
CHAPTER 9. AERODROME OPERATIONAL SERVICES, EQUIPMENT AND INSTALLATIONS

9.1 Aerodrome emergency planning

General

Note. - Aerodrome emergency planning is the process of preparing an aerodrome to cope with an emergency occurring at the aerodrome or in its vicinity. The objective of aerodrome emergency planning is to minimize the effects of an emergency, particularly in respect of saving lives and maintaining aircraft operations. The aerodrome emergency plan sets forth the procedures for coordinating the response of different aerodrome agencies (or services) and of those agencies in the surrounding community that could be of assistance in responding to the emergency. Guidance material to assist the appropriate authority in establishing aerodrome emergency planning is given in the Airport Services Manual, Part 7.

9.1.1 An aerodrome emergency plan shall be established at an aerodrome, commensurate with the aircraft operations and other activities conducted at the aerodrome.

9.1.2 The aerodrome emergency plan shall provide for the coordination of the actions to be taken in an emergency occurring at an aerodrome or in its vicinity.

Note: - **Examples of emergencies are:** aircraft emergencies, sabotage including bomb threats, unlawfully seized aircraft, dangerous goods occurrences, building fires and natural disasters.

9.1.3 The plan shall coordinate the response or participation of all existing agencies which, in the opinion of the appropriate authority, could be of assistance in responding to an emergency.

Note: - Examples of agencies are:

on the aerodrome: air traffic control unit, rescue and fire fighting services, aerodrome administration, medical and ambulance services, aircraft operators, security services, and police;

off the aerodrome: fire departments, city Nazims/civil administration, police, medical and ambulance services, hospitals, military, and harbour patrol or coast guard.

9.1.4 The plan shall provide for cooperation and coordination with the rescue coordination centre, as necessary.

- 9.1.5 The aerodrome emergency plan document shall include at least the following:
- a) Types of emergencies planned for;
 - b) Agencies involved in the plan;
 - c) Responsibility and role of each agency, the emergency operations centre and the command post, for each type of emergency;
 - d) Information on names and telephone numbers of offices or people to be contacted in the case of a particular emergency, and
 - e) A grid map of the aerodrome and its immediate vicinity.

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

Note: - Guidance material on Human Factors principles can be found in the Human Factors Training Manual.

Emergency operations centre and command post

- 9.1.7 A fixed emergency operations centre and a mobile command post shall be available for use during an emergency.
- 9.1.8 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.
- 9.1.9 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.
- 9.1.10 A person shall be assigned to assume control of the emergency operations centre and when appropriate, another person the command post.

Communication system

- 9.1.11 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.

Aerodrome emergency exercise

- 9.1.12 The plan shall contain procedures for periodic testing of the adequacy of the plan and for reviewing the results in order to improve its effectiveness.

Note: - The plan includes all participating agencies and associated equipment.

- 9.1.13 The 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.

Emergencies in difficult environments

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

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

- 9.2 Rescue and fire fighting (**See Chapter 2, Para 2.16**)

- 9.3 Disabled aircraft removal (**See Chapter 2, Para 2.15**)

9.4 Bird hazard reduction

9.4.1 The bird strike hazard on, or in the vicinity of an aerodrome shall be assessed through:

- a) the establishment of a national procedure for recording and reporting bird strikes to aircraft; and
- b) the collection of information from aircraft operators, airport personnel, etc. on the presence of birds on or around the aerodrome.

Note; - see Annex –15,Chapter-8.

9.4.2 **Recommendation:** - Bird strike reports should be collected and forwarded to ICAO for inclusion in the ICAO Bird strike Information System (IBIS) database.

Note: - The is designed to collect and disseminate information on bird strikes to aircraft. Information on the system is included in the Manual on the ICAO Bird Strike Information System (IBIS).

9.4.3 When a bird strike hazard is identified at an aerodrome, the appropriate authority 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.

Note: - Guidance on effective measures for establishing whether or not birds, on or near 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.

9.4.4 Garbage disposal dumps or any such other source attracting bird activity on, or in the vicinity of; an aerodrome shall be eliminated or their establishment prevented, unless an appropriate study indicates that they are unlikely to create conditions conducive to a bird hazard problem.

Note: - Due consideration needs to be given to airport operators' concerns related to land developments close to the airport boundary that may attract birds/wildlife.

9.5 Apron management service

9.5.1 When warranted by the volume of traffic and operating conditions, an appropriate apron management service shall be provided on an apron by an aerodrome ATS unit, by another aerodrome operating authority, or by a cooperative combination of these, in order to:

- 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.

9.5.2 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.

Note :- Guidance on an apron management service is given in the Airport Services Manual, Part 8 and in the Manual of Surface Movement Guidance and Control Systems (SMGCS).

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

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

Note: - Guidance on related special procedures is given in the Manual of Surface Movement Guidance and Control Systems (SMGCS).

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

9.5.6 A vehicle operating on an apron shall:

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

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

9.6 Ground servicing of aircraft

9.6.1 Fire extinguishing equipment suitable for at least initial intervention in the event of a fuel fire and personnel trained in its use shall be readily available during the ground servicing of an aircraft, and there shall be a means of quickly summoning the rescue and fire fighting service in the event of a fire or major fuel spill.

9.6.2 When aircraft refueling operations take place while passengers are embarking, on board or disembarking, 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.

9.7 Aerodrome vehicle operations

Note: - 1 Guidance on aerodrome vehicle operation is contained in Attachment A, section 17 and on traffic rules and regulations for vehicles contained in the Manual of Surface Movements Guidance and Control System (SMGCS).

Note: - 2 It is intended that roads located on the movement area be restricted to the exclusive use of the aerodrome personnel and other authorized persons, and that access to the public buildings by an authorized person will not require use of such roads.

9.7.1 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.

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

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

9.7.4 The driver of a vehicle on the movement area shall be appropriately trained 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.

9.7.5 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.

9.8 Surface movement guidance and control systems

Application

9.8.1 A surface movement guidance and control system shall be provided at an aerodrome.

Note: - Guidance on sulfate movement guidance and control systems is contained in the Manual of Surface Movement Guidance and Control Systems (SMGCS).

Characteristics

9.8.2 The design of a sulfate 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.

9.8.3 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 5.2, 5.3 and 5.4, respectively.

9.8.4 A surface movement guidance and control system shall be designed to assist in the prevention of inadvertent incursions of aircraft and vehicles onto an active runway.

9.8.5 The system shall be designed to assist in the prevention of collisions between aircraft, and between aircraft and vehicles or objects, on any part of the movement area.

Note: - Guidance on control of stop bars through induction loops and on a visual taxiing guidance and control system is contained in the Aerodrome Design Manual, Part 4.

9.8.6 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.

Note 1: - See Sections 5.3.16 and 5.3.19 for specifications on taxiway centre line lights and stop bars, respectively.

Note 2: - Guidance on installation of stop bars and taxiway centre line lights in sulfate movement guidance and control systems is given in the Aerodrome Design Manual, Part 4.

9.8.7 Surface movement radar for the manoeuvring area shall be provided at an aerodrome intended for use in runway visual range conditions less than a value of 350 m.

9.8.8 Surface movement radar for the manoeuvring area shall be provided at an aerodrome other than that in 8.9.7 when traffic density and operating conditions are such that regularity of traffic flow cannot be maintained by alternative procedures and facilities.

Note: - Guidance on the use of surface movement radar is given in the Manual of Surface Movement Guidance and Control Systems (SMGCS) and in the Air Traffic Services Planning Manual (Doc 9426).

9.9 **Siting and of equipment and installations on operational areas**

Note 1: - Requirements for obstacle limitation surfaces are specified in 4.2.

Note 2: - The design of light fixtures and their supporting structures, light units of visual approach slope indicators, signs, and markers, is specified in 5.3. 1, 5.3.5, 5.4.1 and 5.5.1, respectively. Guidance on the frangible design of visual and non-visual aids for navigation is given in the Aerodrome Design Manual, Part 6 (in preparation).

- 9.9.1 Unless its function requires it to be there for air navigation purposes, no equipment or installation shall be:
- a) on a runway strip, a runway end safety area, a taxiway strip or within the distances specified in Table 3-1, column 11, if it would endanger an aircraft; or
 - b) on a clearway if it would endanger an aircraft in the air.

- 9.9.2 Any equipment or installation required for air navigation purposes which must be located:

- a) on that portion of a runway strip within:
 - 1) 75 m of the runway centre line where the code number is 3 or 4; or
 - 2) 45 m of the runway centre line where the code number is 1 or 2; or
- b) on a runway end safety area, a taxiway strip or within the distances specified in Table 3-I; or
- c) on a clearway and which would endanger an aircraft in the air;

shall be frangible and mounted as low as possible.

- 9.9.3 Existing non-visual aids need not meet the requirement of 9.9.2 **until 1st January 2010.**

- 9.9.4 Any equipment or installation required for air navigation purposes which must be located on the non-graded portion of a runway strip shall be regarded as an obstacle and shall be frangible and mounted as low as possible.

Note: - Guidance on the sitting of navigation aids is contained in the Aerodrome Design Manual, Part 6 (in preparation).

- 9.9.5 Unless its function requires it to be there for air navigation purposes, no equipment or installation shall be located within 240 m from the end of the strip and within:

- a) 60 m of the extended centre line where the code number is 3 or 4; or
- b) 45 m of the extended centre line where the code number is 1 or 2;

of a precision approach runway category I, II or III.

- 9.9.6 Any equipment or installation required for air navigation purposes which must be located on or near a strip of a precision approach runway category I, II or III and which:
- a) is situated on that portion of the strip within 77.5 m of the runway centre line where the code number is 4 and the code letter is F: or
 - b) is situated within 240 m from the end of the strip and within:
 - 1) 60 m of the extended runway centre line where the code number is 3 or 4; or
 - 2) 45 m of the extended runway centre line where the code number is 1 or 2; or
 - c) penetrates the inner approach surface, the inner transitional surface or the balked landing surface;

shall be frangible and mounted as low as possible.

- 9.9.7 Existing non-visual aids need not meet the requirement of 9.9.6 (b) until 1st January 2010.

Note: - See 5.3.1.5 for the protection date for existing elevated approach lights.

- 9.9.8 Any equipment or installation required for air navigation purposes which is an obstacle of operational significance in accordance with 4.2.4, 4.2. 11, 4.2.20 or 4.2.27 shall be frangible and mounted as low as possible.

9.10 Fencing

Application

- 9.10.1 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.
- 9.10.2 A fence or other suitable barrier shall be provided on an aerodrome to deter the inadvertent or premeditated access of an unauthorized person onto a non-public area of the aerodrome.

Note 1: - This is intended to include the barring of sewers, ducts, tunnels, etc., where necessary to prevent access.

Note 2: - Special measures may be required to prevent the access of an unauthorized person to runways or taxiways which overpass public roads.

- 9.10.3 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.

Location

- 9.10.4 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.
- 9.10.5 When greater security is thought necessary, a cleared area shall be provided on both sides of the fence or barrier to facilitate the work of patrols and to make trespassing more difficult. Consideration shall be given to the provision of a perimeter road inside the aerodrome fencing for the use of both maintenance personnel and security patrols.

9.11 Security lighting

- 9.11.1 At an aerodrome where it is deemed desirable for security reasons, a fence or other barrier provided for the protection of international civil aviation and its facilities shall be illuminated at a minimum essential level. Consideration shall be given to locating lights so that the ground area on both sides of the fence or barrier, particularly at access points, is illuminated.

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