



Civil Aviation Authority

# GUIDANCE MATERIAL FOR RESCUE & FIREFIGHTING SERVICES

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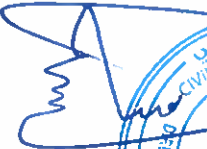
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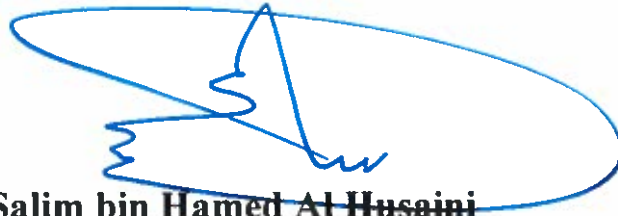
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## Forward

This guidance focuses on Inspection and Testing of Rescue and Fire Fighting Equipment prior to bring into operation or when there have been substantial changes to existing installation as per CAR-139 (Part1-Chapter-9)., maintenance, testing and inspection of (RFF) equipment's, are prerequisites for the safety, regularity, and efficiency of civil aviation. To this end, this material provides guidance on how to inspect and test this equipment.

The guidance material is intended to provide recommendations and guidance to illustrate a means but not necessarily the only means of complying with the Regulations, or to explain certain regulatory requirements by providing interpretative and explanatory material. This guidance material shall always be read in conjunction with the referenced regulations.

This manual is effective from 10 September 2022.



**Salim bin Hamed Al Husaini**

**Acting Director General of Civil Aviation Regulation**



## **1. INTRODUCTION**

The principal objective of a RFFS is to save lives at an aircraft accident/incident. For this reason, the provision of means of dealing with an aircraft accident or incident occurring at, or in the immediate vicinity of, an aerodrome assumes primary importance because it is within this area that there are the greatest opportunities of saving lives. This must always assume the possibility of, and need for, extinguishing a fire which may occur either immediately following an aircraft accident or incident, or at any time during rescue operations.

The most important factors bearing on effective rescue in a survivable aircraft accident are the training received, the effectiveness of the equipment and the speed with which personnel and equipment designated for rescue and firefighting purposes can be put into use.

## **2. APPLICABILITY**

The Aerodrome Operator shall provide the necessary aircraft fire- fighting vehicles, equipment and personnel that is commensurate with the RFFS category published in the Aeronautical Information Publication (AIP)

Where an aerodrome is located close to water or swampy areas or difficult terrain, and where a significant portion of approach or departure operations takes place over these areas, the Aerodrome Operator shall conduct a risk assessment as part of the Task and Resource Analysis (TRA) to determine if any specialist rescue services and fire- fighting equipment appropriate to the hazard and risk needs to be provided. The Aerodrome Operator must have procedures to deal with aircraft incidents that occur in these areas. These procedures must be acceptable to the CAA.

*Note: Additional guidance on difficult environs is available in ICAO Airport Services Manual Doc 9137, Part 1.*

## **3. REFERENCES**

- CAR 139
- Annex 14 Volume I – Aerodromes (Eighth Edition July 2018)
- ICAO Doc 9137 – Airport Services Manual, Part 1 - Rescue and Firefighting (fourth edition 2015)

## **4. LEVEL OF PROTECTION TO BE PROVIDED**

The level of protection provided at an aerodrome for rescue and firefighting shall be appropriate to the aerodrome category determined using the principles below, except that, where the number



of movements of aircraft in the highest category normally using the aerodrome is less than 700 in the busiest consecutive three months, the level of protection provided shall be not less than one category below the determined category if approved by CAA.

*Note: A movement is either a take-off or landing.*

The aerodrome category shall be determined from Table 1 and shall be based on the longest aircraft normally using the aerodrome and their maximum fuselage width.

*Note: To determine the RFF category for aircraft using the aerodrome, first evaluate the overall length and second, the fuselage width.*

If, after selecting the category appropriate to the longest aircrafts' overall length, that the aircraft fuselage width is greater than the maximum width shown in Table 1, then the category for that aircraft shall actually be one category higher.

*Note: Additional guidance is available in ICAO Airport Services Manual Doc 9137, Part 1.*

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

**Table 1 - Aerodrome Category for RFFS**

<b>Aerodrome Category</b>	<b>Aircraft Overall Length</b>	<b>Maximum Fuselage Width</b>
1	0 m up to but not including 9 m	2m
2	9 m up to but not including 12 m	2m
3	12 m up to but not including 18 m	3m
4	18 m up to but not including 24 m	4m
5	24 m up to but not including 28 m	4m
6	28 m up to but not including 39 m	5m
7	39 m up to but not including 49 m	5m
8	49 m up to but not including 61 m	7m
9	61 m up to but not including 76 m	7m
10	76 m up to but not including 90 m	8m

## 5. EXTINGUISHING AGENT

The Aerodrome Operator shall provide a combination of both principal and complementary extinguishing agents at an aerodrome shown in Table 2.

**Table 2 – RFFS Minimum Extinguishing Agents**

Aerodrome category (1)	Foam meeting performance level A		Foam meeting performance level B		Foam meeting performance level C		Complementary agents	
	Water (L) (2)	Discharge rate foam solution minute (L) (3)	Water (L) (4)	Discharge rate foam solution minute (L) (5)	Water (L) (6)	Discharge rate foam solution minute (L) (7)	Dry chemical powders (kg) (8)	Discharge Rate (kg/second) (9)
1	350	350	230	230	160	160	45	2.25
2	1 000	800	670	550	460	360	90	2.25
3	1 800	1 300	1 200	900	820	630	135	2.25
4	3 600	2 600	2 400	1 800	1 700	1 100	135	2.25
5	8 100	4 500	5 400	3 000	3 900	2 200	180	2.25
6	11 800	6 000	7 900	4 000	5 800	2 900	225	2.25
7	18 200	7 900	12 100	5 300	8 800	3 800	225	2.25
8	27 300	10 800	18 200	7 200	12 800	5 100	450	4.5
9	36 400	13 500	24 300	9 000	17 100	6 300	450	4.5
10	48 200	16 600	32 300	11 200	22 800	7 900	450	4.5

*Note: Descriptions of both principal and complementary agents may be found in the ICAO Airport Services Manual (Doc 9137) Part 1.*

The principal extinguishing agents shall be:

- a foam meeting the minimum performance level type A;
- a foam meeting the minimum performance level type B;
- a foam meeting the minimum performance level type C; or
- a combination of these agents.

Except that the principal extinguishing agent for aerodromes in categories 1 to 3 shall meet performance level type B or C foam.

*Note: Information on the required physical properties and fire extinguishing performance criteria needed for a foam to achieve an acceptable performance level A, B or C rating is given in the ICAO Airport Services Manual (Doc 9137), Part 1.*

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

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

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

The amounts of water for foam production and the complementary agents to be provided on the rescue and firefighting vehicles shall be in accordance with the aerodrome category determined under sections Table 1 and Table 2 of this Part, except that for aerodrome of categories 1 and 2 up to 100 per cent of the water may be substituted with complementary agent; or

For the purpose of agent substitution, 1 kg of complementary agent shall be taken as equivalent to 1.0L

*Note 1: The amounts of water specified for foam production are predicated on an application rate of 8.2 L/min/m<sup>2</sup> for a foam meeting performance level A, 5.5 L/min/m<sup>2</sup> for a foam meeting performance level B and 3.75L/min/m<sup>2</sup> for foam meeting performance Level C.*

*Note 2: When any other complementary agent is used, the substitution ratios need to be checked.*

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

Note: Guidance on the determination of quantities of water and discharge rates based on the largest overall length of aircraft in a given category is available in Chapter 2 of the Airport Services Manual (Doc 9137), Part 1.

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

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

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

The discharge rate of the foam solution shall not be less than the rates shown in Table 2.

The complementary agents shall comply with the appropriate specifications of the International Organization for Standardization.

The discharge rate of complementary agents shall be not less than the value shown in Table 2.

A reserve supply of foam concentrate, equivalent to 200 per cent of the quantities identified in Table 2, should be maintained on the aerodrome for vehicle replenishment purposes.

Note: Foam concentrate carried on fire vehicles in excess of the quantity identified in Table 2 can contribute to the reserve.

A reserve supply of complementary agent, equivalent to 100 per cent of the quantity identified in Table 2, should be maintained on the aerodrome for vehicle replenishment purposes. Sufficient propellant gas should be included to utilize this reserve complementary agent.

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

Where a major delay in the replenishment of the supplies is anticipated, the amount of reserve supply should be increased as determined by a risk assessment.

*Note: See Airport Services Manual (Doc 9137), Part 1 for guidance on the conduct of a risk analysis to determine the quantities of reserve extinguishing agents.*

## **6. RFFS PERSONNEL**

The Aerodrome Operator shall appoint a competent person to establish and effectively manage all aspects of Rescue and Firefighting Operations.

Minimum staffing levels for all RFFS Categories operated by an aerodrome shall be agreed with the Authority and promulgated in the Aerodrome Manual.

Sufficient competent personnel shall be readily available to respond and operate the RFFS equipment at maximum capacity. These personnel shall be deployed in a way that ensures that response objectives shall be achieved and that continuous agent application at the appropriate rate(s) shall be fully maintained.

When RFFS personnel designated as part of the operational duty fire crew are engaged on extraneous duties (Sweeping, Wildlife Hazard Control, and surface Inspections, etc.) they shall be capable of meeting response times whilst carrying out those duties. No extraneous duty should create conditions likely to affect individual or crew performance or introduce additional hazards.

At all aerodromes the minimum number of personnel designated shall be assessed by the Aerodrome Operator. In determining the minimum number of rescue and firefighting personnel, a Task Resource Analysis (TRA) shall be conducted and completed for acceptance by the Authority. Further guidance on completing a TRA can be found in ICAO Doc 9137 – Part 1

When conducting the TRA the following shall be taken into account:

- The types of aircraft using the aerodrome;
- Response times;
- Type, design, capacity and discharge rate of appliances to be deployed;
- The need for the rescue of aircraft occupants;
- The need to operate ladders, breathing apparatus, and rescue equipment;
- The availability of water supplies;
- The speed and scale of response of any mutual aid agency;
- The competency levels of all RFFS staff.

Consideration shall also be given for personnel to use hand lines, ladders and other rescue and firefighting equipment normally associated with aircraft rescue and firefighting operations.

The agreed minimum staffing level shall not be reduced without an assessment being conducted and forwarded, in writing, to the Authority for acceptance.

The minimum level of staffing of the aerodrome RFFS shall include an adequate number of competent supervisors and managers reflecting the appropriate command structure. In assessing the level of personnel proposed, the aerodrome shall take account of the supervisors' and managers' competence in the role(s) and tasks applicable to their position.

Each operational fire appliance shall have a designated supervisor on board when responding.

If the Authority considers that minimum staffing levels provided are inappropriate for the level of aircraft operation or where an assessment is unacceptable to the Authority, it will assess and set the minimum staffing level based on the criteria set out above. This would include the supervisory grades.

## 7. RESPONSE TIME

The operational objective of the RFFS should be to achieve response times of two minutes and not exceeding three minutes to the end of each runway, as well as to any other part of the movement area, in optimum conditions of visibility and surface conditions.

*Note: Optimum visibility and surface conditions are defined as daytime, good visibility, no precipitation with normal response route free of surface contamination e.g., water.*

Response time is considered to be the time between the initial call to the RFFS and the time when the first responding vehicle(s) is (are) in position to apply foam at a rate of at least 50 percent of the discharge rate specified in Table 2. Consideration of response times should also be given to landing and take-off areas for the exclusive use of helicopters.

Any other vehicles required to deliver the amounts of extinguishing agents specified in Table 2 should arrive in three minutes and no more than four minutes from the initial call so as to provide continuous agent application.

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

A system of preventive maintenance of RFFS vehicles shall be employed to ensure effectiveness of the equipment and compliance with the specified response time throughout the life of the vehicle.

The Aerodrome Operator shall carry out periodic response time tests to evaluate the response time and effectiveness of the RFFS provided. Records of such tests must be maintained and be available for inspection by the Authority.

The Aerodrome Operator is required to take immediate action if the response time capability of the RFFS does not meet the minimum requirements. Such action may include in extreme cases, the closing of the Aerodrome until minimum response time requirements can be achieved, or the repositioning of RFFS vehicles to meet the response time objective.

## 8. RESCUE & FIREFIGHTING VEHICLES

The minimum number of rescue and firefighting vehicles provided at an aerodrome shall be in accordance with Table 3:

**Table 3 – Minimum Number of RFFS Vehicles**

<b>Aerodrome Category</b>	<b>Minimum Number of RFFS vehicles</b>
1	1
2	1
3	1
4	1
5	1
6	2
7	2
8	3
9	3
10	3

### Technical Requirements – RFF Vehicles

- a) The capacity of the foam concentrate tank should be sufficient to provide the specified concentration for twice the capacity of the water tank.
- b) RFF vehicles should have the characteristic of continuously maintaining foam production while traveling at minimum speeds of 8 km/h.
- c) The RFF vehicle cab should be large enough to accommodate the RFF personnel and various equipment items, facilitate rapid access and egress of personnel, considering that each firefighter will be equipped with their protective equipment, and must have adequate insulation against vibration and the noise.
- d) RFF vehicles must have safety belts, first aid kit, spare tire, safety triangle, etc.
- e) RFF vehicles must have visual audible devices that allow them to be identified as emergency vehicles; they must comply with national or local legislation, and with any lighting and sound regulations.

- f) The airport's emergency vehicles must be painted with highlighting colours, preferably red or yellowish green.
- g) When the fleet of vehicles is renewed, the technical characteristics of Table 4 should be considered.
- h) There should be an adequate provision of spare parts and critical elements of the RFF vehicles, especially the elements of electronic type, in such a way to ensure an immediate repair before being put out of service, in order to avoid prolonged periods, where the RFF capacity is diminished.
- i) Vehicles that have electronic devices to control the application of extinguishing agents and management of operational capabilities of such vehicles must have redundant systems to ensure the reliability of the system in critical operating conditions.

Operational RFF vehicles must have the minimum characteristics shown in Table 4 below:

**Table 4**  
**RFF Vehicle Characteristics**

	RFF vehicles up to 4,500 Litres	RFF vehicles over 4,500 Litres
Monitor	RFF Cat 1 and 2 – Optional RFF Cat 3 to 9 – Mandatory	Mandatory
Design feature	High discharge capacity	High and low discharge capacity
Monitor Jet throw	Appropriate to longest aircraft	Appropriate to longest aircraft
Handlines	Mandatory	Mandatory
Under truck nozzles	Optional	Mandatory
Bumper turret	Optional	Optional
Acceleration	80 km/h within 25 s at the normal operating temperature	80 km/h within 40 s at the normal operating temperature



Top speed	At least 105 km/h	At least 100 km/h
All-wheel drive capability	Mandatory	Mandatory
Automatic or semi-automatic transmission	Mandatory	Mandatory
Single rear wheel configuration	RFF Cat 1 and 2 – Preferable RFF Cat 3 to 9 – Mandatory	Mandatory
Minimum angle of approach and departure	30°	30°
Minimum angle of tilt (static)	30°	28°

*Note: Further guidance on minimum characteristics of rescue and firefighting vehicles is given in the ICAO Airport Services Manual (Doc 9137), Part 1.*

### **9. RESCUE EQUIPMENT**

Rescue equipment commensurate with the level of aircraft operations shall be provided on the RFFS vehicle(s) as shown in Table 5.

*Note: Guidance on the rescue equipment to be provided at an aerodrome is given in the ICAO Airport Services Manual (Doc 9137), Part 1.*

Table 5 Rescue Equipment

Equipment Scope	Equipment Item	RFF Category				
		1-2	3-5	6-7	8-10	
Forcible entry tools	Prying Tool (Hooligan, Biel type)	1	1	1	2	
	Crowbar 95 cm	1	1	1	2	
	Crowbar 1.65 m	1	1	1	2	
	Axe, rescue large non wedge type	1	1	1	2	
	Axe, rescue small non wedge or aircraft type	1	2	2	4	
	Cutter Bolt 61 cm	1	1	2	2	
	Hammer 1.8 kg Lump or Club type	1	1	2	2	
	Chisel cold 2.5 cm	1	1	2	2	
A suitable range of rescue/cut in equipment including powered rescue tools	Hydraulic/Electrical (or combination) portable rescue equipment	1	1	1	2	
	Powered rescue saw complete with minimum 406mm diameter spare blades	1	1	1	2	
	Reciprocating/Oscillating saw	1	1	1	2	
A range of equipment for the delivery of firefighting agent	Delivery hose 30 m lengths x 50 & 64 mm diameter	6	10	16	22	
	Foam Branches (Nozzles)	1	1	2	3	
	Water Branches (Nozzles)	1	2	4	6	
	Coupling adaptors	1	1	2	3	
	Portable fire extinguishers CO <sup>2</sup> DCP		1	1	2	3
			1	1	2	3
Self-Contained Breathing Apparatus – sufficient to maintain prolonged internal operations	Breathing Apparatus (BA) set c/w facemask and air cylinder					
	BA spare air cylinder BA spare facemask					

Respirators	Full faced respirators c/w filters	One per Fire-fighter			
A range of ladders	Extension Ladder, Rescue & suitable for critical aircraft	-	1	2	3
	Ladder General Purpose – rescue capable	1	1	1	2
Protective clothing	Firefighting helmet, coats, over trousers (c/w	One set per Fire-fighter			

## **10. PERSONAL PROTECTIVE EQUIPMENT (PPE)**

The Aerodrome Operator or service provider must ensure that all personnel involved in RFF operations be equipped with personal protective equipment (PPE) and respiratory protective equipment (RPE) so that they can safely perform the functions entrusted to them.

## **11. TRAINING OF RFFS PERSONNEL**

### **11.1 General**

All RFFS personnel require appropriate training if they are to operate in a safe and effective manner. All personnel engaged on rescue and firefighting duties, must receive initial and recurrent competence-based training relevant to their role. The most important factors bearing on effective rescue in a survivable aircraft accident are the training received, the effectiveness of the equipment, and the speed with which competent personnel and equipment designated for rescue and firefighting purposes, can be put to use.

The Aerodrome Operator shall have a written corporate policy, which acknowledges that training for competence is an integral part of its strategy. This policy should be compliant with CAA requirements. It should acknowledge that the key objective of training for competence is the development and use of training and assessment systems, which contribute to the efficient delivery of services while eliminating or reducing risk to the organization, its staff and equipment, the community within the boundaries it serves, and the environment.

The Aerodrome Operator shall ensure that the RFFS has a comprehensive Training and Assessment Policy which clearly explains how RFFS personnel receive initial and ongoing training to maintain their competence in role.

The primary generic roles of personnel engaged in the RFFS, may be grouped under the headings of Firefighter, Supervisor and Manager.

The additional terms Crew Commander, Leading Fire-Fighter, Watch Commander/Manager, and Senior Airport Fire Officer/Fire Service Manager/ Chief Fire Officer, have also been used. The Aerodrome Operator may choose to adopt their own specific terms within the generic terminology of Supervisor and Manager.

## **11.2 Training Subjects**

The training areas shown below cover subjects necessary for initial, on the job and recurrent competency training. The following list of areas is representative but not exhaustive. This list may be used to construct a balanced RFFS training and development programme.

### **11.3 Aerodrome Familiarisation**

- Recognize the runway and taxiway identification system and associated pavement marking, lighting and signs,
- Comply with local rules regarding vehicle movements and access,
- Locate a given point on the aerodrome using references given by Air Traffic Control.
- Locate all emergency access routes and other non-standard routes used to traverse areas where aircraft accidents may occur including difficult environs and runway undershoot/overshoot areas.
- Understand and comply with special procedures during low visibility conditions.
- Identify areas where hazardous materials including freight may be stored.

### **11.4 Aircraft Familiarisation**

- Locate normal entry doors and emergency exits for aircraft normally using the aerodrome and describe methods of operation.
- Describe slide deployment and methods of evacuation.
- Identify aircraft seating and cargo configurations.
- Locate and utilise aircraft break-in areas where installed.

### **11.5 Emergency Planning**

- Recognise different types of emergency contained in the emergency plan.
- Comply with roles as described in the Aerodrome Emergency Plan.
- Understand relevant roles of other aerodrome departments and/or external agencies.

**11.6 Communications**

- Identify relevant radio frequencies.
- Demonstrate correct radio procedures, terminology, and standard messages.
- Demonstrate hand signals used to communicate with the aircraft flight crew.

**11.7 Personal Safety**

- Identify the hazards arising from aircraft incidents and aircraft systems,
- Demonstrate correct and expeditious use of personal protective equipment,
- Understand the limitations of personal protective equipment,
- Demonstrate techniques to be used when working in confined areas,
- Demonstrate techniques to be used when trapped or disoriented,
- Describe the purpose and limitations of Self-Contained Breathing Apparatus (SCBA)
- Demonstrate correct and expeditious donning and start up procedures for SCBA,
- Demonstrate use of SCBA in actual or simulated conditions i.e. smoke, heat and humidity etc.,
- Demonstrate correct techniques when working as a team in SCBA,
- Demonstrate emergency actions to be taken in the event of:
  - low air;
  - Distress Signal Unit (DSU) operations;
  - unit malfunction; or
  - face mask displacement.

**11.8 Fire Behaviour**

- Demonstrate an understanding of causes of fire development, heat transfer and fire classification,
- Demonstrate an understanding of the fire characteristics of materials used in aircraft construction including aviation fuel,
- Demonstrate an understanding of the fire characteristics of materials used in aircraft hangar/building construction including dangerous goods.

**11.9 Extinguishing Agents**

- Understand the principles of fire initiation, spread and suppression/extinction,
- Understand the various types of extinguishing agents commonly available.

**11.10 Foam Monitors/Bumper Turrets**

- Demonstrate operation of foam monitors in jet and dispersed pattern.
- Demonstrate correct application methods.
- Demonstrate use of extinguishing agents,
- Understand effects of wind on foam monitor use,
- Understand and demonstrate Extended Boom Technology (EBT)

**11.11 Hand Line Use**

- Demonstrate selection and deployment of hand lines.
- Demonstrate correct application of foam, foam solution and water.
- Demonstrate judicious use of extinguishing agents.
- Understand effect of wind on hand line and branch pipe effectiveness.

**11.12 Complementary Agent**

- Select and deploy complementary agents carried,
- Demonstrate correct application of complementary agents,
- Demonstrate tactics for dual agent application,
- Understand effects of wind on complementary agent application.

**11.13 Tools/Equipment**

- Identify and locate each tool carried,
- Demonstrate an understanding of the safety procedures necessary when operating equipment.
- Demonstrate tactical use of each tool carried.
- Operate and climb rescue ladders.

**11.14 Appliance Replenishment**

- Identify location of local water supplies.
- Demonstrate procedures for replenishing vehicles using local water supplies (hydrants, tanks, static water tanks, etc.)

**11.15 Firefighting Operations**

- Demonstrate correct firefighting tactics for a variety of scenarios involving aircraft normally using the aerodrome (engines, undercarriage, APU, cargo hold)
- Demonstrate tactics for securing and maintaining rescue paths,
- Demonstrate tactics necessary to protect fuselage from fire exposure,
- Demonstrate tactics necessary to control/extinguish three dimensional fires,
- Describe the procedures for maintaining integrity of foam blankets,
- Describe procedures for controlling/containing fuel spillage,
- Demonstrate casualty handling and removal from an aircraft fuselage.

**11.16 First Aid**

- Carry out primary and secondary surveys for life threatening injuries.
- Establish airway.
- Carry out cardiopulmonary resuscitation.
- Identify and treat internal/external bleeding.
- Identify and treat casualty suffering from shock.
- Identify injuries to skull, spine, chest and extremities.
- Identify internal injuries.
- Place casualties in recovery position.
- Move casualties.
- Treat burns.
- Understand particular problems related to injured children/babies.
- Manage unconscious casualties.

**11.17 Appliance Driving**

- Correctly operate all appliances controls,
- Drive appliances within limits of design,
- Drive appliances in compliance with legislation and local by-laws,
- Operate appliances to traverse difficult terrain,
- Correctly position vehicle at an aircraft incident,

- Pump 'on the move'.

#### 11.18 Command and Supervision

- Ensure adherence to safety procedures.
- Assess tactical priorities to maximise passenger survivability.
- Select, deploy and direct firefighting tactics.
- Manage resources to ensure effectiveness.
- Communicate with external agencies.
- Fully understand the airport incident command system.
- Fully understand the role of the forward command post.
- Be able to operate within the forward command post.
- Fully understand what is required of each role/rank.
- Understand the process of delivering station training at watch/shift level.

#### 11.19 Watchroom Operators

- Maintain RFFS occurrence log,
- Obtain and record accurate and complete information.
- Raise the alarms within acceptable timescales.
- Alert external Local Authorities/mutual aid agencies.

#### 11.20 Live Fire Training

Live-fire drill training shall be provided to all RFFS personnel as a minimum of every 6 months as follows:

- A live-fire drill shall simulate a realistic firefighting situation and be of sufficient size and intensity to provide a challenge to the firefighter in relation to the equipment used.
- The conditions simulated in a live-fire drill shall emulate the type of fire which could be encountered on a typical aircraft at the aerodrome. During the drill, each firefighter shall demonstrate the control and extinguishment of a simulated aircraft fire using:
  - Vehicle Monitor and handlines
  - Correct safety procedures for RFFS personal protection.

*Note: It is intended that the live-fire drill will provide an opportunity for the RFFS to become familiar with the use of all fire extinguishment equipment that will be used in the event of an*



*accident. If possible, a simulated evacuation of aircraft occupants will help increasing a realistic situation.*

### **11.21 Low-Visibility Training**

At an aerodrome certified for low-visibility operations, the RFFS shall receive initial and recurrent training in driving and operating in low visibility conditions. The training received should as a minimum address:

- Demonstrate a sound understanding of the Aerodrome Low Visibility Procedures.
- Locate a simulated accident site.
- Navigate RFFS vehicles to the simulated accident site.
- Negotiate terrain and obstacles with the RFFS vehicles.

All Low Visibility Training will need to coordinate through the relevant aerodrome Departments, e.g., Air Traffic Control and Airside Operations.

### **11.22 Command and Control Training**

Any member of the RFFS that has an operational command or supervisory role should receive appropriate incident command training. As a minimum such training should include:

- Assessing tactical priorities – defensive or offensive mode.
- Communications

## **12. TRAINING RECORDS**

A record of individual achievement shall be maintained for all RFFS personnel. Records may be either in paper or electronic format, or a combination of both. All training records shall be durable and auditable.

The following represents the minimum information to be recorded.

- Unique Identification Number
- Candidate Name
- Date of Birth
- Date of entry into RFFS
- Location
- Date of Commencement, Initial Core Competence Training

- Date of Satisfactory Completion, Initial Core Competence Training
- Examination Results
- Level of qualification – Firefighter, Supervisor, Manager
- Due date for re-certification of Core Competence
- Date of commencement, Progressive Training to Supervisor/manager
- Examination Results
- Level of Qualification Confirmed – Firefighter, Supervisor, Manager
- Transfer into other employment/position/left employment (reference brought forward)
- Any additional courses or certifications.

It is very important that Aerodrome Operators maintain accurate records of all FFS training and assessment events, and any other specialist courses attended and that these are made available for inspection by the Authority. Training records should be maintained for the full period of service and for 5 years after transfer or cessation of employment.

### **13. FIRE STATIONS**

- a) All RFF 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.
- b) The fire station/s should be located to achieve optimum response times.
- c) The fire station shall be located so that the access for rescue and firefighting vehicles onto the movement area is direct and clear, requiring a minimum number of turns.
- d) The fire station/s must have a Watch room which shall be located in such a way as to provide the widest possible vision of the movement area.
- e) When the Fire Station does not have a clear view of areas furthest from the movement area, a watch tower or a closed-circuit television (CCTV) should be installed.
- f) All fire station/s must have emergency access roads which are adequate and allow safe and fast access to the movement area and to the possible accident zones both on and off aerodrome. This condition must be taken into account when determining the location of a fire station/s.

- g) The parking of the RFF vehicles must be done in such a way that the mechanical failure of one of them does not prevent the departure of the other vehicles.
- h) Fire station/s doors should be operated electrically and be linked to the alarm/alerting system. A system that allows manual operation should be provided in case of a power failure.
- i) Plans for the future expansion of the airport should be taken into account when designing and locating a fire station/s, as these can impact response times.

#### **14. EMERGENCY ACCESS ROADS**

Emergency access roads should be provided on an aerodrome where terrain conditions permit their construction, so as to facilitate achieving minimum response times. Particular attention should 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 should be taken into account.

*Note: Aerodrome service roads may serve as emergency access roads when they are suitably located and constructed.*

Emergency access roads should be capable of supporting the heaviest vehicles which will use them and be usable in all weather conditions. Roads within 90 m of a runway should be surfaced to prevent surface erosion and the transfer of debris to the runway. Sufficient vertical clearance should be provided from overhead obstructions for the largest vehicles.

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

#### **15. COMMUNICATION AND ALERTING SYSTEMS**

An alerting system for notifying RFFS personnel of aircraft emergencies capable of being operated from Air Traffic Control Tower, and all Fire Stations shall be provided.

A discrete communication system shall be provided linking Air Traffic Control tower with all Fire Stations and RFFS vehicles.

#### **16. RESCUE AND FIREFIGHTING PROCEDURES**

The RFFS must have a Manual of Rescue and Fire Fighting Procedures, which must be submitted for acceptance by the CAA. The Manual must describe the organisation, training requirements and

operating requirements and should include the following procedures to follow in the following types of emergencies:

- a) Emergency evacuation.
- b) Location of RFF Service.
- c) Rescue and Firefighting operations.
- d) Fuel spills.
- e) Aircraft with landing gear problems.
- f) Aircraft with hydraulic problems.
- g) Overheated brakes and fires in the brake system.
- h) Aircraft with engine problems.
- i) Aircraft with problems in the cabin.
- j) Emergencies with military aircraft (when applicable).
- k) Acts of unlawful interference.
- l) Emergencies with Helicopters.
- m) Structural fires.
- n) Emergencies related to Dangerous Goods.
- o) Preservation of the scene of the accident.

*Note: The Rescue and Firefighting Procedures Manual must be correlated with the provisions of the Aerodrome Emergency Plan.*