Civil Aviation Regulation
Part IX – Aerodromes

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CHAPTER 1
GENERAL

1.1.1. Civil Aviation Regulations Part IX is issued by the General Civil Aviation Authority in pursuit of its obligations to ensure enforcement of accepted international regulations and standards at aerodromes of the State and to follow up their execution in coordination with the local airport authority.

1.1.2. The specifications contained herein are based upon the Standards and Recommended Practices of Annex 14 Volume 1, to the Convention on International Civil Aviation in so far as they have been adopted by the United Arab Emirates.

Design standards are applied based upon the aerodrome reference code. The intent of the reference code is to provide a simple method for interrelating the numerous specifications concerning the characteristics of aerodromes so as to provide a series of aerodrome facilities that are suitable for aeroplanes that are intended to operate at the aerodrome.

1.1.3. These Regulations have been framed in such a way that the specifications for physical infrastructure, visual aids and nav aids can be adopted for use by national and other domestic aerodromes. The specifications contained herein are considered to be minimum acceptable standards.

1.1.4. An aerodrome licensed in accordance with Civil Aviation Regulation Part IX will normally be suitable for use by helicopters. Presently there is no section dealing exclusively with the criteria for helicopter aerodromes. Proposals for the design of international helicopter aerodromes should be discussed with the Aerodrome Regulation and Licensing Section of the Authority, from which guidance is available.

1.2. APPLICABILITY

1.2.1. These Regulations apply to operators of international aerodromes and heliports (i.e. heliports used for international operations.)

1.2.2. An Aerodrome Operator who is not an operator of an international aerodrome, may apply for an aerodrome licence under these Regulations.

The Aerodrome Operator will be subject to the same initial and ongoing annual licensing fees as stated in Federal Cabinet Decree Number 4/2003 dated 3 February 2003.

1.2.3. Civil Aviation Regulation Part IX represents the minimum requirements to achieve an acceptable level of safety.
Wherever a colour is referred to in this Annex, the specifications for that colour given in Appendix 9 shall apply.

DEFINITIONS

1.3.1. The use of the word “shall” in these Regulations means the requirement is mandatory.

1.3.2. The use of the word “should” does not mean that compliance is option but rather that, where insurmountable difficulties exist, the Authority may accept an alternative means of compliance, provided that an acceptable safety assurance from the Aerodrome Operator shows that the safety requirements will not be reduced below that intended by the requirement.

The terms described below shall have the following meaning whenever they appear in these Regulations:

1.3.3. Accuracy. A degree of conformance between the estimated or measured value and the true value.

1.3.4. Accepted/Acceptable, means not objected to by the Authority as suitable for the purpose intended.

1.3.5. 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.

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

1.3.7. Aerodrome licence. A certificate issued by the Authority under Civil Aviation Regulation Part IX for the operation of an aerodrome.

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

1.3.9. Aerodrome facilities and equipment. Facilities and equipment, inside or outside the boundaries of the aerodrome, that are constructed or installed, operated and maintained for the arrival, departure and surface movement of aircraft.

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

1.3.11. Aerodrome manual. The manual that forms part of the application for an aerodrome licence pursuant to these Regulations, including any amendments thereto accepted by the Authority.
1.3.12. **Aerodrome Operator.** In relation to a licensed aerodrome, the aerodrome licence holder

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

1.3.14. **Aerodrome traffic density.**
   
i. 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.
   
   ii. 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.
   
   iii. 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.

1.3.15. **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.

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

1.3.17. **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.

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

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

1.3.20. **Approved by the Authority,** means documented by the Authority as suitable for the purpose intended.

1.3.21. **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.
1.3.22. **Apron management service.** A service provided to regulate the activities and the movement of aircraft and vehicles on an apron.

1.3.23. **Authority** means the General Civil Aviation Authority of the United Arab Emirates and is the competent body responsible for the safety regulation of Civil Aviation.

1.3.24. **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.

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

1.3.26. **Capacitor discharge light.** A lamp in which high-intensity flashes of extremely short duration are produced by the discharge of electricity at high voltage through a gas enclosed in a tube.

1.3.27. **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.

1.3.28. **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.

1.3.29. **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.

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

1.3.31. **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.
1.3.32. **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.

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

1.3.34. **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.

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

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

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

1.3.38. **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.

1.3.39. **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.

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

1.3.41. **Grading.** Means leveling of the ground surface to meet the applicable slope requirements and so prepared or constructed as to minimise hazards arising from differences in load bearing capacity to aeroplanes which a runway or taxiway is intended to serve, in the event of an aeroplane running off the runway or taxiway.

1.3.42. **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*).

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

1.3.44. **Holding bay.** A defined area where aircraft can be held, or bypassed, to facilitate efficient surface movement of aircraft.
1.3.45. **Holdover time.** The estimated time the anti-icing fluid (treatment) will prevent the formation of ice and frost and the accumulation of snow on the protected (treated) surfaces of an aeroplane.

1.3.46. **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.

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

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

1.3.49. **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.

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

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

   a) Non-precision approach runway. An instrument runway served by visual aids and a non-visual aid providing at least directional guidance adequate for a straight-in approach.

   b) Precision approach runway, category I. An instrument runway served by ILS and/or MLS and visual aids intended for operations with a decision height 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. An instrument runway served by ILS and/or MLS and visual aids intended for operations with a decision height lower than 60 m (200 ft) but not lower than 30 m (100 ft) and a runway visual range not less than 350 m.

   d) Precision approach runway, category III. An instrument runway served by ILS and/or MLS to and along the surface of the runway and:

      A- intended for operations with a decision height lower than 30 m (100 ft), or no decision height and a runway visual range not less than 200 m.

      B- intended for operations with a decision height lower than 15 m (50 ft), or no decision height and a runway visual range not less than 100 m.
visual range less than 200 m but not less than 50 m.

C-intended for operations with no decision height and no runway visual range limitations.

Note - Where decision height (DH) and runway visual range (RVR) fall into different categories of operation, the instrument approach and landing operation would be conducted in accordance with the requirements of the most demanding category (e.g. an operation with a DH in the range of CAT IIIA but with an RVR in the range of CAT IIIB would be considered a CAT IIB operation or an operation with a DH in the range of CAT II but with an RVR in the range of CAT I would be considered a CAT II operation).

1.3.52. **Integrity (aeronautical data).** A degree of assurance that an aeronautical data and its value has not been lost nor altered since the data origination or authorized amendment.

1.3.53. **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.

1.3.54. **International aerodrome.** Any aerodrome designated by the Authority for the arrival and departure of international air traffic, and where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

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

1.3.56. **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.

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

1.3.58. **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.

1.3.59. **Licenced aerodrome.** An aerodrome whose operator has been granted an aerodrome licence.

1.3.60. **Lighting system reliability.** The probability that the complete installation operates within the specified tolerances and that the system is operationally usable.
1.3.61. **Manoeuvring area.** That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

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

1.3.63. **Marking.** A symbol or group of symbols displayed on the surface of the movement area in order to convey aero-nautical information.

1.3.64. **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).

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

1.3.66. **Non-instrument runway.** A runway intended for the operation of aircraft using visual approach procedures.

1.3.67. **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.

1.3.68. **Obstacle.** All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight.

1.3.69. **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.

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

1.3.71. **Pavement classification number (PCN).** A number expressing the bearing strength of a pavement for unrestricted operations.

1.3.72. **Precision approach runway, see Instrument runway.**

1.3.73. **Primary runway(s).** Runway(s) used in preference to others whenever conditions permit.
1.3.74. **Protected flight zones.** Airspace specifically designated to mitigate the hazardous effects of laser radiation.

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

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

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

1.3.78. **Runway end safety area (RESA).** An area symmetrical about 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.

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

1.3.80. **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.

1.3.81. **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.

1.3.82. **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.

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

1.3.84. **Safety management system.** A system for the management of safety at aerodromes, including the organizational structure, responsibilities, procedures, processes and provisions for the implementation of aerodrome safety policies by an Aerodrome Operator, which provides for control of safety at, and the safe use of, the aerodrome.

1.3.85. **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.

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

1.3.87. **Sign.**
   a) Fixed message sign. A sign presenting only one message.
   b) Variable message sign. A sign capable of presenting several pre-determined messages or no message, as applicable.

1.3.88. **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.

1.3.89. **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.

1.3.90. **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.

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

1.3.92. **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.

1.3.93. **Taxiway intersection.** A junction of two or more taxiways.

1.3.94. **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
1.3.95. **Threshold.** The beginning of that portion of the runway usable for landing.

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

1.3.97. **Unserviceable area.** A part of the movement area that is unfit and unavailable for use by aircraft.

1.3.98. **Usability factor.** The percentage of time during which the use of a runway or system of runways is not restricted because of the cross-wind component.

1.3.99. **Work area.** Means a part of an aerodrome in which maintenance or contruction works are in progress.

1.4. **COMMON REFERENCE SYSTEMS**

1.4.1. **Horizontal reference system**

World Geodetic System - 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system. Reported aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

1.4.2. **Vertical reference system**

Mean sea level (MSL) datum, which gives the relationship of gravity-related height (elevation) to a surface known as the geoid, shall be used as the vertical reference system.

1.4.3. **Temporal reference system**

The Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system.

1.5. **STANDARDS AND RECOMMENDED PRACTICES**

1.5.1. Where referenced, the methodologies and specifications contained in the Airport Design Manuals and Airport Service Manuals shall be considered to represent an acceptable form of compliance unless otherwise indicated by the Authority.

1.5.2. Guidance material applicable to these Regulations is contained in the following documents

*Aerodrome Design Manual (Doc 9157)*

Part 1 – Runways
Part 2 – Taxiways Aprons and Holding Bays
Part 3 – Pavements
Part 4 – Visual Aids
1.5.3. Procedures for Air Navigation Services (PANS) shall be applied except where specifically deleted or modified in this Civil Aviation Regulation with similar mandatory status as for the SARPs.
CHAPTER 2
LICENSING PROCESS

2.1. REQUIREMENTS TO HOLD AN AERODROME LICENCE

2.1.1. An operator of an aerodrome used for international operations shall be in possession of an aerodrome licence.

2.1.2. An application for an aerodrome licence shall be submitted to the Authority for approval in a form prescribed by the Authority, and shall include the Aerodrome Manual for the aerodrome.

2.2. GRANT OF AN AERODROME LICENCE

2.2.1. Subject to the provisions in 2.2.2 the Authority may approve the application and accept the Aerodrome Manual submitted under 2.1.2 and grant an aerodrome licence to the applicant.

2.2.2. Before granting an aerodrome licence, the Authority must be satisfied that:

   a) The aerodromes facilities, services and equipment are in accordance with these Regulations and other relevant ICAO standards and recommended practices; and

   b) The Aerodrome Manual prepared for the applicant’s aerodrome and submitted with the application contains all the relevant information; and

   c) The aerodrome’s operating procedures make satisfactory provision for the safety of aircraft; and

   d) The applicant will be able to operate and maintain the aerodrome properly; and

   e) Payment of an initial application fee, as specified by Federal Cabinet Decree, has been received.

2.2.3. The Authority may refuse to grant an aerodrome licence to an applicant.

2.2.4. After a successful completion of the processing of the application and inspection of the aerodrome, the Authority, while granting the aerodrome licence may endorse the conditions of the type of use of the aerodrome and other details as shown in the licence (Appendix 3).

2.3. VALIDITY OF AN AERODROME LICENCE

2.3.1. The validity of the licence is based upon the physical characteristics, type of use of the aerodrome and continued operation in accordance with Civil Aviation Regulations, Civil Aviation Advisory Publications, and Information Bulletins as published by the Authority, in addition to ICAO
SARPS. Any change made to the physical characteristics or use of the aerodrome, as documented in the Aerodrome Manual, that is not approved by the Authority shall invalidate the licence.

2.3.2. The aerodrome licence shall remain valid

   a) subject to the payment of a renewal fee, the amount as specified by Federal Cabinet Decree. Such fees shall be paid yearly at the commencement of the calendar year; and

   b) subject to periodic surveillance audits conducted at the discretion of the Authority confirming ongoing compliance with the Civil Aviation Regulations. The Authority shall undertake a complete aerodrome licence renewal inspection at least once in every five year period following the issue of an aerodrome licence; or

   c) until the licence is either surrendered, transferred or revoked, whichever is the earlier.

2.3.3. An aerodrome licence holder must give the Authority not less than 3 months written notice of the date on which the licence is to be surrendered in order that suitable promulgation action can be taken. The Authority will cancel the licence on the date specified in the notice.

2.3.4. The Authority may approve, and issue an instrument of transfer of an aerodrome licence to a transferee where

   a) the current holder of the aerodrome licence notifies the Authority in writing at least 3 months before ceasing to operate the aerodrome, that the current holder will cease to operate the aerodrome as of the date specified in the notice;

   b) the current holder of the aerodrome licence notifies the Authority in writing, the name of the transferee;

   c) the transferee applies in writing to the Authority within 3 months before the current holder of the aerodrome licence ceases to operate the aerodrome, for the aerodrome licence to be transferred to the transferee; and

   d) the requirements set out in 2.2.2 are met.

2.3.5. The Authority may issue an interim aerodrome licence to an applicant or a proposed transferee of the aerodrome licence authorising the applicant or transferee to operate an aerodrome if the Authority is satisfied that:

   a) an aerodrome licence in respect of the aerodrome will be issued to the applicant or transferred to the transferee as soon as the application procedure in respect of the grant or transfer is completed; and

   b) the grant of the interim licence is in public interest and not detrimental to aviation safety.
2.3.6. An interim aerodrome licence shall expire on the earlier of:
   a) the date on which the aerodrome licence is issued or transferred; or
   b) the expiry date specified in the interim aerodrome licence

2.3.7. These Regulations apply to an interim aerodrome licence in the same manner as they apply to an aerodrome licence

2.4. AMENDMENT OF AN AERODROME LICENCE

The Authority may, provided that the requirements of 2.2.2 and 3.5.1 are met, amend an aerodrome licence where:
   a) there is a change in the ownership/management of the aerodrome; or
   b) there is a change in the use or operation of the aerodrome; or
   c) there is a change in the boundaries of the aerodrome; or
   d) the holder of the aerodrome licence requests the amendment
CHAPTER 3
AERODROME MANUAL

3.1. PURPOSE AND SCOPE

3.1.1. The Aerodrome Manual is a fundamental requirement of the licensing process. It shall contain all the pertinent information concerning aerodrome site, facilities, services, equipment, operating procedures, organisation, and management including safety management system. The information presented in the Aerodrome Manual shall demonstrate that the aerodrome conforms to the licensing standards and practices and that there are no apparent shortcomings that would adversely affect the safety of aircraft operations.

3.1.2. The Aerodrome Manual is a reference document and provides a checklist of aerodrome licence standards to be maintained and the level of airside services at the aerodrome. Information provided in the Aerodrome Manual will enable the Authority to assess the suitability of the aerodrome for the aircraft operations proposed. It is the basic reference guide for conducting site inspections for granting an aerodrome licence and for subsequent safety inspections. The Aerodrome Manual shall be produced by the Aerodrome Operator and requires to be accepted by the Authority with respect to the standards, conditions and the levels of services to be maintained at the aerodrome.

3.1.3. The Aerodrome Manual is subject to amendment, in order to ensure that it provides current and accurate information at all times. The aerodrome licence holder is responsible in this respect and also for submitting amendments to the Authority for acceptance.

3.2. PREPARATION OF THE AERODROME MANUAL

3.2.1. The operator of a licensed aerodrome shall have a manual, to be known as the Aerodrome Manual, for the aerodrome.

3.2.2. The Aerodrome Manual shall:

   a) be type written or printed and signed by the Aerodrome Operator;

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

   c) have a system for recording the currency of pages and amendments, thereto, and should include a page for logging revisions; and

   d) be organised in a manner that will facilitate the preparation, review and approval process.
3.3. **LOCATION OF THE AERODROME MANUAL**

3.3.1. The Aerodrome Operator shall provide the Authority with one complete and current copy of the Aerodrome Manual.

3.3.2. The Aerodrome Operator shall keep at least one complete and current copy of the Aerodrome Manual at the aerodrome and one copy at the operator’s principal place of business, if different from the aerodrome.

3.3.3. The Aerodrome Operator shall make the Aerodrome Manual available to all relevant aerodrome personnel and for inspection by the Authority. This can be via hard copy or alternatively by electronic format contingent upon the staff member having immediate access to the information.

3.4. **INFORMATION TO BE INCLUDED IN THE AERODROME MANUAL**

3.4.1. The operator of a licensed aerodrome shall include in an Aerodrome Manual, the particulars as specified in Appendix 3 of these Regulations, to the extent these are applicable to the aerodrome, under the following parts:

a) Part 1: General information as set out in Part 1 of Appendix 3

b) Part 2: Particulars of the aerodrome site as set out in Part 2 of Appendix 3

c) Part 3: Particulars of the aerodrome required to be reported to the Aeronautical Information Service as set out in Part 3 of Appendix 3

d) Part 4: The aerodrome operating procedures and safety measures set out in Part 4 of Appendix 3

e) Part 5: Details of the aerodrome administration and the Safety Management System established for the aerodrome as set out in Part 5 of Appendix 3

3.4.2. If a particular is not included in the Aerodrome Manual because it is not applicable to the aerodrome, the Aerodrome Operator must state in the Aerodrome Manual the reason:

a) that the particular is not applicable; and

b) the reason why the particular is non-applicable.

3.5. **REVISION OR VARIATION OF INFORMATION**

3.5.1. The operator of a licensed aerodrome shall amend the Aerodrome Manual, whenever necessary, in order to maintain the accuracy of the
To maintain the accuracy of the Aerodrome Manual, the Authority may issue written directions to an Aerodrome Operator requiring the operator to alter or amend the manual in accordance with the directions.

To ensure the safety of aircraft, the Authority may give written directions to an Aerodrome Operator to alter the procedures set out in the Aerodrome Manual.

An Aerodrome Operator must notify the Authority, as soon as practicable, of any changes that the operator wishes to make to the Aerodrome Manual.

The Authority shall accept the Aerodrome Manual and any amendments thereto, provided these meet the requirements of these Regulations.
CHAPTER 4

OBLIGATIONS OF THE AERODROME OPERATOR

4.1. GENERAL
The grant of an aerodrome licence obliges the Aerodrome Operator to ensure safety, regularity and efficiency of aircraft operations at the aerodrome; to allow personnel authorised by the Authority access to the aerodrome to carry out safety audits, inspections and testing, and to be responsible for notifying and reporting certain information as prescribed in these Regulations.

4.2. COMPLIANCE WITH STANDARDS AND PRACTICES
The Aerodrome Operator shall comply with the standards and practices contained in the applicable Civil Aviation Regulations, Civil Aviation Advisory Publications, and Information Bulletins published by the Authority. The Aerodrome Operator shall also comply with any conditions that may be endorsed in the aerodrome licence pursuant to Clause 2.2.4.

4.3. CONFORMANCE WITH AERODROME MANUAL
Subject to any directions that the Authority may issue, the Aerodrome Operator shall operate and maintain the aerodrome in accordance with the procedures and methodologies outlined in the Aerodrome Manual.

4.4. PROVISION OF APPROPRIATE INFRASTRUCTURE AND SERVICES
The Aerodrome Operator shall ensure that the physical characteristics of the aerodrome; the obstacle limitation surfaces; the visual aids for navigation and for denoting obstacles and restricted use areas; and the equipment, installations and services required for the aerodrome are commensurate with the following:

a) The characteristics of the aircraft that the aerodrome is intended to serve;
b) The operating modality of the runway;
c) The lowest meteorological minima intended for each runway;
d) The ambient light conditions intended for the operation of aircraft.

The requirements of (a) to (d) shall comply with the minimum specifications outlined in the Appendices to these Regulations, and or ICAO Annex 10 as applicable.

4.5. OPERATING LIMITATIONS
The Aerodrome Operator shall when necessary for the safety of aircraft operations at their aerodrome, establish any limitations on the use of the aerodrome that arise from the aerodrome design or the facilities or
services provided at the aerodrome. These shall be documented in Part 1 of the Aerodrome Manual.

4.6. **INTERNAL QUALITY ASSURANCE**

4.6.1. Each Aerodrome Operator shall establish an internal quality assurance system to ensure compliance with, and the adequacy of, the procedures required by these Regulations, and for the continuance in improvement of safety levels.

4.6.2. The internal quality assurance system shall include:

a) a safety policy and safety policy procedures that are relevant to the applicant’s organisational goals and the expectations and needs of its customers; and

b) procedures to ensure that aeronautical data at any moment is traceable to its origin so as to allow any data anomalies or errors, detected during production/maintenance phases or in operational use, to be corrected; and

c) a procedure to ensure quality indicators, including defect and incident reports, and personnel and customer feedback, are monitored to identify existing problems or potential causes of problems within the system; and

d) a procedure for corrective action to ensure existing problems that have been identified within the system are corrected; and

e) a procedure for preventive action to ensure that potential causes of problems that have been identified within the system are remedied; and

f) an internal quality audit programme to audit the applicant’s organisation for conformity with the procedures in its Aerodrome Manual and associated documentation and achievement of the goals set in its safety; and

g) management review procedures that may, where appropriate, include the use of statistical analysis, to ensure the continuing suitability and effectiveness of the internal quality assurance system in satisfying the requirements of this regulation.

4.6.3. The safety policy procedures shall ensure that the safety policy is understood, implemented, and maintained at all levels of the organization.

4.6.4. The procedure for corrective action shall specify how:

a) to correct an existing problem; and

b) to follow up a corrective action to ensure the action is effective; and

c) management will measure the effectiveness of any corrective action taken.

4.6.5. The procedure for preventive action shall specify how:

a) to correct a potential problem; and

b) to follow up a preventive action to ensure the action is effective; and
c) to amend any procedure required by this Regulation as a result of a preventive action; and

d) management will measure the effectiveness of any preventive action taken.

4.6.6. The internal quality audit programme shall:

a) specify the frequency and location of the audits taking into account the nature of the activity to be audited; and

b) ensure audits are carried out by trained auditing personnel who are independent of those having direct responsibility for the activity being audited; and

c) ensure the results of audits are reported to the personnel responsible for the activity being audited and the manager responsible for internal audits; and

d) require preventive or corrective action to be taken by the personnel responsible for the activity being audited if problems are found by the audit; and

e) ensure follow up audits to review the effectiveness of any preventive or corrective action taken.

Note. All audit findings and observations shall be evidenced and properly recorded.

4.6.7. Material to be issued as part of the Integrated Aeronautical Information Package shall be thoroughly checked and coordinated with relevant parties before it is submitted to the Aeronautical Information Service, in order to make certain that all necessary information has been included and that it is correct in detail prior to distribution.

Validation and verification procedures shall be established which ensure that quality requirements (accuracy resolution, integrity) and traceability of aeronautical data as specified in Appendix 5 are met.

4.6.8. Protection of electronic aeronautical data while stored or in transit shall be totally monitored by the cyclic redundancy check (CRC).

To achieve protection if the integrity level of critical and essential aeronautical data as specified below and in Appendix 5 of these Regulations, a 32 or 24 bit CRC algorithm shall apply respectively.

To achieve protection if the integrity level of routine aeronautical data as specified below and in Appendix 5 of these Regulations, a 16 bit CRC algorithm shall apply.

a) critical data, integrity level 1 × 10^-8: 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;

b) essential data, integrity level 1 × 10^-5: 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
c) routine data, integrity level $1 \times 10^{-3}$: 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.

4.7. **SAFETY MANAGEMENT SYSTEM**

4.7.1. The Aerodrome Operator shall establish a safety management system (SMS) for the aerodrome as outlined in Appendix 3 Part 5, with a view to ensuring that risks are either eliminated or mitigated and operations are carried out in a demonstrably controlled and safe manner, and that safety processes are reviewed with the aim of continuous improvement.

4.7.2. The Aerodrome Operator shall oblige all the users of the aerodrome including fixed-base operators and organisations which perform activities independently at the aerodromes in relation to flight or aircraft handling, to comply with the requirements laid down by the Aerodrome Operator with regard to safety and order at the aerodromes, and shall monitor such compliance.

4.7.3. The Aerodrome Operator shall require all the users of the aerodrome including fixed-base operators and organisations to cooperate in the programme to promote safety and order at, and the safe use of, the aerodrome by immediately informing the Aerodrome Operator of the accidents, incidents, defects and faults which have a bearing on safety. Occurrences involving aircraft shall be reported to the Authority.

4.8. **COMPETENCE OF OPERATIONAL AND MAINTENANCE PERSONNEL**

4.8.1. The Aerodrome Operator shall employ adequate numbers of qualified and skilled personnel for performing all critical activities in the aerodrome operations and maintenance processes.

4.8.2. Where the Authority has prescribed a competency certification requirement for operations or maintenance personnel, or medical standards, the Aerodrome Operator shall employ only those persons possessing such certificates or meeting such medical and fitness requirements.

4.8.3. The Aerodrome Operator shall implement a programme to maintain the competency of the safety critical personnel.

4.9. **NOTIFYING AND REPORTING INFORMATION TO THE AERONAUTICAL INFORMATION SERVICE**

4.9.1. An Aerodrome Operator shall notify and report aeronautical data to the Aeronautical Information Service within the specified time limits required by these Regulations.
4.9.1.1. (a) Data to be supplied to the Aeronautical Information Service

An Aerodrome Operator shall submit to the Aeronautical Information Service all the data requirements specified in Appendix 3 Part 3 of these Regulations.

4.9.1.2. (b) Notification of inaccuracies in Aeronautical Information Service publications:

An Aerodrome Operator shall review the issues of Aeronautical Information Publication (AIP), AIP Supplements, AIP Amendments, Notices to Airmen (NOTAMS), Pre-flight Information Bulletins and Aeronautical Information Circulars issued by the Aeronautical Information Service on initial receipt, thereof, and at regular intervals thereafter. Immediately after such reviews, an Aerodrome Operator shall notify the Aeronautical Information Service of any inaccurate information contained therein that pertains to the aerodrome.

4.9.1.3. (c) Notification of changes in aerodrome facilities, equipment, and level of service planned in advance:

An Aerodrome Operator shall submit a request for approval from the Authority in writing at least 3 months before any change to the aerodrome facility or equipment or the level of service at the aerodrome that has been planned in advance and that is likely to affect the accuracy of the information contained in any of the elements comprising the Integrated Aeronautical Information Package.

Note (1): Acceptance for publication of information in any of the elements comprising the Integrated Aeronautical Information Package shall not be construed as Regulatory Approval.

Note (2) Regulatory approval is required of proposed changes to airside physical infrastructure and air navigation equipment.

4.9.1.4. (d) Issues requiring immediate notification to the Aeronautical Information Service.

An Aerodrome Operator shall, give to the Aeronautical Information Service and cause to be received at air traffic control and the flight operations unit, immediate notice (NOTAM request) giving details of any of the circumstances listed in Appendix # of these Regulations.

4.9.1.5. (e) Obstacle Data

An Aerodrome Operator shall notify the aeronautical information service, the geographical coordinates and the top elevation of all obstacles that penetrate the obstacle limitation surfaces as defined in Appendix 13 of these Regulations. The information shall be kept up to date by periodic survey.

Note. (1) This will require the conduct of an obstacle survey by registered surveyor to establish the initial coordinates and details of obstacles and periodic survey thereafter. The period between surveys should not exceed 5 years.
Note (2) This task can be simplified by the judicious management of developments within the lateral limits of the defined areas.

4.9.1.6. (f) Terrain and Obstacle Data Collection.

To satisfy requirements necessary to accommodate air navigation systems or functions, sets of electronic terrain and obstacle data shall be collected and recorded in databases by the Aerodrome Operator, and reported to the aeronautical information service by 1 January 2008. The geographical coordinates of terrain and obstacles in Area 2, and Area 3 shall be measured, as well as terrain data in Area 4, and reported to the aeronautical information service in degrees, minutes, seconds and the applicable number of seconds. In addition the top elevation, type, marking and lighting (if any) of obstacles shall be reported to the aeronautical information service.

Note:

Area 2 is the Terminal Control Area as published in the AIP of the United Arab Emirates for the aerodrome, or where a Terminal Control Area has not been established, is an area within a 45km radius of the aerodrome reference point.

Area 3 is an area that extends from the edge(s) of the runway(s) to 90m from the runway centre line(s) and, for all other parts of the aerodrome movement area, 50m from the edge of the defined area(s).

Area 4 is restricted to those runways where precision approach Category II and III operations have been approved. The width of the area shall be 60m on either side of the extended runway centreline while the length shall be 900m from the runway threshold measured along the extended runway centreline.

4.9.2. The responsibility for the provision of the data shall be as follows:

   a) Civilian Aerodrome Control Units shall be responsible for data collection within their Control Zone

   b) Approach Control Units shall be responsible for data collection within their Terminal Control Area

4.9.3. Determination and reporting of information/raw data concerning aerodrome related aeronautical information shall be in accordance with the accuracy and integrity requirements set forth in Tables 1 to 5 contained in Appendix 5 of these Regulations while taking into account the established quality system procedures.

4.9.4. Geographical coordinates indicating latitude and longitude shall be determined and reported to the aeronautical information services in terms of the World Geodetic System - 1984 (WGS-84) geodetic reference datum, identifying those geographical coordinates which have been transformed into WGS-84 coordinates by mathematical means and whose accuracy of original field work does not meet the requirements in Appendix 5, of these Regulations.
4.9.5. In addition to the elevation (referenced to mean sea level) of the specific surveyed ground positions at aerodromes, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions as indicated in Appendix 5, shall be determined and reported to the aeronautical information services.

4.10. **NOTIFYING AND REPORTING INFORMATION TO AIR TRAFFIC SERVICES**

4.10.1. An Aerodrome Operator shall report significant aeronautical information to the Air Traffic Service Unit within the specified time limits required by these Regulations.

4.10.1.1. (a) Issues requiring immediate notification to the Air Traffic Control Tower

The condition of the movement area and the operational status of related facilities shall be monitored and information provided to the air traffic control tower to enable this unit to provide the necessary information to arriving and departing aircraft, and to other air traffic service units as necessary.

Reports on matters of operational significance or affecting aircraft safety or performance shall be given, particularly in respect of the following:

i. Construction or maintenance work;
ii. Rough or broken surfaces on a runway, a taxiway or an apron;
iii. Water on a runway, a taxiway or an apron
iv. Other temporary hazards, including parked aircraft
v. Failure or irregular operation of part or all of the aerodrome visual aids; and
vi. Failure of the normal or secondary power supply
vii. Reduction in category of Rescue Fire Service
viii. Evacuation of a passenger terminal

The information shall be kept up to date and changes in conditions reported without delay.

4.10.1.2. Whenever water is present on a runway, a description of the runway surface conditions on the centre half of the width of the runway, including the possible assessment of water depth, where applicable, shall be notified using the following terms:

DAMP – the surface shows a change of colour due to moisture
WET – the surface is soaked but there is no standing water
WATER PATCHES – significant patches of standing water are visible
FLOODED – extensive standing water is visible
4.10.1.3. (b) Runway friction characteristic to be reported

Information that a runway or portion thereof which may be slippery when wet shall be made available to the air traffic control tower when the last friction measurement test indicated that the runway surface friction characteristic as measured by a continuous friction measuring device was below the minimum friction level specified in Clause 4.15 of these Regulations.

4.11. (c) Isolated aircraft position

The Aerodrome Operator shall ensure that the aerodrome air traffic control tower is advised of an area or areas suitable for the parking of an aircraft which is known or believed to be the subject of unlawful interference, or which for other reasons needs isolation from normal aerodrome activities.

4.12. NOTIFYING AND REPORTING INFORMATION TO AIRCRAFT OPERATORS

4.12.1. An Aerodrome Operator shall develop and implement procedures for briefing Air Transport Operators and Air Carriers by the Aerodrome Operator, of the necessary safety and regulatory requirements for aircraft before operating in the Emirates FIR or from UAE Territory. The Airport Briefing shall include but not be limited to at least the following requirements.

a) Provision of up to date aerodrome information as contained in the AIP to be available to the flight crew, and

b) Requirement for the aircraft operator to follow correct ICAO flight planning principles including the provision of aircraft registration and correct ICAO designators, and

c) Requirement for the aircraft operator to report either flight or ground based incidents to the Authority, including bird strikes or near misses, and

d) Requirement for the aircraft to be adequately equipped in accordance with the rules and regulations governing the airspace in which it will be flying. This should include reference to at least, verification that the aircraft payload does not exceed MCTOW at departure; the aircraft must be equipped with ACASII if above 5700kg; the aircraft must have RNAV equipment certified to operate to the appropriate RNP requirements for the airspace in which the aircraft will operate; the aircraft must be RVSM approved for flights between FL290 and FL410; the operator must be able to meet minimum en-route levels and minimum climb performance gradients specific to the aerodrome.

Note: Guidance to Aerodrome Operators concerning Airport Briefings is contained in Civil Aviation Publication 24.
4.13. **OBLIGATIONS TO RESTRICT CERTAIN AIRCRAFT.**

In respect to Clause 4.12, the Aerodrome Operator or their agent shall ensure that procedures are developed to negate aircraft operators from operating at their aerodrome when such aircraft operators cannot meet the UAE regulatory requirements, or are subject to:

a) A ban based upon the origin of registry as notified by the Authority, or

b) A cease and desist order as notified by the Authority, or

c) when the aircraft is subject to a grounding order as notified by the Authority.

The Aerodrome Operator shall monitor and ensure that third parties at the aerodrome comply with such procedures.

4.13.1. The provision of weigh scales appropriate to the task to random check of aircraft payload shall be immediately available at the aerodrome.

4.13.2. The procedures required by this Clause 4.13 shall include immediate notification to the Authority of actions taken against such aircraft or aircraft operators.

4.14. **REPORTING STATISTICAL INFORMATION**

An Aerodrome Operator shall provide statistical information to the Authority to permit an overview of Civil Aviation activity in the UAE. ICAO Form I (Appendix 16) shall be completed and forwarded to the Authority on a monthly basis. ICAO Form J (Appendix 17) shall be completed yearly.

4.15. **AERODROME OPERATION AND MAINTENANCE PROGRAMME**

**General**

4.15.1. The Aerodrome Operator shall employ a maintenance programme, including preventative maintenance where appropriate, to maintain the aerodrome facilities in a condition that does not impair the safety, security, regularity or efficiency of aircraft operations.

*Note: Facilities are intended to include, but are not limited to, such items as pavements, visual aids, fencing, drainage systems and buildings*

4.15.2. The design and application of the maintenance programme should observe Human Factors principles.

4.15.3. The Aerodrome Operator shall ensure that all maintenance records are documented, including information on the design and construction of aircraft pavements and aerodrome lighting. A system for easy retrieval of such documentation shall be implemented.

4.15.4. Inspections of the movement area to assess its operational status shall be carried out each day at least once where the code number is 1 or 2 and at
least twice where the code number is 3 or 4.

The minimum number of inspections shall be increased by one where aerodrome traffic density is considered to be medium or heavy.

4.15.5. An Aerodrome Operator shall inspect an aerodrome, as the circumstances require, to ensure aviation safety:

   a) As soon as practicable, after any aircraft accident or incident within the meaning of these terms defined in CARs Part VI Chapter 4 – Aircraft Accident Investigation.

   b) during any period of construction or repair of the aerodrome facilities or equipment that is critical to the safety of aircraft operation; and

At any other time when there are conditions at the aerodrome that could affect aviation safety.

4.15.6. **Pavement Maintenance Programme**

4.15.6.1. The surface of pavements (runways, taxiways, aprons, etc.) shall be kept clear of any loose stones or other objects that might cause damage to aircraft structures or engines, or impair the operation of aircraft systems.

4.15.6.2. The surface of a runway should be maintained in a condition such as to preclude formation of harmful irregularities.

4.15.6.3. When a taxiway is used by turbineengined aeroplanes, the surface of the taxiway shoulders should be maintained so as to be free of any loose stones or other objects that could be ingested by the aeroplane engines.

4.15.6.4. 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.

**Pavement Surface Inspections**

4.15.6.5. In addition to Clause 4.15.3.1 an evaluation of the runway and taxiways shall be conducted at least yearly by qualified pavement engineers for the preparation/upkeep of a pavement management system and maintenance schedule.

**Friction Testing**

4.15.6.6. Runways shall be evaluated when first constructed or after resurfacing to determine the wet runway surface friction characteristics. The results shall be forwarded to the Authority.

4.15.6.7. The surface of a paved runway shall be maintained in a condition so as to provide good friction characteristics and low rolling resistance. Standing water, mud, dust, sand, oil, rubber deposits and other contaminants shall be removed as rapidly and completely as possible to minimize
4.15.6.8. Friction tests of existing, new or resurfaced runways shall be made with a continuous friction measuring device provided with a smooth tread tyre.

4.15.6.9. Measurements of the friction characteristics of a runway surface shall be made monthly with a continuous friction measuring device using self-wetting features to enable measurements of the friction characteristics of the surface to be made at a water depth of at least 1mm.

4.15.6.10. Runway friction testing shall be conducted at two speeds; 65km/h and 95km/h.

Note: When conducting friction tests simulating wet surface conditions, it is important to note that there is a drop in friction with an increase in speed. However, as speed increases, the rate at which the friction is reduced becomes less. Among factors affecting the friction coefficient between the tyre and the runway surface, texture is particularly important. If the runway has a good macro-texture allowing water to escape beneath the tyre, then the friction value will be less affected by speed. Conversely, a low macro-texture surface will produce a larger drop in friction with increase in speed.

4.15.6.11. Friction measurement shall be conducted over the entire length of the runway. To cover the required width, measurements shall be carried out along a line approximately 3m of each side of the runway centreline or that distance from the centreline at which most operations take place. For runways that have a mix of widebody and narrow-body aeroplane operations, measurements shall be conducted at 5m on both sides of the runway centreline.

Runs shall be made in both directions and a mean value taken.

Additionally, a measurement shall be made along a track 5m from the runway edge, to provide a datum of the unworn and uncontaminated surface for comparison with the centre tracks subjected to traffic.

4.15.6.12. The friction value shall be obtained by averaging the results of measurements made with the test device. If the friction characteristics differ significantly along major portions of a runway, the friction value shall be obtained for each portion of the runway.

4.15.6.13. Corrective maintenance action shall be taken when the friction characteristics for any portion of the runway is below the minimum friction level corresponding to the particular test equipment used as specified in Table 4-1.

4.15.6.14. Corrective maintenance action shall be programmed when the friction characteristics for any portion of the runway is below the maintenance planning level, corresponding to the particular test equipment used, as specified in Table 4-1.
A portion of runway approximately 100m long is considered significant for maintenance or reporting action.

4.15.6.15.

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 friction characteristics should be assessed under natural or simulated conditions that are representative of local rain and corrective maintenance action should be taken as necessary.

### Table 4-1

<table>
<thead>
<tr>
<th>Test equipment</th>
<th>Type</th>
<th>Pressure (kPa)</th>
<th>Test speed (km/h)</th>
<th>Test water depth (mm)</th>
<th>Design objective for new surface</th>
<th>Maintenance planning level</th>
<th>Minimum friction level</th>
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#### Runway pavement overlays

4.15.6.16.

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

- a) 0.5 to 1.0 per cent for overlays up to and including 5 cm in thickness; and
- b) not more than 0.5 per cent for overlays more than 5 cm in thickness.

4.15.6.17.

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

4.15.6.18.

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

4.15.6.19.

Before a runway being overlaid is returned to a temporary operational status, a runway centre line marking conforming to the specifications in Appendix 12 shall be provided. Additionally, the location of any temporary threshold shall be identified by a 3.6 m wide transverse stripe.

#### ELECTRICAL SYSTEMS

4.15.7.1.

Adequate primary power supply shall be available at aerodromes for the safe functioning of air navigation facilities.

4.15.7.2.

The design and provision of electrical power systems for aerodrome
visual and radio navigation aids shall be such that an equipment failure will not leave the pilot with inadequate visual and non-visual guidance or misleading information.

4.15.7.3. 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 normal source of power.

4.15.7.4. Requirements for a secondary power supply shall be met by either of the following:

a) 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

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

4.15.7.5. Where the secondary power supply of an aerodrome is provided by the use of duplicate feeders, such supplies shall be physically and electrically separate so as to ensure the required level of availability and independence.

4.15.7.6. 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:

a) the signalling lamp, voice communication management system and minimum lighting necessary to enable air traffic services personnel to carry out their duties;

b) Radio navigation aids and ground elements of communication systems

c) meteorological equipment

d) approach, runway and taxiway lighting as specified in Appendix 9

e) all obstacle lights which, in the opinion of the Authority, are essential to ensure the safe operation of aircraft;

f) essential equipment and facilities for the aerodrome responding emergency agencies;

g) illumination of apron areas over which passenger aircraft are being handled

h) essential security equipment including but not necessarily limited to access control facilities, security screening equipment, lighting.
4.15.7.7. The time interval between failure of the normal source of power and the complete restoration of the services required by Clause 4.15.7.6 shall be as short as practicable, except that for navigation aids and visual aids associated with non-precision, precision approach or take-off runways the requirements of Appendix 10 for maximum switch-over times shall apply.

4.15.8. **MAINTENANCE OF VISUAL AIDS**

4.15.8.1. 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 9. For light units where the designed main beam average intensity is above the value shown in Appendix 9, the 50 per cent value shall be related to that design value.

4.15.8.2. A system of preventive maintenance of visual aids shall be employed to ensure lighting and marking system reliability.

**Maintenance checks to be included**

4.15.8.3. The system of preventive maintenance employed for a precision approach runway category I shall include at least the following checks:

- a) control and measurement of the electrical characteristics of each circuitry included in the approach and runway lighting systems; and
- b) control of the correct functioning of light intensity settings used by air traffic control.

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

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

4.15.8.5. 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 9.

4.15.8.6. 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 analyze the characteristics of the individual lights.

4.15.8.7. 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.

**Maintenance objectives for lighting**

4.15.8.8. The system of preventive maintenance 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:

a) precision approach category I lighting system;
b) runway threshold lights;
c) runway edge lights; and
d) 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.

4.15.8.9. 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, (i.e. Cat I conditions), shall have as its objective that, during any period of operations, all runway lights are serviceable and that, in any event,

a) 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.

4.15.8.10. 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:

a) 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;
b) 90 per cent of the lights are serviceable in the touchdown zone lights;

c) 85 per cent of the lights are serviceable in the approach lighting system beyond 450 m; and

d) 75 per cent of the lights are serviceable in the runway end lights.

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.

4.15.8.11. The system of preventive maintenance 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 550 m, (i.e. Cat II or III conditions), shall have the following objectives:

a) no more than two lights will remain unserviceable; and

b) two adjacent lights will not remain unserviceable unless the light spacing is significantly less than that specified.

4.15.8.12. The system of preventive maintenance employed for a taxiway intended for use in runway visual range conditions less than a value of 550 m (i.e. Cat II or III conditions) shall have as its objective that no two adjacent taxiway centre line lights be unserviceable.

4.15.8.13. 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, (i.e. Cat II or III condition), shall have as its objective that, during any period of operations, all runway lights are serviceable and that in any event:

a) 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

b) 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.

4.15.9. Monitoring of Lighting Systems

4.15.9.1. A system of monitoring shall be employed to indicate the operational status of the lighting systems.

4.15.9.2. Where lighting systems are used for aircraft control purposes, such systems shall be monitored automatically so as to provide an indication of any fault which may affect the control functions. This information shall be automatically relayed to the aerodrome control tower.
Where a change in the operational status of lights has occurred, an indication shall be provided within two seconds for a stop bar at a runway-holding position and within five seconds for all other types of visual aids.

For a runway meant for use in runway visual range conditions less than a value of 550 m, the lighting systems detailed in Appendix 10 shall be monitored automatically so as to provide an indication when the serviceability level of any element falls below the minimum serviceability level specified. This information shall be automatically relayed to the maintenance crew.

For a runway meant for use in runway visual range conditions less than a value of 550 m, the lighting systems detailed in Appendix 10 shall be monitored automatically to provide an indication when the serviceability level of any element falls below the minimum level as specified below which operations shall not continue. This information shall be automatically relayed to the aerodrome control tower and displayed in a prominent position.

An Aerodrome Operator, who operates and maintains radio navigation aids, shall do so in accordance with the requirements of ICAO Annex 10 and, Doc 8071 Manual on Testing of Radio Navigation Aids.

The Aerodrome Operator shall:

a) Prevent the construction of facilities on the aerodrome that would adversely affect the operation of any electronic or visual navigation aid or air traffic service facility on the aerodrome; and

b) Prevent, as far as it is within the Aerodrome Operator’s authority, any interruption of visual or electronic signals of navigation aids.

An Aerodrome Operator shall provide obstacle limitation and obstacle protection surfaces in accordance with these Regulations as well as ICAO Doc 8168 PANS-OPS Volume II, taking into account the planned or intended mode of operation for the runway. These surfaces shall be agreed by the Authority.

An Aerodrome Operator shall remove and/or control obstacles within the specified surfaces. Responsibility for control of obstacles may be delegated to an Aerodrome Operator and/or municipality subject to an agreed and clearly defined set of criteria. In all cases criteria for the control of obstacles must be agreed in writing by the Authority.

Note: Guidance for the control of obstacles is contained in the ICAO Doc 9137 Airport Services Manual Part 6. Objects which penetrate the obstacle limitation surfaces may, in certain circumstances, cause an
increase in the obstacle clearance altitude/height for an instrument approach procedure or any associated visual circling procedure. Penetrations of the approach, transition or balked landing surfaces are not permitted for CAT III operations.

4.17.1.3. An Aerodrome Operator shall ensure that the runway and taxiway strip areas are free from obstacles or objects which are considered hazardous to aircraft operations unless required to be there for air navigation purposes.

4.18. AERODROME OPERATING APPROVALS

4.18.1. PAVEMENT AREAS AND AIRFIELD LIGHTING

An Aerodrome Operator shall prior to undertaking:

a) Extensions to pavement areas for use by aircraft; or

b) Installation of new aerodrome lighting including approach lighting system;

obtain a Letter of No Objection from the Authority prior to undertaking construction. The following documentation will normally be required for such a purpose:

a) Statement of operational objective;

b) Time scale for making the proposed changes;

c) Diagram/ drawing showing all relevant dimensions ;

d) Compliance statement against CAR Part IX specifications: This should be specific to (as applicable):

- Physical dimensions, strength and slopes
- Clearance distances
- Pavement markings, applicability, location and characteristics
- Signs, applicability, location and characteristics
- Airfield Lighting, applicability, location and characteristics
- Obstacle control – protection of obstacle limitation surfaces

e) Safety Plan for implementation of the works, including details of transition if applicable

f) Associated information, (list of proposed changes to the, AIP Aerodrome Manual and other Regulatory documents e.g. Airport Aviation Security Programme, Airport Emergency Plan, etc.)

Note:

Changes to the security perimeter (if any) will also require to be approved by the Authority prior to implementation, whether the changes are temporary or permanent.

4.18.1.1. An Aerodrome Operator shall obtain an Operational Approval from the Authority for changes to the aerodrome infrastructure as noted in the
preceding clause, prior to use by aircraft.

Note: Operational Approval will normally be subject to inspection by the Authority.

4.18.2. **CHANGES TO EQUIPMENT**

An Aerodrome Operator shall prior to undertaking:

a) Installation of new or replacement navigation aids;

b) Installation of new or replacement radar equipment;

c) Installation of new or replacement display monitors used for the purposes of controlling and/or assisting with the movement of aircraft;

obtain a Letter of No Objection from the Authority prior to issuing a Request for Proposal or Tender document for the said equipment. The following documentation will normally be required for such a purpose:

a) A statement of operational objective.

b) A statement of functional requirements.

c) Technical specifications of the equipment

d) Proposed time scale for implementation.

4.18.2.1. An Aerodrome Operator shall obtain an Operational Approval from the Authority for changes to the aerodrome infrastructure as noted in the immediately preceding clause, prior to its use.

The following additional documentation will normally be required for the purposes of gaining an Operational Approval:

a) Compliance statement against relevant ICAO and Standards and Recommended Practices as well as guidance material, and with UAE Civil Aviation Regulations.

b) Evidence of successful factory acceptance tests.

c) Evidence that the installation is in accordance with the manufacturer’s requirements and in compliance with applicable ICAO Standards and Recommended Practices as well as guidance material.

d) Evidence of successful site acceptance tests. This should record that the equipment has passed established criteria for the testing of the equipment; i.e. it meets the functional requirements.

e) Evidence of availability of manufacturer recommended tools and test equipment.

f) Evidence of stores held on site of manufacturer recommended spares.

g) Availability of maintenance documentation (O & M Manuals).

h) Availability of as built documentation relating to hardware and
software installation.

i) Evidence of maintenance procedures and schedules.

j) Evidence of sufficient trained and competent personnel to maintain the equipment.

k) Evidence that operational procedures have been developed.

l) A plan for transition.

m) A training and validation programme to ensure operational proficiency of ATC staff to operate the equipment.

n) List of required changes to operational procedure / regulatory manuals.

o) Results of calibration flights

p) Any additional documentation specified by the Authority at the time

4.18.3. CONSTRUCTION/ REFURBISHMENT OF AIR TRAFFIC CONTROL TOWERS

An Aerodrome Operator shall obtain a Letter of No Objection from the Authority prior to the construction or refurbishment of an aerodrome Air Traffic Control Tower.

An Operational Approval shall be obtained from the Authority prior to use of any new or refurbished facility.

4.19. MANAGING UNSAFE CONDITIONS

4.19.1. The Aerodrome Operator shall establish procedures for restricting aircraft operations where an unsafe condition exists on an aerodrome. The procedures shall ensure that operations are not conducted on portions of the aerodrome where an unsafe condition exists.

4.19.2. The Aerodrome Operator shall develop a safety plan for all development/maintenance works on the aerodrome

4.19.3. Unserviceability markers shall be displayed wherever any portion of a taxiway, apron or holding bay is unfit for the movement of aircraft but it is still possible for aircraft to bypass the area safely. On a movement area used at night, unserviceability lights shall be used.

4.19.4. Closure markings and unserviceability lights shall be displayed on a runway or taxiway, or portion thereof, which is closed to the use of all aircraft.

Such marking and lights may be omitted when the closure is of short duration and that adequate warning is provided by air traffic services.

When the area is temporarily closed, frangible barriers or markings utilising materials other than paint, or other suitable means may be used to identify a closed area
4.19.5. Lighting on a closed runway or taxiway or portion thereof shall not be operated, except as required for maintenance purposes, but under no circumstances shall such lighting be operated during low visibility operations.

4.20. SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEMS

4.20.1. A surface movement guidance and control system shall be provided at an aerodrome to assist in the prevention of inadvertent incursions of aircraft and vehicles onto an active runway and to assist in the prevention of collisions between aircraft, and between aircraft and vehicles or objects, on any part of the movement area.

4.20.2. The design of a surface movement guidance and control system shall take into account:

   a) the density of air traffic;
   b) the visibility conditions under which operations are intended;
   c) the need for pilot orientation;
   d) the complexity of the aerodrome layout; and
   e) movements of vehicles.

4.20.3. The visual aid components of a surface movement guidance and control system, i.e. markings, lights and signs shall be designed to conform with the relevant specifications in Appendices 9,11 and 12 respectively.

4.20.4. Where a surface movement guidance and control system is provided by selective switching of stop bars and taxiway centre line lights, the following requirements shall be met:

   a) taxiway routes which are indicated by illuminated taxiway centre line lights shall be capable of being terminated by an illuminated stop bar;
   b) the control circuits shall be so arranged that when a stop bar located ahead of an aircraft is illuminated, the appropriate section of taxiway centre line lights beyond it is suppressed; and
   c) the taxiway centre line lights are activated ahead of an aircraft when the stop bar is suppressed.

4.20.5. Where stopbars are installed at runway holding positions, these stopbars shall be operated when the taxiway lighting system is switched on, except when taxiway centreline lighting is not provided, the stopbars shall be operated when the runway lighting is switched on.

4.20.6. The runway and taxiway lighting system shall be operated in low ambient light or low visibility conditions, to assist the pilot with navigating on the aerodrome.
4.20.7. The Aerodrome Operator shall ensure that human factor and human machine interface issues are taken into account with design and implementation of the airfield lighting console in the aerodrome control tower. The number of key strokes/actions taken by the controller to operate the airfield lighting system and stopbars in particular shall be reduced to a minimum.

4.20.8. Surface movement radar for the manoeuvring area shall be provided at an aerodrome:
   a) intended for use in runway visual range conditions less than a value of 350 m or
   b) in the absence of visual observation of all or part of the manoeuvring area from an aerodrome control tower.

Surface movement radar, when provided shall be utilized to:

i. monitor the movements of aircraft and vehicles on the manoeuvring area;
ii. provide directional information to pilots and vehicle drivers as necessary; and
iii. provide advice and assistance for the safe and efficient movement of aircraft and vehicles on the manoeuvring area.

4.20.9. Surface movement radar for the manoeuvring area shall be provided at an aerodrome when traffic density and operating conditions are such that regularity of traffic flow cannot be maintained by alternative procedures and facilities.

4.21. LOW VISIBILITY OPERATIONS PLAN

4.21.1. An Airport Operator shall not permit aircraft to operate in visibility conditions below 550m RVR or where meteorological conditions do not permit ATS to be carried out with visual reference, unless a low visibility operations plan has been approved by the Authority.

4.21.2. During low visibility procedures the Aerodrome Operator shall restrict construction or maintenance activities in the proximity of aerodrome electrical systems.

4.21.3. APPROVALS FOR LOW VISIBILITY OPERATIONS

A comprehensive low visibility safety assessment shall be submitted to the Authority for approval. CAR Part VIII Chapter 16 outlines the requirements for consideration for such a safety case.

Note (1): - A multi disciplinary audit by the Authority will be conducted prior to approval of low visibility operations.

Note (2): – For operations in visibility conditions below 200m RVR, aircraft must be demonstrably controlled to the aircraft stand stopblock.
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4.22. APRON MANAGEMENT SERVICE

4.22.1. An appropriate apron management service shall be provided on an apron by the Aerodrome Operator, in order to:

   a) regulate movement with the objective of preventing collisions between aircraft, and between aircraft and obstacles;
   b) regulate entry of aircraft into, and coordinate exit of aircraft from, the apron with the aerodrome control tower; and
   c) ensure safe and expeditious movement of vehicles and appropriate regulation of other activities.

4.22.2. 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.

4.22.3. An apron management service shall be provided with radiotelephony communications facilities.

4.22.4. Where low visibility procedures are in effect, persons and vehicles operating on an apron shall be restricted to the essential minimum.

4.22.5. An emergency vehicle responding to an emergency shall be given priority over all other surface movement traffic.

4.22.6. A vehicle operating on an apron shall:

   a) give way to an aircraft taxiing, about to taxi, or being pushed or towed; and to an emergency vehicle.
   b) give way to other vehicles in accordance with local airport regulations.

4.22.7. An aircraft stand shall be visually monitored to ensure that the recommended clearance distances are provided to an aircraft using the stand.

4.23. AERODROME VEHICLE OPERATIONS

4.23.1. Roads located on the movement area shall be restricted to the exclusive use of aerodrome personnel and other authorised persons, and that access to the public buildings by an unauthorised person will not require use of such roads.

4.23.2. A vehicle shall be operated:

   a) on a manoeuvring area only as authorized by the aerodrome control tower; and
   b) on an apron only as authorized by the appropriate designated authority.
4.23.3. The driver of a vehicle on the movement area shall comply with all mandatory instructions conveyed by aerodrome markings and signs unless otherwise authorized by:

a) the aerodrome control tower when on the manoeuvring area; or

b) the appropriate designated authority when on the apron.

4.23.4. The driver of a vehicle on the movement area shall comply with all mandatory instructions conveyed by lights.

4.23.5. The driver of a vehicle on the movement area shall be appropriately trained (and where applicable qualified), for the tasks to be performed and shall comply with the instructions issued by:

a) the aerodrome control tower, when on the manoeuvring area; and

b) the appropriate designated authority, when on the apron.

Training will include, as appropriate to the drivers function, knowledge of:

a) the geography of the aerodrome;

b) aerodrome signs, markings and lights;

c) radiotelephone operating procedures;

d) terms and phrases used in aerodrome control including the ICAO phonetic alphabet;

e) rules of air traffic services as they relate to ground operations;

f) airport rules and procedures including for low visibility operations; and

g) specialist functions in the operation of the vehicle e.g. rescue fire fighting.

4.23.6. The driver of a radio-equipped vehicle shall establish satisfactory two-way radio communication with the aerodrome control tower before entering the manoeuvring area and with the appropriate designated authority before entering the apron. The driver shall maintain a continuous listening watch on the assigned frequency when on the movement area.

4.23.7. The vehicle operator shall be able to demonstrate competency, as appropriate, in:

a) the operation or use of vehicle transmit/receive equipment;

b) understanding and complying with air traffic control and local procedures;

c) vehicle navigation on the aerodrome; and
4.23.8. The driver of a vehicle on the movement area shall hold a UAE Driving Licence, be appropriately trained for the tasks to be performed and shall hold an Airport Driving Permit.

4.23.9. If special procedures apply for operations in low visibility conditions, the Aerodrome Operator shall verify a driver’s knowledge of such procedures through periodic checks and in any case at least annually.

**Ground servicing of aircraft**

4.23.10. While passengers are embarking, on board or disembarking and aircraft, ground equipment shall be positioned so as to allow:

   a) the use of a sufficient number of exits for expeditious evacuation; and
   
   b) a ready escape route from each of the exits to be used in an emergency.

**4.24. RESCUE AND FIRE FIGHTING**

4.24.1. Rescue and fire fighting equipment and services shall be provided at an aerodrome.

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

4.24.3. Public or private organisations, suitably located and equipped, may be designated to provide the rescue and fire fighting service. It is intended that the fire station housing these organisations be normally located on the aerodrome, although an off-aerodrome location is not precluded provided the response time can be met.

**Level of protection to be provided**

4.24.4. The level of protection provided shall be based upon the aerodrome category

The aerodrome category shall be determined from Table 4-3 and shall be based on the longest aeroplanes normally using the aerodrome and their fuselage width.

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 4-3, column 3 for that category, then the category for that aeroplane shall actually be one category higher

4.24.5. 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
Aerodrome Category for Rescue and Fire Fighting

<table>
<thead>
<tr>
<th>Aerodrome category</th>
<th>Aeroplane overall length</th>
<th>Maximum fuselage width</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0 m up to but not including 9 m</td>
<td>2 m</td>
</tr>
<tr>
<td>2</td>
<td>9 m up to but not including 12 m</td>
<td>2 m</td>
</tr>
<tr>
<td>3</td>
<td>12 m up to but not including 18 m</td>
<td>3 m</td>
</tr>
<tr>
<td>4</td>
<td>18 m up to but not including 24 m</td>
<td>4 m</td>
</tr>
<tr>
<td>5</td>
<td>24 m up to but not including 28 m</td>
<td>4 m</td>
</tr>
<tr>
<td>6</td>
<td>28 m up to but not including 39 m</td>
<td>5 m</td>
</tr>
<tr>
<td>7</td>
<td>39 m up to but not including 49 m</td>
<td>5 m</td>
</tr>
<tr>
<td>8</td>
<td>49 m up to but not including 61 m</td>
<td>7 m</td>
</tr>
<tr>
<td>9</td>
<td>61 m up to but not including 76 m</td>
<td>7 m</td>
</tr>
<tr>
<td>10</td>
<td>76 m up to but not including 90 m</td>
<td>8 m</td>
</tr>
</tbody>
</table>

**Extinguishing agents**

4.24.6. Both principal and complementary agents shall be provided at an aerodrome.

4.24.7. The principal extinguishing agent shall be a foam meeting the minimum performance level B.

Evidence of certification of the foam meeting performance level B, shall be obtained from the supplier and shall be maintained at the Fire Station.

4.24.8. The complementary extinguishing agent shall be a dry chemical powder suitable for extinguishing hydrocarbon fires.

The complementary agents shall comply with the appropriate specifications of the International Organization for Standardization (ISO).
Minimum usable amounts of extinguishing agents

<table>
<thead>
<tr>
<th>Aerodrome category</th>
<th>Foam meeting performance level B</th>
<th>Complementary agents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water(^1) (L)</td>
<td>Discharge rate foam solution/minute (L)</td>
</tr>
<tr>
<td>1</td>
<td>230</td>
<td>230</td>
</tr>
<tr>
<td>2</td>
<td>670</td>
<td>550</td>
</tr>
<tr>
<td>3</td>
<td>1,200</td>
<td>900</td>
</tr>
<tr>
<td>4</td>
<td>2,400</td>
<td>1,800</td>
</tr>
<tr>
<td>5</td>
<td>5,400</td>
<td>3,000</td>
</tr>
<tr>
<td>6</td>
<td>7,900</td>
<td>4,000</td>
</tr>
<tr>
<td>7</td>
<td>12,100</td>
<td>5,300</td>
</tr>
<tr>
<td>8</td>
<td>18,200</td>
<td>7,200</td>
</tr>
<tr>
<td>9</td>
<td>24,300</td>
<td>9,000</td>
</tr>
<tr>
<td>10</td>
<td>32,300</td>
<td>11,200</td>
</tr>
</tbody>
</table>

Note 1. — The quantities of water shown in column 4 are based on the average overall length of aeroplanes in a given category. Where operations of an aeroplane larger than the average size are expected, the quantities of water would need to be recalculated. See the Airport Services Manual, Part 1 for additional guidance.

Note 2. — Any other complementary agent having equivalent fire fighting capability may be used.

4.24.9. The amounts of water for foam production and the complementary agents to be provided on the rescue and fire fighting vehicles shall be in accordance with the aerodrome category and Table 4.4, except that:

a) for aerodrome categories 1 and 2 up to 100 per cent of the water may be replaced by complementary agent.

For the purpose of agent substitution, the following equivalents shall be used:

1 kg complementary agent = 0.66 L water for production of a foam meeting performance level B

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

4.24.11. The amount of foam concentrate provided on a vehicle shall be sufficient to produce at least two loads of foam solution.

4.24.12. The discharge rate of the foam solution shall not be less than the rates shown in Table 4-4.
4.24.13. The discharge rate of complementary agents shall be selected for optimum effectiveness of the agent.

4.24.14. A reserve supply of foam concentrate and complementary agent, equivalent to 200 per cent of the quantities of these agents to be provided in the rescue and fire fighting vehicles, shall be maintained on the aerodrome for vehicle replenishment purposes. Where a major delay in the replenishment of this supply is anticipated, the amount of reserve supply should be increased.

4.24.15. Supplementary water supplies, for the expeditious replenishment of rescue and fire fighting vehicles at the scene of an aircraft accident, shall be provided.

4.24.16. 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.

**Rescue and fire fighting vehicles**

4.24.17. The minimum number of rescue and fire fighting vehicles provided at an aerodrome should be in accordance with the following tabulation:

<table>
<thead>
<tr>
<th>Aerodrome category</th>
<th>Rescue and fire fighting vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note:*

*Guidance on minimum characteristics of rescue and fire fighting vehicles is given in the Airport Services Manual, Part I*

4.24.18. A system of preventive maintenance of rescue and fire fighting vehicles shall be employed to ensure effectiveness of the equipment and compliance with the specified response time throughout the life of the vehicle.
Rescue equipment commensurate with the level of aircraft operations shall be provided on the rescue and fire fighting vehicle(s).

*Note:*

*Guidance on the amount of equipment to be carried is contained in Airport Services Manual Part 1, Rescue and Fire Fighting.*

### Response Times

**4.24.20.** The rescue and firefighting service shall be able to achieve and consistently demonstrate response times of two minutes to the end of each runway, as well as to any other part of the movement area, in all conditions of visibility and surface conditions.

*Note:*

To meet the operational objective in conditions of less than optimum visibility, it may be necessary to provide guidance for rescue and fire fighting vehicles. This may include navigation equipment installed in the vehicle; thermal imaging or other image enhancement system; the provision of ground guidance instructions by radio telephone from the air traffic control tower based on surveillance radar and a collision avoidance facility either from equipment installed in the vehicles or provided by surveillance radar from air traffic control.

**4.24.21.** Response time is considered to be the time between the initial call to the rescue and fire fighting 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 4-4.

*Note:*

For the purposes of testing the timing will be taken from the end of transmission of the emergency message passed to the on airport Fire Station. (This does not include any readback that maybe required)

**4.24.22.** Any other vehicles required to deliver the amounts of extinguishing agents specified in Table 4-4 should arrive no more than one minute after the first responding vehicle(s) so as to provide continuous agent application.

### Emergency access roads

**4.24.23.** Emergency access roads shall be provided 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 1 000 m 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. In such circumstances crash gates shall be provided that comply with security provisions.

**4.24.24.** Emergency access roads shall be capable of supporting the heaviest
vehicles which will use them, and be usable in all weather conditions. Roads where constructed shall measure at least twice the axle width of the largest emergency vehicle anticipated to utilise the road. Roads within 90 m of a runway shall be surfaced to prevent surface erosion and the transfer of debris to the runway. Sufficient vertical clearance shall be provided from overhead obstructions for the largest vehicles.

4.24.25. When the surface of the road is indistinguishable from the surrounding area, edge markers shall be placed at intervals of about 10 m.

Fire stations

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

4.24.27. The fire station shall be located so that the access for rescue and fire fighting vehicles into the runway area is direct and clear, requiring a minimum number of turns.

Communication and alerting systems

4.24.28. A discrete communication system shall be provided linking a fire station with the aerodrome control tower, any other fire station on the aerodrome and the rescue and fire fighting vehicles.

4.24.29. An alerting system for rescue and fire fighting personnel, capable of being operated from that station, shall be provided at a fire station, any other fire station on the aerodrome and the aerodrome control tower.

4.24.30. A means of quickly summoning the rescue and fire fighting service in the event of a fire or major fuel spill shall be available on the apron areas.

Personnel

4.24.31. All rescue and fire fighting personnel shall meet the medical standards as described in Appendix 14 of these Regulations.

4.24.32. All rescue and fire fighting personnel shall be properly trained to perform their duties in an efficient manner and shall participate in live fire drills commensurate with the types of aircraft and type of rescue and fire fighting equipment in use at the aerodrome, including pressure-fed fuel fires.

Note 1: Guidance to assist the Airport Authority in providing proper training is given in Attachment A, Section 17 of ICAO Annex 14 Vol 1; Airport Services Manual, Part 1; and Training Manual, Part E-2.

Note 2: Fires associated with fuel discharged under very high pressure from a ruptured fuel tank are known as “pressure-fed fuel fires”.

4.24.33. The rescue and fire fighting personnel training programme shall include
training in human performance, including team coordination.

Note:

Guidance material to design training programmes on human performance and team coordination can be found in ICAO Circular 216 (Human Factors Digest No.1 – Fundamental Human Factors Concepts) and Circular 227 (Human Factors Digest No. 3 – Training of Operational Personnel in Human Factors).

4.24.34. During flight operations, sufficient trained personnel shall be detailed and be readily available to ride the rescue and fire fighting vehicles and to operate the equipment at maximum capacity. These trained 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 fire fighting equipment normally associated with aircraft rescue and fire fighting operations.

4.24.35. The types of aircraft using the aerodrome shall be taken into account when determining the number of personnel required to provide for rescue.

4.24.36. All responding rescue and fire fighting personnel shall be provided with protective clothing and respiratory equipment to enable them to perform their duties in an effective manner.

4.25. AERODROME EMERGENCY PLAN

4.25.1. An Aerodrome Emergency Plan shall be established at an aerodrome, commensurate with the aircraft operations and other activities conducted at the aerodrome.

4.25.2. The Aerodrome Emergency Plan shall provide for the coordination of actions to be taken in an emergency occurring at an aerodrome or in its vicinity.

4.25.3. The plan shall observe Human Factors principles to ensure optimum response by all existing agencies participating in emergency operations.

4.25.4. The Aerodrome Emergency Plan shall coordinate the response or participation of all existing agencies, which, could be of assistance in responding to an emergency.

The Aerodrome Emergency Plan shall, where applicable, include coordinating actions for, at least, the following agencies on the aerodrome:

a) air traffic services unit;

b) rescue and fire fighting services;
c) aerodrome administration;
d) aircraft operators;
e) security services and police.

4.25.5. The Aerodrome Emergency Plan shall, where applicable, include coordinating actions for at least the following off aerodrome agencies:

a) civil defense;
b) police, medical and ambulance services;
c) hospitals;
d) military and coast guard (where applicable).

4.25.6. The Aerodrome Emergency Plan shall provide for cooperation and coordination with the Search and Rescue Coordination Centres, as necessary.

Note:

In the UAE initial notification for Search and Rescue shall be to the Authority’s Area Control Centre Supervisor based in Abu Dhabi.

The Area Control Centre will coordinate with:

- Dubai Police – for the Northern Emirates and
- Military GHQ – for Abu Dhabi Emirate

4.25.7. The Aerodrome Emergency Plan shall for security related occurrences, reference the Airport Security Programme and where necessary, the UAE National Civil Aviation Security Programme. Any response actions to security related emergencies contained in the Aerodrome Emergency Plan, shall be coordinated and consistent with the Airport Security Programme.

4.25.8. The Aerodrome Emergency Plan document shall include the following:

a) types of emergencies planned for;
b) agencies involved in the plan (both on and off the aerodrome), along with their telephone numbers, and notification procedures;
c) responsibility and role of each agency, the Emergency Operations Centre and the Command Post, for each type of emergency;
d) a clearly specified commander and chain of authority for each emergency specified, covering all phases of the emergency;
e) information on names and telephone numbers of offices or people to be contacted in the case of a particular emergency;
f) a list of pertinent on and off aerodrome services available
with telephone numbers and contact persons;
g) copies of Memoranda of Understanding (MOUs) or agreements with other agencies for mutual aid and the provision of emergency services; and,
h) a grid map of the aerodrome and its immediate vicinity.

4.25.9. The Aerodrome Emergency Plan shall include response procedures for at least the following types of emergencies:

a) aircraft emergencies; local standby, full emergency, aircraft crash on & off airport, ground incident.
b) security related emergencies; unlawful seizure of aircraft, sabotage including bomb threats to aircraft and airport facilities;
c) dangerous goods occurrences;
d) building fires
e) natural disasters.
f) medical emergencies.

4.25.10. A grid map of the aerodrome and immediate vicinity shall be provided to the emergency response vehicle(s) normally providing first emergency response.

4.25.11. **Emergency Operations Centre and Command Post**
A fixed emergency operations centre and a mobile command post shall be available for use during an emergency

4.25.11.1. The emergency operations centre shall be a part of the aerodrome facilities and shall be responsible for the overall coordination and general direction of the response to an emergency

4.25.11.2. The command post shall be a facility capable of being moved rapidly to the site of an emergency, when required, and shall undertake the local coordination of those agencies responding to the emergency.

4.25.11.3. The Aerodrome Operator shall assign a person to assume control of the emergency operations centre and, when appropriate, another person the command post

4.25.11.4. Adequate communication systems linking the command post and the emergency operations centre with each other and with the participating agencies shall be provided in accordance with the plan and consistent with the particular requirements of the aerodrome

4.25.12. **Aerodrome Emergency Exercise**
The aerodrome emergency response plan shall contain procedures for periodic testing of the adequacy of the plan and for reviewing the results in order to improve its effectiveness. The plan shall include all participating agencies and associated resources.
4.25.12.1. The aerodrome emergency response plan shall be tested by conducting:
   
a) a full-scale aerodrome emergency exercise at intervals not exceeding two years; and

   b) partial emergency exercises in the intervening year to ensure that any deficiencies found during the full-scale aerodrome emergency exercise have been corrected; and reviewed thereafter, or after an actual emergency, so as to correct any deficiency found during such exercises or actual emergency.

   *Note:*
   
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.

4.25.12.2. At those aerodromes located close to water and or difficult terrain, the aerodrome emergency plan shall include the establishment, testing and assessment at regular intervals of a pre-determined response for the specialist rescue services.

4.26. **DISABLED AIRCRAFT REMOVAL PLAN**

4.26.1. A plan for the removal of an aircraft disabled on, or adjacent to, the movement area at the aerodrome shall be developed by the Aerodrome Operator in consultation with aircraft owners and operators, and a coordinator designated to implement the plan, when necessary.

4.26.2. All major users of the aerodrome shall be informed of the preparations and capabilities contained within the disabled aircraft removal plan. The designated coordinator shall be made known to all aircraft owners and operators.

4.26.3. 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:

   a) a list of equipment and personnel on, or in the vicinity of, the aerodrome which would be available for such purpose;

   b) arrangements for the rapid receipt of aircraft recovery equipment kits available from other aerodromes;

   c) a list of nominated agents acting on behalf of each aircraft operator at the aerodrome;

   d) a statement of the aircraft operator arrangements for the use of pooled specialist equipment; and

   e) a list of local contractors (with contacts and telephone numbers)
with suitable removal equipment for hire.

4.27. **WILDLIFE HAZARD MANAGEMENT PLAN**

4.27.1. An Aerodrome Operator shall where any wildlife presents a hazard to aircraft operations at their aerodrome, in areas within their authority, establish an environmental management programme to minimize or eliminate any such wildlife hazard.

**Bird hazard reduction**

4.27.2. A bird strike hazard on, or in the vicinity of, an aerodrome shall be assessed through the collection of information from aircraft operators, airport personnel, etc. on the presence of birds on or around the aerodrome constituting a potential hazard to aircraft operations.

*Note: Guidance on effective measures for establishing whether or not birds, on or in the vicinity of an aerodrome, constitute a potential hazard to aircraft operations, and on methods for discouraging their presence, is given in the Airport Services Manual Part 3 – Bird Control and Reduction.*

4.27.3. When a bird strike hazard is identified at an aerodrome, the Aerodrome Operator shall take action to decrease the number of birds constituting a potential hazard to aircraft operations by adopting measures for discouraging their presence on, or in the vicinity of, an aerodrome.

4.27.4. The Aerodrome Operator shall take action to eliminate or to prevent the establishment of garbage disposal dumps or any such other source attracting bird activity on, or in the vicinity of, an aerodrome, unless an aeronautical study indicates that they are unlikely to create conditions conducive to a bird hazard problem.

4.27.5. **Bird strike reporting**

In the event of a bird strike, the Bird Strike Occurrence Report form (Appendix 18) shall be completed and submitted (as soon as possible) to the Director Air Navigation Services, General Civil Aviation Authority, PO Box 6558, Abu Dhabi, UAE.

4.28. **AVIATION SECURITY**

An Aerodrome Operator shall in addition to meeting the obligations required of this Civil Aviation Regulation, satisfy the requirements of Civil Aviation Regulation Part VII, The National Civil Aviation Security Programme, and operate in accordance with the procedures stipulated in the Airport Security Programme.

**Fencing**

4.28.1. A fence or other suitable barrier shall be provided on an aerodrome to prevent the entrance to the movement area of animals large enough to be
a hazard to aircraft, or to deter the inadvertent or premeditated access of an unauthorized person onto a non-public area of the aerodrome.

The fence or barrier shall be located so as to separate the movement area and other facilities or zones on the aerodrome vital to the safe operation of aircraft from areas open to public access.

4.28.2. Suitable means of protection shall be provided to deter the inadvertent or premeditated access of unauthorized persons into ground installations and facilities essential for the safety of civil aviation located off the aerodrome.

Access to the Aerodrome

4.28.3. Personnel authorised by the Authority may inspect and carry out tests on the aerodrome facilities, services and equipment, inspect Aerodrome Operator’s documents and records and verify the Aerodrome Operator’s safety management system before the aerodrome licence is granted or renewed, and subsequently, at any other time, for the purpose of ensuring safety and order at the aerodrome.

4.28.4. An Aerodrome Operator shall issue permanent security passes to personnel authorised by the Authority to enable access to any part of the aerodrome or any aerodrome facility including, but not limited to, aircraft, tenant company premises, equipment, records, documents and operator’s personnel for the purpose referred to in Clause 4.28.3

4.28.5. The Aerodrome Operator shall cooperate in conducting the activities referred to in Clause 4.28.3

Photography on the Aerodrome

4.28.6. Personnel authorised by the Authority may take photographs of the aerodrome facilities and equipment, for licensing, audit and approval purposes.

4.28.7. An Aerodrome Operator shall issue photography permits/authorisation to personnel authorised by the Authority.

4.29. WARNING NOTICES

Where 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 notices warning of the hazard on any public way 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 there is a hazard.

4.29.1. Where navigation aids are installed, signs warning of hazardous microwave radiation shall be erected by the Aerodrome Operator where
appropriate.