BELIZE:

CIVIL AVIATION (AERODROME CERTIFIATION, OPERATION AND SURVEILLANCE) REGULATIONS, 2023

ARRANGEMENT OF REGULATIONS

BELIZE:

STATUTORY INSTRUMENT

No. 115 of 2023

REGULATIONS made by the minister responsible for Civil Aviation in exercise of the powers conferred upon him by section 4, 5, 8, 9, and 32 of the Civil Aviation Act, Chapter 239 of the Substantive Laws of Belize, Revised Edition 2020, and all other powers thereunto him enabling.

(Gazetted 23rd October, 2023).

WHEREAS, Belize is a member of the Central American Organisation for the Control of Air Navigation Services (Corporacion Centroamerica de Servicios de Navegacion Aerea) (hereinafter referred to as "COCESNA");

AND WHEREAS, COCESNA has made certain regulations for the control of civil aviation (hereinafter referred to as "the COCESNA Regulations");

AND WHEREAS, in common with other countries in the region, it would be expedient for Belize to adopt the COCESNA Regulations with such modifications as may be necessary;

AND WHEREAS, the Regulations contains in the Schedule, hereto are based on the COCESNA Regulations, as amended to suit the conditions of Belize;

NOW THEREFORE, in exercise of the powers conferred upon the Minister by sections 4, 5, 8, 9, and 32 of the Civil Aviation Act, the following Regulations are made.

Citation.

1. These Regulations may be cited as the

COCESNA Regulations to have the force of law. CIVIL AVIATION (AERODROME CERTIFICATION, OPERATION AND SURVEILLANCE) REGULATIONS, 2023.

COCESNA Regulations to have the force of law.

2. The COCESNA Regulations, as modified, contained in the Schedule, shall have the force of law in Belize.

Penalty.

3. Every person who contravenes these Regulations commits an offence and is liable on summary conviction to the penalty provided in section 30 of the Act.

BELIZE DEPARTMENT OF CIVIL AVIATION

BCAR - 139

SCHEDULE

[regulation 2]

BCAR- 139 AERODROME CERTIFICATION, OPERATION AND SURVEILLANCE

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BELIZE DEPARTMENT OF CIVIL AVIATION

Section - 1 **BCAR - 139**

SECTION 1 - REQUIREMENTS

1 GENERAL

1.1. Section 1 of BCAR 139 is presented in one column on loose pages. Each page is identified by the date of issue or amendment under which it is amended or issued.

1.2. BCAR 139 is written using Arial 10. Explanatory notes are not considered requirements. In case they exist, they will be written in Arial 8.

2 PRESENTATION

2.1. Section 1 includes the requirements for Aerodrome Certification, Operation and Surveillance in compliance with Annex 14 to the Convention on International Civil Aviation and the requirements of national regulations.

BELIZE DEPARTMENT OF CIVIL AVIATION

Section - 1 **BCAR - 139**

SUBPART A - GENERAL

BCAR 139.001 Applicability

This BCAR 139 applies to:

(a) The aerodrome operators for public service located in domestic territory and used in:

(1) Regular and irregular international operations with any type of aircraft.

(2) Regular and irregular local operations involving aircraft with a maximum take-off weight greater than 20,000 Kg or more than thirty seats for transportation of passengers, cargo or mail.

(3) Regular and irregular local operations involving aircraft with a maximum take-off weight lower than 20,000 Kg for transportation of passengers, cargo or mail at night operations.

(4) The following requisites shall be applicable to all domestic aerodromes carrying out commercial passenger, cargo and mail operations within national territory:
Movement area maintenance program and plan for paved areas, unpaved areas, visual aids, electrical systems (as applicable), secondary power supply (as applicable), aeronautical studies and risk assessment, safety audits and inspections by the BDCA, apron management and safety, handling and storage of hazardous materials, vehicle operations (as applicable), obstacle control, fencing, notifying and reporting aerodrome conditions to the pilots, safety during construction or maintenance, ground servicing of aircraft, disabled aircraft removal, aerodrome incident reporting and investigation, and any other provision that in the opinion of the authority is applicable to the aerodrome, commensurate with the aerodrome operations.

(5) If aircraft operate at private aerodromes for which an aerodrome certificate is not required, the owner may apply for it based on the requirements of this BCAR and the fees established by the BDCA or the competent authority.

(b) The aerodrome service providers, rescue and firefighting services, technical support companies for aircraft: dispatch, online service, fuelling, food and beverage supply, handling of cargo operation and other organisations which perform or may perform independent activities in the aerodrome.

BCAR 139.003 Requirement for an aerodrome certificate (See IEM 139.103)

(a) The operator of a private or State aerodrome intended for public use of aircraft in-international operations with regular and/or irregular flights carrying passengers, cargo or mail, shall be in possession of an aerodrome certificate based on this BCAR.

(b) Besides the provisions in subsection (a), the operator of an aerodrome must comply with the related valid and applicable standards, regulations and provisions as part of the certification process.

(c) A person shall not operate an international aerodrome in Belize unless the aerodrome is issued an aerodrome certificate by the Director of Civil Aviation.

(d) Unless otherwise authorised by the Director of Civil Aviation, a person shall not operate an aircraft for international flights from any other location than a certificated aerodrome.

(e) An aerodrome certificate shall be required if:

1. the aerodrome conducts international flights; or

2. the aerodrome conducts aircraft operating flights for the purpose of public transport and having:

I. a type certificated maximum passenger seating capacity of 30 or more; or

II. a MTOWA of 20,000 Kg or more

(f) For actual local public aerodromes that do not meet subpart 139.003 (e), the BDCA can establish the rules based on BCAR 14 and this regulation to grant a licence of operation in order to ensure minimum safety conditions.

BCAR 139.005 Abbreviations and definitions

In this regulation, the terms and expressions listed below have the following meaning:

a) ABBREVIATIONS

ACN[1]	Aircraft classification number
ACR[2]	Aircraft classification rating
ADP	Airside driver permit
Approx.	Approximately
ASDA	Accelerate-stop distance available
ARIWS	Autonomous runway incursion warning system
ATS	Air traffic services
BDCA	Belize Department of Civil Aviation
C	Degree Celsius
CBR	California bearing ratio
cd	Candela
CIE	Commission Internationale de l'Éclairage
cm	Centimetre
DME	Distance measuring equipment
E	Modulus of elasticity
Ft	Foot
ILS	Instrument landing system
IMC	Instrument meteorological conditions
K	Kelvin

[1] Applicable until 27 November 2024
[2] Applicable as of 28 November 2024.

kg	Kilogram
km	Kilometre
km/h	Kilometre per hour
kt	Knot
L	Litre
LDA	Landing distance available
m	Metre
max	Maximum
mm	Millimetre
min	Minimum
MN	Meganewton
MPa	Megapascal
NM	Nautical mile
NU	Not usable
OCA/H	Obstacle clearance altitude/height
OFZ	Obstacle free zone
OLS	Obstacle Limitation Surface
OMGWS	Outer main gear wheel span
OPS	Obstacle protection surface
PANS	Procedures of Air navigation service
PAPI	Precision Approach path indicator
PCN[3]	Pavement classification number
PCR[4]	Pavement classification Rating
RCAM	Runway condition Assessment Matrix
RCR	Runway condition report
RESA	Runway end safety area
RVR	Runway visual range
RWYCC	Runway condition code
TODA	Take-off distance available
TORA	Take-off runway available
VMC	Visual meteorological conditions
VOR	Very high frequency omnidirectional radio range
WGS-84	World Geodetic System 1984 range
WHMP	Wildlife hazard management programme
WIP	Work in progress

(b) SYMBOLS

°	Degree
=	Equals
′	Minute of arc

[3] Applicable until 27 November 2024
[4] Applicable as of 28 November 2024.

μ	Friction coefficient
>	Greater than
<	Less than
%	Percentage
±	Plus or minus

(c) DEFINITIONS

Aerodrome. A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

Aerodrome beacon. Aeronautical beacon used to indicate the location of an aerodrome from the air.

Aerodrome certificate. A certificate issued by the appropriate authority under applicable regulations for the operation of an aerodrome.

Aerodrome elevation. The elevation of the highest point of the landing area.

Aerodrome identification sign. A sign placed on an aerodrome to aid in identifying the aerodrome from the air.

Aerodrome mapping data (AMD). Data collected for the purpose of compiling aerodrome mapping information for aeronautical uses.

Note.— Aerodrome mapping data are collected for purposes that include the improvement of the user's situational awareness, surface navigation operations, training, charting and planning.

Aerodrome mapping database (AMDB). A collection of aerodrome mapping data organized and arranged as a structured data set.

Aerodrome reference point. The designated geographical location of an aerodrome.

Aerodrome traffic density.

Light. Where the number of movements in the mean busy hour is not greater than 15 per runway or typically less than 20 total aerodrome movements.

Medium. Where the number of movements in the mean busy hour is of the order of 16 to 25 per runway or typically between 20 to 35 total aerodrome movements.

Heavy. Where the number of movements in the mean busy hour is of the order of 26 or more per runway or typically more than 35 total aerodrome movements.

Note 1.— The number of movements during the busy hour is the arithmetic mean over the year of the number of movements in the daily busiest hour.

Note 2.— Either a take-off or a landing constitutes a movement.

Aeronautical beacon. An aeronautical ground light visible at all azimuths, either continuously or intermittently, to designate a particular point on the surface of the earth.

Aeronautical ground light. Any light specially provided as an aid to air navigation, other than a light displayed on an aircraft.

Aeroplane reference field length. The minimum field length required for take-off at maximum certificated take-off mass, sea level, standard atmospheric conditions, still air and zero runway slope, as shown in the appropriate aeroplane flight manual prescribed by the certificating authority or equivalent data from the aeroplane manufacturer. Field length means balanced field length for aeroplanes, if applicable, or take-off distance in other cases.

Note.— Attachment A, Section 2, provides information on the concept of balanced field length and the Airworthiness Manual (Doc 9760) contains detailed guidance on matters related to take-off distance.

Aircraft classification number (ACN).[5] A number expressing the relative effect of an aircraft on a pavement for a specified standard subgrade category.

Note.— The aircraft classification number is calculated with respect to the centre of gravity (CG) position which yields the critical loading on the critical gear. Normally the aftmost CG position appropriate to the maximum gross apron (ramp) mass is used to calculate the ACN. In exceptional cases the forwardmost CG position may result in the nose gear loading being more critical.

Aircraft classification rating (ACNR)[6]. A number expressing the relative effect of an aircraft on a pavement for a specified standard subgrade category.

Aircraft stand. A designated area on an apron intended to be used for parking an aircraft.

Apron. A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance.

[5] Applicable on 27 November 2024
[6] Applicable on 28 November 2024.

Apron management service. A service provided to regulate the activities and the movement of aircraft and vehicles on an apron.

Arresting system. A system designed to decelerate an aeroplane overrunning the runway.

Autonomous runway incursion warning system (ARIWS). A system which provides autonomous detection of a potential incursion or of the occupancy of an active runway and a direct warning to a flight crew or a vehicle operator.

Balked landing. A landing manoeuvre that is unexpectedly discontinued at any point below the obstacle clearance altitude/height (OCA/H).

Barrette. Three or more aeronautical ground lights closely spaced in a transverse line so that from a distance they appear as a short bar of light.

Calendar. Discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day (ISO 19108□).

Certified aerodrome. An aerodrome whose operator has been granted an aerodrome certificate.

Clearway. A defined rectangular area on the ground or water under the control of the appropriate authority, selected or prepared as a suitable area over which an aeroplane may make a portion of its initial climb to a specified height.

Cyclic redundancy check (CRC). A mathematical algorithm applied to the digital expression of data that provides a level of assurance against loss or alteration of data.

Data accuracy. A degree of conformance between the estimated or measured value and the true value.

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution and integrity (or equivalent assurance level), traceability, timeliness, completeness and format.

Data integrity assurance level). A degree of assurance that an aeronautical data and its value has not been lost nor altered since the data origination or authorized amendment.

Datum. Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities (ISO 19104□□).

Declared distances.

a) Take-off run available (TORA). The length of runway declared available and suitable for the ground run of an aeroplane taking off.

b) Take-off distance available (TODA). The length of the take-off run available plus the length of the clearway, if provided.

c) Accelerate-stop distance available (ASDA). The length of the take-off run available plus the length of the stopway, if provided.

d) Landing distance available (LDA). The length of runway which is declared available and suitable for the ground run of an aeroplane landing.

Dependent parallel approaches. Simultaneous approaches to parallel or near-parallel instrument runways where radar separation minima between aircraft on adjacent extended runway centre lines are prescribed.

Displaced threshold. A threshold not located at the extremity of a runway.

Effective intensity. The effective intensity of a flashing light is equal to the intensity of a fixed light of the same colour which will produce the same visual range under identical conditions of observation.

Ellipsoid height (Geodetic height). The height related to the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question.

Fixed light. A light having constant luminous intensity when observed from a fixed point.

Foreign object debris (FOD). An inanimate object within the movement area which has no operational or aeronautical function and which has the potential to be a hazard to aircraft operations.

Frangible object. An object of low mass designed to break, distort or yield on impact so as to present the minimum hazard to aircraft.

Note.— Guidance on design for frangibility is contained in the Aerodrome Design Manual (Doc 9157), Part 6.

Geodetic datum. A minimum set of parameters required to define location and orientation of the local reference system with respect to the global reference system/frame.

Geoid. The equipotential surface in the gravity field of the Earth which coincides with the undisturbed mean sea level (MSL) extended continuously through the continents.

Note.— The geoid is irregular in shape because of local gravitational disturbances (wind tides, salinity, current, etc.) and the direction of gravity is perpendicular to the geoid at every point.

Geoid undulation. The distance of the geoid above (positive) or below (negative) the mathematical reference ellipsoid.

Note.— In respect to the World Geodetic System — 1984 (WGS-84) defined ellipsoid, the difference between the WGS-84 ellipsoidal height and orthometric height represents WGS-84 geoid undulation.

Gregorian calendar. Calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar (ISO 19108***).

Note.— In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.

Hazard beacon. An aeronautical beacon used to designate a danger to air navigation.

Heliport. An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

Holding bay. A defined area where aircraft can be held, or bypassed, to facilitate efficient surface movement of aircraft.

Hot spot. 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.

Human factors principles. Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

Human performance. Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

Identification beacon. An aeronautical beacon emitting a coded signal by means of which a particular point of reference can be identified.

Independent parallel approaches. Simultaneous approaches to parallel or near-parallel instrument runways where radar separation minima between aircraft on adjacent extended runway centre lines are not prescribed.

Independent parallel departures. Simultaneous departures from parallel or near-parallel instrument runways.

Instrument runway. One of the following types of runways intended for the operation of aircraft using instrument approach procedures:

a) Non-precision approach runway. A runway served by visual aids and non-visual aid(s) intended for landing operations following an instrument approach operation type A and a visibility not less than 1 000 m.

b) Precision approach runway, category I. A runway served by visual aids and non-visual aid(s) intended for landing operations following an instrument approach operation type B with a decision height (DH) not lower than 60 m (200 ft) and either a visibility not less than 800 m or a runway visual range not less than 550 m.

c) Precision approach runway, category II. A runway served by visual aids and non-visual aid(s) intended for landing operations following an instrument approach operation type B with a decision height (DH) lower than 60 m (200 ft) but not lower than 30 m (100 ft) and a runway visual range not less than 300 m.

d) Precision approach runway, category III. A runway served by visual aids and non-visual aid(s) intended for landing operations following an instrument approach operation type B with a decision height (DH) lower than 30 m (100 ft), or no decision height and a runway visual range less than 300 m or no runway visual range limitations.

Note 1. — Visual aids need not necessarily be matched to the scale of non-visual aids provided. The criterion for the selection of visual aids is the conditions in which operations are intended to be conducted.

Note 2. — Refer to BCAR 6 — Operation of Aircraft for instrument approach operation types

Integrity classification (aeronautical data). Classification based upon the potential risk resulting from the use of corrupted data. Aeronautical data is classified as:

a) routine data: there is a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;

b) essential data: there is a low probability when using corrupted essential data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; and

c) Critical data: there is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe.

Intermediate holding position. A designated position intended for traffic control at which taxiing aircraft and vehicles shall stop and hold until further cleared to proceed, when so instructed by the aerodrome control tower.

Landing area. That part of a movement area intended for the landing or take-off of aircraft.

Landing direction indicator. A device to indicate visually the direction currently designated for landing and for take-off.

Laser-beam critical flight zone (LCFZ). Airspace in the proximity of an aerodrome but beyond the LFFZ where the irradiance is restricted to a level unlikely to cause glare effects.

Laser-beam free flight zone (LFFZ). Airspace in the immediate proximity of the aerodrome where the irradiance is restricted to a level unlikely to cause any visual disruption.

Laser-beam sensitive flight zone (LSFZ). Airspace outside, and not necessarily contiguous with, the LFFZ and LCFZ where the irradiance is restricted to a level unlikely to cause flash-blindness or after-image effects.

Lighting system reliability. The probability that the complete installation operates within the specified tolerances and that the system is operationally usable.

Manoeuvring area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

Marker. An object displayed above ground level in order to indicate an obstacle or delineate a boundary.

Marking. A symbol or group of symbols displayed on the surface of the movement area in order to convey aeronautical information.

Movement area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron(s).

Near-parallel runways. Non-intersecting runways whose extended centre lines have an angle of convergence/divergence of 15 degrees or less.

Non-instrument runway. A runway intended for the operation of aircraft using visual approach procedures or an instrument approach procedure to a point beyond which the approach may continue in visual meteorological conditions.

Note. — Visual meteorological conditions (VMC) are described in Chapter 3 of Annex 2 — Rules of the Air.

Normal flight zone (NFZ). Airspace not defined as LFFZ, LCFZ or LSFZ but which must be protected from laser radiation capable of causing biological damage to the eye.

Obstacle. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:

a) are located on an area intended for the surface movement of aircraft; or

b) extend above a defined surface intended to protect aircraft in flight**;** or

c) Stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

Obstacle free zone (OFZ). The airspace above the inner approach surface, inner transitional surfaces, and balked landing surface and that portion of the strip bounded by these surfaces, which is not penetrated by any fixed obstacle other than a low-mass and frangibly mounted one required for air navigation purposes.

Outer main gear wheel span (OMGWS). The distance between the outside edges of the main gear wheels.

Orthometric height. Height of a point related to the geoid, generally presented as an MSL elevation.

Pavement classification number (PCN)[7]. A number expressing the bearing strength of a pavement for unrestricted operations.

Pavement classification rating (PCR)[8]. A number expressing the bearing strength of a pavement

Precision approach runway, see Instrument runway.

Primary runway(s). Runway(s) used in preference to others whenever conditions permit.

Protected flight zones. Airspace specifically designated to mitigate the hazardous effects of laser radiation.

Road. An established surface route on the movement area meant for the exclusive use of vehicles.

[7] Applicable on 27 November 2024
[8] Applicable on 28 November 2024.

Road-holding position. A designated position at which vehicles may be required to hold.

Runway. A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

Runway condition assessment matrix (RCAM). A matrix allowing the assessment of the runway condition code, using associated procedures, from a set of observed runway surface condition(s) and pilot report of braking action.

Runway condition code (RWYCC). A number describing the runway surface condition to be used in the runway condition report.

Note. — The purpose of the runway condition code is to permit an operational aeroplane performance calculation by the flight crew. Procedures for the determination of the runway condition code are described in the PANS-Aerodromes (Doc 9981).

Runway condition report (RCR). A comprehensive standardized report relating to runway surface conditions and its effect on the aeroplane landing and take-off performance.

Runway end safety area (RESA). A symmetrical area on the extended runway centre line and adjacent to the end of the strip primarily intended to reduce the risk of damage to an aeroplane undershooting or overrunning the runway.

Runway guard lights. A light system intended to caution pilots or vehicle drivers that they are about to enter an active runway.

Runway-holding position. A designated position intended to protect a runway, an obstacle limitation surface, or an ILS/MLS critical/sensitive area at which taxiing aircraft and vehicles shall stop and hold, unless otherwise authorized by the aerodrome control tower.

Note. — In radiotelephony phraseologies, the expression “holding point” is used to designate the runway-holding position.

Runway strip. A defined area including the runway and stopway, if provided, intended:

a) to reduce the risk of damage to aircraft running off a runway; and

b) To protect aircraft flying over it during take-off or landing operations.

Runway surface condition(s). A description of the condition(s) of the runway surface used in the runway condition report which establishes the basis for the determination of the runway condition code for aeroplane performance purposes.

Note 1. — The runway surface conditions used in the runway condition report establish the performance requirements between the aerodrome operator, aeroplane manufacturer and aeroplane operator.

Note 2. — Other contaminants are also reported but are not included in the list of runway surface condition descriptors because their effect on runway surface friction characteristics and the runway condition code cannot be evaluated in a standardized manner.

Note 3. — Procedures on determining runway surface conditions are available in the PANS-Aerodromes (Doc 9981).

a) Dry runway. A runway is considered dry if its surface is free of visible moisture and not contaminated within the area intended to be used.

b) Wet runway. The runway surface is covered by any visible dampness or water up to and including 3 mm deep within the intended area of use.

c) Slippery wet runway. A wet runway where the surface friction characteristics of a significant portion of the runway have been determined to be degraded.

d) Contaminated runway. A runway is contaminated when a significant portion of the runway surface area (whether in isolated areas or not) within the length and width being used is covered by one or more of the substances listed in the runway surface condition descriptors.

Note. — Procedures on determination of contaminant coverage on runway are available in the PANS-Aerodromes (Doc 9981).

e) Runway surface condition descriptors. One of the following elements on the surface of the runway:

Note. — The descriptions below are used solely in the context of the runway condition report and are not intended to supersede or replace any existing WMO definitions.

i) Standing water. Water of depth greater than 3 mm.

Note. — Running water of depth greater than 3 mm is reported as standing water by convention.

Runway turn pad. A defined area on a land aerodrome adjacent to a runway for the purpose of completing a 180-degree turn on a runway.

Runway visual range (RVR). The range over which the pilot of an aircraft when being on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.

Safety management system (SMS). A systematic approach to managing safety including the necessary organizational structure, accountabilities, policies and procedures.

Segregated parallel operations. Simultaneous operations on parallel or near-parallel instrument runways in which one runway is used exclusively for approaches and the other runway is used exclusively for departures.

Shoulder. An area adjacent to the edge of a pavement so prepared as to provide a transition between the pavement and the adjacent surface.

Sign.

a) Fixed message sign. A sign presenting only one message.

b) Variable message sign. A sign capable of presenting several predetermined messages or no message, as applicable.

Signal area. An area on an aerodrome used for the display of ground signals.

Station declination. An alignment variation between the zero-degree radial of a VOR and true north, determined at the time the VOR station is calibrated.

Stopway. A defined rectangular area on the ground at the end of take-off run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take-off.

Switch-over time (light). The time required for the actual intensity of a light measured in a given direction to fall from 50 per cent and recover to 50 per cent during a power supply changeover, when the light is being operated at intensities of 25 per cent or above.

Take-off runway. A runway intended for take-off only.

Taxiway. A defined path on a land aerodrome established for the taxiing of aircraft and intended to provide a link between one part of the aerodrome and another, including:

a) Aircraft stand taxilane. A portion of an apron designated as a taxiway and intended to provide access to aircraft stands only.

b) Apron taxiway. A portion of a taxiway system located on an apron and intended to provide a through taxi-route across the apron.

c) Rapid exit taxiway. A taxiway connected to a runway at an acute angle and designed to allow landing aeroplanes to turn off at higher speeds than are achieved on other exit taxiways thereby minimizing runway occupancy times.

Taxiway intersection. A junction of two or more taxiways.

Taxiway strip. An area including a taxiway intended to protect an aircraft operating on the taxiway and to reduce the risk of damage to an aircraft accidentally running off the taxiway.

Threshold. The beginning of that portion of the runway usable for landing.

Touchdown zone. The portion of a runway, beyond the threshold, where it is intended landing aeroplanes first contact the runway.

Usability factor. The percentage of time during which the use of a runway or system of runways is not restricted because of the crosswind component.

Usability factor. The percentage of time during which the use of a runway or system of runways is not restricted because of the crosswind component.

Note. — Crosswind component means the surface wind component at right angles to the runway centre line.

Water on the ground

a) Moist. The surface shows a colour change due to moisture.
b) Wet. The surface is saturated, but there is no standing water.
c) Puddles. Large puddles of visible standing water.
d) Flooded. A large surface with visible standing water.

Wildlife hazard. Potential hazard of aircraft damage due to collisions with birds or animals at or around the aerodrome.

Work area. A part of an aerodrome in which maintenance or construction works are in progress.

BCAR 139.007 Operational coordination with users and service providers
(See IEM 139.007, b) 2)

(a) The aerodrome operator shall coordinate with Air Traffic Services, Meteorological Services, Aeronautical Information Services, the security agency, customs, immigration office as well as rescue and firefighting services to ensure safety, availability and continuity on the provision of such services.

(b) All service providers shall actively incorporate with the aerodrome Safety Management System.

(c) The aerodrome operator shall constitute at least five committees:

1- The Safety Management Committee.
2- The Security and Facilitation Committee.
3- The Runway Safety Team
(See IEM 139.007, b) 3)
4- Emergency Response Committee,
5- The Wildlife Hazard Control Committee

At the discretion of the aerodrome operator, if unifies either committee, depending on the affinity of the areas.

(d) The aerodrome operator shall endorse Memoranda or letters of understanding with the aerodrome users and service providers with the aim of agreeing competences, liabilities or any other aspect needed to ensure aerodrome safety, availability and continuity of service provision.

(e) The aerodrome operator shall make arrangements with the aeronautical information services authority for immediate notification, as stated in BCAR 139.339, to ensure that the competent authorities receive the necessary data to provide updated information prior to the flight and satisfy the need of information during the flight,

(1) information on the aerodrome certification situation and the aerodrome conditions;
(2) serviceability of the facilities, services and navigation aids located within the area of competence;
(3) any information that may be relevant to operations.

(f) To ensure that aeronautical information services units obtain information to enable them to provide up-to-date pre-flight information and to meet the need for in-flight information, arrangements shall be made between aeronautical information services and aerodrome authorities responsible for aerodrome services to report to the responsible aeronautical information services unit, with a minimum of delay, according with BCAR 139.339:

1) Information on the status of certification of aerodromes and aerodrome conditions.
2) the operational status of associated facilities, services and navigation aids within their area of responsibility;
3) any other information considered to be of operational significance.

(g) Before introducing changes to the air navigation system, due account shall be taken by the services responsible for such changes of the time needed by aeronautical information services for the preparation, production and issue of relevant material for promulgation. To ensure timely provision of the information to aeronautical information services, close coordination between those services concerned is therefore required.

(h) Of a particular importance are changes to aeronautical information that affect charts and/or computer-based navigation systems which qualify to be notified by the aeronautical information regulation and control (AIRAC) system, as specified in BCAR 15, Subpart E (Regulation and Control of Aeronautical Information) and Appendix 3. The predetermined, internationally agreed AIRAC effective dates in addition to 14 days postage time shall be observed by the responsible aerodrome services when submitting the raw information/data to aeronautical information services.

(i) The aerodrome services responsible for the provision of raw aeronautical information/data to the aeronautical information services shall do that while taking into account accuracy and integrity requirements for aeronautical data as specified in BCAR 15

BCAR 139.009 Issuance of supporting material for compliance with this regulation

To facilitate compliance and implementation of this regulation, the BDCA may issue guidance material in the format of Explanatory Material (IEM) through Acceptable Means of Compliance (IEM). Moreover, in case of

rules difficult to understand, Interpretative and Explanatory Material (IEM) of some requirements may be issued.

The BDCA inspectors have the Airport Inspection Manual as guidance material for compliance with these rules.

BCAR 139.011 Access to the aerodrome

(a) The aerodrome inspector and the personnel so authorised by the BDCA may verify, audit, inspect and carry out tests on the aerodrome facilities, services and equipment, inspect the aerodrome operator's documents and records and audit the aerodrome operator's safety management system before the aerodrome certificate is granted or renewed and subsequently, at any other time, for the purpose of ensuring safety at the aerodrome.

(b) An aerodrome operator or applicant shall, at the request of the inspector or the personnel so authorised by the BDCA, cooperate in the inspection duties and allow access to any part of the aerodrome or any aerodrome facility, including equipment, technical records and documents as well as operator and management personnel.

(c) The aerodrome operator shall observe and comply with the annual monitoring programme established by the BDCA for safety monitoring purposes at each aerodrome. This shall not affect random inspections or audits conducted by the inspector or personnel authorised by the BDCA to determine whether MA-approved operation requirements and procedures are met under all circumstances and whether they conform to the activity and comply with this BCAR.

BCAR 139.015 Aeronautical Studies
(See IEM 139.15)

Aeronautical studies shall be conducted to determine possible solutions and choose alternative means to ensure operational safety.

The aerodrome operator, the applicant for an aerodrome certificate or BDCA by its own accord may manage aeronautical studies. The effectiveness of each alternative shall be evaluated and procedures shall be recommended in order to compensate possible deviations as part of the study.

Aeronautical studies shall be supported by a risk management analysis.

BCAR 139.020 Operational directives and advisory circulars

(a) The BDCA may issue operational directives to prohibit, limit or subject an operation to certain conditions in the interest of safety.

(1) Operational directives shall have:

i) The reason for issuance;

ii) The scope and duration; and

iii) Action required from the operators.

(2) Anything required by the operational directives shall be considered an additional requirement to those established in BCAR 139.

(b) The BDCA may also issue Advisory Circulars or Acceptable Means of Compliance to facilitate compliance and implementation of this regulation.

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BELIZE DEPARTMENT OF CIVIL AVIATION

SUBPART B - CERTIFICATION

BCAR 139.101 Certification process

(See IEM 139.101)

(a) To obtain an aerodrome certificate, the applicant must undergo a certification process, which is instructed and recorded in certification file by the Aerodrome Inspector/Auditor of the BDCA. This process consists of the following stages:

(1) **Pre-application**: It consists of the process an applicant goes through to get information related to the granting of an aerodrome certificate. During this stage, the first meeting between the applicant and the BDCA takes place, creating the first information exchange on service and guidance in regards to the regulations, standards, procedures, responsibilities and privileges of the service that the applicant intends to provide and the technical documentation to be submitted. This procedural stage may be omitted if the applicant considers that he/she knows appropriately the requirements of this regulation, except when an operational evaluation of the site where the aerodrome is expected to be located is required.

(2) **Formal application:** The applicant shall submit the BDCA-Form 8 (see Annex 1), attaching the schedule of events for the certification process, the Aerodrome Operations Manual AOM required by BCAR 139.201, the Aerodrome Security Programme required by BCAR 17 and the Safety Management System of the aerodrome required by BCAR 139.323.

(3) **Evaluation:** The BDCA reviews the documentation submitted and informs the applicant of any discrepancies found, if any; otherwise, the respective approval/acceptance is issued.

(4) **Technical demonstration:** The applicant is subjected to a technical demonstration and evaluation to determine compliance with the facilities with respect to signals, lighting, markings, pavements, obstacles, rescue and firefighting services, equipment, personnel, procedures, safety management, apron management, wildlife (birds and animals) strike hazard and training.

(5) **Certification:** Once the previous stages have been successfully completed, the BDCA shall grant the aerodrome certificate and the conditions established for promulgation in the Belize AIP.

(b) Under no circumstance may an aerodrome certificate be granted if the applicant has not completed the process.

BCAR 139.103 Grant of an aerodrome certificate

(See IEM 139.103)

(a) The BDCA Director shall issue the aerodrome certificate, in a BDCA-AGA-1005 format, (see Annex 1) once:

(1) The applicant has satisfactorily completed the technical certification process;

(2) The applicant and his/her staff have the necessary competence and experience to operate and maintain the aerodrome properly;

(3) The AOM submitted by the applicant for approval/acceptance contains all the relevant information corresponding to the aerodrome site, facilities, services, equipment, operating procedures, organisation and management including a safety management system as stated in this regulation;

(4) The aerodrome facilities, services and equipment are in accordance with the provisions and standards set out;

(5) The aerodrome operating procedures make satisfactory provision for the safety of aircraft; and

(6) The applicant has implemented an acceptable safety management system.

BCAR 139.105 Issue of the limitations and conditions of the aerodrome certificate

When granting an aerodrome certificate, the aerodrome inspector/auditor shall approve, in the corresponding BDCA form, the limitations and operating conditions for the type of use and other details established for the aerodrome.

BCAR 139.107 Duration of an aerodrome certificate

An aerodrome certificate issued under this BCAR 139 shall remain in force from the date of issue until it is suspended, transferred or cancelled by the BDCA or, alternatively, until the effectiveness period has expired. An aerodrome certificate shall be valid for a maximum period of 5 years.

The BDCA may revoke an aerodrome certificate if during the surveillance process the operator does not demonstrate that it maintains the necessary competencies or if it incurs in recurring failures in the resolution of the non-conformities found.

BCAR 139.109 Transfer of an aerodrome certificate

(a) The BDCA may give its consent to and issue an instrument of transfer of an aerodrome certificate to a transferee when:

(1) The current holder of the aerodrome certificate notifies the BDCA, in writing, at least three months before ceasing to operate the aerodrome as of the date specified in the notice, including the name of the transferee or operator;

(2) The transferee applies to the BDCA, in writing, within two months before the current holder of the aerodrome certificate ceases to operate the aerodrome for the aerodrome certificate to be transferred to the transferee. If there are no changes in the original terms of certification, only the holder transfer shall be recorded and the certification amended. If there are changes, the BDCA shall evaluate the situation and communicate, in writing, to the transferee the actions to be taken. These actions may go from a partial recertification or less, up to the application of the full certification process.

(b) If the BDCA does not consent to the transfer of an aerodrome certificate, it shall notify the transferee, in writing, of its reasons no later than 15 business days after making that decision or within the period specified in the provision of applicant's protection.

BCAR 139.111 Amendment of an aerodrome certificate

The BDCA may amend an aerodrome certificate when:

a) there is a change in the ownership;
b) there is a change in the use;
c) there is a change in the boundaries of the aerodrome; or
d) the holder of the aerodrome certificate requests an amendment.
e) by requirement of the BDCA

BCAR 139.113 Surrender of an aerodrome certificate

(a) An aerodrome certificate holder must give the BDCA not less than 60 days' written notice of the date on which the certificate is to be surrendered in order that suitable promulgation action can be taken.

(b) The BDCA shall cancel the certificate after the notice period is closed.

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SUBPART C: AERODROME OPERATIONS MANUAL (AOM)

BCAR 139.201 Requirement of the Aerodrome Operations Manual (AOM).

To be a holder of an aerodrome certificate, the applicant shall have a manual approved by the BDCA, containing relevant information for the aerodrome maintenance and operation in accordance with its policies and procedures. This manual is called the Aerodrome Operations Manual – AOM.

BCAR 139.203 Preparation of the Aerodrome Operations Manual
(See IEM 139.203)

The AOM required by this BCAR shall:

(a) be typewritten and printed in English;

(b) be in a format that is easy to revise and use;

(c) have a system for logging revisions;

(d) have the initial approval date and the list of effective pages duly signed to support the revision approvals.

(e) have a guarantee from the aerodrome operator, that the AOM and its revisions do not infringe any standards of this regulation.
(See IEM 139.203 (e))

(f) include all revisions and amendments required by the BDCA, aimed at ensuring aircraft safety.

(g) be organised in a manner that will facilitate the preparation, review and acceptance/approval process by the BDCA. It may be structured in different volumes or just one, whichever is more convenient. Some requirements, such as manuals, may be submitted separately: AOM, Aerodrome Emergency Plan or Manual, Rescue and Firefighting Manual, Training Manual, Aerodrome Safety Management System (SMS) Manual, preventive and corrective maintenance plan or programme including pavement, visual aids and rescue and firefighting equipment, Safety plan or Manual and other approved by the BDCA.

(h) The AOM shall comprise all policies and procedures including information and instructions necessary for the accountable personnel to carry out their duties.

BCAR 139.205 Contents of the Aerodrome Operations Manual
(See Appendix 1 to BCAR 139.205)

(a) The AOM required by this BCAR shall contain all the relevant information concerning the aerodrome site, services, operating procedures, equipment, facilities, organisation and management including the safety management system.

(b) If a requirement is not included in the AOM because it is not applicable to the aerodrome, the reason shall be indicated in the manual.

BCAR 139.207 Amendment and location of the Aerodrome Operations Manual (AOM)

An aerodrome operator must:

(a) Ensure that the AOM is amended so that its instructions and information are current. Likewise, ensure that the administrative personnel, as well as the Operations, Maintenance and SMS personnel and any person or entity responsible for a manual, receive the approved revisions.

(b) Keep at least one complete and current copy of the AOM at each Operations, Maintenance and SMS offices. These copies shall be available for audits that may be performed by aircraft operators and aviation authorities.

(c) Provide the applicable parts or portions of the AOM, or a complete copy, to the aerodrome personnel in charge of its implementation.

(d) Keep master control of all existing manuals.

(e) Any holder of the AOM or any of its parts is responsible for keeping this document up to date with the amendments provided by the aerodrome operator.

BCAR 139.209 Manual review

(a) The BDCA may review the AOM:

(1) At the aerodrome operator's request, who may require to include modifications to the conditions initially approved, related to the aerodrome site, services, operating procedures, equipment, facilities, organisation, aerodrome management or the safety management system.

(2) If a revision is determined to be needed in the interest of safety.

(b) An AOM revision request shall be submitted at least 30 business days prior to the date set for entry into force, unless the BDCA approves a shorter period upon request of the applicant.

(c) In case of revisions originated by the BDCA, the aerodrome operator shall be notified of the reasons for revision and the pages with the proposed revisions shall be included. The aerodrome operator has seven business days to submit in writing his/her viewpoints and arguments on the revision. After evaluating the information, the BDCA shall decide whether or not to adopt the revision. The revision shall be effective 30 business days after the aerodrome operator receives it.

(d) If the BDCA determines the presence of an emergency condition requiring immediate safety action that prevents the implementation of the procedures provided in subsection (c), a revision shall be carried out and it shall be effective since the aerodrome operator receives it. The BDCA shall briefly describe the emergency in the letter of formal amendment notice. Once the emergency is solved, the aerodrome operator may request the BDCA a revaluation of the elements causing the emergency and the revision required.

BCAR 139.211 Acceptance/approval of the aerodrome manual

(a) For the purposes of AOM approval, or the volumes comprising it, the aerodrome operator shall submit two copies of each to the BDCA.

(b) The BDCA shall approve the AOM or the volumes comprising it, and any revision provided that BCAR 39 requirements are met.

Once the AOM, or the volumes comprising it, are approved, the BDCA shall submit a copy to the aerodrome operator and keep a copy of each one in the aerodrome certification file.

Appendix 1 to BCAR 139.205 Contents of the Aerodrome Operations Manual (AOM)

In case of local aerodromes, relevant information applicable to the size, category and complexity of its operations shall be included. For aerodromes used for international operations, the AOM shall include the following information:

Part 1: General
1.1 General information
(a) Purpose and scope of the aerodrome manual;

(b) legal requirement stating that the manual and the operator comply with all applicable regulations as prescribed in the provisions and conditions of the aerodrome certificate;

(c) A statement that the manual includes operating instructions to be met by relevant personnel;

(d) A statement to indicate that the aerodrome shall at all times, when it is available for the take-off and landing of aircraft, be so available to all persons on equal terms and conditions;

(e) the system for recording aircraft movement; and

(f) the available aeronautical information system and procedures for its promulgation and/or notification to the Aeronautical Information Service (AIS);

1.2 Explanations and definitions of terms and words needed to use the manuals.

1.3 Amendment and review system

(a) A statement of who is responsible for the issuance and disclosure of amendments and revisions.

(b) A record of amendments and revisions with their corresponding entry and effective dates.

(c) A statement that no handwritten amendments or revisions are allowed except in situations requiring an immediate amendment or revision in the interest of operational safety.

(d) A list of effective pages.

(e) A description of the distribution system of manuals, amendments and revisions.

Part 2: Organisation

2.1 An aerodrome organisational chart showing the names and positions of management personnel.

2.2 Functions and responsibilities of management personnel.

2.3 Airport committees, including Safety and Facilitation, Fauna, Emergency, and any other committee established by the aerodrome operator to ensure aerodrome safety and operation.

Part 3: Particulars of the aerodrome site

General information, including the following:

(a) a plan of the aerodrome showing the main aerodrome facilities for the operation of the aerodrome including, particularly, the location of each wind direction indicator; lights, markings, signs, access to the aerodrome, perimeter roads, fuel storage, rescue and firefighting installations, ATC facilities and location or road-holding position for rescue and firefighting vehicles in case of emergency and an isolated parking position for an aircraft which is believed to be the subject of unlawful interference.

(b) a plan of the aerodrome showing the aerodrome boundaries;

(c) a plan showing the distance of the aerodrome from the nearest city, town or other populous area, and the location of any aerodrome facilities and equipment outside the boundaries of the aerodrome covering a diameter of at least 8 km;

(d) particulars of the title (cadastral plan) of the aerodrome site. If the boundaries of the aerodrome are not defined in the document particulars of the title to, or interest in, the property on which the aerodrome is located and a plan showing the boundaries and position of the aerodrome.

Part 4: Particulars of the aerodrome required to be reported to the Aeronautical Information Service (AIS)

4.1 General information

(a) the name of the aerodrome;

(b) the location of the aerodrome;

(c) the geographical coordinates of the aerodrome reference point determined in terms of the World Geodetic System (WGS-84). The aerodrome reference point shall be located near the initial or planned geometric centre and shall be measured in degrees, minutes and seconds.

(d) the aerodrome elevation and geoid undulation, with an accuracy rounded to the nearest one-half metre;

(e) the elevation of each threshold and geoid undulation, the elevation of the runway end and any significant high and low points along the runway, and the highest elevation of the touchdown zone of a precision approach runway shall be measured to the accuracy of one-quarter metre and one-half metre for non-precision approaches.

(f) the aerodrome reference temperature in degrees Celsius, which shall correspond to the monthly mean of the daily maximum temperatures for the hottest month of the year.

(g) Details of the aerodrome beacon; and

(h) The name of the aerodrome operator, address, telephone numbers and e-mail address at which the aerodrome operator may be contacted at all times.

4.2 Aerodrome dimensions and related information.

General information, including the following:

(a) runway – true bearing rounded to the nearest hundredth of a degree, designation number, length, width and displaced threshold location to the nearest metre, slope, surface type, type of runway and, for a precision approach runway Category I, the existence of an obstacle free zone:

(b) length, width rounded to the nearest metre and surface type of strip, runway end safety areas, stopways;

(c) length, width and surface type of taxiways;

(d) apron surface type and aircraft stands;

(e) clearway length and ground profile;

(f) visual aids for approach procedures, marking and lighting of runways, taxiways, and aprons; other visual guidance and control aids on taxiways (including runway holding positions, intermediate holding positions and stop bars) and aprons, location and type of visual docking guidance system; availability of standby power for lighting;

(g) the location and radio frequency of VOR aerodrome checkpoints;

(h) the location and designation of standard taxi routes;

(i) the geographical coordinates of each threshold in degrees, minutes, seconds and hundredths of a second.

(j) the geographical coordinates of appropriate taxiway centre line points in degrees, minutes, seconds and hundredths of a second.

(k) the geographical coordinates of each aircraft stand in degrees, minutes, seconds and hundredths of a second.

(l) the geographical coordinates in degrees, minutes, seconds and hundredths of a second and the top elevation of significant obstacles in the approach and take-off areas, in the circling area and in the vicinity of the aerodrome. (This information may be best shown in the form of charts such as those required for the preparation of aeronautical information publications, as specified in BCAR 15 and Annex 4 to the Convention on International Civil Aviation);

(m) pavement surface type and bearing strength in accordance with the standardised procedures of the Aircraft Classification Number – Pavement Classification Number (ACN-PCN) method, noting the following information:

1) the Pavement Classification Number (PCN);
2) pavement type for ACN-PCN determination;
3) subgrade strength category;
4) maximum allowable tire pressure category or maximum allowable tire pressure value; and
5) evaluation method.

(n) One or more pre-flight altimeter check locations established on an apron and their average elevation rounded to the nearest metre or foot.

(o) The following declared distances rounded to the nearest metre:

1) take-off run available (TORA);
2) take-off distance available (TODA);
3) accelerate-stop distance available (ASDA); and
4) landing distance available (LDA)

(p) The condition of the movement area and the operational status of related facilities shall be monitored and reports on matters of operational significance or affecting aircraft performance given, particularly in respect of the following:

1) construction or maintenance work;
2) rough or broken surfaces on a runway, a taxiway or an apron;
3) water on a runway, a taxiway or an apron;
4) chemicals or other contaminants on a runway, taxiway or apron;
5) other temporary hazards, including parked aircraft;
6) failure or irregular operation of part or all of the aerodrome visual aids; and
7) failure of the normal or secondary power supply.

(q) Disabled aircraft removal plan: the telephone/ telex/facsimile numbers and e-mail address of the aerodrome operator for the removal of a disabled aircraft on or adjacent to the movement area, information on the capability to remove a disabled aircraft, expressed in terms of the largest type of aircraft which the aerodrome is equipped to remove;

(r) Rescue and firefighting: based on BCAR 139.315, the level of protection provided, expressed in terms of the category, which shall be in accordance with the type and amounts of extinguishing agents normally available at the aerodrome. Moreover, significant changes to the level of protection, level restoration and in terms of a new category, resulting from variations in availability of extinguishing agents, vehicles, personnel or any other requirement affecting the level of protection.

(s) The following information concerning a visual approach slope indicator system installation shall be made available:

1) associated runway designation number;

2) type of system and, for an AT-VASIS, PAPI or APAPI installation, the side of the runway on which the lights are installed, i.e. left or right, shall be given;

3) where the axis of the system is not parallel to the runway centre line, the angle of displacement and the direction of displacement, i.e. left or right, shall be indicated;

4) nominal approach slope angle(s). For a T-VASIS or an AT-VASIS this shall be angle Θ according to the formula in Figure 5-18 and for a PAPI and an APAPI this shall be angle (B + C) ÷ 2 and (A + B) ÷ 2, respectively as in Figure 5-20; and

5) minimum eye height(s) over the threshold of the on-slope signal(s). For a T-VASIS or an AT-VASIS this shall be the lowest height at which only the wing bar(s) are visible; however, the additional heights at which the wing bar(s) plus one, two or three fly-down light units come into view may also be reported if such information would be of benefit to aircraft using the approach. For a PAPI this shall be the setting angle of the third unit from the runway minus 2', i.e. angle B minus 2', and for an APAPI this shall be the setting angle of the unit farther from the runway minus 2', i.e. angle A minus 2'.

(t) Limitations, by aircraft type, in terms of resistance, runways, taxiways and turns.

The accuracy of the information previously indicated is critical to aircraft safety. Information requiring engineering survey and assessment shall be gathered or verified by qualified technical persons.

Part 5: Particulars of the aerodrome operating procedures and safety measures.

5.1 Aerodrome reporting as stated on BCAR 139.339.

Particulars of the procedures for reporting any changes to the aerodrome information set out in the AIP and procedures for requesting the issue of NOTAMs, including the following:

(a) Arrangements for reporting any changes to the BDCA and recording the reporting of changes during and outside the normal hours of aerodrome operations;

(b) The names and roles of persons responsible for notifying the changes, and their telephone numbers during and outside the normal hours of aerodrome operations; and

(c) The address and telephone numbers, as provided by the BDCA, of the place where changes are to be reported to the AIS base stations.

5.2 Access to the aerodrome movement area

Particulars of the procedures that have been developed and are to be followed in coordination with the competent authorities as stated in BCAR 17 for preventing unauthorised entry of persons, vehicles, equipment, animals or other things into the movement area, including the following:

(a) The role of the aerodrome operator, the aircraft operator, aerodrome fixed-based operators, the aerodrome security entity, the BDCA and other government departments, as applicable;

(b) The names and roles of the personnel responsible for controlling access to the aerodrome, and the telephone numbers for contacting them during and after working hours;

(c) Procedures to access the movement area, including: Issue and format of identification cards as well as the training plan, evaluation and consequences of non-compliance.

(d) Responsibilities, procedures and means for communicating emerging problems of the pilot and the aircraft carrier.

5.3 Aerodrome emergency plan.

Particulars of the aerodrome emergency plan, including the following:

(a) Plans for dealing with emergencies occurring at the aerodrome or in its vicinity, including the malfunction of aircraft in flight or on the ground; structural fires, sabotage, including bomb threats (aircraft or structure); unlawful seizure of aircraft or facilities; and accidents or incidents on the airport covering “during the emergency” and “after the emergency” considerations;

(b) Details of tests for aerodrome facilities and equipment to be used in emergencies, including the frequency of those tests; it shall not exceed two years.

(c) Details of exercises to test emergency plans, including the frequency of those exercises; it shall not exceed two years.

(d) A list of organisations, agencies and persons of authority, both on- and off airport, for site roles; their telephone and facsimile numbers, e-mail and SITA addresses and the radio frequencies of their offices as well as any other communication system;

(e) The establishment of an aerodrome emergency committee or similar agreement to organise training and other preparations for dealing with emergencies; and

(f) The appointment of an on-scene commander to supervise the overall emergency operations.

5.4 Rescue and firefighting

Facilities, equipment, personnel and procedures data to meet the rescue and firefighting requirements; including the names and roles of the persons responsible for dealing with the rescue and firefighting services at the aerodrome, training, exercises and response time demonstration.

Note: This subject shall also be covered in appropriate detail in the aerodrome emergency plan.

5.5 Inspection of the aerodrome movement area and obstacle limitation surface by the aerodrome operator

Particulars of the procedures for the inspection of the aerodrome movement area and obstacle limitation surfaces, including the following:

(a) Arrangements for carrying out inspections, including runway friction and water-depth measurements on runways and taxiways, during and outside the normal hours of aerodrome operations;

(b) Arrangements and means of communicating with air traffic control during an inspection;

(c) Arrangements for keeping an inspection logbook, and the location of the logbook;

(d) Details of inspection intervals and times;

(e) Inspection guides and checklists;

(f) Arrangements for recording and reporting the results of inspections and for taking prompt follow-up actions to ensure correction of unsafe conditions; and

(g) The names and roles of persons responsible for carrying out inspections, and their telephone numbers during and after working hours.

5.6 Visual aids and aerodrome electrical systems as required on BCAR 139.311.

Particulars of the procedures for the inspection and maintenance of aeronautical lights (including obstacle lighting), signs, markers and aerodrome electrical systems, including the following:

(a) Arrangements for carrying out inspections during and outside the normal hours of aerodrome operation, and the checklist for such inspections;

(b) Arrangements for recording the result of inspections and for taking follow-up action to correct deficiencies;

(c) Arrangements for carrying out routine maintenance and emergency maintenance;

(d) Arrangements for secondary power supplies, if any, and, if applicable, the particulars or any other method of dealing with partial or total system failure; and

(e) The names and roles of the persons responsible for the inspection and maintenance of the lighting, and the telephone number for contacting those persons during and after working hours.

(f) Monthly verification of PAPI/VASI light angles and photo cell operation, by the responsible unit.

5.7 Maintenance of the movement area, as required on BCAR 139.305, BCAR 139.307 and BCAR 139.309.

Particulars of the facilities and procedures for the maintenance of the movement area, including;

(a) Arrangements for maintaining the paved areas;

(b) Arrangements for maintaining the unpaved runways and taxiways;

(c) Arrangements for maintaining the runway and taxiway strips; and

(d) Arrangements for the maintenance of aerodrome drainage.

5.8 Aerodrome works – Safety as required on BCAR 139.341.

Particulars of the procedures for planning and carrying out construction and maintenance work safely (including work that may have to be carried out at short notice) on or in the vicinity of the movement area which may extend above an obstacle limitation surface, including the following:

(a) Arrangements for communicating with air traffic control during the progress of such work;

(b) The names, telephone numbers and role of persons or organisations responsible for planning and carrying out the work, and arrangements for contacting those persons and organisations at all times;

(c) The names, telephone numbers, during and after working hours, of the aerodrome fixed-base operators, ground handling agents and aircraft operators who are to be notified of the work;

(d) A distribution list for work plans, if required; and

(e) Arrangements, procedures and recovery time of major damage to the runway pavement.

5.9 Apron management

Particulars of the apron management procedures, including the following:

(a) Arrangements between air traffic control and the apron management unit;

(b) Arrangements for allocating aircraft parking positions;

(c) Arrangements for initiating engine start and ensuring clearance of aircraft push-back;

(d) Marshalling service; and

(e) Leader (van) service.

(f) Arrangements and procedures on movement/non movement areas, to determine when the control is to be taken by ATS, the aerodrome operator or the aircraft operator in push back operation and taxing and when it corresponds to the air operator in push back operations and taxiing.

5.10 Apron safety management.

Procedures to ensure apron safety, including:

(a) Protection from jet blasts;

(b) Enforcement of safety precautions during aircraft refuelling operations;

(c) Apron sweeping;

(d) Apron cleaning;

(e) Arrangements for reporting incidents and accidents of an apron; and

(f) Arrangements for auditing the safety compliance of all personnel working on the apron.

5.11 Airside vehicle control as required on BCAR 139.329.

Particulars of the procedures for the control of surface vehicles operating on or in the vicinity of the movement area, including:
(a) Details of the applicable traffic rules (including speed limits and the means of enforcing the rules);

(b) The method of issuing driving permits for operating vehicles in the movement area;

(c) Identification (signalling) procedures and safety equipment; and

(d) Compliance with the procedures for the total annual vehicle technical inspection and when in doubt, with the operating conditions of vehicles.

5.12 Wildlife hazard management as required on BCAR139.337.

Particulars of the procedures to deal with the danger posed to aircraft operations by the presence of bird or other animals in the aerodrome flight pattern or movement area, including the following:

(a) Arrangements for assessing wildlife hazards;

(b) Arrangements for implementing wildlife control programmes; and

(c) The names and roles of the persons responsible for dealing with wildlife hazards, and their telephone numbers during and after working hours.

5.13 Obstacle control as required on BCAR 139.331.

Particulars setting out the procedures for:

(a) Monitoring the obstacle limitation surfaces and Type A Chart for obstacles in the take-off surface;

(b) Controlling obstacles within the authority of the aerodrome operator;

(c) Monitoring the height of buildings or structures within the boundaries of the obstacle limitation surfaces;

(d) Controlling new developments in the vicinity of aerodromes;

(e) Notifying the BDCA of the nature and the location of obstacles and any subsequent addition or removal of obstacles for action as necessary, including amendment of the AIS publication; and

(f) Evaluating and updating the obstacle letter.

5.14 Removal of disabled aircraft, as required on BCAR 139.347

Particular of the procedures for removing a disabled aircraft on or adjacent to the movement area, including the following:

(a) The roles of the aerodrome operator and the holder of the aircraft certificate of registration;

(b) Arrangements for notifying the holder of the certificate of registration;

(c) Arrangements for liaising with the air traffic control unit;

(d) Arrangements for obtaining equipment and personnel to remove the disabled aircraft; and

(e) The names, role and telephone numbers of persons responsible for arranging for the removal of disabled aircraft.

5.15 Handling of hazardous materials as required on BCAR 139.321

Particulars of the procedures for the safe handling and storage of hazardous materials on the aerodrome, including the following:

(a) arrangements for special areas on the aerodrome to be set up for the storage of inflammable liquids (including aviation fuels) and any other hazardous materials; and

(b) the method to be followed for the delivery, storage, dispensing and handling of hazardous materials, including areas for temporary storage of containers and packing with spills.

Note: Hazardous materials include inflammable liquids and solids, explosives, solvents, corrosive liquids, compressed gases and magnetised or radioactive materials. Arrangements for dealing with the accidental spillage of hazardous materials shall be included in the aerodrome emergency plan.

5.16 Reduced-visibility operations

Particulars of procedures to be introduced for low-visibility operations, including the measurement and reporting of runway visual range as and when required, and the names and telephone numbers, during and after working hours, of the persons responsible for measuring the runway visual range.

5.17 Protection of sites for radar and navigational aids as required on BCAR 139.333

Particulars of the procedures for the protection of sites for radar and radio navigational aids located on the aerodrome to ensure that their performance will not be degraded, including the following:

(a) arrangements for the control of activities in the vicinity of radar and navigational aids installations;

(b) arrangements for ground maintenance in the vicinity of these installations; and

(c) arrangements for the supply and installation of signs, warnings of hazardous microwave radiation.

Note 1: In writing the procedures for each category, clear and precise information shall be included on:

- When, or in what circumstances, an operating procedure is to be activated;
- how an operating procedure is to be activated;
- actions to be taken;
- the persons who are to carry out the actions; and
- the equipment necessary for carrying out the actions, and access to such equipment.

Note 2: If any of the procedures specified above are not relevant or applicable, the reason shall be given.

Part 6: Aerodrome Safety Management System as required on BCAR 139.323

a. General description of the safety management system established for ensuring compliance with all safety requirements provided in BCAR 139.323;

b. The safety policy, insofar as applicable, on the safety management process and its relation to the operational and maintenance process;

c. the structure or organisation of the SMS, including staffing and the assignment of individual and group responsibilities for safety issues;

d. SMS strategy and planning, such as setting safety performance targets, allocating priorities for implementing safety initiatives and providing a framework for controlling the risks to as low a level as is reasonably practicable keeping always in view the requirements of BCAR 14 and BCAR 139, as well as the applicable local regulations, standards, rules or technical guides;

e. SMS implementation, including facilities, methods and procedures for the effective communication of safety messages and the enforcement of safety requirements;

f. a system for the implementation of, and action on, critical safety areas which require a higher level of safety management integrity (safety measures programme);

g. measures for safety promotion and accident prevention and a system for risk control involving analysis and handling of accidents, incidents, complaints, defects, faults, discrepancies and failures, and continuing safety monitoring;

h. A system of voluntary notification of events, events or hazards that affect or may affect aeronautical safety

i. the internal safety audit and review system detailing the systems and programmes for quality control of safety;

j. the system for documenting all safety-related airport facilities as well as airport operational and maintenance records, including information on the design and construction of aircraft pavements and aerodrome lighting. The system shall enable easy retrieval of records including charts;

k. staff training and competency, including the review and evaluation of the adequacy of training provided to staff on safety-related duties and of the certification system for testing their competency; and

l. The incorporation and enforcement of safety-related clauses in the contracts for construction work at the aerodrome.

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SUBPART D - OBLIGATIONS OF THE AERODROME OPERATOR

BCAR 139.301 General
(See IEM 139.201 (a) (b))

(a) The aerodrome operator shall manage, operate and maintain the aerodrome in accordance with the policies and procedures set out in the Aerodrome Operations Manual (AOM).

(b) The aerodrome operator shall establish a preventive and corrective maintenance programme observing the human factors principles allow that pavement, fencing, drainage systems, buildings and other facilities are kept in such conditions that do not affect safety, regularity or efficiency of air navigation.

BCAR 139.302 Records

(a) The aerodrome operator shall establish a recording system including the following:

(1) Aerodrome certification records.

(2) Personnel training records provided in BCAR 139.303.

(3) Emergency training records as provided in BCAR 139.319(j)(6)

(4) Training records on fuel and hazardous material handling as provided in BCAR 139.321(f)

(5) Audit and inspection records as provided in BCAR 139.321(d) and BCAR 139.327(g)

(6) People accessing the movement area as provided in BCAR 139.329(e).

(7) SMS records as provided in BCAR 139.323.

(8) Wildlife strike records as provided in BCAR 139.337(d)(7)

(9) Records on aerodrome conditions as provided in BCAR-139.339

(10) Records on tool and equipment calibration as provided in BCAR 139.349(c).

(11) Incident/accident records as provided in BCAR 139.329(f), BCAR 139.337 and BCAR 139.353(c).

(b) The records in subsection (a) above shall be kept permanently unless the specified regulation establishes a holding period. Recurrent training records may be eliminated when the training is repeated.

BCAR 139.303 Personnel competence and requirements
(See IEM 139.303 (b))

(a) The aerodrome operator shall employ and maintain an adequate number of qualified and skilled personnel to perform all critical activities for aerodrome management, operation, maintenance, aviation security and safety.

(b) The aerodrome operator shall submit to the BDCA, for its approval, an initial and recurrent training programme in order to maintain the technical competence of personnel responsible for the management, operation and maintenance of the aerodrome, as provided in subsection (a) above. The programme shall be included in the AOM or in a separate volume.

(c) The aerodrome operator shall submit to the BDCA, for its approval, key operations and maintenance personnel of the aerodrome, which shall comply with the following requirements:

(1) Operations:

(i) Higher education in engineering or aerodrome administration, or an aviation technician license or any other career related to aerodrome operations.

(ii) A minimum of five years of experience in aerodrome management.

(2) Maintenance:

(i) Higher education in civil, mechanical, or electric engineering, construction or architecture or a qualified technician with proven experience subjected to BDCA approval.

(ii) Aerodrome specialised courses.

(iii) Three years of proven experience in positions related to supervision and inspection of the movement area or two years subject to a training plan proposed by the aerodrome operator and approved by the BDCA.

(3) Safety management

(i) Qualified technician with proven knowledge and experience in safety management system.

(ii) A minimum of three years of proven experience in quality systems or aerodrome safety management systems.

d) Under special circumstances, the BDCA may determine the requirements based on c (1), c (2) and c (3) above.

e) Any change in the authorised key personnel payroll, shall be submitted to the BDCA for approval.

BCAR 139.304 Specific procedures for aerodrome operations
(See IEM 139.304)

(a) When the aerodrome accommodates an aeroplane that exceeds the certified characteristics of the aerodrome, the compatibility between the operation of the aeroplane and aerodrome infrastructure and operations shall be assessed and appropriate measures developed and implemented in order to maintain an acceptable level of safety during operations.

(b) Information concerning alternative measures, operational procedures and operating restrictions implemented at an aerodrome arising from (a) shall be promulgated.

BCAR 139.305 Paved areas
(See IEM 139.305(a) (5), (b) (2) (3) (4) (c))

(a) In the preventive and corrective maintenance programme, the operator shall consider the following procedures in regards to paved areas:

(1) With respect to the pavement edge, the level difference between the pavement and the adjacent area shall not exceed 7.5 cm (3 inches).

(2) The pavement shall be free from material failures such as cracks, deformations, disintegration, fluting and low skid resistance that may affect aircraft directional control, braking capacity, structural damage or damage caused by flying objects.

(3) So as to provide good friction characteristics and low rolling resistance, garbage, dust, mud, sand, rubber deposits and other contaminants shall be removed as rapidly and completely as possible to minimize accumulation at runways, taxiways, aprons and other movement areas.

(4) The pavement of the runway shall be easily drained and be free from depressions or other harmful irregularities to prevent standing water that may affect runway markings or aircraft safe operation due to hydroplaning.

(5) The surfaces of all movement areas including pavements (runways, taxiways and aprons) and adjacent areas shall be inspected and their conditions monitored regularly as part of an aerodrome preventive and corrective maintenance programme with the objective of avoiding and eliminating any loose objects/debris that might cause damage to aircraft or impair the operation of on-board aircraft systems; as well as avoiding loose stones or other objects that could be ingested or expelled by the aeroplane engines.

(6) The surface of a runway shall be maintained in a condition such as to prevent formation of harmful irregularities.

(7) Any chemical used to clean any pavement area, as well as rubber deposits, shall be removed as soon as possible in accordance with the manufacturer's instructions for the solvent.

(8) Chemicals for cleaning or removing rubber deposits which may have harmful effects on aircraft airframe or pavements, or the aerodrome environment, shall not be used by the aerodrome operator.

(b) Surface friction characteristics. A paved runway shall be maintained in a condition so as to provide surface friction characteristics at or above the minimum friction level specified in Table 1 of BCAR 139.305 (b). Standing water, mud, dust, sand, oil, rubber deposits and other contaminants shall be removed as rapidly and completely as possible to minimise accumulation

The aerodrome operator shall include in the AOM or as part of the maintenance programme the following aspects:

(1) The measurement procedures of runway surface friction characteristics shall be carried out with a continuous friction measuring device provided with a smooth tread tire or other means approved by the BDCA.

(2) The procedures for adoption of corrective maintenance action shall be taken to prevent the runway surface friction characteristics for either the entire runway or a portion thereof from falling below a minimum friction level specified in Table 1, Appendix 1 to BCAR 139.305 (b).

(3) The frequency of these measurements shall be sufficient to determine the trend of the surface friction characteristics of the runway.
(See IEM 139.305 (b) (3))

(4) Frequency and procedures for the removal of rubber deposits.
(See IEM 139.305 (b) (4))

(5) When runway surface friction measurements are made for maintenance purposes using a self-wetting continuous friction-measuring device, the performance of the device shall meet the standard set or agreed by the BDCA.

(6) Personnel measuring runway surface friction required for (b) (1) shall be trained to fulfil their duties.

(7) The runway surface shall be visually assessed, as necessary, under natural or simulated rain conditions for ponding or poor drainage and where required, corrective maintenance action taken.

(8) Chemicals which may have harmful effects on aircraft or pavements, or chemicals which may have toxic effects on the aerodrome environment, shall not be used.

(9) Procedures when there is reason to believe that the drainage characteristics of a runway, or portions thereof, are poor due to slopes or depressions, then the runway surface friction characteristics shall be assessed under natural or simulated conditions that are representative of local rain, and corrective maintenance action shall be taken as necessary.

(10) When turbine-engined aeroplanes use a taxiway, the surface of the taxiway shallers shall be maintained so as to be free of any loose stones or other objects that could be ingested by the aeroplane engines.

(11) A taxiway shall be kept clean to the extent necessary to enable aircraft to be taxied to and from an operational runway.

(12) Aprons shall be kept clean to the extent necessary to enable aircraft to manoeuvre safely or, where appropriate, to be towed or pushed.

(c) Runway pavement overlays. The following specifications are intended for runway pavement overlay projects when the runway is to be returned temporarily to an operational status before overlay of the entire runway is complete thus normally necessitating a temporary ramp between the new and old runway surfaces.

(1) The longitudinal slope of the temporary ramp, measured with reference to the existing runway surface or previous overlay course, shall be:

(i) 0.5 to 1.0 per cent for overlays up to and including 5 cm in thickness; and
(ii) not more than 0.5 per cent for overlays more than 5 cm in thickness.

(2) Overlaying shall proceed from one end of the runway toward the other end so that based on runway utilisation most aircraft operations will experience a down ramp.

(3) The entire width of the runway shall be overlaid during each work session.

(4) Before a runway being overlaid is returned to a temporary operational status, a runway centre line marking conforming to the aerodrome design specifications shall be provided. Additionally, the location of any temporary threshold shall be identified by a 3.6 m wide transverse stripe.

(5) The overlay shall be constructed and maintained above the minimum friction level specified in BCAR 14.305 (b).

BCAR 139.307 Unpaved areas

(a) The aerodrome operator shall include in the maintenance programme, procedures to maintain and repair surfaces with loose stones or grass and every runway, taxiway or unpaved ramp as follows:

(1) In the event of a slope in the edge of the surface towards the lower part of the ground, it shall have a ratio of two to one (2:1) or lower.

(2) The surface shall have the necessary slopes to allow sufficient drainage and prevent accumulation of water.

(3) The surface shall be adequately compacted and sufficiently stable to prevent tire tread/groove patterns and avoid affecting drainage and directional control.

(4) The surface shall not have holes or depressions exceeding three inches deep since that may cause aircraft damage or affect directional control.

(5) Foreign objects and other contaminants shall be removed completely from runways, taxiways, movement areas or adjacent areas.

(b) In case of unpaved runways, the green area (grass) of the runway strips shall not exceed 20 cm in height.

BCAR 139.309 Runway strips and taxiways

(a) The aerodrome operator shall include in the maintenance programme, procedures to maintain runway and taxiway strips as follows:

(1) Clear and graded without channels, warping, depressions, erosion or other surface variations.

(2) Appropriately drained to prevent water accumulation.

(3) Built, prepared and maintained so as to reduce to the minimum risks associated with allowable weight differences with respect to the aircraft the runway has been designed to serve, so that it may support the rescue and firefighting vehicles and occasional movement by an aircraft that is off the runway, such that no major damage occurs.

(4) Free of obstacles, except those needed for air navigation and visual aids whose structures shall be frangible. The height of supporting structures shall not exceed 7.5 cm.

(b) No mobile object shall be allowed in the runway strip while the runway and/or taxiway is in use.

(c) The grass of the runway and taxiway strips shall be kept at a height not exceeding the lower part of the runway or taxiway edge lights or higher than 20 cm.

BCAR 139.311 Visual aids and electrical systems
(See IEM 139. 311 (a), (h) (l))

(a) The aerodrome operator or the entity responsible for maintenance shall establish the maintenance programmes with the procedures for appropriate maintenance of visual aids and electrical systems to ensure lighting and marking system reliability. In this context, appropriate maintenance includes: cleaning, replacement, calibration, adjustment or repair of any missing or inoperative device/object, so that the user has a precise reference.

(b) The aerodrome operator shall ensure that all illumination systems, including those of approach lighting systems, vehicle parking areas, roads, fuel tank areas, aprons, the vicinity of buildings and surroundings are properly regulated and protected to prevent in-flight and ground interference or glare to pilots, aerodrome and apron controllers and personnel on the apron.

(c) A light shall be deemed to be unserviceable when the main beam average intensity is less than 50 per cent of the value specified in the appropriate figure in Appendix 2 to BCAR 14. For light units where the designed main beam average intensity is above the value shown in Appendix 2, the 50 per cent value shall be related to that design value. The BDCA may accept, under demonstration, the criteria of skilful personnel, who will determine the condition of the intensity level based on their experience.

(d) The system of preventive maintenance employed for a precision approach runway category II or III shall include at least the following checks:

(1) visual inspection and in-field measurement of the intensity, beam spread and orientation of lights included in the approach and runway lighting systems;
(2) control and measurement of the electrical characteristics of each circuitry included in the approach and runway lighting systems; and
(3) control of the correct functioning of light intensity settings used by air traffic control.

(e) In-field measurement of intensity, beam spread and orientation of lights included in approach and runway lighting systems for a precision approach runway category II or III shall be undertaken by measuring all lights, as far as practicable, to ensure conformance with the applicable specification of Appendix 2 to BCAR 14.

(f) Measurement of intensity, beam spread and orientation of lights included in approach and runway lighting systems for a precision approach runway category II or III shall be undertaken using a mobile measuring unit of sufficient accuracy to analyse the characteristics of the individual lights.

(g) The frequency of measurement of lights for a precision approach runway category II or III shall be based on traffic density, the local pollution level, the reliability of the installed lighting equipment and the continuous assessment of the results of the in-field measurements but, in any event, shall not be less than twice a year for in-pavement lights and not less than once a year for other lights.

(h) The system of preventive maintenance employed for a precision approach runway category II or III shall have as its objective that, during any period of category II or III operations, all approach and runway lights are serviceable and that, in any event, at least:

(1) 95 per cent of the lights are serviceable in each of the following particular significant elements:
(i) precision approach category II and III lighting system, the inner 450 m;
(ii) runway centre line lights;
(iii) runway threshold lights; and
(iv) runway edge lights.

(2) 90 per cent of the lights are serviceable in the touchdown zone lights;
(3) 85 per cent of the lights are serviceable in the approach lighting system beyond 450 m; and
(4) 75 per cent of the lights are serviceable in the runway end lights.

(i) In order to provide continuity of guidance, the allowable percentage of unserviceable lights shall not be permitted in such a way as to alter the basic pattern of the lighting system. Additionally, an unserviceable light shall not be permitted adjacent to another unserviceable light, except in a barrette or a crossbar where two adjacent unserviceable lights may be permitted.

(j) The preventive maintenance programme employed for a stop bar provided at a runway-holding position used in conjunction with a runway intended for operations in runway visual range conditions less than a value of 350 m shall have the following objectives:

(1) No more than two lights will remain unserviceable; and
(2) Two adjacent lights will not remain unserviceable unless the light spacing is significantly less than that specified.

(k) The system of preventive maintenance employed for a taxiway intended for use in runway visual range conditions less than a value of 350 m shall have as its objective that no two adjacent taxiway centre line lights be unserviceable.

(l) The preventive maintenance programme employed for a precision approach runway category I shall have as its objective that, during any period of category I operations, all approach and runway lights are serviceable and that, in any event, at least 85 per cent of the lights are serviceable in each of the following:

(1) precision approach category I lighting system;
(2) runway threshold lights;
(3) runway edge lights; and
(4) runway end lights.

In order to provide continuity of guidance an unserviceable light shall not be permitted adjacent to another unserviceable light unless the light spacing is significantly less than that specified.

(m) The system of preventive maintenance employed for a runway meant for take-off in runway visual range conditions less than a value of 550 m shall have as its objective that, during any period of operations, all runway lights are serviceable and that in any event:

(1) at least 95 per cent of the lights are serviceable in the runway centre line lights (where provided) and in the runway edge lights; and

(2) at least 75 per cent of the lights are serviceable in the runway end lights.

In order to provide continuity of guidance, an unserviceable light shall not be permitted adjacent to another unserviceable light.

(n) The system of preventive maintenance employed for a runway meant for take-off in runway visual range conditions of a value of 550 m or greater shall have as its objective that, during any period of operations, all runway lights are serviceable and that, in any event, at least 85 per cent of the lights are serviceable in the runway edge lights and runway end lights. In order to provide continuity of guidance, an unserviceable light shall not be permitted adjacent to another unserviceable light.

(o) In low visibility conditions, the BDCA may impose restrictions on building and maintenance activities carried out in the areas adjacent to the aerodrome electrical system.

(p) The following aerodrome facilities shall be provided with a secondary power supply capable of supplying power when there is a failure of the primary power supply:

(1) the signalling lamp and the minimum lighting necessary to enable air traffic services personnel to carry out their duties, as well as the operating communication and radar equipment;

(2) all obstacle lights which, in the opinion of the BDCA, are essential to ensure the safe operation of aircraft;

(3) approach, runway and taxiway lighting;

(4) meteorological equipment;

(5) essential security lighting, if provided in accordance with subsection BCAR139.335 (b).

(6) essential equipment and facilities for the aerodrome responding emergency agencies, and other equipment for aerodrome safety and operation;

(7) floodlighting on a designated isolated aircraft parking position if provided;

(8) radio navigation aids and ground elements of communications systems; and

(9) illumination of apron areas over which passengers may walk.

(q) The time interval between failure of the primary source of power and the complete restoration of the services required by subsection (p) above, shall be as short as practicable, except that for visual aids associated

with non-precision, precision approach or take-off runways the requirements of Table 2 for maximum switch-over times shall apply. (See IEM 139. 311(g))

(r) To achieve the switch-overtime as provided in Table 2, in relation to the maximum switch-overtimes defined in BCAR 139.5 the replacement of an existing secondary power supply before 1 January 2010 is not required. However, for a secondary power supply installed after 4 November 1999, the electric power supply connections to those facilities for which secondary power is required shall be so arranged that the facilities are capable of meeting the requirements of Table 2 for maximum switch-over times as defined in BCAR 139.5.

(s) As part of the audit and inspection plan of the preventive maintenance system, the aerodrome operator shall include:

(1) The frequency (no less than twice a year) and procedures for verification of secondary power supply switch-over periods based on the requirements of Table 2, which shall be verified as required by the BDCA.

(2) The frequency and procedures of measurement of light intensity for a precision approach runway category I or II shall be based on traffic density, the local pollution level, the reliability of the installed lighting equipment and the continuous assessment of the results of the in-field measurements but, in any event, shall not be less than twice a year for in-pavement lights and not less than once a year for other lights.

(t) Requirements for a secondary power supply shall be met by either of the following:

1. independent public power, which is a source of power supplying the aerodrome service from a substation other than the normal substation through a transmission line following a route different from the normal power supply route and such that the possibility of a simultaneous failure of the normal and independent public power supplies is extremely remote; or

2. standby power unit(s), which are engine generators, batteries, etc., from which electric power can be obtained.

(u) At an aerodrome where the primary runway is a non-instrument runway, a secondary power supply capable of meeting the requirements of subsection (h) above shall be provided by the aerodrome operator, except that a secondary power supply for visual aids need not be provided when an emergency lighting system in accordance with the specification of subsection (o) is provided and capable of being deployed in 15 minutes.

Table 2
Secondary power supply requirements

Runway	Lighting aids requiring power	Maximum switch-over time
Non-instrument	Visual approach slope indicators [a] Runway edge [b] Runway threshold [b] Runway end [b] Obstacle [a]	See (h) and (l)

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Non-precision approach	Approach lighting system Visual approach slope indicators [a, d] Runway edge [d] Runway threshold [d] Runway end Obstacle	15 seconds 15 seconds 15 seconds 15 seconds 15 seconds 15 seconds
Precision approach category I	Approach lighting system Runway edge [d] Visual approach slope indicators [a, d] Runway threshold [d] Runway end Essential taxiway [a] Obstacle	15 seconds 15 seconds 15 seconds 15 seconds 15 seconds 15 seconds 15 seconds
Precision approach categories II/III	Inner 300 m of the approach lighting system Other parts of the approach lighting system Obstacle [a] Runway edge Runway threshold Runway end Runway centre line Runway touchdown zone All stop bars Essential taxiway	1 seconds 15 seconds 15 seconds 15 seconds 1 seconds 1 seconds 1 seconds 1 seconds 1 seconds 15 seconds
Runway meant for take-off in runway visual range conditions less than a value of 800 m	Runway edge Runway end Runway centre line All stop bars Essential taxiway [a] Obstacle [a]	15 seconds [c] 1 seconds 1 seconds 1 seconds 15 seconds 15 seconds

[a]. Supplied with secondary power when their operation is essential to the safety of flight operation.
[b]. See BCAR 14, regarding the use of emergency lighting.
[c]. One second where no runway centre line lights are provided.
[d]. One second where approaches are over hazardous or precipitous terrain.

(v) At an aerodrome where the primary runway is a non-precision approach runway, a secondary power supply capable of meeting the requirements of Table 2 shall be provided by the aerodrome operator except that a secondary power supply for visual aids need not be provided for more than one non-precision approach runway.

(w) For a precision approach runway, a secondary power supply capable of meeting the requirements of Table 2 for the appropriate category of precision approach runway shall be provided. Electric power supply connections to those facilities for which secondary power is required shall be so arranged that

the facilities are automatically connected to the secondary power supply on failure of the primary source of power.

(x) For a runway meant for take-off in runway visual range conditions less than a value of 800 m, a secondary power supply capable of meeting the relevant requirements of Table 2 shall be provided.

(y) Emergency lighting system.

(1) At an aerodrome provided with runway lighting and without a secondary power supply, sufficient emergency lights shall be conveniently available for installation on at least the primary runway in the event of failure of the normal lighting system. Emergency lighting may also be useful to mark obstacles or delineate taxiways and apron areas.

(2) When installed on a runway the emergency lights shall, as a minimum, conform to the configuration required for a non-instrument runway.

(3) The colour of the emergency lights shall conform to the colour requirements for runway lighting, and all lights may be variable white or as close to variable white as practicable.

BCAR 139.315 Rescue and firefighting: determining category
(IEM 139.315 (a) (2))

(a) The BDCA and the entity responsible for rescue and firefighting shall determine the rescue and firefighting category for all international aerodromes as determined from Table 3 and provide a level of protection equal to the aerodrome category determined using the following principles:

(1) The longest aeroplanes and with the widest fuselage, normally using the aerodrome, first evaluating their overall length and second, their fuselage.
(2) If, after selecting the category appropriate to the longest aeroplane's overall length, that aeroplane's fuselage width is greater than the maximum width in Table 3, column 3, for that category, then the category for that aeroplane shall actually be one category higher. To categorise the aeroplanes using the aerodrome, first evaluate their overall length and second, their fuselage width.

(3) The level of protection provided at an aerodrome for rescue and firefighting shall be appropriate to the aerodrome category determined using the principles in (1) and (3), except that, where the number of movements of the aeroplanes in the highest category normally using the aerodrome is less than 700 in the busiest consecutive three months, the level of protection provided shall be not less than one category below the determined category.

(4) Domestic aerodromes that receiving commercial operations with aircraft code C or higher shall have a Rescue and Firefighting service with an appropriate level of protection for the largest aircraft operating at the aerodrome.

(b) The amount of rescue and firefighting vehicles serving the aerodrome shall not be lower than the number indicated in Column 4 on Table 3.

Aerodrome Category (1)	Aeroplane overall length (metres) (2)	Maximum fuselage width (metres) (3)	Number of vehicles (4)
1	0 to 9	2	1
2	0 to 12	2	1
3	12 to 18	3	1
4	18 to 24	4	1
5	24 to 28	4	1
6	28 to 39	5	2
7	39 to 49	5	2
8	49 to 61	7	3
9	61 to 76	7	3
10	76 to 90	8	3
This table determines the aerodrome level of protection for rescue and firefighting matters, which is closely related to the overall length and fuselage width of aeroplanes using the aerodrome as well as to the minimum amount of rescue and firefighting vehicles in such conditions.			

Table 3. Aerodrome category for rescue and firefighting and number of vehicles

(c) The number of vehicles in column 4 of Table 3 may be different to comply with a category depending on the capacity ratio (water and other agents) of the vehicle used by the aerodrome operator to comply with the requirements of columns 2 and 4.

BCAR 139.317 Rescue and firefighting: equipment and extinguishing agents
(See IEM 139.317 (a) (b) (d) (k) (o) y (q))

(a) The amounts of water for foam production and the complementary agents to be provided on the rescue and firefighting vehicles shall be in accordance with the aerodrome category determined under BCAR 139.315 and Table 4, however

(1) for aerodrome categories 1 and 2 up to 100 per cent of the water may be replaced by complementary agents;

(2) for the purpose of agent substitution, the following equivalents shall be used:

1 Kg complementary agent	=	1.0 L water for production of a foam meeting performance level A

The amounts of water specified for foam production are predicated on an application rate of 8.2 L/min/m2 for a foam meeting performance level A, and 5.5 L/min/m2 for a foam meeting performance level B.

When any other complementary agent is used, the substitution ratios need to be checked.

(3) When a combination of foams of different performance levels is used in an aerodrome, the total amount of water to be supplied for the production of foam must be calculated for each type of foam and the distribution of these amounts must be documented for each vehicle and applied to the global requirement for rescue and firefighting

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TABLE 4 Minimum usable amounts of extinguishing agents – Discharge rates

	Foam meeting performance level A		Foam meeting performance level B		Foam meeting performance level C		Complementary Agents	
Aerodrome category	Water (L)	Discharge rate foam solution/min (L)	Water[1] (L)	Discharge rate foam solution/min /min (L)	Water (L)	Discharge rate foam solution/min /min (L)	Dry Chemical powders (Kg)	Discharge rate (Kg/s)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	350	350	230	230	160	160	45	2.25
2	1000	800	670	550	460	360	90	2.25
3	1800	1300	1200	900	820	630	135	2.25
4	3600	2600	2400	1800	1700	1100	135	2.25
5	8100	4500	5400	3000	3900	2200	180	2.25
6	11800	6000	7900	4000	5800	2900	225	2.25
7	18200	7900	12100	5300	8800	3800	225	2.25
8	27300	10800	18200	7200	12800	5100	450	4.5
9	36400	13500	24300	9000	17100	6300	450	4.5
10	48200	16600	32300	11200	22800	7900	450	4.5

Note 1. The quantities of water shown in columns 2, 4 and 6 are based on the average overall length of aeroplanes in a given category.

(b) Both principal and complementary agents shall normally be provided at an aerodrome.

(c) The principal extinguishing agent shall be:

(1) a foam meeting the minimum performance level A; or
(2) a foam meeting the minimum performance level B; or
(3) a foam meeting the performance level B or C;
(4) a combination of these agents.

The principal extinguishing agent for aerodromes in categories 1 to 3, shall preferably a foam meeting the minimum performance level B or C.

(d) The complementary extinguishing agent shall be a dry chemical powder suitable for extinguishing hydrocarbon fires.

Note 1. — When selecting dry chemical powders for use with foam, care must be exercised to ensure compatibility.

Note 2. — Alternate complementary agents having equivalent firefighting capability may be utilised. Additional information on extinguishing agents is given in the Airport Services Manual (Doc 9137), Part 1.

(e) Supplementary water supplies, for the expeditious replenishment of rescue and firefighting vehicles at the scene of an aircraft accident, shall be provided.

(f) When both a foam meeting performance level A and a foam meeting performance level B are to be used, the total amount of water to be provided for foam production shall first be based on the quantity which would be required if only a foam meeting performance level A were used, and then reduced by 3 L for each 2 L of water provided for the foam meeting performance level B.

(g) The discharge rate of the foam solution shall not be less than the rates shown in Table 4.

(h) The quantity of foam concentrates separately provided on rescue and fire-fighting vehicles for foam production shall be twice the quantity (capacity) of water provided to produce two loads of foam solution.

(i) Foam concentrates, complementary agents and rescue and firefighting vehicles shall meet industry standards and technical specifications approved by the BDCA. (See IEM 139.317 (i))

(j) The discharge rate of the complementary agents shall not be less than the values shown in Table 4.

(k) Dry chemical powders shall only be substituted with an agent that has equivalent or better firefighting capabilities for all types of fires where complementary agent is expected to be used.

(l) A reserve supply of foam concentrates and complementary agent, equivalent to 200 per cent of the quantities of these agents to be provided in the rescue and firefighting vehicles, shall be maintained on the aerodrome. Where a major delay in the replenishment of this supply is anticipated, the amount of reserve supply shall be increased.

(m) The complementary agents shall comply with the appropriate specifications of the International Organization for Standardization (see ISO publication 7202 (powder))

(n) The quantity of foam concentrates separately provided on vehicles for foam production shall be in proportion to the quantity of water provided and the foam concentrate selected.

(o) A reserve supply of complementary agent, equivalent to 100 per cent of the quantity identified in Table 4, shall be maintained on the aerodrome propellant gas shall be included to utilize this reserve complementary agent.

(p) Category 1 and 2 aerodromes that have replaced up to 100 per cent of the water with complementary agent shall hold a reserve supply of complementary agent of 200 per cent.

(q) Where a major delay in the replenishment of the supplies is anticipated, the amount of reserve supply in BCAR 139.315 (l) BCAR 139.315 (o) and BCAR 139.315 (p) shall be increased as determined by a risk assessment.

BCAR 139.319 Rescue and firefighting: Operational requirements
(See IEM 139.319 (j) and IEM 139.319 (n))

(a) The aerodrome operator, the entity responsible for rescue and firefighting, or both, shall provide rescue and firefighting services during aerodrome operation hours, the number of vehicles, as shown in Table 3, for the related category under BCAR 139.315 and the support vehicles additional to the minimum amount required for that category. All vehicles shall be supplied with rescue equipment according to the service level acceptable to the BDCA.

(b) Category increase. In case of an increase in the average amount of movements or aircraft size, requiring an increase in the established category, the aerodrome operator or the entity responsible for rescue and firefighting shall comply with the applicable requirement for the new category.

(1) At aerodromes where operations by aeroplanes larger than the average size in a given category are planned, the quantities of water shall be recalculated and the amount of water for foam production and the discharge rates for foam solution shall be increased accordingly.

(c) Reduction of the minimum rescue and firefighting equipment.

(1) During anticipated periods of reduced activity, the level of protection available shall be no less than that needed for the highest category of aeroplane planned to use the aerodrome during that time irrespective of the number of movements.

(2) When experiencing or anticipating periods of permanent reduction of movements, whose amount is lower than what is provided in BCAR 139.315, or when the aerodrome is being used by smaller aeroplanes than those of the approved category, the aerodrome operator, as provided in subsection (a), may reduce the rescue and firefighting equipment at a level lower than the category determined.

(d) Any reduction in the equipment capacity required in subsection (a) shall be subject to the following conditions:

(1) The Aerodrome Operations Manual shall specify the procedures and persons that have the power to apply for and/or implement the reduction.

(2) Moreover, the Manual shall include everything related to the system and procedure to reactivate all rescue and firefighting equipment.

(3) The reduction shall not be implemented unless it is requested by the aerodrome operator, it is approved by the BDCA and the local and international aircraft operators have been notified by NOTAM.

(e) Communication and alerting systems:

(1) Each vehicle required under BCAR 139.317 shall have a two-way radio to communicate with the aerodrome control tower, other vehicles attending the emergency and the stations defined in the emergency plan.

(2) An independent communication system shall be provided linking a fire station with the control tower.

(3) An alerting system (alarms and sirens) for rescue and firefighting personnel, capable of being operated from the control tower or any other rescue and firefighting station at the aerodrome, shall be provided.

The aerodrome operator or the responsible entity shall establish the procedures and include them in the AOM to alert the rescue and firefighting personnel in case of emergencies.

(f) Each vehicle under BCAR139.317 shall:

(1) have at least one headlight or a flash strobe.

(2) be coloured or marked with colours that contrast with the aerodrome background to optimise visibility by day or night and be easily identified.

(g) The colour, marking and illumination standards of vehicles used in the aerodrome shall be acceptable to the BDCA. (See IEM 139.329 (h)).

(h) Maintenance of rescue and firefighting vehicles

(1) A system of preventive maintenance of rescue and firefighting vehicles shall be employed by the aerodrome operator or entity responsible for rescue and firefighting services, to ensure effectiveness of the equipment and compliance with the specified response time throughout the life of the vehicle.

(2) Any vehicle, which does not comply with the requirements on subsection (1) above, shall be replaced immediately with another one of equal capacity. If reserve vehicle or replacement equipment is not available, the aerodrome operator or the entity responsible for rescue and firefighting shall notify the BDCA and every aircraft operator using the aerodrome according to BCAR139.339. If the category and authorised capacity are not restored within 48 hours, the aerodrome operator shall limit air operations according to the category related to remaining rescue and firefighting equipment still operating unless the BDCA states otherwise.

(i) Response time

(1) The rescue and firefighting service shall demonstrate compliance with the response time as provided in BCAR 139.5, when required by the BDCA or the aerodrome operator.

(2) Response time shall not exceed two minutes between the initial call and the time when the first responding vehicle(s) reach the end of each operational runway in optimum visibility and surface conditions and a response time not exceeding three minutes to any other part of the movement area.

(3) Any vehicles, other than the first responding vehicles(s), required to deliver the amounts of extinguishing agents, as provided in BCAR139.317 (a), shall ensure continuous agent application and shall arrive no more than four minutes from the initial call.

(4) To meet the operational objective as nearly as possible in less than optimum conditions of visibility, especially during low visibility operations, suitable guidance, equipment and/or procedures for rescue and firefighting services shall be provided.

(j) Rescue and firefighting personnel: All rescue and firefighting personnel shall be properly trained to perform their duties in an efficient manner according to the training programme and comply with the following:

(1) All responding rescue and firefighting personnel shall be provided with protective clothing and equipment to enable them to perform their duties in an effective manner.

(2) The training programme shall include initial and recurrent theoretical and practical training every 12 months; except the provision on subsections (x) and (xiii), which are applied every two years. Practical training shall be conducted in equipment that simulates the characteristics and design of an aeroplane. The training curriculum shall include initial and recurrent instruction in at least the following areas: areas:

(i) Familiarization with airport characteristics and operations;

(ii) Aircraft familiarization: Additionally, air operators using the aerodrome shall train rescue and firefighting personnel on the specific aircraft model they operate.

(iii) Rescue and firefighting personnel safety;

(iv) Emergency communications systems on the aerodrome, including aircraft fire-related alarms;

(v) Use of the fire hoses, nozzles, turrets and other appliances required for compliance with BCAR 139;

(vi) Application of the types of extinguishing agents required for compliance with BCAR 139;

(vii) Emergency aircraft evacuation assistance;

(viii) Rescue and firefighting operations;

(ix) Adaptation and use of structural rescue and firefighting equipment for aircraft rescue and firefighting;

(x) Dangers related to aircraft cargo, dangerous goods;

(xi) Familiarization with fire fighters' duties under the aerodrome emergency plan;

(xii) Protective clothing and respiratory protection;

(xiii) Human factors, including team coordination; and

(xiv) SMS programme, applicable to the operations of rescue and firefighting personnel.

(3) All rescue and firefighting personnel shall participate in live fire drills commensurate with the types of aircraft and type of rescue and firefighting equipment in use at the aerodrome, including pressure-fed fuel fires at least once every 24onths.

(4) During flight operations, sufficient trained and competent personnel shall be designated to be readily available to ride the rescue and firefighting vehicles and to operate the equipment at maximum capacity. These personnel shall be deployed in a way that ensures that minimum response times can be achieved and that continuous agent application at the appropriate rate can be fully maintained. Consideration shall also be given for personnel to use hand lines, ladders and other rescue and firefighting equipment normally associated with aircraft rescue and firefighting operations.

(5) Rescue and firefighting personnel shall know the AOM or appropriate sections.

(6) Training records and tests of rescue and firefighting personnel as well as medical emergency services shall be maintained for a period of 24 months after recurrent training completion.

(7) In determining the minimum number of rescue and firefighting personnel required, a task resource analysis shall be completed and the level of staffing documented in the Aerodrome Manual.

(k) Emergency access roads

(1) Emergency access roads to approach areas shall be provided by the aerodrome operator on an aerodrome where terrain conditions permit their construction, so as to facilitate achieving minimum response times. Particular attention shall be given to the provision of ready access to approach areas up to 1 km from the threshold, or at least within the aerodrome boundary. Where a fence is provided, the need for convenient access to outside areas shall be taken into account.

(2) The aerodrome operator shall ensure that emergency access roads for rescue and firefighting vehicles and service roads have a resistant or hard surface, capable of supporting the heaviest vehicles which will use them, and be usable in all weather conditions. Roads within 90 m of a runway shall be surfaced to prevent surface erosion and the transfer of debris to the runway.

(l) Where an aerodrome is located close to water/swampy areas, or difficult terrain, and where a significant portion of approach or departure operations takes place over these areas, specialist rescue services and firefighting equipment appropriate to the hazard and risk shall be available.

(m) All rescue and firefighting vehicles shall normally be housed in a single fire station. Satellite fire stations shall be provided whenever the response time cannot be achieved from a single fire station.

(n) The fire station shall be located so that the access for rescue and firefighting vehicles into the movement area is direct and clear, requiring a minimum number of turns.

(o) The aerodrome operator shall foresee, and provide, that at least one of the persons required to be in service for rescue and firefighting in each shift has been trained and has updated information on medical emergencies and recurrent training every 12 months according to the requirements of the governing body as long as the same level of competency is met. Training shall include 40 hours covering the following areas:

(1) Haemorrhages

(2) CPR, cardiopulmonary resuscitation

(3) Shock

(4) Basic patient monitoring

(5) Internal injuries

(6) Safe patient handling and mobility

(7) Burns

(8) Triage

(9) Injuries to the head, spine, limbs and thorax

BCAR 139.321 Handling and storage of hazardous substances
(See IEM 139.321 (b) and (c))

(a) The aerodrome operator shall establish and maintain procedures for people and property protection in the aerodrome during handling and storage of any material regulated under BCAR 18 on air transportation of dangerous goods. These procedures shall include at least the following:

(1) Assignment of personnel in charge of receiving and handling hazardous materials or substances.

(2) Consignors or aerodrome operators must ensure that cargo is handled safely including any special procedure required for safety purposes.

(3) Arrangements for special areas on the aerodrome to be set up for the storage of hazardous materials while they are in the aerodrome.

(4) The method to be followed for temporary location of boxes, packages and containers of dangerous goods with evidence of leakage.

(b) The aerodrome operator or fuel supplier, as appropriate, shall establish the procedures and follow the standards provided in IEM 139.321 (b), to ensure safety against fire and explosions during storage, refuelling and handling of fuels including:

(1) Grounding or earthing.

(2) Public protection.

(3) Access control in storage areas.

(4) Safety against fuel fire in storage and refuelling areas.
(5) Safety against fire in refuelling vehicles, hydrants and cabinets.

(6) Personnel safety training against fire according to subsection (e).

(7) Rescue and firefighting code applicable to the aerodrome, as established by the BDCA.

(c) If the aerodrome operator works as a fuel supplier, it shall comply with the provisions on subsection (b) and shall require other suppliers to comply as well. Besides that, it shall conduct inspections and audits to demonstrate compliance with the provisions on subsection (b), according to the required standard.

(d) The aerodrome operator shall conduct audits/inspections of vehicles and facilities of the aerodrome, and/or other provider or fuel supplier, at least once every four months to comply with the provisions on subsection (b) and shall retain the inspection records for a period of 24 months. The aerodrome operator may use a technically qualified and independent organisation to conduct audits/inspections under approval of the BDCA.

(e) Instruction required under subsection (b) (6) shall include at least the following:

(1) At least each shift supervisor of the supplier shall have completed a specialised course on aviation fuel fire safety every 24 months, approved by the BDCA.

(2) Personnel receiving and handling fuel or refuelling aircraft shall receive an initial and recurrent on the job training (OJT) every 12 months, conducted by a trained supervisor according to subsection (e) (1) above.

(f) The fuel supplier shall keep a record system on the initial and recurrent training of each employee and keep it for a period of 24 months after training completion.

(g) The aerodrome operator shall require each fuel supplier to take immediate corrective action when deficiencies in compliance with standards required in subsection (b) are detected. To ensure compliance, the aerodrome operator shall notify the discrepancies found to the BDCA so that they are properly monitored.

(h) Other hazardous substances used or handled in the aerodrome, not covered in the provisions above, such as liquefied petroleum gas (LPG), shall be controlled by the rules of science and industry, such as the NFPA.

BCAR 139.323 Aerodrome Safety Management System
(See IEM 139.323 (a) (4) (e))

(a) The aerodrome operator shall establish a safety management system (SMS) and submit it to the BDCA for acceptance, as a minimum:

(1) identifies safety hazards;

(2) establishes policies and procedures to ensure the implementation of remedial action necessary to maintain agreed safety performance;

(3) establishes policies and procedures that provide for continuous monitoring and regular assessment of the safety performance though internal and external audits; and

(4) aims at a continuous improvement of the overall performance of the safety management system.

(b) A safety management system shall clearly define lines of safety accountability in the certified aerodrome operator's organisation, including a direct accountability to ensure that aerodrome operations are safe, monitored and continuously improved.

(c) Aerodrome service providers, rescue and firefighting services, aircraft technical aircraft assistance companies: dispatch, line service, fuelling, food and beverage supply, cargo handling and other organisations that carry out or may carry out independent activities, shall be part of the aerodrome safety management system in accordance with valid applicable regulations. Aerodrome service providers shall at least develop and maintain a protocol that ensures operational hazard identification besides of an accident/incident reporting system and they must approve audits, inspections and tests that the aerodrome operator or BDCA conducts to ensure compliance.

(d) All aerodrome users, service providers and other organisations operating independently are obliged to cooperate with the programme to promote safety and safe use of the aerodrome; by taking corrective actions to mitigate risks and reporting immediately any incident, accident, defect or flaw that may impact safety or security against acts of unlawful interference.

(e) The safety management system shall be presented as Part 6 of the Aerodrome Operations Manual or in an independent manual or volume for BDCA approval. See Appendix 1 to BCAR 139.205 for its structure.

BCAR 139.325 Aerodrome emergency plan
(See IEM 139.325 (a))

The aerodrome operator shall establish an emergency plan commensurate with the aircraft operations and other activities conducted at the aerodrome. The aerodrome emergency plan shall provide for the coordination of the actions to be taken in an emergency occurring at an aerodrome or in its vicinity. The plan shall observe Human Factors principles to ensure optimum response by all existing agencies participating in emergency operations, include and meet at least the following requirements:

(a) Organisation and operations. Include at least the following:

(1) Procedures that constitute a rapid response to any of the emergencies listed in subsection (b), in sufficient detail, to provide adequate guidance for each person who requires implementing it.

(2) The establishment of a fixed emergency operations centre (EOC) at the aerodrome facilities under the responsibility of the highest aerodrome authority or the nominated person.

(3) Responsibility and role of each agency, the emergency operations centre (EOC) and the mobile command post, for each type of emergency.

(4) The command post shall be a facility capable of being moved rapidly to the site of an emergency, when required, and shall undertake command and the local coordination of those agencies responding to the emergency. The person assigned to assume control of the command post shall be the competent authority assigned in agreement with the type of emergency as provided in subsection (b) of this section.

(5) A communication system linking the command post and the emergency operations centre with each other and with the participating agencies.

(6) List of key personnel at the aerodrome, including: name, telephone number, position, institution or other means of contact.

(7) Provisions for medical service, including transportation and medical assistance for the maximum number of people that may be carried on board of the largest aircraft operating at the aerodrome.

(8) Name, location, telephone number and emergency capacity of each hospital and other medical facilities as well as addresses and telephone numbers of all medical personnel at the aerodrome and the community where the aerodrome is located which agree to provide medical and transport assistance.

(9) The name, address and telephone number of each rescue squad, ambulances and government units located at the aerodrome or the community where it is located, which may provide medical assistance or transportation.

(10) An inventory of vehicles and aircraft fitted with ramps, facilities, institutions and individuals, included in the plan under subsections (2) and (3) of this section, which shall transport dead or injured persons from the aerodrome to hospitals or other sites.

(11) Each hangar or other buildings at the aerodrome or in the community which may be used to accommodate uninjured, injured and deceased people.

(12) Grid map of the airport and its immediate vicinity.

(13) Accommodation, guidance and transport of injured and uninjured people who have survived an accident or incident.

(14) Procedures to notify institutions and personnel responsible for the aircraft accident plan of the community about the number of persons involved in the accident and any other information necessary to take on responsibility as soon as they receive the information and become available.

(15) The emergency alarm system.

(16) Supplies for the rescue of victims of aircraft accidents that may happen on water located near the approach or departure areas of the aerodrome. In that case, the aerodrome emergency plan shall include exercises and reviews at regular intervals on the response time of rescue services.

(b) Instructions for immediate response in the following emergencies:

(1) Aviation accidents or incidents.

(2) Acts of unlawful interference.

(i) Incidents with explosive devices or bomb threats on board an aircraft, whether in-flight, on the ground, at aerodrome facilities or sites within the area of the aerodrome, including the parking position for aircraft involved
(ii) Sabotage
(iii) Unlawful seizure of aircraft (hijacking in-flight or on the ground)
(iv) Hostage taking.
(v) Unlawful seizure of facilities serving international civil aviation.

(3) Building fires.

(4) Fires in fuel farms or storage areas.

(5) Natural disasters.

(6) Dangerous goods occurrences on board an aircraft or ground facility.

(7) Rescue situations on the sea, where appropriate.

(8) Public health emergencies, for example: increased risk of spreading a serious communicable disease internationally through air travellers or cargo carried by air transport and severe outbreak of a communicable disease potentially affecting a large proportion of aerodrome staff.

(c) Coordination. The aerodrome operator shall:

(1) coordinate the plan with the BDCA, law enforcement and traffic authorities, rescue institutions, air traffic services (ATS), the Red Cross, rescue and firefighting services, the national entity in charge of emergencies in particular the unit responsible for technical advice in case of aircraft emergencies, the bureau of investigation, the State security services, medical personnel, hospitals, clinics and other liable institutions or personnel in this plan.

(2) Encourage and provide for the participation of all parties and specific personnel for the development of this plan.

(3) Ensure that all personnel, who have obligations and responsibilities under this plan, are familiar with their assignments and have proper training.

(d) Assessment of the emergency plan. The aerodrome operator shall ensure: (See IEM 139.325 (d))
(1) The plan contains procedures for periodic testing of the adequacy of the plan and for reviewing the results in order to improve its effectiveness.

(2) Plan verification through a full-scale aerodrome emergency exercise at intervals not exceeding two years.

(3) A series of modular tests commencing in the first year and concluding in a full-scale aerodrome emergency exercise at intervals not exceeding three years;

(i) ensure that all people involved know their responsibilities and that plan information is updated;

(ii) ensure that any deficiencies found during the full-scale aerodrome emergency exercise or an actual emergency have been corrected;

(iii) ensure the adequacy of the response by individual participating agencies with regard to each one of the components of the plan, such as the communications system;

(4) After an actual emergency or an exercise, results shall be reviewed so as to correct any deficiency found.

(e) The aerodrome operator providing services to air operators with aircraft for the international transport of passengers, which require to comply with BCAR 17, shall ensure that instructions on the response to subsection (b) (2) in the aerodrome emergency plan, are consistent with the provisions of the Aerodrome Security Programme.

(f) Emergencies in difficult environments. The plan shall include the ready availability of, and coordination with, appropriate specialist rescue services to be able to respond to emergencies where an aerodrome is located close to water and/or swampy areas and where a significant portion of approach or departure operations takes place over these areas.

1) At those aerodromes located close to water and/or swampy areas, or difficult terrain, the aerodrome emergency plan shall include the establishment, testing and assessment at regular intervals of a predetermined response for the specialist rescue services.

2) An assessment of the approach and departure areas within 1,000 m of the runway threshold shall be carried out to determine the options available for intervention.

BCAR 139.327 Safety audits and inspections
(See IEM 139.327)

(a) The aerodrome operator shall arrange for an audit of the safety management system, including an inspection of the aerodrome facilities and equipment. The audit shall cover the aerodrome operator's own functions. The aerodrome operator shall also arrange for an external audit and inspection programme for evaluating other users, including fixed-base operators, ground handling agencies and other organisations working at the aerodrome.

(b) The aerodrome operator shall establish within the audit programme the frequency of such audits and inspections referred to in the regulation above.

(c) The aerodrome operator shall establish a daily inspection system, a minimum of one daily inspection when the key number is 1 or 2 and a minimum of two inspections when the key number is 3 or 4. These

inspections shall be conducted during the day or at night to verify the possible existence of deficiencies or contamination in the movement area, including pavement (runways, taxiways, aprons and adjacent areas). Inspection guides and checklists shall be attached to the Aerodrome Operations Manual (See Part 5 (5.5 (e)).

(d) The aerodrome operator shall conduct special inspections as required by circumstances, to ensure aviation safety, at least in the following cases:

1) as soon as practicable after any aircraft accident or incident or ground incident;

2) during any period of construction or repair of the aerodrome facilities or equipment;

3) at any other time when there are conditions at the aerodrome that could affect aviation safety;

4) when weather conditions may affect the safe operation of aircraft;

5) As soon as practicable after a major earthquake.

(e) The aerodrome operator shall include all relevant information in the Aerodrome Operations Manual and ensure that the audit and inspection reports, including the report on the aerodrome facilities, services and equipment, are prepared by suitably qualified safety experts and signed by the individuals who conducted the audits and inspections.

(f) The aerodrome operator shall provide the following:

(1) Equipment to conduct safety audits and inspections of the aerodrome.

(2) Procedures, facilities and equipment for the safe and prompt distribution of information among the aerodrome personnel, airlines and other users.

(3) A system of reporting, follow-up and correction of unsafe conditions detected during the inspection.

(g) The aerodrome operator shall establish a system to record audits and inspections prescribed in this section, detailing the conditions found and the corrective measures taken. The records shall be kept for at least 24 months after the inspection date or the closing date of each inaccuracy found.

(h) The aerodrome operator shall establish a transfer and communication system with the BDCA in regards to inaccuracies or findings in audits and inspections conducted for aerodrome service providers, rescue and firefighting services, aircraft technical assistance companies: dispatch, online service, fuelling, food and beverage supply, cargo and other organisations that carry out, or may carry out, independent activities at the aerodrome.

BCAR 139.329 Vehicles.
(See Appendix 1 to BCAR 139.329 (e))
(See IEM 139.329 (e) and (l))

(a) Access of vehicles to the movement area shall be limited by the aerodrome operator, in particular to those vehicles that are unnecessary for aerodrome and aircraft operations.

(b) The aerodrome operator shall establish and implement traffic rules and procedures for the safe and orderly operation of vehicles on the movement area and identify the consequences of non-compliance.

(c) A vehicle shall be operated:

(1) On a manoeuvring area only as authorised by the aerodrome control tower; and

(2) On an apron only when authorised by the aerodrome operator.

(3) When operation is carried out by escort vehicles, they shall be authorised as provided above.

(d) The driver of a vehicle on the movement area shall comply with all mandatory instructions conveyed by markings and signs unless otherwise authorised by:

(1) the aerodrome control tower when on the manoeuvring area; or

(2) the aerodrome operator while on the apron.

(e) The aerodrome operator shall implement a training plan and a record system for drivers who require to be authorised to enter the manoeuvring area, the apron or other portions of the movement area.

(f) It is necessary to maintain and make available to the BDCA the records of accidents and incidents on the ground and incursions of aircraft, vehicles, or both, and of people in the movement area.

(g) The aerodrome operator shall establish a system to verify technical review programmes of all vehicles and equipment operating in the movement area.

(h) Marking and lighting of vehicles shall be acceptable by the BDCA. (See IEM 139.329 (h)).

(i) The driver of a vehicle on the movement area shall comply with all mandatory instructions that the aerodrome control tower conveys by lights.

(j) The driver of a vehicle who requires entering the manoeuvring area shall establish satisfactory two-way radio communication with the aerodrome control tower and with the aerodrome operator before entering the apron. The driver shall maintain a continuous listening watch on the assigned frequency when on the manoeuvring area.

BCAR 139.331 Obstacle control
(See IEM 139.331 (b))

(a) The aerodrome operator shall monitor any interference with an obstacle limitation surface:

(1) objects with natural growth;

(2) temporary or permanent constructions, including equipment and materials used in these structures;

(3) temporary or permanent alteration of any structure.

These obstacles shall be removed, marked or illuminated, by the owner of the property or by the aerodrome operator, determined by the aeronautical study as provided in BCAR 139.015.

(b) Every four years, the aerodrome operator shall verify and update the Type A Chart for obstacles.

(c) The aerodrome operator shall establish, through an aeronautical study conducted by the BDCA, the preventive, corrective or decisive provisions against any circumstance of:

(1) Evident or imminent presence of a new obstacle.
(2) Modification or alteration of an existing object.
(3) Intention or interest of natural or legal persons to place a new object or modify an existing one.

(d) Aeronautical studies may be conducted by the aerodrome operator, the individuals concerned or by the BDCA's own initiative.

(e) Removal, marking and lighting.

(1) These obstacles shall be removed, marked or illuminated, by the owner of the property or by the aerodrome operator, as determined by the aeronautical study.

(2) The aerodrome operator shall remove or eliminate, from the movement area or any other surface, any vehicle or obstruction whose presence may be dangerous for regular operations.

(f) Shielding principle

(1) Through an aeronautical study, the BDCA may establish, in a reasonable and reliable way, that there is no possibility for an existing object to be removed in the future; regardless of how the configuration, the type or density of air operations may be modified. In that case, the object is considered permanent or immovable.

(2) When an object is considered or immovable, it creates a shielding plane on the surface surrounding it. That surface and the objects included are shielded by permanent or immovable objects. A permanent object is considered to be dominant with respect to surrounding objects shielded by it.

(3) An obstacle shielded by an existing or immovable object shall not be considered as such. The BDCA may exempt the operator or interested party from the requirement of removing, marking or illuminating it.

(4) In any case, the shielding principle shall be determined by an aeronautical study. The formula shall be based in the following analysis criteria: Any object which lies beneath any of the following planes shall be considered as shielded:

(i) A horizontal plane at the elevation of the top of the obstacle, that extends from the obstacle in the direction away from the runway; and

(ii) A plane with a negative slope of 10% towards the runway.

(g) Non-instrument runways

(1) New objects or extensions of existing objects shall not be permitted above an approach or transitional surface except when the new object or extension would be shielded by an existing immovable object.

(2) New objects or extensions of existing objects shall not be permitted above the conical surface or inner horizontal surface except when the object would be shielded by an existing immovable object, or after aeronautical study it is determined that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes.

(3) Existing objects above the conical surface, inner horizontal surface, approach and transitional surfaces, shall as far as practicable be removed except when the object is shielded by an existing immovable object, or after aeronautical study it is determined that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes.

(h) Non-precision approach runways:

(1) New objects or extensions of existing objects shall not be permitted above an approach surface within 3,000 m of the inner edge or above a transitional surface except when, the new object or extension would be shielded by an existing immovable object.

(2) New objects or extensions of existing objects shall not be permitted above the approach surface beyond 3,000 m from the inner edge, or above the conical surface or inner horizontal surface except when, the object would be shielded by an existing immovable object, or after aeronautical study determines that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes.

(3) Existing objects above any of the conical surface, inner horizontal surface, approach and transitional surfaces shall as far as practicable be removed except when, the object is shielded by an existing immovable object, or after aeronautical study determines that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes.

(i) Precision approach runways:

(1) Fixed objects shall not be permitted above the inner approach surface, the inner transitional surface or the balked landing surface, except for frangible objects which because of their function must be located on the strip. Mobile objects shall not be permitted above these surfaces during the use of the runway for landing.

(2) New objects or extensions of existing objects shall not be permitted above an approach surface or a transitional surface except when, the new object or extension would be shielded by an existing immovable object.

(3) New objects or extensions of existing objects shall not be permitted above the conical surface and the inner horizontal surface except when, an object would be shielded by an existing immovable object, or after aeronautical study determines that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes.

(4) Existing objects above an approach surface, a transitional surface, the conical surface and inner horizontal surface shall as far as practicable be removed except when, an object is shielded by an existing immovable object, or after aeronautical study determines that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes.

(j) Runways meant for take-off:

(1) New objects or extensions of existing objects shall not be permitted above a take-off climb surface except when the new object or extension would be shielded by an existing immovable object.

(2) If no object reaches the 2 per cent (1:50) take-off climb surface, new objects shall be limited to preserve the existing obstacle free surface or a surface down to a slope of 1.6 per cent (1:62.5).

(3) Existing objects that extend above a take-off climb surface shall as far as practicable be removed, except when an object is shielded by an existing immovable object, or after aeronautical study determines that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes.

(k) The aerodrome operator shall coordinate with the local authority to remove or prevent the installation of signs or other structures, which penetrate the obstacle limitation surfaces of the aerodrome within its jurisdictions, or the installation of lighting systems or luminous elements that the BDCA, through a risk analysis, determines that affect safety (See provisions in BCAR 139. 311 b).

(l) The entities in charge of controlling and providing electrical power or communication services shall remove or prevent the installation of electricity pylons, towers, transmission or supply lines or other structures or buildings, which penetrate the aerodrome obstacle limitation surfaces, or the installation of lighting systems or luminous elements that the BDCA, through a risk analysis, determines that affect safety (See provisions in BCAR 139. 311 b).

BCAR 139.333 Protection of radio navigational aids

The aerodrome operator shall:

(a) prevent that the construction of facilities at the aerodrome may interfere, void or reduce the operation of a visual or electronic aid;

(b) when necessary, protect the navigational aids from vandalism or theft;

(c) when necessary, monitor and prevent signal interruption of navigational aids.

(d) Ensure the protection of these systems during the maintenance of the unpaved areas in the vicinity of these equipment (grass cutting, wildlife and other inspections), the operator shall demarcate these areas in such a way that they are defined as restricted areas to both person and equipment.

BCAR 139.335 Public protection
(See IEM 139.335 (a))

The aerodrome operator shall:

(a) Provide a fence or other suitable barrier to prevent the inadvertent or premeditated access of an unauthorised person onto a non-public area of the aerodrome. This is intended to include barring of sewers, tunnels or other similar ducts. The fence or barrier shall be located such that it does not represent an obstacle separates the movement area and other facilities or zones on the aerodrome vital to the safe operation of aircraft and prevents acts of unlawful interference.

(b) Provide illumination at a minimum essential level for a fence or other barrier provided for the protection of civil aviation and its facilities, through lights illuminating both sides of the fence or barrier, particularly at access points.

(c) A cleared area shall be provided on both sides of the fence or barrier to facilitate the work of patrols and prevent unauthorised access. Consideration shall be given to the provision of a perimeter road inside the aerodrome fencing for the use of both maintenance personnel and security patrols.

(d) Make all necessary arrangements and provide a fence or other suitable barrier to prevent the entrance to the movement area of an unauthorised person or vehicle, or animals large enough to be a hazard to aircraft.

(e) Establish, within the monitoring programme, daily inspections during the day or at night.

(f) Reasonably protect persons and property to prevent damage from aircraft engine jet stream.

BCAR 139.337 Wildlife (birds and animals) strike hazard reduction
(See IEM 139.337 (a) and (f))

The aerodrome operator shall:

(a) Provide or facilitate a wildlife study in order to take appropriate action to minimise the risks related to birds and other animals:

(b) The study required in subsection (a) shall be conducted by professionals with expertise in aerodrome management and shall include at least the following:

(1) Identification of species, number, daily and seasonal local movements and information on the presence of animals.

(2) Identification and location of characteristics of the aerodrome, or its vicinity, which may attract birds or wild animals.

(3) Description of any wildlife hazard to air operations.

(4) Periodical update mechanism.

(5) Criteria of public and private entities affected.

(c) The study required in subsection (a) shall be submitted to the BDCA, who shall determine if it is necessary to establish an ongoing plan on wildlife hazard conducted by competent personnel. To determine this, the BDCA shall take into consideration:

(1) The wildlife studies.

(2) Actions recommended in the study.

(3) The aviation activity at the aerodrome, including the number of movements.

(4) Point of view of the aerodrome operator.

(5) Opinion of the aerodrome users.

(6) Information from aircraft operators.

(d) When the BDCA determines that the wildlife management plan is required, the aerodrome operator, in coordination with the wildlife committee, shall prepare this plan and include at least the following:

(1) Persons with authority and responsible for the implementation of each element of the plan.

(2) Priorities for changes of habitat and land use identified in the wildlife study and proposed deadlines to comply with the plan.

(3) Information to be sent to public entities to issue permits for wildlife control.

(4) Identification of the resources to be provided by the aerodrome operator for plan implementation.

(5) Procedures to be followed during aircraft operation, including at least:

(i) The assignment of personnel responsible for implementing the procedure.

(ii) Conduction of physical inspections in the movement area and other critical areas for possible wildlife hazards.

(iii) Animal control measures.

(iv) Effective means of communication among personnel of the aerodrome operator in charge of animal control and Air Traffic Control Services.

(6) Procedures for the assessment and periodical review, at least every 12 months, of the wildlife management plan, including:

(i) The plan effectiveness to handle wildlife hazards at the aerodrome or its vicinity.

(ii) Aspects of the plan that require re-evaluation.

(7) A training programme taught by experts, which provide personnel with appropriate knowledge and skills for the successful conduct of the wildlife management plan at the aerodrome.

(8) A recording system for wildlife hazard control.

(9) Creation of a bird and wildlife hazard committee of the aerodrome.

(e) The aerodrome operator shall keep surveillance to prevent that a radius of no less than 13 Km (8 MT) in any direction of the aerodrome, or the radius established by the BDCA contain garbage disposal dumps or any other source which may attract birds or animals, unless an appropriate aeronautical study indicates that they are unlikely to create conditions conducive to a wildlife hazard problem. If the aerodrome operator knows about the existence of garbage disposal dumps or other facilities non-compatible with aviation, it shall coordinate with health authorities and entities with the authority to eliminate and prevent the installation through the bird and wildlife hazard committee of the aerodrome.

(f) The BDCA is responsible for reporting bird strikes to the International Civil Aviation Authority.

(g) The BDCA, through control plans, shall take into account aviation safety concerns related to developments near the aerodrome, which may attract birds and other animals.

BCAR 139.339 Notifying and reporting about aerodrome conditions
(See IEM 139.339 (d) (3) (h) (i))

(a) An aerodrome operator shall adhere to the requirement to notify and report to the BDCA and air traffic control, within time limits specified in this section, any condition that may affect aircraft safety and operations.

(b) Notification of inaccuracies in aeronautical information service (AIS) publications. An aerodrome operator shall review all aeronautical information publications (AIP), AIP Supplements, AIP Amendments, Notices to Airmen (NOTAM), Pre-flight Information Bulletins and Aeronautical Information Circulars issued by AIS on receipt thereof and immediately after such reviews shall notify AIS of any inaccurate information contained therein that pertains to the aerodrome.

(c) The aerodrome operator shall notify AIS, in writing, at least 56 days before effecting any planned major change to the aerodrome facility or equipment or level of service at the aerodrome which may affect accuracy of the information contained in any AIS publication.

(d) Issues requiring immediate notification. The aerodrome operator shall immediately report to AIS and shall arrange for Air Traffic Control and the flight operations unit to receive immediate notice detailing any of the following circumstances of which the operator has knowledge:

(1) Obstacles, obstructions and hazards.

(i) Any penetration by an object into an obstacle limitation surface related to the aerodrome.

(ii) The existence of any obstruction or hazardous condition affecting aviation safety at or near the aerodrome.

(iii) Objects in the movement area or runway strips.

(2) Level of service: reduction in the level of service or absence of rescue and firefighting services at the aerodrome as provided in BCAR 139.317 and BCAR139.319.

(3) The condition of the movement area and the operational status of related facilities, as provided in BCAR 139.327, shall be monitored and reported to the appropriate aeronautical information services units, and the air traffic services units, to enable those units to provide the necessary information to arriving and departing aircraft. The information shall be maintained up to date, any change shall be notified on time and cover relevant aspects on operational safety or on matters affecting performance, particularly in respect of the following:

(i) construction or maintenance work;

(ii) irregular or deteriorated surfaces on a runway, a taxiway or a platform;

(iii) Whenever water is present on a runway, a description of the runway surface conditions shall be made available using de Global Reporting Format for Runway Conditions (GRF) methodology using the appropriate terms. See BCAR139.339 (i).

(iv) liquid chemicals or other contaminants on a runway, taxiway or apron.

(v) other temporary hazards, including parked aircraft;

(vi) failure or irregular operation of part or all of the aerodrome visual aids; and

(vii) failure of the normal or secondary power supply or malfunction of any lighting system.

(4) Wildlife hazards as provided in BCAR 139.337.

(5) Information that a runway or portion thereof may be slippery when wet shall be made available. A runway or portion thereof shall be determined as being slippery, when the runway surface friction characteristics are below the minimum friction level specified in BCAR 139.305 or when it is suspected that a runway may become slippery under unusual conditions and additional measurements have been made.

(6) Any other condition that may affect aviation safety at the aerodrome and against which precautions shall be warranted.

(e) Immediate notification to pilots. When it is not feasible for an aerodrome operator to arrange for the air traffic control to receive notice of a circumstance referred to in subsection d) above, the operator must give immediate notice direct to the pilots who may be affected by that circumstance.

(f) The aerodrome operator shall provide information on the minimum friction level for reporting slippery runway conditions and the type of friction measuring device.

(g) The aerodrome operator shall give due consideration regarding accuracy and integrity requirements for the provision of aeronautical information/data to the AIS for the issue of NOTAMs, AICs and changes to the AIP.

(h) Personnel assessing and reporting runway surface conditions required in BCAR139.339 (d) (3) and BCAR 139.339 (i) shall be trained and competent to meet criteria set by the BDCA

(i) **Runway surface condition(s) for use in the runway condition report**
(See IEM 139.339 (i))

Introductory Note. — The philosophy of the runway condition report is that the aerodrome operator assesses the runway surface conditions whenever water is present on an operational runway. From this assessment, a runway condition code (RWYCC) and a description of the runway surface are reported which can be used by the flight crew for aeroplane performance calculations. This report, based on the type, depth and coverage of contaminants, is the best assessment of the runway surface condition by the aerodrome operator; however, all other pertinent information may be taken into consideration. See Attachment A, Section 6, for further details. The PANS-Aerodromes (Doc 9981) contains procedures on the use of the runway condition report and assignment of the RWYCC in accordance with the runway condition assessment matrix (RCAM).

(1) The runway surface condition shall be assessed and reported through a runway condition code (RWYCC) and a description using the following terms:

DRY
WET
SLIPPERY WET
STANDING WATER
LOOSE SAND

Conditions that may affect runway safety shall be reported in the Situational Awareness section of the RCR, such as changes in the LDA. Loose sand, volcanic ash, quality of the pavement structure among others.

(2) Whenever an operational runway is contaminated, an assessment of the contaminant depth and coverage over each third of the runway shall be made and reported.

(3) Information that a runway or portion thereof is slippery wet shall be made available.

(4) Notification shall be given to relevant aerodrome users when the friction level of a paved runway or portion thereof is less than the minimum friction level specified by the State in accordance with BCAR 14.304 (b).

BCAR 139.341 Identification and marking of construction areas
(See IEM 139.341)

(a) The aerodrome operator shall guarantee:

(1) Markings, lighting and installation of fences or barriers in:

(i) All construction areas and out of service areas near the movement area or any other area of the aerodrome where aircraft operate.

(ii) Each element of the construction equipment and any road under construction that may affect the safe movement of aircraft at the aerodrome.

(iii)Any area adjacent to a navigation aid that may interrupt the signal or cause failure of the radio navigation aids when crossed.

(2) Verification of existing plans or information before construction to prevent damages in wires, lighting, ducts, cables and other underground utilities.

(b) The aerodrome operator shall establish a safety plan for construction, comprising both operational and public safety (AVSEC) aspects and which shall be submitted to the BDCA to verify that the minimum elements to ensure safety during construction work have been considered. See IEM 139.341 for plan preparation.

BCAR 139.343 Apron management service
(See IEM 139.343 (b))

(a) When warranted by the volume of traffic and operating conditions, an appropriate apron management service shall be provided on an apron by an aerodrome ATS unit, by another aerodrome operating authority, or by a cooperative combination of these, in order to:

(1) Regulate movement with the objective of preventing collisions between aircraft, and between aircraft and obstacles;

(2) Regulate entry of aircraft into, and coordinate exit of aircraft from the apron with the aerodrome control tower; and

(3) Ensure a safe and expeditious movement of vehicles and appropriate regulation of other activities.

(b) When the aerodrome control tower does not participate in the apron management service, procedures shall be established to facilitate the orderly transition of aircraft between the apron management unit and the aerodrome control tower.

(c) An apron management service shall be provided with radiotelephony communications facilities.

(d) Where low visibility procedures are in effect, persons and vehicles operating on an apron shall be restricted to the essential minimum.

(e) An emergency vehicle responding to an emergency shall be given priority over all other surface movement traffic and air traffic services shall suspend any manoeuvre in the movement area.

(f) The aerodrome operator shall monitor that vehicles operating on an apron:

(1) Give way to:
(i) An emergency vehicle;
(ii) An aircraft taxiing;
(iii) An aircraft taxiing or about to taxi;
(iv) An aircraft being pushed back, towed or about to be pushed or towed.

(2) Give way to fuelling and rescue and firefighting vehicles and tow tractors.

(g) An aircraft stand shall be visually monitored by the aerodrome operator to ensure that the recommended clearance distances are provided to an aircraft using the stand.

BCAR 139.345 Ground servicing of aircraft
(See IEM 139.345 b))

(a) Fire extinguishing equipment suitable for at least initial intervention in the event of a fuel fire and personnel trained in its use shall be readily available during the ground servicing of an aircraft, and there shall be a means of quickly summoning the rescue and firefighting service in the event of a fire or major fuel spill. In case of a fuel spill, the aircraft operator or the fuel supplier shall have solvent material to remove spilled fuel.

(b) When aircraft refuelling operations take place while passengers are embarking, on board or disembarking, ground equipment shall be positioned so as to allow:

(1) The use of a sufficient number of exits for expeditious evacuation; and

(2) A ready escape route from each of the exits to be used in an emergency.

(c) The aerodrome operator shall assign appropriate areas for aircraft engine and system tests and keep noise pollution under control.

(d) Any person or organisation which provides, or seeks to provide, ground handling services, or fixed-base operators (FBO), shall comply with the requirements laid down by the aerodrome operator with regard to safety and an insurance policy which covers adequately liabilities for risks inherent to the services provided.

(e) Aerodrome users that regularly operate vehicles on apron also require an insurance policy to cover damage to third parties.

BCAR 139.347 Disabled aircraft removal
(See IEM 139.347 a))

(a) A plan for the removal of an aircraft disabled on, or adjacent to, the movement area shall be established for an aerodrome, and a coordinator designated to implement the plan, when necessary.

(b) The disabled aircraft removal plan shall be based on the characteristics of the aircraft that may normally be expected to operate at the aerodrome, and include among other things:

(1) list of equipment and personnel on, or in the vicinity of, the aerodrome which would be available for such purpose; and

(2) Arrangements for the rapid receipt of aircraft recovery equipment kits available from other aerodromes.

(3) Designate an area for the safekeeping of a disabled aircraft, in order to protect the remains for investigation by the Aeronautical Authorities.

BCAR 139.349 Tools and precision equipment

(a) The aerodrome operator or providers AOG technical support service shall ensure the precision and accuracy of tools and precision equipment. This is achieved through a calibration by an entity authorised by the National Measurement Office or any other local or international entity that keeps measures and standards.

(b) The period between calibrations shall be:

(1) Specified by the manufacturer;

(2) one year, if there is no period set by the manufacturer; or

(3) The period established by the BDCA when doubts on the reliability of tools and equipment arise.

(c) The aerodrome operator or providers of AOG technical support service shall establish a system recording tools and precision equipment to be calibrated, as provided in BCAR 139.349 (a).

BCAR 139.351 Technical library

(a) The aerodrome operator shall provide and keep the following information updated:

(1) obstacle charts;

(2) instrument approach charts;

(3) grid map of the aerodrome;

(4) national and international regulations;

(5) international standards of design, quality and inspection of:

(i) Fuel;

(ii) Vehicles and ground equipment of the aerodrome;

(iii) Equipment, clothing and rescue and firefighting material;

(iv) Navigation aids; and

(v) Any other rule or standard applicable to aerodrome safety.

BCAR 139.353 Aerodrome incident reporting and investigation

(a) Incident reporting. The aerodrome operator shall establish procedures to report aircraft incidents and surface incidents, taking into account the responsibilities described below:

(1) The aerodrome operator shall immediately notify the BDCA, verbally, by phone, by electronic mail or any other means on the occurrence of an incident.

(2) Written reports shall be forwarded to the BDCA within 5 days from the time the incident is identified unless exceptional circumstances prevent it.

(b) Incident investigation. The aerodrome operator shall establish procedures for the investigation of:

(1) any surface incident to identify causal factors and take corrective measures necessary to minimise risks as provided in the SMS Manual. The investigation shall be assessed by the aerodrome inspectors.

(2) the investigation of air incidents may be initiated or conducted as agreed with the entity responsible for accident investigations (Memorandum of understanding). See definition in BCAR139.5.

(c) Investigation records. The aerodrome operator shall permanently retain a copy of the incident investigation reports and create a logbook to record them.

BCAR 139.355 Warning notices

When low flying aircraft, at or near an aerodrome, or taxiing aircraft are likely to be hazardous to people or vehicular traffic, the aerodrome operator shall:

(a) Post hazard warning notices on any public area that is adjacent to the manoeuvring area; or

(b) If such a public way is not controlled by the aerodrome operator, inform the authority responsible for posting the notices on the public way that it is a hazard.

BCAR 139.357 Insurance

The aerodrome operator shall have insurance covering liabilities according to the risk levels of the aerodrome.

Appendix 1 to 139.305 (b) (2) Paved areas

Table 1 establishes the minimum friction levels and their correlation with different friction measuring devices.

Table 1Friction level classification

	65 kph			95 kph		
	Minimum	Maintenance Planning	New Pavement	Minimum	Maintenance Planning	New Pavement
Mu Meter	.42	.52	.72	.26	.38	.66
Dynastest Consulting, Inc. Runway Friction Tester	.50	.60	.82	.41	.54	.72
Airport Equipment Co. Skiddometer	.50	.60	.82	.34	.47	.74
Airport Surface Friction Tester	.50	.60	.82	.34	.47	.74
Airport Tecnology USA Safe gate Friction Tester	.50	.60	.82	.34	.47	.74
Findlay, Irvine, Ltd. Griptester Friction Meter	.43	.53	.74	.24	.36	.64
Tatra Friction Tester	.48	.57	.76	.42	.52	.67
Norsemeter RUNAR (operated at fixed 16% slip)	.45	.52	.69	.32	.42	.63

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Appendix 1 to BCAR 139.329 (e) Vehicles

Minimum training and assessment requirements for people who apply for a credential or permit to operate vehicles at the aerodrome.

(a) Plan contents. The authorities responsible for the operation of vehicles on the movement area shall ensure that the operators are properly qualified. This may include:

(1) Identification of runways, taxiways, parking areas and NAVAIDs.

(2) Distinction between movement areas and non-movement areas.

(3) Airport rules and procedures.

(4) Identification of aerodrome signs and markings.

(5) Identification of lights.

(6) Description and location of NAVAIDs critical areas.

(7) Regulations of Air Traffic Services in regards to ground operations and authorizations.

(8) Identification and sources of rules governing the operation of vehicles.

(9) Basic communication system.

(10) Aeronautical terms and phrases.

(11) Communication procedures (radiotelephony).

(12) Use of ICAO spelling alphabet.

(13) Description of communication procedures when radio fails.

(14) Description of consequences for non-compliance with operational requirements.

(b) Practical assessment for applicants:

The operator shall be able to demonstrate competency, as appropriate, in:

(1) the operation or use of vehicle transmit/receive equipment;

(2) understanding and complying with air traffic control;

(3) vehicle navigation on the aerodrome;

(4) special skills required for the particular function; and

(c) As required for any specialist function, the operator shall be the holder of a State driver's licence.

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ANNEX 1

BELIZE DEPARTMENT OF CIVIL AVIATION

Section - 1 **BCAR - 139**

APPLICATION FORM FOR AN AERODROME CERTIFICATE

1. PARTICULARS OF THE APPLICANT				
Full Name				
Position				
Address				
Phone	Cellular		Electronic mail	
	Office			

2. PARTICULARS OF THE AERODROME SITE	
Aerodrome Name	
Aerodrome Reference Code	
RFF Protection Level	
Property Description	
Geographical Coordinates	
Bearing and distance from nearest town	

3. MANAGEMENT			
State ☐	Concession * ☐	Management * ☐	Private ** ☐

Notes:
* Attach a copy of the resolution and contract
** Attach certified property deed

4. **INDICATE THE LARGEST TYPE OF AIRCRAFT EXPECTED TO USE THE AERODROME**

5. **INDICATE LIMITATIONS (IF APPLICABLE)**

6. TYPE OF PUBLIC TRANSPORT OPERATIONS			
Regular Itinerated ☐	Non Regular ☐	Daytime ☐	Night time ☐

BELIZE DEPARTMENT OF CIVIL AVIATION

Section - 1 **BCAR - 139**

7. In my capacity as _____ and according to the data shown above, I hereby apply for an aerodrome certificate _____managed by _____	
Application Date	Signature of authorised person

BDCA FORM 1010 10th September 2020

1) Attach a Schedule of events related to the certification process, two copies of the Aerodrome Operations Manual (AOM) as provided in BCAR 139.201, the Aerodrome Safety Programme as provided in BCAR 17 and the Safety Management System as provided in BCAR 139.323.
2) The application for a license for an aerodrome is processed in accordance with the civil aviation regulations in force. This is applicable for private and public aerodromes and includes those which may be used by aircraft carrying passengers for hire or reward. This form shall be completed and forwarded to the Director of Civil Aviation. It must be accompanied by a preliminary report on the site, using Belize Department of Civil Aviation Form (BDCA Form 6 for a land aerodrome) or on (BDCA Form 7 for a water aerodrome),

3) When ready for use and prior to the issue of the aerodrome license, it will be necessary for the site to be inspected by a Belize Department of Civil Aviation aerodromes inspector.

4) Particulars of the statutory fees chargeable for the issue of an aerodrome license and for the site inspection are shown at the end of this form. Payment shall be by cash or cheque, made payable to the Government of Belize and sent to the Director of Civil Aviation, P. O. Box 367, Belize City, Belize.

BELIZE DEPARTMENT OF CIVIL AVIATION

SECTION 2 – INTERPRETATIVE AND EXPLANATORY MATERIAL (IEM)

1. General

1.1 This section contains INTERPRETATIVE AND EXPLANATORY MATERIAL (IEM), which have been approved for inclusion in BCAR 139.

1.2 Where a particular paragraph does not have IEM, it means that such paragraph does not require it.

2. Presentation

2.1 The numbering proceeded by acronyms AMC, IEM or IEM indicates the paragraph number of BCAR 139 they refer to.

2.2 Acronyms are defined as follows:

2.1.1 Joint Advisory Circular (JAC): Text related to the BCAR requirements to clarify and provide guidance for its application. It contains explanations, interpretations and/or acceptable means of compliance.

2.2.1 Acceptable Means of Compliance (AMC): Standards to illustrate means or alternatives, but not necessarily the only possible means, to comply with a specific paragraph of BCAR 14.

2.3.1 Interpretative and Explanatory Material (IEM): It helps explain the meaning of a regulation.

2.3 The text of this section is written using Arial 10; explanatory notes, which are not part of AMCs, IEMs or IEMs, are written in Arial 8.

BELIZE DEPARTMENT OF CIVIL AVIATION

SUBPART A - GENERAL

IEM 139.003 Requirement for an Aerodrome Certificate
(See BCAR 139.003)

The purpose of these specifications is to ensure the establishment of a regulatory framework to effectively enforce the specifications of this BCAR 139. It is recognized that the methods of ownership, operation and surveillance of aerodromes differ. The most effective and transparent means of ensuring compliance with applicable specifications is to have a separate safety oversight entity and a well-defined safety oversight mechanism supported by appropriate legislation to be able to exercise the role of regulating safety of the aerodromes. When a certificate is granted to an aerodrome, for aircraft operators and other organizations operating on it, it means that at the time of certification the aerodrome complies with the standards relating to the facilities and their operation and the operator has in agreement with the certification authority, the ability to continue to meet those specifications during the validity of the certificate. The certification process also establishes the benchmark for continuous monitoring of compliance with specifications.

It is necessary to provide the aeronautical information services, relevant information on the status of certification of aerodromes to be promulgated in the Aeronautical Information Publication (AIP). See RAC 101 (a) (5) and RAC 15, Appendix 1, AD 1.5

IEM 139.007 (b) (3) Runway Safety Team:
(See BCAR 139.007 (b) (3))

Runway Safety Program

The aerodrome operator shall establish a safety plan on the runway for the prevention of incursions, excursions and any other safety related event. Through this program a Runway Safety Team (RST-) must be established at each of the international airports. The program must take into account the following actors:

(a) The Airport Operator
(b) Air traffic services
(c) Aircraft Operators SMS representative
(d) State SSP representative
(e) Pilots
(f) Any other group involved in the operations of the track. RST Tasks

Functions of the Runway Safety Team

The main functions of the RST shall be:

- Develop action plans for runway safety
- Identify the potential hazards of runway incursions and excursions
- Recommend strategies to eliminate hazards and mitigate individual risks
- Recognize any other safety hazards considered to be hazardous.

Frequency of RST meetings

The work team shall meet regularly at least every three months

BELIZE DEPARTMENT OF CIVIL AVIATION

IEM 139.007 (c) Memorandum of Understanding:
(See BCAR 139.007 (c))

This IEM is an alternative means of compliance on how a Memorandum of Understanding may be established.

Memorandum of Understanding between the Airport Operator ---------- and ----------.

1) **FRONT PAGE:**
"Memorandum of Understanding between: Corporate Name or name of the Airport Operator and Corporate Name or name of the other signatory."

2) **PREAMBLE:**
The aforementioned entities have agreed that is mutually beneficial to establish a formal understanding for the efficient and safe development of airport activities.

3) **SUBJECT:**
(Indicate subject to be agreed)

4) **OBJETIVES:**
"Depending on the topic, briefly describe the objectives"

5) RESPONSIBILITIES:
Each of the signing parties of this agreement shall be responsible that personnel under their authority comply with the provisions set forth herein. The initial and recurrent training of personnel involved shall be under the responsibility of the signing parties.

6) PROCEDURES OF THE AIRPORT OPERATOR:
a. Procedures of the Aerodrome Operator
b. Procedures of the other signing party

7) EFFECTIVE DATE:
This Memorandum of Understanding shall enter into force on the date it is signed and shall remain effective until either party notifies the other in writing of the intention to terminate the Memorandum. In that case, the termination shall occur two (2) months after receiving the notification.

8) MODIFICATION:
This Memorandum of understanding may be amended by mutual consent under a written communication exchange between the two parties.

9) PLACE AND DATE OF SIGNING

Signed at_____ on _____ of _____.

10) SIGNATURE:

_____ _____

Airport Operator Other signatory

IEM 139.015 Aeronautical Studies
(See BCAR 139.15)

This IEM is Interpretative and Explanatory Material (IEM), which helps to better understand the criteria for conducting aeronautical studies.

PURPOSE

An aeronautical study is conducted to evaluate the consequences of deviations with respect to the aerodrome standards, specified in BCAR 14 and BCAR 139 and established according to the requirements of Annex 14, Volume I to the Convention of International Civil Aviation, to present alternative means of ensuring aircraft operations safety, evaluate the effectiveness of each alternative and recommend procedures to compensate the deviations.

APPLICABILITY

An aeronautical study may be conducted when the aerodrome standards may not be complied with, as a result of development or expansion. Such study is often conducted during the planning process of a new aerodrome or during the certification of an existing one.

Note — Aeronautical studies may not be conducted in case of deviations with respect to the standards if BCAR 14 and BCAR 139 does not specifically recommend it or when the fulfilment of the regulations may be made up reasonably practicable actions.

DEFINITION

An aeronautical study is an investigation of an aviation problem aimed at identifying possible solutions and selecting the most acceptable one so that it does not affect flight safety.

TECHNICAL ANALYSIS

The technical analysis shall provide justification for a deviation on the basis that an equivalent level of safety may be achieved by other means. It is generally applied in situations where the cost of correcting a problem that infringes standard results excessive, but where the unsafe effects of the problem may be overcome by any procedural means offering practical and reasonable solutions.

In technical analysis, inspectors shall apply their field experience and expertise. They may also consult other specialists in relevant areas. When considering alternative procedures in the deviation approval process, it is essential to take into account the safety purpose of the aerodrome certification regulations and the applicable standards so that the purpose of the regulations is maintained.

DEVIATION ACCEPTANCE

In some cases, the only reasonable means of providing an equivalent level of safety is to adopt adequate procedures and demand, as a condition for certification, that caution notices be published in appropriate AIS publications.

The decision of demanding caution notices shall depend mainly on two considerations:

a) The pilots' need of being aware of the possible dangerous conditions; and

b) The responsibility of the BDCA to publish deviations with respect to the standards, which otherwise are assumed to be met under the aerodrome certification.

STRUCTURE OF THE AERONAUTICAL STUDY

The minimum contents required in an aeronautical study shall be the following:

Section 1. General

a) Title page of the study
b) Name and signature of the person in charge of the study
c) General index
d) Objective
e) Scope

Section 2. Risk analysis

a) Description of the deviation by indicating the difference with respect to the standards specified in the applicable regulations or in accordance with Annex 14, Volume I to the Convention of International Civil Aviation.

Section 3. Identification of unwanted events

a) Estimate the probability of an incident or an accident related to deviations similar to those under analysis. The probability shall be classified as:	b) Description of the consequences **magnitude** of incidents or accidents occurrence. The magnitude of the consequences is classified as:
•Frequent	•Catastrophic
•Occasional	•Dangerous
•Remote	•Major
•Unlikely	•Minor
•Extremely unlikely	•Insignificant

Section 4. Mitigation measures

a) Description of the mitigation measures applied to eliminate or reduce as much as possible the detected risks.

Section 5. Results

a) Description of the results derived from the implementation of mitigation measures, including the necessary documentation to support such results.

b) Comparison of results obtained with respect to standards specified in the applicable regulations or as stated in Annex 14, Volume I to the Convention of International Civil Aviation.

c) Conclusions.

Section 6. Annexes

All documents (procedures, analysis, reports, records, photographs, maps, tables, graphics, etc.) and any supporting information needed for the aeronautical study shall be included.

SUBPART B - CERTIFICATION

IEM 139.101 Certification Process

(See BCAR 139.101)

Note. — Specific procedures on the stages of certifying an aerodrome are given in the PANS-Aerodromes (Doc 9981). Further guidance on aerodrome certification can be found in the Manual on Certification of Aerodromes (Doc 9774).

IEM 139.103 Grant of an aerodrome certificate

(BCAR 139.103)

Note 1.— Contents of an aerodrome manual,including procedures for its submission and approval/acceptance, verification of compliance and granting of an aerodrome certificate, are available in the PANS-Aerodromes (Doc 9981).

Note 2. — The intent of a safety management system is to have in place an organized and orderly approach in the management of aerodrome safety by the aerodrome operator. Annex 19 — Safety Management contains the safety management provisions applicable to certified aerodromes. Guidance on a harmonized safety management system is given in the Safety Management Manual (SMM) (Doc 9859) and in the Manual on Certification of Aerodromes (Doc 9774). Procedures on the management of change, conduct of safety assessment, reporting and analyses of safety occurrences at aerodromes and continuous monitoring to enforce compliance with applicable specifications so that identified risks are mitigated can be found in the PANS-Aerodromes (Doc 9981).

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SUBPART C – AERODROME OPERATIONS MANUAL (AOM)

IEM 139.203 Preparation of the Aerodrome Operations Manual (AOM)
(See BCAR 139.203)

(a) One of the most important reasons for the existence of the AOM is that it serves as an extension of the regulations. BCAR 139 provides information in broad terms to cover all aerodromes and it may not appear in a specific level for each airport. The AOM becomes a bridge between the BCAR 139 requirements and the individual application for an aerodrome taking into account size, activities and configuration.

(b) In the development of the AOM, two fundamental principles shall be observed:

(1) **Be comprehensive**. It shall include all BCAR 139 requirements applicable to the aerodrome, so that personnel operating in the aerodrome have the necessary information to comply with the regulations. Even quotes or references to regulations, may be included.

(2) **Be moderate**. It shall be created with the level of detail necessary to show how to achieve compliance with regulations in the aerodrome. Excessive details that may restrict the flexibility to meet unforeseen circumstances or the creation of commitments not stated in BCAR 139 in terms of responsibility, authority and procedures shall be avoided.

(c) **Approval.** There are two relevant levels of approval in the regulations: the approval or compliance statement by the aerodrome operator or the applicant of an Aerodrome Certificate before submitting it to the BDCA, and BDCA's approval.

(1) **Approval or Operator's Statement**. The highest authority within the structure of the Airport Operator, on behalf of the company it represents, shall establish a statement or approval that the manual complies and that the operator shall meet all applicable rules as well as the provisions and conditions of the Aerodrome Certificate in a note or letter.

The note or representation letter shall identify the aerodrome, the person signing the document and the date. This approval may be issued in the front page or the first page of the manual.

(2) **Approval from the BDCA:** Once the AOM is approved, it becomes an authorised document. Therefore, the BDCA shall issue an initial approval note of the Airport Operations Manual (AOM) and also certificate its approval with the full name, date and signature of the designated inspector, at the end of each sheet of the effective pages of the manual.

(d) **Who, what, how and when**? To comply with regulatory requirements, the airport operator shall foresee that the policies and procedures of the AOM respond to these questions. A realistic and objective AOM is the one that provides guidelines and instructions necessary for another person to develop its activities while the airport operator is absent. When the person is reading the instructions, these shall indicate who is performing the tasks, what they consist of, how they shall be conducted and the schedules or periods to perform them.

(1) **Who:** Two aspects require debate. There is a person who normally operates far away under a relative autonomy, not beyond the authority, but with some physical or functional distance. This is called *independent* person for convenience. The key element is that this person can make decisions to deal with abrupt changes in situations without direct supervision, even if the airport operator is located anywhere in the aerodrome. The other person is the *substitute*, who intervenes and performs certain tasks to meet the regulations when the usual chain of authority and responsibility has been temporarily interrupted. This person is essentially an aid and may or may not be completely familiarised with the normal routine. The AOM shall provide enough guidance to perform functions as well as the course and instructions to request support when problems arise.

(i) **The independent person**. As it was previously indicated, this person is not entirely independent on authority or action, but certain relevant actions may be carried out without the participation of the airport operator or the normal procedure of application and approval. Therefore, the airport operator must be sure that the person knows what is required from the regulation point of view, how to apply his/her knowledge in adverse situations as well as to conduct routine work, which may be accomplished by firm and clear instructions in the AOM. Rescue and firefighting services represent a good example. In the rescue and firefighting station, events requiring immediate attention may arise and they may have consequences somewhere else or for other people. For example, if a piece of equipment is not working, administrative action must be taken to restrict air operations or, at least, notify the airport operators. In case of an emergency, it is necessary to decide whether to activate the emergency plan or just part of it. Do the rescue and firefighting personnel know how to make these decisions? Do they have clear and concise information for the correct approach? Of course, it must be clear who the person in charge of giving instructions is.

(ii) **The substitute**. It is important to keep in mind who may take action if the airport operator or the nominated person is absent. Taking daily inspections as an example, if a person knows the airport operations, but he/she does not know specifically the BCAR 139 requirements, it may be unnecessary to give instructions from scratch. However, the person usually does not perform those functions. Therefore, the AOM shall be specific enough on critical aspects of the operation, so that the aerodrome takes its normal course.

Nevertheless, if the airport operator is not in the facilities, there shall be another person to perform the tasks instead of the appointed person. If the person in charge of checking the lighting system is off, the substitute must know how to check the system and where the switches are. In other words, an instruction in the AOM stating, “The lighting system must be checked to meet the requirements” is not enough.

(e) **What and how.** The instructions in the AOM shall detail what tasks must be conducted and how they shall be carried out by people responsible for its compliance. Unless every person designated for a task is completely familiar with the regulation requirements, the AOM must be structured so that it provides the appropriate guidance. For example, it may be confusing if the AOM states, “*The security areas must be kept according to the regulations”*. Unless the personnel know the BCAR 139 and the relevant ICAO manuals, a better description shall provide details identifying the physical limits, the revision periods and how to keep the surfaces of the safety and security areas.

(f) **When.** The best instructions will not produce satisfactory results if they do not indicate when they shall be put into practice. Is the instruction “*The personnel shall conduct refuelling inspections every day”* specific enough? Can a person take action if the AOM indicates “*When the weather conditions allow it”*?

Closely related questions like who, what, how and when may arise from these indications and the AOM instructions shall provide enough information to answer them.

IEM 139.203 (e) Preparation of the Airport Operations Manual (AOM)
(See BCAR 130.203 (e))

(a) The Airport Operator shows that it fully complies with the standards established in BCAR 139 through a compliance letter. There shall be a policy or procedure for each standard in the Manual system taking into account the complexity and size of the operations.

IEM 139.205 (a) Content of the Airport Operations Manual 4. 2(q).
(See Appendix 1 to BCAR 139.205) (See BCAR 139.205)

For information about disabled aircraft service see BCAR 139.347

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SUBPART D - OPERATIONS AND OBLIGATIONS FROM THE OPERATOR

IEM 139.301 (a) General.
(See BCAR 139.301(a))

1. Preventive maintenance is programmed maintenance work done in order to prevent a failure or degradation of facilities.
2. "Facilities" are intended to include such items as pavements, visual aids, fencing, drainage systems, electrical systems and buildings.

IEM 139.301 (b) General.

Note 1.— Guidance material on Human Factors principles can be found in the Human Factors Training Manual (Doc 9683)

Note 2.— General principles and procedures on the training of aerodrome personnel, including training programmes and competence checks, are specified in the PANS-Aerodromes (Doc 9981).

IEM 139.303 (b) Personnel competence
(See BCAR 139.303)

Personnel responsible of the administration, operations and maintenance of the aerodrome shall be trained to a level according to the tasks to be performed; therefore, the programme contents of the initial and recurring training of the airport operator established in BCAR 139.303(b), shall be based on the policy and procedures stated and approved by the BDCA in the Airport Operations Manual (AOM). These shall include at least the following:

(a) Initial training

(1) Training in airport operations.

(2) Training in standards and security of fuel storage and handling in the aerodrome.

(3) Training in the inspection system including familiarisation with the aerodrome, emergency plan, NOTAMs, vehicle operation and discrepancy report system.

(4) Rescue and firefighting training

(5) Training in regulations, standards and AOM

(6) Introduction to the investigation of aviation accidents and incidents

(7) Maintenance of visual and electronic aids and pavements

(8) Human factors in civil aviation (ICAO Doc. 9683)

(9) Dangerous goods training, based on BCAR 18

(10) Bird and other animals control (ICAO IBIS Doc 9332)

(11) Operational Security Management System

(12) Quality System

(b) Recurring training

(1) Every two years, (a) (2), (4), (5) and (9) courses shall be given to the appropriate personnel.

(2) Every year, the training indicated in (a) (3) shall be conducted for the inspection personnel.

(3) Instruction not indicated in the previous paragraphs shall be given in periods not exceeding 5 years.

(c) Training files

Training files of the Airport Operator shall indicate the amount of formal training, on the job training (OJT) and the experience that each employee has accumulated over the years.

(d) Planning and design

The planning and design stage establishes the basis to define the instruction specifications such as the intermediate and final objectives, expected results, group to be trained, training course contents and specifications, which allow the further development of a training programme.

This stage includes:

- planning and design actions that require to be executed to fill the gap between the current competence and the required competence, and
- definition of the criteria to establish the job performance standards and the performance requirements as well as the evaluation criteria of the instruction process and the subsequent objectives for each course.

The training programme shall be created taking into account the human factors for its implementation. Moreover, it shall consider the depth of each course or subject depending on the responsibilities of the personnel to be trained.

Usually, human resources management is in charge of the administration of resources needed for the correct compliance with the different instruction methods, required teaching materials, activity design, hiring of external instructors, training for internal instructors and their availability, transport to contracted training centres/factories or providers of the different products and services.

However, the highest authority within the Airport Operator is responsible for the approval of any method used for instruction (regardless of whether the instruction is contracted from a third party), as well as for the contents of the training programmes. This may require that contents and evaluation systems of the different courses are audited.

This audit or revision of the training programme by the operator shall be conducted in order to detect non-compliance problems, and eventually, corrective actions.

Data collection shall be performed continuously to provide the basis for the instructional process validation and offer the necessary recommendations to improve it.

IEM 139.304 Specific procedures for aerodrome operations
(See BCAR 139.304 (a))

a) Introductory Note. — This section introduces PANS-Aerodromes (Doc 9981) for use by an aerodrome undertaking an assessment of its compatibility with the type of traffic or operation it is intending to accommodate. The material in the PANS- Aerodromes addresses operational issues faced by existing aerodromes and provides the necessary procedures to ensure the continued safety of operations. Where alternative measures, operational procedures and operating restrictions have been developed, these are detailed in the aerodrome manual and reviewed periodically to assess their continued validity. The PANS-Aerodromes does not substitute nor circumvent the provisions contained in this Annex. It is expected that infrastructure on an existing aerodrome or a new aerodrome will fully comply with the requirements in this Annex. See Annex 15, 4.1.2 (c) on a State's responsibilities for the listing of its differences to the related ICAO Procedures in its Aeronautical Information Publication.

(b) Procedures to assess the compatibility of the operation of a new aeroplane with an existing aerodrome can be found in the PANS-Aerodromes (Doc 9981).

IEM 139.304 Specific procedures for aerodrome operations
(See BCAR 139.304 (b))

1) See Annex 15, Appendix 1, AD 2.20, on the provision of a detailed description of local traffic regulations.

2) See PANS-Aerodromes (Doc 9981), Chapter 3, section 3.6, on promulgation of safety information.

IEM 139.305 (a) (5) Paved areas
(See BCAR 139.305(a) (5))

1) See BCAR139.327(c) for inspection of movement areas.

2) Procedures on carrying out daily inspections of the movement area and control of FOD are given in the PANS-Aerodromes (Doc 9981), the Manual of Surface Movement Guidance and Control Systems (SMGCS) (Doc 9476) and the Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual (Doc 9830).

3- The *Airport Services Manual* (Doc 9137), Part 9, provides more information on sweeping and cleaning of surfaces.

4- Annex A, Section 8 of BCAR 14, and the *Aerodrome Design Manual* (Doc 9157), Part 2, offers guidance on precautions to be taken in regard to the surface of shallers.

5- Where the pavement is used by large aircraft or aircraft with tire pressures in the upper categories re ferred to in BCAR 14.111(f) (3), particular attention shall be given to the integrity of light fittings in the pavement and pavement joints.

IEM 139.305 (b) (5) Paved areas
(See BCAR 139.305(b) (3))

The Airport Services Manual (Doc 9137), Part 2, contains further information on this subject, on improving surface friction characteristics of runways.

IEM 139.305 (b) (5) Paved areas
(See BCAR 139.305(b) (3))

1- Guidance on evaluating the friction characteristics of a runway is provided in Attachment A, Section 7. Additional guidance is included in the Airport Services Manual (Doc 9137), Part 2.

2- The objective of BCAR 139.305 is to ensure that the surface friction characteristics for the entire runway remain at or above a minimum friction level specified by the State.

3- Guidance for the determination of the required frequency is provided in Attachment A, Section 7 and in the Airport Services Manual (Doc 9137), Part 2, Appendix 5.

IEM 139.305 (b) (2) Paved areas
(See BCAR 139.305(b) (2))

The following documents provide guidance to establish the procedures on gathering and dissemination of information related to the surface conditions and corrective maintenance when the friction levels are low: *Airport Services Manual* (Doc 9137), Part 2; Annex 14, Attachment A, Section 7 and FAA AC 150/5320-12C.

A portion of runway in the order of 100 m long may be considered significant for maintenance or reporting action.

IEM 139.305 (b) (3) Paved areas – Frequency of friction tests
(See BCAR 139.305 (b) (3))

The purpose of friction tests or measurement of the friction level of a runway surface is to detect deterioration of the skid resistance. Such deterioration is caused by factors as wear of micro- and macro- textures of pavement by the action of running and breaking and the accumulation of pollutants. Rubber, dust, water, mud, sand and oil, are among them, but rubber deposits from aircraft tyres in the touchdown zone are the most representative. Skid resistance is also affected by the type of materials used in the original construction, any subsequent surface treatment and maintenance practices.

Minimum number of daily landings per active runway	Suggested frequency
Less than 15	2 years
16 to 30	1 year
31 to 90	9 months
91 to 150	6 months
151 to 210	3 months
More than 210	1 month

IEM 139.305 (b) (4) Paved areas - Frequency for airfield rubber removal
(See BCAR 139.305)

When the friction coefficient is near or below the minimum level of maintenance planning on Table 1, appendix 1 to BCAR 139.305, it is recommended to use the following information for budgeting and accumulated rubber removal programming.

Minimum number of daily landings per active runway	Suggested frequency
Less than 15	2 years
16 to 30	1 year
31 to 90	9 months
91 to 150	6 months
151 to 210	3 months
More than 210	1 month

IEM 139.305 (c) Paved areas – Overlaying pavements
(See BCAR 139.305)

ICAO *Aerodrome Design Manual* (Doc 9157), Part 3, offers guidance on overlaying pavements and assessing their operational status.

IEM 139.311 (a) Visual aids and electrical systems
(See BCAR 139.311(a))

1- These specifications are intended to define the maintenance performance level objectives. They are not intended to define whether the lighting system is operationally out of service.

2- The energy savings of light emitting diodes (LEDs) are due in large part to the fact that they do not produce the infra-red heat signature of incandescent lamps.

3- Enhanced vision systems (EVS) technology relies on the infra-red heat signature provided by incandescent lighting. Annex 15 protocols provide an appropriate means of notifying aerodrome users of EVS when lighting systems are converted to LED.

IEM 139.311 (a) Visual aids and electrical systems
(See BCAR 139.311(a))

Guidance on preventive maintenance of visual aids is given in the Airports Service Manual, Doc. 9137, part 9, and documents FAA AC-150/5340-24 (Runway and Taxiway Edge Lighting System) and FAA AC-150/5340-26 (Maintenance of Airport Visual Aid Facilities),

IEM 139.311 (h) **Visual aids and electrical systems**
(See RAC 139.311(h))

With respect to barrettes, crossbars and runway edge lights, lights are considered to be adjacent if located consecutively and:

— Laterally: in the same barrette or crossbar; or

— Longitudinally: in the same row of edge lights or barrettes.

IEM 139.311 (l) Visual aids and electric systems
(See BCAR 139.311(l))

In barrettes and crossbars, having two adjacent unserviceable lights does not lose guidance.

IEM 139.315 (a) (2) Rescue and firefighting: categorizing
(See BCAR 139.315(a)(2))

See guidance in the *Airport Services Manual* (Doc 9137), Part 1, for categorizing aerodromes, including those for all-cargo aircraft operations, for rescue and firefighting purposes.

Note 2.— Principles and procedures on training, including training programmes and competence checks, are specified in the PANS-Aerodromes (Doc 9981). Further guidance on the training of personnel, rescue equipment for difficult environments and other facilities and services for rescue and firefighting purposes is given in Attachment A, Section 17, and in the *Airport Services Manual* (Doc 9137), Part 1.

IEM 139.317 (a) Rescue and firefighting: Equipment and extinguishing agents
(See BCAR 139.317(a))

1- The amounts of water specified for foam production are predicated on an application rate of 8.2 L/min/m2 for a foam meeting performance level A, 5.5 L/min/m2 for a foam meeting performance level B and 3.75 L/min/m2 for a foam meeting performance level C.

2- When any other complementary agent is used, the substitution ratios need to be checked. 9.2.11 Notes

IEM 139.317 (b) Rescue and firefighting: Equipment and extinguishing agents
(See BCAR 139.317)
Descriptions of the agents may be found in the Airport Services Manual (Doc 9137), Part 1.

IEM 139.317 (c) Rescue and firefighting: Equipment and extinguishing agents
(See BCAR 139.317)
Information on the required physical properties and fire extinguishing performance criteria needed for a foam to achieve an acceptable performance level A, B or C rating is given in the Airport Services Manual (Doc 9137), Part 1.

IEM 139.317 (d) Rescue and firefighting: Equipment and extinguishing agents
(See BCAR 139.317)
1- In addition to the provisions of ICAO in Attachment A, Section 17 to Annex 14 and the *Airport Services Manual* (Doc 9137), Part I, on rescue and firefighting equipment and extinguishing agents, this IEM states some acceptable standards for the compliance of the 139.317 (d) norm, originally from National Fire Protection Association (NFPA) and the Federal Aviation Administration (FAA), both from the United States of America.

NFPA 412 Standard for Evaluating Aircraft Rescue and Fire Foam Equipment

NFPA 414 Aircraft Rescue and Firefighting Vehicles

FAA-AC150/5210-14 (Airport Fire and Rescue Personal Protective Clothing

IEM 139.317 (k) Rescue and firefighting: Equipment and extinguishing agents
(See BCAR 139.317)
Guidance on the use of complementary agents can be found in the Airport Services Manual (Doc 9137), Part 1.

IEM 139.317 (o) Rescue and firefighting: Equipment and extinguishing agents
(See BCAR 139.317)

Foam concentrate carried on fire vehicles in excess of the quantity identified in Table 4 can contribute to the reserve.

IEM 139.317 (q) Rescue and firefighting: Equipment and extinguishing agents
(See BCAR 139.317)
See the Airport Services Manual (Doc 9137), Part 1 for guidance on the conduct of a risk analysis to determine the quantities of reserve extinguishing agents.

IEM 139.319 (j) Rescue and firefighting: operational requirements
(See BCAR 139.319(a))

IEM 139.319 (j) Rescue and firefighting: operational requirements
(See BCAR 139.319(j))

The principal objective of a rescue and firefighting service is to save lives in the event of an aircraft accident or incident occurring at, or in the immediate vicinity of, an aerodrome. The rescue and firefighting service is provided to create and maintain survivable conditions, to provide egress routes for occupants and to initiate the rescue of those occupants unable to make their escape without direct aid. The rescue may require the use of equipment and personnel other than those assessed primarily for rescue and firefighting purposes.

The most important factors bearing on effective rescue in a survivable aircraft accident are: the training received, the effectiveness of the equipment and the speed with which personnel and equipment designated for rescue and firefighting purposes can be put into use.

Requirements to combat building and fuel farm fires, or to deal with foaming of runways, are not taken into account.

Guidance regarding to the rescue and firefighting equipment to be provided at the aerodromes is provided in Airport Services Manual (Doc 9137, Part 1

IEM 139.319 (b) (1) Rescue and firefighting: operational requirements
(See BCAR 139.319 (b) (1))

Guidance on the determination of quantities of water and discharge rates based on the largest theoretical aeroplane in a given category is available in Chapter 2 of the Airport Services Manual (Doc 9137), Part 1.

IEM 139.319 (i) (2) Rescue and firefighting: operational requirements
(See BCAR 139.319 (i) (2))

1. Response time is considered to be the time between the initial call to the rescue and firefighting service, and the time when the first responding vehicle(s) is (are) in position to apply foam at a rate of at least 50 per cent of the discharge rate specified in Table 4.

2. Optimum visibility and surface conditions are defined as daytime, good visibility, no precipitation with normal response route free of surface contamination, e.g. water, fog, ash, sand, mud.

IEM 139.319 (i) (4) Rescue and firefighting: operational requirements
(See BCAR 139.319 (i) (4))

Additional guidance is available in the Airport Services Manual (Doc 9137), Part 1.

IEM 139.319 (j) Rescue and firefighting: operational requirements
(See BCAR 139.319(j))

1- In addition to the provisions of ICAO in Attachment A, Section 17 to Annex 14 and the *Airport Services Manual* (Doc 9137), Part I, on rescue and firefighting training, this IEM states some acceptable standards for the compliance of the 139.319 (j) norm, originally from National Fire Protection Association (NFPA) and the Federal Aviation Administration (FAA), both from the United States of America.

NFPA 402 Guide for Aircraft Rescue and Firefighting Operations

NFPA 405 Proficiency Training of Aircraft Rescue Firefighting Personnel

FAA-AC 150/5210-7 Aircraft Rescue and Fire Communications

FAA-AC 150/5210-17 Program for Training of Aircraft Rescue and Firefighting Personnel

FAA-AC 150/5220-17 Design Standards for an Aircraft Rescue and Firefighting Training Facility

2- Fires associated with fuel discharged under very high pressure from a ruptured fuel tank are known as "pressure-fed fuel fires".

3- Guidance material to design training programmes on human performance and team coordination can be found in the Human Factors Training Manual (Doc 9683).

4- Guidance on the use of a task resource analysis can be found in the Airport Services Manual (Doc 9137), Part 1.

IEM 139.319 (k) Rescue and firefighting: operational requirements
(See BCAR 139.319(k))

Aerodrome service roads may serve as emergency access roads when they are suitably located and constructed.

IEM 139.319 (l) Rescue and firefighting: operational requirements
(See BCAR 139.319(l))

1- Special firefighting equipment need not be provided for water areas; this does not prevent the provision of such equipment if it would be of practical use, such as when the areas concerned include reefs or islands.

2- The objective is to plan and deploy the necessary life-saving flotation equipment as expeditiously as possible in a number commensurate with the largest aeroplane normally using the aerodrome.

3- Additional guidance is available in Chapter 13 of the Airport Services Manual (Doc 9137), Part 1.

IEM 139.319 (n) Rescue and firefighting: operational requirements
(See BCAR 139.319(j))

Besides of the ICAO provisions in the *Airport Services Manual* (Doc 9137), Part 1, on the location and specifications on the rescue and firefighting station, this IEM states some acceptable standards for the compliance of the 139.317 (n) standard originally from the National Fire Protection Association (NFPA) and the Federal Aviation Administration (FAA), both from the United States of America.

NFPA 403 Aircraft Rescue and Firefighting Services at Airports

FAA-AC 150/5210-15 Airport Rescue and Firefighting Station Building Design

IEM 139.321 (b) and (c) Handling and storage of hazardous materials
(See BCAR 139.321)

Besides of the ICAO provisions in the *Airport Services Manual* (Doc 9137), Part 1, Chapter 16, this IEM states some acceptable standards for the compliance of standards 139.321 (b) and (c) on the facilities design, equipment and storage systems, fuel handling and dispensing, originally from the National Fire Protection Association (NFPA) and the Federal Aviation Administration (FAA), both from the United States of America.

NFPA 10 Standards for Portable Fire Extinguishers

NFPA 30 Flammable and Combustible Liquid Code

NFPA 385 Tank Vehicles for Flammable and Combustible Liquids

NFPA 408 Aircraft Hand Portable Fire Extinguishers

NFPA 407 Aircraft Fuel Servicing

NFPA 415 Standard on Airport Terminal Buildings, Fuelling Ramp Drainage, and Loading Walkways

FAA-150/5230-4 Aircraft Fuel Storage, Handling and Dispensing on Airports

IEM 139.323 (a) (4) Guidance on an aerodrome safety management system
(See BCAR 139.323(a) (4))

Guidance on an aerodrome safety management system is given in the *Safety Management Manual* (Doc 9859).

IEM 139.323 (e) Guidance on an aerodrome safety management system
(See BCAR 139.323(e))

The intent of a safety management system is to have in place an organized and orderly approach in the management of aerodrome safety by the aerodrome operator. Annex 19 — Safety Management contains the safety management provisions applicable to certified aerodromes. Guidance on a harmonized safety management system is given in the Safety Management Manual (SMM) (Doc 9859) and in the Manual on Certification of Aerodromes (Doc 9774). Procedures on the management of change, conduct of safety assessment, reporting and analyses of safety occurrences at aerodromes and continuous monitoring to enforce compliance with applicable specifications so that identified risks are mitigated can be found in the PANS-Aerodromes (Doc 9981).

This IEM represents an alternative means of compliance for the implementation and maintenance of the aerodrome *Safety Management System* (SMS) by the airport operator and/or service providers. An SMS is a system for the management of safety by an organisation. The framework includes four components and twelve elements representing the minimum requirements for SMS implementation. The implementation of the framework shall be commensurate with the size of the aerodrome and the complexity of the services provided. However, all service providers shall create and maintain a protocol to identify hazards in operations and

systems to notify incidents, accidents, defects or failures which may have consequences in the safety, occupational safety or safety against acts of unlawful interference based on the guidelines of the SMS Manual.

This IEM also includes a brief description of each element of the framework.

Contents of the SMS Manual

1. Scope of the safety management system

1. **Safety policies and objectives**
   1.1 Management commitment and responsibility
   1.2 Safety accountabilities
   1.3 Appointment of key safety personnel
   1.4 Coordination of emergency response planning
   1.5 SMS documentation
2. Safety risk management
   2.1 Hazard identification
   2.2 Safety risk assessment and mitigation
3. Safety assurance
   3.1 Safety performance monitoring and measurement
   3.2 Management of change
   3.3 Continuous improvement of the SMS
4. Safety promotion
   4.1 Training and education
   4.2 Safety communication

1. **Safety policy and objectives**

1.1 Management commitment and responsibility
The aerodrome operator shall define the organisation's safety policy and objectives, which shall be in accordance with BCAR 139.323 requirements, and which shall be signed by the accountable executive of the Aerodrome Operational Management System. The policy shall reflect organisational commitments regarding safety; shall include a clear statement about the provision of the necessary resources for the implementation of the safety policy; and shall be communicated, with visible endorsement, throughout the organisation. The safety policy shall include the safety reporting procedures; shall clearly indicate which types of operational behaviours are unacceptable; and shall include the conditions under which disciplinary action would not apply. The safety policy shall be periodically reviewed to ensure it remains relevant and appropriate to the organisation.

1.2 Safety accountabilities
The aerodrome operator shall identify the accountable executive who, irrespective of other functions, shall have ultimate responsibility and accountability, on behalf of the aerodrome operator. The accountable executive could be:

a) The general director;
b) The president of the board of directors;
c) An associate; or
d) The owner.

The aerodrome operator shall also identify the accountabilities of all members of management, irrespective of other functions, as well as of employees, with respect to the safety performance of the SMS. Safety responsibilities, accountabilities and authorities shall be documented and communicated throughout the organization, and shall include a definition of the levels of management with authority to make decisions regarding safety risk tolerability.

1.3 Appointment of key safety personnel
A safety manager to be the responsible individual and contact for the implementation and maintenance of the Aerodrome SMS shall be identified and nominated.

1.4 Coordination of emergency response planning
The Aerodrome Emergency Plan, according to BCAR 139.325 shall be part of the structure of the Aerodrome *Safety Management System Manual* (SMSM) and it establishes, in writing, the actions to be adopted after an accident and designates the accountable individuals. The aim of an Aerodrome Emergency Plan is to ensure an efficient and organised transition from normal to emergency operations including delegating emergency authorities and responsibilities. The authorisation for the measures to be taken by key personnel is also part of the plan; as well as the activity coordination with the emergency response. The general objective is continuing the operations under safe conditions or returning to normal operations as soon as possible.

1.5 SMS documentation
The aerodrome operator shall develop a documentation control system.

2. Safety risk management

2.1 Hazard identification
The aerodrome operator shall develop and maintain a formal process that ensures the operational hazards are identified. Hazard identification shall be based on a combination of reactive, proactive and predictive methods of safety data collection.

2.2 Safety risk assessment and mitigation
The aerodrome operator shall develop and maintain a formal process that ensures analysis, assessment and control of the safety risks in flight and maintenance operations.

3. Safety assurance

3.1 Safety performance monitoring and measurement
The aerodrome operator shall develop and maintain the means to verify the safety performance of the organisation and to validate the effectiveness of safety risk controls. The safety performance of the organisation shall be verified in reference to the safety performance indicators and safety performance targets of the SMS and through an audit and inspection system, which verifies the established standards.

3.2 The management of change
The aerodrome operator shall develop and maintain a formal process to identify changes within the organisation which may affect established processes and services; to describe the arrangements to ensure safety performance before implementing changes; and to eliminate or modify safety risk controls that are no longer needed or effective due to modifications in the operational environment.

3.3 Continuous improvement of the SMS
The aerodrome operator shall develop and maintain a formal process to identify the causes of substandard performance of the SMS, determine the implications of substandard performance of the SMS in operations, and eliminate or mitigate such causes.

4. Safety promotion

4.1 Training and education
The certified aerodrome shall develop and maintain a safety training programme that ensures that personnel are trained and competent to perform the SMS duties. The scope of the safety training shall be appropriate to each individual's involvement in the SMS.

4.2 Safety communication
The aerodrome operator shall develop and maintain formal means for safety communication that ensures that all personnel are fully aware of the SMS, conveys safety-critical information, and explains why particular safety actions are taken and why safety procedures are introduced or changed.

IEM 139.325 (a) Aerodrome emergency planning
(See BCAR 139.325 (a))

Aerodrome emergency planning is the process of preparing an aerodrome to cope with an emergency occurring at the aerodrome or in its vicinity. The objective of aerodrome emergency planning is to minimize the effects of an emergency, particularly in respect of saving lives and maintaining aircraft operations. The aerodrome emergency plan sets forth the procedures for coordinating the response of different aerodrome agencies (or services) and of those agencies in the surrounding community that could be of assistance in responding to the emergency.

Guidance material and standard procedures for the development of the aerodrome emergency plan are given in the ICAO *Airport Services Manual* (Doc 9137), part 7 and the advisory circular FAA AE 150/5200–31 A.

Examples of emergencies are: aircraft emergencies, sabotage including bomb threats, unlawfully seized aircraft, dangerous goods occurrences, building fires, natural disaster and public health emergencies.

Examples of public health emergencies are increased risk of travelers or cargo spreading a serious communicable disease internationally through air transport and severe outbreak of a communicable disease potentially affecting a large proportion of aerodrome staff.

Note 1.— Guidance material on Human Factors principles can be found in the Human Factors Training Manual (Doc 9683).
Note 2.— General principles and procedures on the training of aerodrome personnel, including training programmes and competence checks, are specified in the PANS-Aerodromes (Doc 9981).

IEM 139.325 (d) Aerodrome emergency planning
(See BCAR 139.325 (d))

The plan includes all participating agencies and associated equipment.

IEM 139.325 (d) (2) Aerodrome emergency planning
(See BCAR 139.325 (d) (2))

1. — the purpose of a full-scale exercise is to ensure the adequacy of the plan to cope with different types of emergencies. The purpose of a partial exercise is to ensure the adequacy of the response to individual participating agencies and components of the plan, such as the communications system. The purpose of modular tests is to enable concentrated effort on specific components of established emergency plans.

2. — Guidance material on airport emergency planning is available in the Airport Services Manual (Doc 9137), Part 7.

IEM 139.325 (f) (2) Aerodrome emergency planning
(See BCAR 139.325 (f) (2))

Guidance material on assessing approach and departure areas within 1 000 m of runway thresholds can be found in Chapter 13 of the Airport Services Manual (Doc 9137), Part 1.

IEM 139.327 (c) Safety Audits and Inspections
(See BCAR 139.327)

1- Guidance on carrying out daily inspections of the movement area is given in the Airport Services Manual (Doc 9137), Part 8 and in the Manual of Surface Movement Guidance and Control Systems (SMGCS) (Doc 9476).

2- Examples of agencies are:

— on the aerodrome: air traffic control units, rescue and firefighting services, aerodrome administration, medical and ambulance services, aircraft operators, security services, and police;

— off the aerodrome: fire departments, police, health authorities (including medical, ambulance, hospital and public health services), military, and harbour patrol or coast guard.

3- Public health services include planning to minimize adverse effects to the community from health-related events and deal with population health issues rather than provision of health services to individuals.

IEM 139.329 (a), (b), (c), (d) and (e) Vehicles

Ground Vehicle Operations on Airports (FAA Doc AC 150/5210-20) offers acceptable standards for the compliance of BCAR 139.329 sections (a), (b), (c), (d) and (e).

Note 1.— Procedures on the establishment of an airside driver permit (ADP) scheme and vehicle/equipment safety requirements, including detailed personnel training, are specified in the PANS-Aerodromes (Doc 9981), Part II, Chapter 9.

Note 2.— Guidance on aerodrome vehicle operations is contained in Attachment A, Section 19, and on traffic rules and regulations for vehicles in the Manual of Surface Movement Guidance and Control Systems (SMGCS) (Doc 9476).

Note 3.— It is intended that roads located on the movement area be restricted to the exclusive use of aerodrome personnel and other authorized persons, and that access to the public buildings by an unauthorized person will not require use of such roads.

Note 4.— Ground Vehicle Operations on Airports (FAA Doc AC 150/5210-20) offers acceptable standards for the compliance of BCAR 139.329 sections (a), (b), (c), (d) and (e).

IEM 139.329 (h) Vehicles – Vehicle identification and other requirements

(1) Objective.

This IEM offers guidance for standard identification of vehicles used on the airside of the aerodrome.

(2) Definitions.

(a) Vehicles: Any means of transport used for transportation or assistance for people, cargo, equipping, maintenance, construction, services or security related tasks.

(b) Airport (airfield) service vehicles: Those vehicles routinely used for service, maintenance or construction of the aerodrome such as runway sweepers, tractors or any other vehicle of the same category.

(c) Aircraft support vehicles: Those vehicles commonly used to support aircraft operations such as: towing tractors, baggage tow tractors, air conditioning units, road tankers and any other transport of the same category.

(d) Other vehicles: Those vehicles not commonly used in the aerodrome operations such as ambulances, rescue and firefighting vehicles and security vehicles.

(3) Colors

(a) Ambulances: They shall be coloured according to the dispositions of the corresponding authority (Red Cross).

(b) Rescue and firefighting vehicles: Yellowish green is the standard colour for aerodromes. This colour provides optimal visibility in different luminance levels throughout the 24 hours of the day.

(c) Airport Service vehicles: Chrome yellow is the standard colour for vehicles. If they have a bar type bumper of 20 cm or more, they shall be coloured with black and yellow alternating contrasting bands and they shall have 10 cm in width with 45° inclination.

(d) Security and aircraft support vehicles: Any colour combination except yellowish green or chrome yellow. The recommendation related to bumpers in the previous paragraph is also applicable.

(e) Other vehicles: Any color or combination

(4) Markings

(a) Ambulances: They shall be marked according to the dispositions of the corresponding authority (Red Cross).

(b) Rescue and firefighting, service, aircraft support and security vehicles: They shall have an identification number contrasting with the colour of the vehicle on the sides and top (the cabin is considered the top of the vehicle). The side numbers shall be appropriately located and at a minimum height of 40 cm. Numbers on the top shall be at least 60 cm high facing forward the vehicle. To improve night recognition, a horizontal reflective band of 20 cm in width shall be painted or added across the vehicle. Additionally, it shall have the name of the aerodrome, the company or logo.

(c) Other vehicles: Vehicles which usually do not access the manoeuvring area or which are not in contact with ATS, shall be provided with an easily visible flag attached to the vehicle. The flag shall be at least 90 cm^2, with a chequered pattern of 30 cm in orange and white. Moreover, they shall be equipped with two-way radios to communicate with ATS. At aerodromes without ATS, the flag shall be provided on the vehicle.

(6) Lighting

The standard light to identify vehicles operating in the airfield, either at night or when visibility is low, shall be the rotating beacon or flashing light, on top of the highest part of the vehicle and visible from any direction, even from the air. Vehicles, which not operate normally in the airfield, shall be identified with a light during low visibility periods or be escorted by a properly identified vehicle.

(a) Characteristics:

(1) Headlamp or flashing lights shall have low luminous intensity, with a boundary of 400 cd to avoid interference of night vision. The minimum interference intensity at horizontal plane shall be 40 cd.

(2) Azimuthal horizontal coverage of 360°

(3) For flashing lights, the flash range shall be between 75 $\pm$ 15 per minute.

(b) Colour:

(1) Ambulances: as provided by the corresponding authority (Red Cross).

(2) Rescue and firefighting vehicles: Flashing-red lights, red and white flashing combination or rotating beacon if the station is close to the apron.

(3) Service vehicles: Flashing-yellow lights.

(4) Aircraft support vehicles: Yellow or red rotating beacons.

(5) Security vehicles: Flashing-blue lights or a red and blue flashing combination.

(6) Other vehicles: Flashing-yellow lights.

(7) Other requirements:

I) Permission or security seal issued by the aerodrome operator

II) Technical review approval by the airport operator

III) Copy of the vehicle insurance policy

IEM 139.331 (b) Control of obstacles

The *Airport Services Manual* (Doc 9137), Part 6: obstacle limitation surfaces, and ICAO's Doc PANS-OPS establish the implementation criteria on obstacle limitation surfaces, particularly for operating aerodromes.

IEM 139.335 A) Landside protection
(See BCAR 139.335)

Material resources for safety

(a) The perimeter of the airside as well as the restricted security area shall be outlined and protected with physical barriers. However, as the perimeter of a restricted security area is adjacent to open areas, including the airside, these perimeter sections shall be patrolled or be kept under surveillance to ensure that any non-authorized access is detected and intruders may be promptly arrested before they have access to aircraft or other essential facilities.

(b) All airside shall be protected, whether they are part of the restricted security areas or not, by separating them from adjacent landside through fences or other effective security means.

(c) Fencing shall be at least 2.44 meters high. Supporting pipes shall have an angle of 45^0 to prevent possible access. In addition, fencing shall have at least 4 barbed wires or razor wire type.

(d) In some places, where a fence or barrier may become an obstacle for safety, it may not be possible to build fences or barriers that fully meet safety conditions; for example, near navigation systems and approach or take-off areas. In such cases, special non-metallic fencing materials or construction methods such as frangible fences including plants or thorny bushes combined with intrusion detection equipment and surveillance may be required.

(e) Each building located in the perimeter of the security restricted area, or which leads to that area, shall be protected enough to ensure that no one may access it through, or over, that building without authorization. This requires that all open areas, such as windows or vents which may allow access to security restricted areas, shall be protected with locks and provided with barriers, grilles and wire mesh. The roof of the building may be a possible route for unauthorized access and shall be protected in a similar manner, especially when building cables are attached to the perimeter fence of the security restricted area.

Places where there are land characteristics such as water areas, barriers, etc. in the airfield or the perimeter of the security restricted area shall be as protected as the fencing. It is necessary to take care of transitional areas, from fences to natural barriers, to ensure the integrity of the perimeter. In case of navigable watercourses, they shall be patrolled by boats, in addition to regular patrols along the shore.

IEM 139.337 Protection against wildlife strike hazards
(See BCAR 139.337)

The presence of wildlife (birds and animals) on and in the aerodrome vicinity poses a serious threat to aircraft operational safety.

IEM 139.337 (a) and (f) Protection against wildlife strike hazards
(See BCAR 139.337)

a). Procedures on the management of wildlife hazards on and within the vicinity of aerodromes, including the establishment of a wildlife hazard management programme (WHMP), wildlife risk assessment, land-use management and personnel training, are specified in the PANS-Aerodromes (Doc 9981), Part II, Chapters 1 and 6. Further guidance is given in the Airport Services Manual (Doc 9137), Part 3 in addition DOC 4332-1815 contains the *Bird Strike Information System* (IBIS) to notify ICAO.

b) The IBIS is designed to collect and disseminate information on wildlife strikes to aircrafts. Information on the system is included in the Manual on the ICAO *Bird Strike Information System* (IBIS) (Doc 9332).

IEM 139.339 (d) and (h) Notifying and reporting about aerodrome conditions
(See BCAR 139.339 d (3) (5) and (h))

Nature, format and conditions of the information to be provided are specified in Annex 15 and PANS-ATM (Doc 4444).

other contaminants may include mud, dust, sand, volcanic ash, oil and rubber. Procedures for monitoring and reporting the conditions of the movement area are included in the PANS-Aerodromes (Doc 9981).

the determination that a runway or portion thereof may be slippery when wet is not based solely on the friction measurement obtained using a continuous friction measuring device. Supplementary tools to undertake this assessment are described in the Airport Services Manual (Doc 9137), Part 2.

Guidance on determining and expressing the minimum friction level is provided in BCAR 14 IEM 14.201 (w), including minimum friction levels.

The surface friction characteristics of a runway or a portion thereof can be degraded due to rubber deposits, surface polishing, poor drainage or other factors. The determination that a runway or portion thereof is slippery wet stems from various methods used solely or in combination. These methods may be functional friction measurements, using a continuous friction measuring device, that fall below a minimum standard as defined by the State, observations by aerodrome maintenance personnel, repeated reports by pilots and aircraft operators based on flight crew experience, or through analysis of aeroplane stopping performance that

indicates a substandard surface. Supplementary tools to undertake this assessment are described in the PANS-Aerodromes (Doc 9981).

(h) Guidance on training criteria is included in the Airport Services Manual (Doc 9137), Part 8, Chapter 7.

1. — The Aeroplane Performance Manual (Doc 10064) provides guidance on aircraft performance calculation requirements regarding the description of runway surface conditions in 2.9.2 c), d) and e).

2. — Origin and evolution of data, assessment process and the procedures are prescribed in the PANS-Aerodromes (Doc 9981). These procedures are intended to fulfil the requirements to achieve the desired level of safety for aeroplane operations prescribed by Annex 6 and Annex 8 and to provide the information fulfilling the syntax requirements for dissemination specified in Annex 15 and the PANS-ATM (Doc 4444).

IEM 139.339 (i) (1), (2), (3) and (4) Notifying and reporting about aerodrome conditions
(See BCAR 139.339 (i))

(1) Note 1. — The runway surface conditions are those conditions for which, by means of the methods described in the PANS-Aerodromes (Doc 9981), the flight crew can derive appropriate aeroplane performance.

Note 2. — The conditions, either singly or in combination with other observations, are criteria for which the effect on aeroplane performance is sufficiently deterministic to allow assignment of a specific runway condition code.

Note 3. — The terms CHEMICALLY TREATED and LOOSE SAND do not appear in the aeroplane performance section but are used in the situational awareness section of the runway condition report.

(2) Procedures on depth and coverage reporting are found in the PANS-Aerodromes (Doc 9981).

(3) Note 1. — Surface friction characteristics of a runway or a portion thereof can be degraded due to rubber deposits, surface polishing, poor drainage or other factors. The determination that a runway or portion thereof is slippery wet stems from various methods used solely or in combination. These methods may be functional friction measurements, using a continuous friction measuring device, that fall below a minimum standard as defined by the State, observations by aerodrome maintenance personnel, repeated reports by pilots and aircraft operators based on flight crew experience, or through analysis of aeroplane stopping performance that indicates a substandard surface. Supplementary tools to undertake this assessment are described in the PANS-Aerodromes (Doc 9981).

Note 2. — See Part 4, 4.2 (p) and 139.007 concerning the provision of information to, and coordination between, appropriate authorities.

(4) Note 1. — Guidance on determining and expressing the minimum friction level is provided in the ICAO Circular 329 – Assessment, Measurement and Reporting of Runway Surface Conditions.

Note 2. — Procedures on conducting a runway surface friction characteristics evaluation programme are provided in the PANS-Aerodromes (Doc 9981).

Note 3. — Information to be promulgated in a NOTAM includes specifying which portion of the runway is below the minimum friction level and its location on the runway.

IEM 139.341 Identification and signalling of building areas, unused fields and warning signs
(See BCAR 139.341)

The Advisory Circular CA BDCA-AGA-001 (Operational safety in aerodromes during construction) offers guidance to keep operational safety during building activities and aerodrome maintenance.

IEM 139.343 (b) Apron management service
(See BCAR 139.343 (b))

ICAO *Airport Services Manual*, Part 8, and the *Manual of Surface Movement Guidance and Control Systems* (SMGCS), offer guidance on apron management service.

IEM 139.343 (d) Apron management service
(See BCAR 139.343 (d))

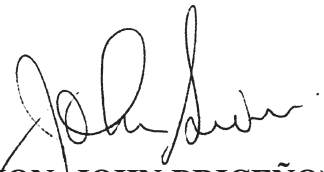
Note 1.— Procedures on apron safety are specified in the PANS-Aerodromes (Doc 9981). Guidance on related special procedures is given in the Manual of Surface Movement Guidance and Control Systems (SMGCS) (Doc 9476).

Note 2.— Procedures on apron safety are specified in the PANS-Aerodromes (Doc 9981).

IEM 139.347 Disabled aircraft movement and removal
(See BCAR 139.347 (a))

See the *Airport Services Manual* (Doc 9137), Part 5: It provides guidance and standardized procedures on the development of the disabled aircraft movement and removal plan.

MADE by the Minister responsible for civil aviation this 14th day of October, 2023.



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