shall be assigned the responsibility for the successful completion of each mitigating activity. Notably, multiple individuals and/or organizations may be affected by an action item. In such cases the head of the Runway Safety Team shall co-ordinate with such persons and/or organizations for the completion of all tasks associated with the action item. A realistic timeline for the completion of the activity shall also be associated with each action item.

Additionally, the effectiveness of the implemented and/or completed action items shall be assessed periodically. This can be accomplished by comparing the results of the initial analysis with those of the current status of runway incursions at the aerodrome. For example, if an action item was to provide training for controllers, pilots or vehicle operators; the effectiveness of such training shall be evaluated by the Team. If the analysis shows little or no improvement in the number, type or severity of runway incursions, the Team shall re-evaluate the implementation of that action item.

Furthermore, education and awareness material such as newsletters, posters, stickers and other educational information are invaluable tools for reducing the risk of runway incursions. These shall be used by Runway Safety Teams for the guidance and education of controllers, pilots, vehicle operators and aerodrome personnel.

Finally, regarding the identification of Hot Spots; suitable strategies shall be implemented to remove associated hazards. When this is not immediately possible, preemptive action shall be taken to adopt 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 routes,
d) construction of new taxiways,
e) the mitigation of blind spots in the aerodrome control tower; and
f) aerodrome charts showing hot spots (these shall be produced by the aerodrome operator, checked regularly for accuracy, revised as needed, distributed locally and published in the Aeronautical Information Publication (AIP).

19. MONITORING

The AGA Unit, BDCA shall monitor the activities of Runway Safety Teams. Additionally, programmed visits will be conducted by this Unit for surveillance and monitoring purposes.

Reports of the meetings and mitigating actions taken by the Runway Safety Teams including runway incursion and causal factor identification reports - shall be submitted to the Department addressed to the Director, BDCA.