Advisory Circular

AC 139-16

Runway Safety Programme

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General

Civil Aviation Authority Advisory Circulars contain information about standards, practices, and procedures that the Director has found to be an **Acceptable Means of Compliance (AMC)** with the associated rule.

An AMC is not intended to be the only means of compliance with a rule, and consideration will be given to other methods of compliance that may be presented to the Director. When new standards, practices, or procedures are found to be acceptable they will be added to the appropriate Advisory Circular.

An Advisory Circular may also include **Guidance Material (GM)** to facilitate compliance with the rule requirements. Guidance material must not be regarded as an acceptable means of compliance.

Purpose

This Advisory Circular provides information and guidance to assist aerodrome operators and other parties to establish, implement and maintain a Runway Safety Programme contained in their Safety Management Systems in accordance with Civil Aviation Rule 139.93(b).

Related Rules

This Advisory Circular relates specifically to Civil Aviation Rule Part 139.

Change Notice

AC 139-16 Initial issue

Contents

CHAPTER 1 — GENERAL

1.1. Background

1.1.1. In 2001 the ICAO Air Navigation Commission began action to address runway safety. Several critical areas were identified that needed to be investigated and which had a relation to overall runway safety, including radiotelephony phraseology, language proficiency, equipment, aerodrome lighting and markings, aerodrome charts, operational aspects, situational awareness and Human Factors.

1.1.2. To improve the situation with respect to runway safety and to encourage the implementation of relevant provisions, ICAO embarked on an education and awareness campaign which began with a comprehensive search for the best available educational material for inclusion in an interactive runway safety toolkit.

1.1.3. To address aerodromes, air traffic management and flight operations, among other subjects, ICAO also conducted a series of runway safety seminars in the ICAO regions, with the aim of disseminating information on the prevention of runway incursions.

1.1.4. The objective of this document is to give guidelines to aerodrome operators, air traffic service (ATS) providers and aircraft operators to implement runway safety programmes taking into account best practices already implemented by some other States, international organizations, aerodrome operators, ATS providers and airlines.

1.1.5. An evolution in safety thinking has led to a change in focus: from that of the individual to that of the organization as a whole. It is now acknowledged that senior management decisions are influential in shaping the operational contexts within which operational personnel perform their duties and discharge their responsibilities. It is also accepted that, regardless of the extent to which operational personnel excel in their job performance, they can never ultimately compensate for systemic deficiencies and flaws in the system that binds them. This new way of thinking is reflected in the following recent Standards and Recommended Practices (SARPs) on safety management which, for the first time, explicitly address the contribution and responsibility of senior management regarding safety.

1.1.6. Annex 6 — Operation of Aircraft requires operators to establish and maintain an accident prevention and flight safety programme.

1.1.7. Annex 11 — Air Traffic Services requires States to implement safety programmes and ATS providers, to implement safety management systems (SMS).

1.1.8. Annex 14 — Aerodromes requires aerodrome operators to implement SMS, as a part of the certification process of an aerodrome, and recommends the same for already certified.

1.1.9. The evolution in safety thinking notwithstanding, it is a fact that properly selected, trained and motivated operational personnel remain the true custodians of safety. When a system breaks down due to unanticipated deficiencies in design, training, technology, procedures or regulations, human performance is the last line of defence against latent conditions that can penetrate the aviation system defences and potentially result in compromised safety. Operational personnel are the true “gatekeepers” of the aviation safety system.

1.1.10. From this broad perspective, it is imperative to avoid the pitfall of focussing safety efforts on organizational issues exclusively, to the detriment of the human contribution to the success and failure of the aviation system. Active failures by operational personnel are sometimes a consequence of flaws in the system, sometimes a result of well-known and documented human limitations, but usually are a combination of the two. A true systemic approach to safety must consider latent conditions in the system as well as active failures on the front lines of operations. Such a systemic approach underlies this document.

1.2. Introduction

1.2.1. In accordance with the requirements of Rule 139.93(b), the applicant of an aerodrome operating certificate must establish, implement and maintain a safety management system which meets the requirements of Part 100. This safety management system must include a runway safety programme.

1.2.2. Aircrafts are in close proximity to other aircrafts and obstacles such as vehicles, pedestrians and airport structures and equipment on the airport surface. The aim is to reduce the risk of runway incursions, runway excursions and wrong runway departures, as well as address the errors committed by pilots, air traffic controllers, vehicle operators and pedestrians. The focus will be on outreach, awareness, improved infrastructure and technology.

1.2.3. Several critical areas that need to be investigated and which had a relation to overall runway safety including:

a) Radiotelephony phraseology;
b) Language proficiency;
c) Equipment;
d) Aerodrome lighting and markings;
e) Aerodrome charts;

f) Operational aspects;
g) Situational awareness;
h) Human Factors.

1.2.4. In 2005 ICAO developed the ICAO Runway Safety Toolkit and in 2007 Manual on the Prevention of Runway Incursions (Doc 9870). The objective of this manual is to help States, international organizations, aerodrome operators, ATS providers and aircraft operators to implement runway safety programmes taking into account best practices already implemented by some States, international organizations, aerodrome operators, ATS providers and airlines.

1.2.5. ICAO Runway Safety Programme has evolved to include the prevention and mitigation of Runway Incursion, Runway Excursion and other occurrences related to runway safety.

1.2.6. ICAO and its member States are now working together on a series of concrete measures to minimize the risks of runway incursions, runway excursions and other events linked to runway safety by establishing, promoting and enhancing multi-disciplinary runway safety teams at individual airports.

1.3. Applicability

1.3.1. This AC 139-16 applies to all aerodrome operators[1] certificated under Part 139 of the PNG Civil Aviation Rules and aircraft operators as well as air navigation service providers who are requested to observe the guidelines through continuous system improvement and adoption of industry best practice at aerodromes in Papua New Guinea.

1.3.2. For the purposes of, but not limited to Rule 139.93(b), it is recommended that this AC 139-16 provides guidance to aerodrome operators when establishing, implementing and maintaining a Runway Safety Programme.

1.4. Objectives

1.4.1. The objective for Runway Safety Programme at aerodromes in Papua New Guinea is to prevent and mitigate as far as reasonably practicable the following:-
a) Runway Incursion
b) Runway Excursion
c) Other occurrences related to runway safety.

Note 1: *Aerodrome operators include applicants applying for an aerodrome operating certificate (ADOC).*

CHAPTER 2 — RUNWAY SAFETY TEAM

2.1. Establishment

2.1.1. A Runway Safety Programme shall start with the establishment of runway safety teams at individual aerodromes.

2.1.2. The runway safety team shall be established by the Aerodrome Operator. The roles and responsibilities of the team are as mentioned in paragraph 2.1.1 to 2.1.10 of this AC.

2.1.3. The runway safety team shall comprise of representatives from the following disciplines:

a) aerodrome operator
b) aircraft operator
c) air traffic service provider
d) ground service providers

2.1.4. The members of Runway Safety Team shall be endorsed by the National Runway Safety Programme Committee which is chaired by Senior AGA Inspector, Aerodrome Inspection & Certification Section, CASA PNG or any other person who is appointed by him.

2.1.5. The runway safety team meeting shall be chaired by Airport Manager or Head of Operation of that particular aerodrome.

2.1.6. The chairman of Runway Safety Team shall submit the Runway Safety Programme and shall regularly report to Aerodrome Inspection & Certification Section, CASA PNG.

2.1.7. The Aerodrome Operator shall conduct a minimum of four [4] Runway Safety Team meetings at each aerodrome every year.

2.1.8. The Aerodrome Operator shall submit the minutes of Runway Safety Team meeting to Aerodrome Inspection & Certification Section, CASA PNG within two weeks after the meeting.

2.1.9. The primary role of a local runway safety team shall be to develop an action plan for runway safety, advise management as appropriate on potential runway incursion/excursion issues and recommend strategies for hazard removal and mitigation of the residual risk. These strategies may be developed based on local occurrences or combined with information collected elsewhere.

2.1.10. The runway safety team shall establish goals that will improve the safety of runway operations, inter alia:

a) to improve runway safety data collection, analysis and dissemination;
b) to check that signage and markings are national and ICAO-compliant and visible to pilots and drivers;

c) to develop initiatives for improving the standard of communications;
d) to identify potential new technologies that may reduce the possibility of a runway incursion / excursion;
e) to ensure that procedures are compliant with the national and ICAO Standards and Recommended Practices (SARPs); and
f) to initiate local awareness by developing and distributing runway safety education and training material to controllers, pilots and personnel driving vehicles on the aerodrome.

2.2. Generic Term of Reference for Runway Safety Team

2.2.1. Suggested generic terms of reference for a runway safety team are to assist in enhancing runway safety by:

a) determining the number, type and, if available, the severity of runway incursions / excursions;
b) considering the outcome of investigation reports in order to establish local hot spots[2] or problem areas at the aerodrome;
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 (Doc 9870) are implemented;
e) identifying any local problem areas and suggesting improvements;
f) conducting 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 reviewing the airfield to ensure its adequacy and compliance with national and ICAO SARPs.

2.2.2. The local runway safety team will assist in enhancing runway safety by:

a) Considering the outcome of investigation reports to establish local hot spot or problem areas at the aerodrome;
b) Working as a combined team to better understand the operating difficulties of those working in other areas, and suggest items for improvement;
c) Co-ordinating with the organisations or teams they represent on the implementation of the recommendations that have been assigned to the local teams during the Runway Safety Team meeting;
d) Identifying any local problem areas and making any suggestions for improvement that are considered necessary;

Note 2: The ICAO definition of a hot spot is:
"A location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary."

e) Running a local Runway Safety Awareness Campaign, that focuses on local issues, for example by producing and distributing local hot spot maps or other guidance material as considered necessary;
f) Confirming that communications between the Air Navigation Service Provider and Aircrew/Drivers are satisfactory, or if any improvements could be suggested. For example, although standard ICAO phraseology may be utilised, some messages from ATC may be overlong or complex, which may have the potential to confuse drivers or aircrew; and
g) Driving on the airfield on a regular basis to ensure that all markings and signage are understandable by all parties, and that no possible ambiguity exists.

2.3. Runway Safety Incident Reporting

2.3.1. All reportable occurrences (accident, incident, deficiency etc.) including runway incursion / excursion incidents are reported and investigated in sufficient detail to identify specific causal and contributory factors (see the reporting forms in Appendices F and G of ICAO Doc 9870 – Manual on Prevention of Runway Incursions).

2.3.2. The Aerodrome Operator, airlines and air traffic service provider shall record any safety incident occurred at their respective aerodromes.

2.3.3. They shall conduct safety investigation for any incident/accident occurred and shall produce a safety investigation report.

2.3.4. Runway Safety Team should promote a safety culture that embraces the concept of just culture and non-punitive safety reporting. RST members should also provide an avenue for confidential reporting.

2.3.5. RST Team shall discuss the outcome of safety investigation reports from various disciplines and focus on implementation of recommendation made.

2.3.6. The safety investigation report shall be submitted to the Aerodrome Inspection & Certification Section, CASA PNG as soon as possible after the incident/accident occurred. If safety critical recommendations are deemed necessary, a preliminary report should be provided within 48 hours.

2.4. Hot Spot

2.4.1. The criteria used to establish and chart a hot spot are contained in the PANS-ATM (Chapter 7) and Annex 4 — Aeronautical Charts (Chapters 13, 14 and 15).

2.4.2. The Aerodrome Operator shall and must produce “Hot Spot Chart” which identify any area at their respective aerodrome that require a more detail concern by pilot and any of airside users to avoid any unwanted incident/accident. The chart shall be regularly updated in AIP and shall be submitted regularly to Aerodromes Inspection and Certification Section, CASA PNG.

2.4.3. Hazards associated with hot spots shall be mitigated as soon as possible and so far as is reasonably practicable.

2.4.4. Examples of how hot spots are shown on charts are provided in Figures 3-1, 3-2 and 3-3 ICAO Doc 9870 Manual on the Prevention of Runway Incursions.

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

2.4.6. Once hot spots have been identified, suitable strategies should be implemented to remove the hazard and, when this is not immediately possible, 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; and
e) the mitigation of blind spots in the aerodrome control tower.

2.5. Runway Safety Promotion

2.5.1. The Aerodrome Operator should regularly produce and distribute brochures for “Best Practice in aerodromes” and shall disseminate them to all relevant aerodrome stakeholders. A copy of the brochures should be given to Aerodrome Inspection & Certification Section, CASA PNG

2.5.2. The Aerodrome Operator should conduct regular in-house runway safety related trainings to all their staff and submit the lists of staff who have attended the training to Aerodrome Inspection & Certification Section, CASA PNG.

2.5.3. The individual Runway Safety Teams should produce an annual report to the National Runway Safety Programme Committee which the committee will use to prepare a National Runway Safety Programme Report. The report should be submitted to Aerodrome Inspection & Certification Section, CASA PNG before the end of every year.

2.5.4. National Runway Safety Programme meeting will be conducted twice a year to discuss all runway safety related matters and all the matters listed above. This meeting will be chaired by Senior AGA Inspector of the Aerodrome Inspection & Certification Section, CASA PNG or any other person who is appointed by him. The minutes of the meeting and the results of any discussion of the meeting will be submitted to Director for Civil Aviation of Papua New Guinea for further action.

2.5.5. The objective of National Runway Safety Programme is to mentor the formation and then oversee the activities of Runway Safety Teams in PNG. Membership of this committee is by invitation by Senior AGA Inspector of the Aerodrome Inspection & Certification Section, CASA PNG and shall consist of

representatives from each of the disciplines involved in Runway Safety Team activity:

a) Pilots
b) Air Traffic Controller
c) Airport Operators
d) Ground Handling Service Providers

2.5.6. The National Runway Safety Programme Committee will meet officially twice a year except when mentoring the formation of teams across the nation, when it will meet as and when required.

CHAPTER 3 – AIRPORT OPERATIONS

3.1. Introduction

3.1.1. Prevention of runway incursions and favourable operating environment are important factors that contribute to runway safety. With these basic principles, an aerodrome operator should establish procedures to monitor the conditions of runways and ground aids which must be supported by effective maintenance programme to ensure system integrity.

3.1.2. Logical layout, simplicity and avoidance of runway crossings should be included as elements in the design and introduction of new aerodrome infrastructure.

3.1.3. Human factors shall be considered in setting up aerodrome procedures with the objectives of minimizing human errors and respecting user-friendliness when used by pilots, vehicle drivers and air traffic controllers.

3.2. Annex 14 Provisions

3.2.1. An aerodrome operator is required to fully implement at high priority the national and ICAO provisions required that are relevant to runway safety. Their compliance forms the basis for consideration of certifying aerodromes. Appropriate additional safeguards should be taken into account to avoid runway incursion.

3.3. Runway Maintenance Programme

3.3.1. A maintenance programme, including preventive maintenance where appropriate, shall be established for the aerodrome to maintain runway in a condition which does not impair the safety of aircraft operations. A robust maintenance programme should be implemented to prevent failure or degradation of runway facilities.

3.3.2. The design and application of the maintenance programme should observe Human Factors principles. Guidance material on Human Factors principles can be found in the ICAO Human Factors Training Manual (Doc 9683).

3.4. Pavement Maintenance

3.4.1. The surface of pavements (runways and adjacent areas) shall be kept clear of loose stones or other objects that might cause damage to aircraft structures or engines, or impair the operations of aircraft systems. In this connection, a comprehensive runway inspection and sweeping programme should be incorporated into the standard operation procedures of aerodrome operators.

3.4.2. The surface of runways shall be maintained in a condition so as to provide good friction characteristics and low rolling resistance. Standing water, mud, dust, sand, oil, rubber deposits and other contaminants shall be removed as rapidly and completely as possible to minimize accumulation. On every landing, the runway touch-down zone is heavily loaded and rubber from aircraft tyres would be

inevitably deposited on runway surface. The adverse effect as a result of rubber deposit should be continuously monitored and addressed.

3.4.3. An aerodrome operator shall establish a programme to measure the friction characteristics of runway. Different levels of friction corresponding to the level of maintenance required, including rubber removal, should be defined. Pertinent information should be made available to air traffic control (ATC) for onward transmission to pilots if necessary.

3.5. Visual Aids

3.5.1. A system of preventive maintenance of visual aids shall be adopted to ensure the availability and reliability of the runway lighting and marking systems. Guidance on preventive maintenance of visual aids is given in the ICAO Airport Services Manual, Part 9 (Doc 9137 Part 9).

3.5.2. The system of preventive maintenance employed for a precision approach runway should include at least the following checks:

i. visual inspection and in-field measurement of the intensity, beam spread and orientation of lights included in the approach and runway lighting systems;

ii. control and measurement of the electrical characteristics of each circuitry included in the approach and runway lighting systems; and

iii. control of the correct functioning of light intensity settings used by the air traffic control unit.

3.5.3. The frequency of measurement of lights for a precision approach runway should be based on traffic density, the local pollution level and the reliability of the installed lighting equipment. The results of the in-field measurements should be continuously assessed and subject to audit by CASA PNG.

3.6. Runway works

3.6.1. An aerodrome operator shall plan and implement works to be carried out at an aerodrome so as not to create any hazard to aircraft operations or confusion to pilots. A works plan should be developed whereby the work items are thoroughly co-ordinated amongst aerodrome users, air traffic control and other service providers after suitable consultations.

3.6.2. An aerodrome operator shall make arrangement to inspect the works areas, as circumstances require, to ensure aviation safety during and immediately after any period of construction or repair of runway facility or equipment that is critical to the safety of aircraft operations, and at any other time when there are conditions on the runway that could affect aircraft operations.

3.6.3. An aerodrome operator shall not close the runway to aircraft operations due to pre-planned aerodrome works unless an Aeronautical Information

Publication (AIP) Supplement or a Notice to Airmen (NOTAM) giving notice of the closure has been issued in advance before the closure takes place.

3.6.4. An aerodrome operator shall appoint a person responsible for the safe and proper execution of each item of runway works. This person is responsible to ensure that the works information is widely promulgated to airport users by way of Airport Circular, AIP Supplement or NOTAM.

3.6.5. Runways or taxiways sections that are closed as a result of the aerodrome works being carried out shall be suitably delineated with marker boards and lit in accordance with the appropriate aerodrome standards.

3.6.6. All obstacles including vehicles and plants created as a result of the aerodrome works being carried out shall be marked and lit in accordance with the appropriate aerodrome standards.

3.6.7. Vehicles used by works parties carrying out aerodrome works on the movement area should be equipped with a radio for two-way communications with air traffic control and the unit responsible for airfield control. The drivers of these works vehicles should be properly trained and briefed about the works details prior to each works session.

3.7. Safety Management System (SMS)

3.7.1. An aerodrome operator shall implement a SMS in accordance with the provision in Annex 14 and Annex 19. Facilities, equipment and procedures used to support runway operations shall be designed and operated in a way that the combination of the probability of occurrence and the seriousness of the consequences of the hazard occurring must not result in a level of risk that is unacceptable.

3.7.2. Risk assessment matrices facilitate the determination of acceptable levels of risks taking into account the probability of occurrence and seriousness of consequences.

3.8. SMS Implementation

3.8.1. The implementation of the SMS should include the introduction of:

i. **Quantitative safety levels –** an acceptable level of safety in respect of runway operations should be specified.

ii. **System safety assessment –** safety assessment exercises should be performed whenever changes, additions or replacements of runway facilities are introduced. All records should be documented.

iii. **Safety committee (Runway Safety Teams) –** forum with members from pilot community, air traffic controllers, aerodrome operator, airline

representatives and relevant franchisees with operations associated with runway operations should be formed to discuss issues on runway safety;

iv. **Safety competency scheme –** a scheme should be developed to assess the safety competency on staff involved in runway operations.

v. **Safety audit –** periodic safety audits are to be performed to confirm the compliance with the safety requirements and the principles of the safety management system;

vi. **Safety monitoring and reporting system –** suitable monitoring and reporting mechanism should be developed for identifying undesirable trends in runway safety performance for further remedial action;

vii. **Safety information dissemination –** a system of information dissemination should be developed to keep aerodrome staff notified whenever a potential safety threat is discovered for enhancing their awareness; and

viii. **Continuous safety promotion –** efforts should be made to nurture a safety culture amongst the airport community.

CHAPTER 4 – AIRCRAFT OPERATIONS

4.1. Introduction

4.1.1. Pilots play an important role in contributing to runway safety. Aircraft operators are therefore requested to review the suggestions put forward in this document and adopt these guidelines where necessary in order to refine their ground operation procedures.

4.2. Pilots Training

4.2.1. Pilots should be given training on visual aids, for example, aerodrome signage, lightings and markings, to assist in determining positions. Emphasis should be given to maintaining a high level of awareness in observing and complying with signs and markings. A sound knowledge of all the symbols, signs and colour of lightings that can be anticipated at aerodromes is vital.

4.3. Cockpit management during ground operation

4.3.1. The taxi phase should be treated as a 'critical phase of flight', which requires careful planning.

4.3.2. Pilots should be familiar with the airport that they operate to. Airfield charts and NOTAMs should be reviewed prior to commencement of taxi and before top of descent. Special attention should be paid to the location of HOT SPOTS if known, i.e. complex intersections, runway crossings area/ locations where runway incursions have taken place in the past.

4.3.3. Pilots should monitor the aircraft's position against the aerodrome chart so as to ensure that instructions received from ATC and flight information services are being followed correctly. Any uncertainty must be resolved through clarification and assistance from ATC and or flight information services.

4.3.4. Pilots should exercise extra caution when being instructed to taxi into position and hold, particularly at inclement weather or in poor visibility. Remaining in position and holding on the departure runway for an extended period without direct communication with ATC or surrounding traffic should be avoided.

4.3.5. When crossing or entering runways, all flight crew members should assign full concentration on the runway condition. In addition to visual checking, other available means, such as monitoring of ATC frequency, aircraft radar may be used to obtain a better picture on the traffic situation.

4.3.6. Prior to entering a runway, each flight crew member must cross check and positively confirm with the other the runway identification signage and that the aircraft heading aligns with the designated runway.

4.3.7. After landing and exiting the runway, non-essential communications and non-essential flight crew actions should not be initiated until clear of all runways, in accordance with sterile cockpit procedures.

4.4. Communication with air traffic control

4.4.1. It is vital that pilots follow the clearance or instructions that are actually received, and not the one that they expected to receive.

4.4.2. Standard phraseology should be used as far as practicable.

4.4.3. Clearance should be read back in its full content with the aircraft call sign included. The runway designator should be included in case of hold short, runway crossing, take-off, or landing.

4.4.4. The receipt of a clearance to taxi to a point beyond a runway does not automatically include the authorization to cross that runway. Each taxi clearance beyond a runway should contain an explicit clearance to cross the runway or an instruction to hold short of that runway

4.4.5. An ATC instruction to follow other traffic does not automatically imply that permission to enter or cross a runway is given. Each aircraft requires a specific clearance to enter or cross any runway. Flight crew should seek clarification from ATC if in doubt.

4.4.6. Flight crew members should pay extra attention to ATC messages when another aircraft with a similar call sign is on the frequency.

4.4.7. All pilots are required to attain at least ICAO Level 4 in the language proficiency test.

4.5. Crew resource management

4.5.1. Flight crew members should support each other in managing the cockpit. All flight crew members should monitor the frequency and agree upon the acceptance of a clearance to taxi, cross a runway, and take-off or land on a nominated runway. Any misunderstanding or disagreement among flight crew on flight deck duties should be resolved immediately by contacting ATC for clarification.

4.5.2. All the visual information that is available should correlate with the actual position. The gathering of visual information, allowing a critical review and cross-checking of position, is the task of the entire flight crew. Any crew member who is uncertain or in doubt about the current aircraft position must speak up and resolve that uncertainty.

CHAPTER 5 – VEHICLE OPERATIONS IN AIRSIDE

5.1. Introduction

5.1.1. Runway incursion by vehicles has caused considerable concern in daily operation at airfields. An aerodrome operator therefore should establish comprehensive procedures to regulate the quality and discipline of airside drivers. Suitable measures should be introduced to promote a safety culture in general and arouse the situation awareness of drivers and aircrew.

5.2. Control of Airside Driving and Airside Driving Certification

5.2.1. In order to ascertain drivers' competency for operating vehicles at airside, an aerodrome operator shall administer an airside driving permit system for the aerodrome.

5.2.2. The numbers of drivers permitted to drive on the manoeuvring area should be kept to the minimum necessary. The driving operations should be related to the functions of their duties.

5.2.3. All drivers should be trained and assessed initially and be provided with refresher training at agreed intervals for re-examination to ascertain their competency.

5.2.4. Where responsibility for the training of vehicle drivers is delegated to a third party provider, the aerodrome operator should institute a programme of audits/examinations, as part of its SMS, to ensure that agreed standards are being maintained.

5.3. Airside Driving Training

5.3.1. An aerodrome operator should introduce a formal driver training and assessment programme. Training guidelines should be provided and a set of agreed standards on driver competency should be developed in administering the programme.

5.3.2. Training material should cover general aerodrome layout including:

i. runway, taxiway, apron, roads, crossings, runway holding points etc.;

ii. all aerodrome signs, markings and lights for both vehicles and aircraft;

iii. specific reference to signs, markings and lights used to guard runways and critical areas; and

iv. specific reference to low visibility operation.

5.4. Airside Driving Discipline

5.4.1. Provided there is an ATC at the aerodrome, airside drivers must be given a clear message that ATC instructions must be followed at all time. Without ATC's authorization, drivers must not enter the runway. If there is any doubt in the mind of a vehicle driver when receiving a clearance or instruction, clarification should be

immediately requested from ATC before the clearance or instruction is enacted. Vehicle drivers should immediately contact the unit responsible for airfield control or ATC when uncertain of their exact position on an aerodrome.

5.4.2. Vehicle drivers experiencing radio problems while on manoeuvring area must immediately vacate the manoeuvring area. Driver with vehicle breakdown on runways and taxiways must seek assistance from ground staff or report to ATC immediately.

5.5. Language Proficiency in respect of Radiotelephony (RTF) Communication

5.5.1. Standard phraseology should be used for communication among drivers, controllers and airfield control personnel. Vehicle driver or his team members who communicates with air traffic controller and maintaining a listening should read back all instructions pertaining to entering, leaving or crossing runways.

5.6. Situational Awareness

5.6.1. On the part of airside drivers, situational awareness is about knowing where they are and where they want to go, as well as knowing the traffic in the surrounding.

5.6.2. Drivers should be encouraged to exercise extra vigilance when operating in the vicinity of runways. Close references should be made with any visual cues, lightings and signage especially at times of darkness and poor visibility.

CHAPTER 6 – AIR TRAFFIC CONTROL OPERATION

6.1. Introduction

6.1.1. One of the primary objectives of air traffic control is to prevent collision on the ground between aircraft and between aircraft and vehicles. Skills and procedures for achieving this objective should form the basic training and proficiency assessment of air traffic control personnel. However, air navigation service provider is advised to make continuous effort to promote runway safety through service quality assurance, excelling of operational management and improvement of air traffic control facilities through utilization of state-of-the-art technology.

6.2. Safety Management System

6.2.1. The top management of an air navigation service provider (ANSP) should make full commitment in promoting runway safety. Safety Management for Air Traffic Management is generally specified in Annex 11 and generically detailed in Annex 19.

6.2.2. ANSP shall implement the necessary Safety Management provisions and practices stated therein and make effort to arouse the safety awareness of its staff and motivate a safety culture within the organization.

6.3. Airfield Surveillance

6.3.1. In addition to the basic skills of aerodrome control, controllers should be advised through training or periodic briefing on the importance of visual surveillance with particular emphasis on vigilance in determining aircraft and vehicle positions. Restrictions to the visibility from the control tower that may have a potential impact to the ability of controllers to see the runway should be assessed and clearly made known to aerodrome controllers.

6.3.2. Other airport units may be requested to provide supplementary surveillance from their locations or vehicles on aircraft/vehicle positions if necessitated by circumstances such as at night or in time of poor visibility.

6.3.3. Surveillance equipment (such as advanced surface movement guidance and control system or close-circuit TV) should be provided as aids to controllers in determining aircraft and vehicle positions. The system limitations for surveillance equipment, if applicable, must be made known to controllers so that caution is exercised during equipment utilization.

6.4. Operational Management

6.4.1. Oversight of daily aerodrome operation should be exercised by competent supervisory staff. The workload of individual control positions in the tower should be closely monitored to ensure that it is within the manageable limit.

6.4.2. ANSP management should ensure that aerodrome control staff are familiar with the Low Visibility procedures through refresher training, periodic briefing or discussion during proficiency examinations.

6.4.3. A system or work practice serving the purpose of a memory aid to indicate that the runway is being occupied by towing aircraft, vehicles or maintenance personnel etc. should be developed and provided for use.

6.5. Operational Communication

6.5.1. The radio equipment used for communication with pilots and airport ground vehicles must be thoroughly evaluated to ensure that it provides adequate coverage for runway operation.

6.5.2. All aerodrome controllers are required to attain at least ICAO Level 4 in the language proficiency test.

6.5.3. Standard radio-telephone phraseology should be used as far as practicable.

6.5.4. Instructions for aircraft or vehicles to enter/exit the runway shall be issued in a clear and unambiguous manner. Full call sign of aircraft or vehicles and runway designator should be used to avoid confusion.

6.5.5. All clearances for operation on the manoeuvring area should be read back by the receivers.

6.5.6. In the interest of situation awareness, all communications associated with runway operations should be conducted on a common frequency when practicable.

6.5.7. If the taxi route is expected to be long and complex, controller should use where applicable progressive taxi instructions to reduce pilot workload and the likelihood of confusion.

6.5.8. Where practicable, en-route clearance should be passed before leaving the gate to avoid distraction to pilots during taxiing.