ESTABLISHMENT OF RUNWAY SAFETY TEAM FOR AERODROME OPERATORS

GENERAL

Ghana Civil Aviation Authority (GCAA) Advisory Circulars from Aerodrome Safety and Standards (ASAS) contain information about standards, practices and procedures that the Authority has found to be an Acceptable Means of Compliance (AMC) with the associated Regulations.

An AMC is not intended to be the only means of compliance with a regulation, and consideration will be given to other methods of compliance that may be presented to the Authority.

PURPOSE

This Advisory Circular provides methods, acceptable to the Authority, for showing compliance with Part 24 of the Ghana Civil Aviation Regulations (Aerodrome) Regulations, 2011, LI 2004, as well as explanatory and interpretative material to assist in showing compliance.

REFERENCE

Ghana Civil Aviation (Aerodromes) Regulations, 2011, L.I. 2004
Manual of Aerodrome Standards (MOS)
ICAO Annex 6 (Operation of Aircraft)
ICAO Annex 11 (Air Traffic Services)
ICAO Annex 14 – Volume 1 (Aerodrome Design & Operations)
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)

STATUS OF THIS AC

This is the first AC to be issued on this subject.

FORWARD

This document provides guidance to certificated aerodrome operators on the establishment of local runway safety teams (LRSTs) to lead actions on local runways to improve the situation with respect to runway safety and to ensure compliance with the GCARs and encourage the implementation of programmes, taking into account the requirements of the GCARs and international best practice.

APPROVAL

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1. PURPOSE

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

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 Advisory Circular recommends the guidance material in the Manual on the Prevention of Runway Incursion, Doc 9870 in meeting these objectives.

2. BACKGROUND

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.

3. APPLICABILITY

An Aerodrome operator shall have in place a Local Runway Safety Team (LRST) that is acceptable to the Ghana Civil Aviation Authority.

Since the Runway Safety Programme requires the collaboration of air traffic controllers, pilots, vehicle drivers and aerodromes management, representatives from the GCAA (observer status) this Advisory Circular 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.

4. CONTRIBUTORY FACTORS

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

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 controlinstruction; 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 duringdaylight 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 presentat the time of the occurrence.

4.1. Breakdown in Communications

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.

4.2. Airside Vehicle Driver Factors

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.

4.3. 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 runway crossings and the characteristics of the aerodrome layout.

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.

4.4. Pilot Factors

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.

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.

4.5. Air Traffic Control Factors

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;

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

e) communication errors;

f) overlong or complex instructions;

g) use of non-standard phraseologies; and

h) 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) human-machine interface; and

g) incorrect or inadequate handover between controllers.

5. ESTABLISHMENT OF LOCAL RUNWAY SAFETY TEAMS

A Runway Incursion Prevention Programme start 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 below:

a) Airport operators shall establish Local Runway Safety Teams at individual aerodromes.

b) 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, representatives from the GCAA (observer status) and any other groups with a direct involvement in runway operations. The Airport General Manager or his representative shall head the Team.

c) The LRSTs shall have the terms of reference as given in paragraph twelve (12) of this Advisory Circular.

d) The primary role of the Local Runway Safety Team shall be:
   • to develop an action plan for runway safety;
   • to identify potential runway incursion issues;
   • to recommend strategies for hazard removal and mitigation of individual risk;
   e) The Team shall meet at least once in every three (3) months. Frequency of meetings may be increased keeping in view increasing traffic due to capacity enhancement.

5.1. Generic Terms of Reference (TOR) of the Local Runway Safety Teams

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

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 disturbing 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 GCARs/GCADs and other guidance material issued by the GCAA.

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

5.2. Objectives of the LRSTs

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 MOS and visible to pilots and drivers;

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 GCARs/GCADs and other guidance material issued by the Authority from time to time; and

f) 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

5.3. Action Items to Be Prepared and Monitored by the LRSTs

The outcome of the meetings of the LRSTs 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; airfield access requirements; pilot and vehicle operator awareness; and production of hot spot maps.

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.

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 team should evaluate the effectiveness of such training. 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.

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 LRSTs for the guidance and education of controllers, pilots, vehicle drivers and personnel working at the aerodromes.

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 the aerodrome operator, checked regularly for accuracy, revised as needed, should produce hot spots distributed locally and published in the Aeronautical Information Publication (AIP).

6. MONITORING
The Aerodrome Safety and Standards (ASAS) Division of the Authority shall monitor the activities of the LRSTs. This Division, for surveillance and monitoring purposes, will conduct programmed visits.

Reports of the meetings and mitigating action by the LRSTs including runway incursion and casual factor identification reports shall be submitted to GCAA.