REPÚBLICA DE MOÇAMBIQUE

AUTORIDADE DE AVIAÇÃO CIVIL DE MOÇAMBIQUE

TECHNICAL CIRCULAR

CT 139-006 – ASSESSING COMPETENCE OF ARFF TRAINING PROVIDERS

Date: 04 September 2018

1. AUTHORITY

This Technical Circular is issued under the authority of the Chairman of the Board of Directors of the Mozambique Civil Aviation Authority in pursuance of powers vested in him under Article 19 of Law number 05/2016 of 14 June and Article 12 of Resolution 19/2011 of 30 November.

2. GENERAL

The following guidance contains information derived from international civil aviation standards, practices and procedures that the Authority has considered to be acceptable means of compliance with the MOZCATS 139 the Mozambique Aviation Technical Regulations.

3. PURPOSE

This Advisory Circular provides methods, acceptable to the Authority, for showing compliance with Assessing Competence of Training Facilities/Institutions and Rescue and Fire Fighting Personnel requirements of MOZCARS139 volume1 4thedition as well as explanatory and interpretative material to assist in observing compliance.

4. REFERENCE

1) MOZCATS 139, Volume I
2) AIC 05/17 - Supplementary to the MOZCATS 139, Volume I
3) ICAO Annex 14 – Aerodromes
4) ICAO Doc 9137 Part 1 – Airport Services Manual, Fourth Edition 2015

DEFINITIONS and ABBREVIATIONS

Definitions

Advisory Circulars

Guidance material on the means of achieving the minimum compliance with the MOZCAR and MOZCATS

Aerodrome

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

Aircraft

Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

Aircraft accident

An occurrence during the operation of an aircraft in which any person involved suffers death or serious injury or in which the aircraft receives substantial damage.

Aircraft fire fighting

The control or extinguishment of fire adjacent to or involving an aircraft following ground accident/incidents.

Aircraft incident

An occurrence, other than an accident, which affects or could affect the safe operation if not corrected and is associated with the operation of an aircraft.

Approved training provider

A provider approved by a Contracting State in accordance with the requirements of Annex 1, 1.2.8.2.

Facility

One or more items of equipment essential to provide a discrete technical function or amenity.

Human performance

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

Pressure-fed fuel fires

Fires associated with fuel discharged under very high pressure from a ruptured fuel tank.

Abbreviations

AC	Advisory Circular
ARFF	Aerodrome Rescue and Fire Fighting
ARFFS	Aerodrome Rescue and Fire Fighting Services
ARFFT	Aerodrome Rescue and Fire Fighting Training
AM	Aerodrome Manual
Authority	Refers to the Mozambique Civil Aviation Authority
BA	Breathing Apparatus
CABA	Compressed Air Breathing Apparatus
FGC	Fire Ground Commander
IACM	Instituto de Aviação Civil de Moçambique
ICAO	International Civil Aviation Organization
LOA	Letter of Agreement
MOU	Memorandum of Understanding
MOZCAR	Mozambique Civil Aviation Regulations
MOZCATS	Mozambique Civil Aviation Technical Standards
QAS	Quality Assurance System

CHAPTER 1 — INTRODUCTION

1.1 The Advisory Circular – Assessing Competence of ARFF Training Institutions/Facilities and Personnel contains the requirements pertaining to the training of ARFF personnel at an aerodrome by an **approved training provider operating in Mozambique**. Readers should refer to the applicable provisions together with this Advisory Circular, to ascertain the requirements of, and the obligations imposed by or under the Mozambique Civil Aviation Regulations (MOZCARS).

The purpose of this document is to provide guidelines in establishing training programme for ARFFS and set requirements used by the Authority in approving ARFF training providers and in assessing competence of Aerodrome Rescue and Fire Fighting personnel.

The Advisory Circular also gives suggestions on different curricular of fire service courses together with general point of training for duties in the rescue and fire fighting services. Attempt is also made to ensure complete familiarity with both the practical aspects of fire fighting, the equipment and aircraft likely to be encountered. Different hazards could be encountered during aircraft operations, emergencies of major proportions could develop with startling suddenness. Initiations of the correct actions in such circumstance are essential and vital to the successful fulfillment of the role of the RFFS. Only thorough training can provide the background knowledge and personal – confidence which are the foundations for prompt and correct actions.

1.2 This document is based mainly on compliance with the following documents:

(a) ICAO Annex 1, Appendix 2 – Approved training provider;
(b) Airport Services Manual, Part 1 – Rescue and firefighting;
(c) Mozambique Civil Aviation Regulations (MOZCARS);
(d) Aerodrome Standards Manual (ASM) Attachment A, Section 18 – Rescue and firefighting services.

1.3 Where there is a difference between a requirement in this Advisory Circular and that of the above-mentioned documents, the requirement in this document shall prevail.

1.4 An approved training provider should endeavor to comply with all requirements.

1.5 From time to time, the Authority may wish to supplement the requirements in the MOZCARS. Where appropriate, such additions will be incorporated into this Advisory Circular by amendment.

1.6 The issuance of an approval for a training provider and the continued validity of the approval shall depend upon the training provider being in compliance with the requirements of this Advisory Circular.

1.7 The approval document shall contain at least the following:

(a) provider's name and location;

(b) date of issue and period of validity (where appropriate); and

(c) terms of approval.

1.8 Should the approved training provider be unable to meet any of the requirements spelt out in this Advisory Circular, a written notification has to be given to the Authority stating the reasons for not meeting the particular requirement along with its mitigating measures. The Authority will then decide if an exemption for that particular requirement should be granted for a period of time.

1.9 The following chapters contain requirements for a training provider to be approved by the Authority.

CHAPTER 2 — APPLICATION FOR THE APPROVAL OF ARFF TRAINING PROVIDER

2.1 An application for the grant of an ARFF training provider approval in Nigeria shall include:

(a) an application form (Attachment A) duly completed and signed by the person responsible for the organization or a nominated accountable manager;

(b) a copy of the training and procedures manual; and

(c) a copy of relevant standard operating procedures in support of the training and procedures manual, if applicable.

2.2 The contents of the manuals and the course materials shall meet the requirements specified in this Advisory Circular.

2.3 To be approved as an ARFF training provider, the applicant must provide details of:

(a) a training course that achieves the requirements of this document;

(b) other relevant training courses/modules may be outsourced to a third party who is able to fulfil the requirements as specified by the training provider;

(c) training facilities/training aids leased from a third party may be signed by MOU/LOA (Memorandum of Understanding/ Letter of Agreement);

(d) qualified training staff;

(e) learning outcomes and testing processes;

(f) registration of certificates issued; and

(g) qualified assessors and validators.

2.4 Significant and continual non-compliance will result in the approval being suspended or revoked.

CHAPTER 3 — TRAINING AND PROCEDURES MANUAL

3.1 The training provider shall provide a training and procedures manual for the use and guidance of personnel concerned. This manual may be issued in separate parts and shall contain at least the following information:

(a) a general description of the scope of training authorized under the organization's terms of approval;

(b) the content of the training programs offered including the courseware and equipment to be used, for compliance with the requirements in Appendices 1 to 5;

(c) a description of the organization's quality assurance system in accordance with Section 3.4;

(d) a description of the organization's facilities, in particular training simulators for compliance with the requirements in Appendix 6;

(e) the name, duties and qualification of the person designated as responsible for compliance with the requirements of the approval in Section 6.1;

(f) a description of the duties and qualification of the personnel designated as responsible for planning, performing and supervising the training in Section 6.2;

(g) a description of the procedures used to establish and maintain the competence of instructional personnel as required by Section 6.3;

(h) a description of the method used for the completion and retention of the training records required by Chapter 7;

(i) a description, when applicable, of additional training needed to comply with an operator's procedures and requirements;

(j) a description of the standard operating procedure (SOP) for safety when training is conducted;

(k) a description of the selection, role and duties of the authorized personnel to conduct the testing requirements approved by the Authority; and

(l) an organizational structure chart of the training provider.

3.2 The training provider shall ensure that the training and procedures manual is amended as necessary to keep the information contained therein up to date. Details of any course variation shall be provided to the Authority prior to implementation. All changes incorporated and the reasons for them shall be recorded and kept by the training provider so that the history of its development could be traced.

3.3 Copies of all amendments to the training and procedures manual shall be furnished promptly to all organizations or persons to whom the manual has been issued.

3.4 The training provider shall establish a quality assurance system, acceptable to the Authority granting the approval, which ensures that training and instructional practices comply with all relevant requirements.

CHAPTER 4 — TRAINING COURSES

4.1 Five types of courses shall incorporate the course syllabus established by the Authority. They are namely:

(a) Basic Course;

(b) Fire fighter Course;

(c) Crew Commander Course;

(d) Watch Commander Course; and

(e) Specialist Course.

4.2 **Basic Course:** This training is a mandatory course that shall be attended by all recruits to the aerodrome fire services as soon as possible after appointment. It is designed to equip entry level of ARFF personnel with the necessary knowledge and skills to perform their tasks. Majority of the training will be devoted to practical exercises involving pressure-fed fuel fires to give ARFF personnel adequate exposure related to aircraft fire fighting.

4.3. **Fire Fighter Course:** This course shall be attended by all firemen as soon as possible following successful completion of the basic course. The course should provide essentially practical training with emphasis on the tactical deployment of men and appliance to achieve rescue from aircraft involved in fire and should also include other forms of fire training such as rough ground driving techniques. It is designed to equip experienced ARFF personnel with the theory, principles and practice of fire station management, tactical fire-fighting involving various emergencies and fire ground command to prepare them for their roles as airport fire officers. Majority of the training will be devoted to practical exercises.

4.4. Crew Commander Course: This course shall be attended by officers who have successfully completed a fire fighter course. The course is designed to equip senior fire officers with the theory, principles and practice of fire station management, administration, organization, cover the planning of distance training programme, station records, discipline, aerodrome

emergency orders, facilities and fire safety planning, fire prevention as well as command and control at aircraft crash site to prepare them for their roles as senior fire officers.

4.5. **Watch Commander Course:** This course shall b e attended by all officers who have successfully completed a crew commander course. The syllabus is designed to acquaint officers with development in the field of airport fire prevention rescue and firefighting, appliance design and handling etc.

4.6 Specialist Courses: This course should be attended by all officers to impact them with knowledge on equipment and specialized operations essential for rescue operations. See Appendix 5 for details.

4.7. Particular attention is paid on these courses as they cover the entry level training as well as leadership training for ARFF personnel. The operator of an aerodrome in Nigeria is required to send all their new ARFF personnel to be trained in basic fireman ship with a training provider approved by the Authority. Personnel performing supervisory roles shall also be sent to a training provider approved by the Authority for the appropriate leadership courses depending on their types of responsibilities.

4.8 The guidelines for the course syllabus are provided in Appendices 1 to 5.

CHAPTER 5 — FACILITIES

5.1 The training provider shall provide facilities and working environment appropriate for the task to be performed and be approved by the Authority.

5.2 The training provider shall have, or have access to, the necessary information, equipment, training devices and materials to conduct the courses for which it is approved.

5.3 The training provider shall have, or have an agreement with a third party to obtain access to the essential facilities specified in Appendix 6.

CHAPTER 6 — PERSONNEL

6.1 The training provider shall nominate a person responsible for ensuring that it is in compliance with the requirements for an approved organization. This person shall be sufficiently senior and should have authority to ensure that there are adequate resources to finance the operation of the training provider.

6.2 The organization shall employ the necessary personnel to plan, perform and supervise the training to be conducted.

6.3 The training provider shall ensure that all instructional personnel have the necessary experience and qualifications appropriate for their job scope. They shall at least meet the minimum standards as specified in Appendix 7 of this Advisory circular.

6.4 The training provider shall ensure that all instructional personnel receive initial and continuous training appropriate to their assigned tasks and responsibilities. The instructors must complete the relevant training programme and shall be assessed as competent to conduct classroom lessons, practical simulator training and assessment of student competence. The training programme established by the training provider shall also include training in knowledge and skills related to human performance including team coordination which can be found in the Human Factors Training Manual under ICAO Doc 9683.

CHAPTER 7 — RECORDS

7.1 The training provider shall retain detailed student records to show that all requirements of the training course have been met as stipulated by the Authority.

7.2 The training provider shall maintain a system for recording the qualifications and training of instructional and examining staff, where appropriate.

7.3 Records from conducting the various ARFF training courses shall be documented and retained by the training provider. Changes made to the training courses as a result of course reviews shall also be appropriately documented, together with the reasons for making them. These changes shall be recorded in the course records or course design documents. Such records shall be made available to the Authority upon request during an audit or inspection.

7.4 The records required by Section 7.1 shall be kept for a minimum period as approved by the Authority, after completion of the training. The records required by Section 7.2 shall be retained for a minimum period approved by the Authority, after the instructor or examiner ceases to perform a function for the training provider.

CHAPTER 8 — EVALUATION, CHECKING AND APPEALS

8.1 When an approved training provider conducts testing required for the issuance of a certificate, the testing shall be conducted by qualified personnel designated by the training provider in accordance with criteria approved by the Authority.

8.2 Assessment tests of theory and practical modules related to the courses specified in Appendices 1 to 5 shall be in accordance with procedures and to a standard acceptable to the Authority. Regular audits will be conducted by the Authority to ensure this.

8.3 **Note 1:** Each training course outlined should terminate with oral, technical, practical and written technical tests. The minimum qualification standard should not be less than 70%.

8.4 **Note 2**: All RFFP training programmes must include human performance and team coordination. All grades of personnel should undergo recurrent/further training within a space of 12 months.

8.5 A certificate of competence, serialized, validated and dated for the period specified, as per the applicable regulatory authority's requirements should be issued of which record of the specific training name of the participant, serial number of certificate of competence and date that the training was provided to the individual be retained by the training provider, following satisfactory completion of written, oral and continuous assessment appropriate to the relevant programme.

8.6 Any person who has the opinion that training providers, during or at the end of a course or programme has disadvantaged him/her by the conduct of an assessment should have the right to appeal. Every training provider should therefore establish and publish an internal appeal procedure as

part of the training providers' manual of procedures that is required for approval by the authority during its formal application.

8.7 Where training is provided by Aerodrome authorities, the training provider should ensure that they have a policy that allows candidates to receive equal consideration, opportunity and access to training and development. It is vital to state that training may not be taken up before conferment of the approval.

CHAPTER 9 — CONCLUSION AND SUMMARY

In the last few sections, efforts have been made to emphasize the relevance of RFF personnel training and how critical it is to ensure that competency is maintained throughout the operational duration of RFF personnel job.

The importance of ensuring that training facilities are within the acceptable standards and training instructors – possess the necessary qualifications has also been stressed. The Authority will ensure through guidelines set in this Advisory Circular that:

(i). All RFF personnel at Mozambique Certified Aerodrome, Helipad, Helidecks, etc maintain their competency while working at these aerodromes.

(ii). Training providers/institutions within the authority's jurisdiction and individuals wishing to offer RFF training are requested to apply for the Authority's approval through the set guidelines.

APPENDIX 1

BASIC COURSE

1 GENERAL

1.1 Personnel whose duties consist solely of the provision of rescue and fire fighting services for aircraft operations are infrequently called upon to face a serious situation involving life saving at a major aircraft fire. Therefore, in order to assure that both personnel and equipment will be fit to deal with a major aircraft fire when the necessity arises, a most carefully planned and rigorously followed training programme is required. The entire training programme must be designed to ensure that both personnel and equipment are at all times fully efficient. This represents a very high standard of achievement but anything less than that is not only insufficient but may be dangerous to those who are in need of aid and also to the personnel who are providing such aid. The required course syllabus are listed in paragraph 2 below.

2 COURSE SYLLABUS

2.1 Basic Course shall be designed to equip entry level of airport fire fighters with the necessary knowledge and skills to perform their tasks. Majority of the training must be devoted to practical exercises involving pressure-fed fuel fires to give fire fighters adequate exposure related to aircraft fire fighting. The Basic Course of airport fire fighter shall include at least the following areas:

2.1.1 Rescue and Fire Fighting Personnel Safety

2.1.1.1 Fire fighters should also possess basic knowledge of fire chemistry, smoke hazards and various safety precautions. The training course should also contain hazards of helicopters and military aircraft.

2.1.2 Emergency Communications Systems

2.1.2.1 Knowledge of operating radio communication equipment, proper procedures of radiotelephony communications and basic hand signals is essential to fire fighters in their operations.

2.1.3 Handling of Equipment

2.1.3.1 All fire fighters must be trained in the use of fire hoses, nozzles, turrets and other appliances required for compliance with Supplementary to MOZCATS. All fire fighters must also be trained in the operation and maintenance of the range of basic rescue equipment listed in Appendix 4. They must be capable of handling their equipment, not only under drill ground conditions, but also in rapidly changing conditions. The aim is to ensure that every individual is so well versed in the handling of all types of equipment that he can perform automatically under stress conditions.

2.1.4 Application of Extinguishing Agents

2.1.4.1 It is essential to acquire a thorough knowledge of the extinguishing agents employed in aircraft fire fighting. In particular, fire fighters shall be trained in the application of all the types of extinguishing agents required for compliance with ASM Chapter 13, 2.2.42

2.1.5 Emergency Aircraft Evacuation

2.1.5.1 The training programme will need to provide instructions on aircraft evacuation procedures for different situations so that fire fighters can assist to evacuate occupants in the shortest time possible in the event of an aircraft accident or incident.

2.1.6 Fire Fighting Operations

2.1.6.1 All fire fighters must have a general knowledge of the causes of fire, factors contributing to its spread and the principles of fire extinction. They should also possess knowledge of fire prevention. All fire fighters are required to be trained in combating various types of fires:

a) aircraft fires:

1) engine fire
2) internal fire
3) fuel line fire
4) helicopter fire

b) building fire;

c) liquefied petroleum gas fire; and

d) bulk fuel fire.

2.1.7 Adaptation and Use of Structural Rescue and Fire Fighting Equipment for Aircraft Rescue and Fire Fighting

2.1.7.1 All fire fighters must be conversant with the proper usage and operation of various types of specialized rescue tools and fire fighting equipment for both structural and aircraft rescue and fire fighting purposes.

2.1.8 Dangerous goods

2.1.8.1 All fire fighters may be called upon to respond to an incident or accident involving hazardous materials. As such, they will require basic knowledge on detection methods and containment measures.

2.1.9 Familiarisation with Fire Fighters' Duties under the Aerodrome Emergency Plan

2.1.9.1 Under the Aerodrome Emergency Plan, fire fighters are assigned to perform specific roles and responsibilities such as rescue operation, fire fighting, emergency medical care, casualty evacuation, ambulance service and logistics support in an aircraft accident or incident.

2.1.10 Protective Clothing and Respiratory Protection

2.1.10.1 All fire fighters may be called upon to effect a rescue from an aircraft cabin in conditions of great stress working in an atmosphere heavily laden with smoke and fumes. As such, they must be carefully trained to use self-contained breathing apparatus. Simulators to train fire fighters to operate in such environments will be necessary.

2.1.11 Medical First Aid and Casualty Handling

2.1.11.1 Every fire fighter of the rescue team shall be trained in first aid so that they can provide medical assistance when necessary and casualties are intelligently handled so as to avoid the infliction of additional suffering and/or injury in the removal of occupants in an aircraft accident or incident.

2.1.12 Search and Rescue

2.1.12.1 The training programme shall provide instruction in search procedures, not only in the enclosed spaces of an aircraft but also for procedures for systematic searching of the area in the immediate vicinity of an aircraft accident and also in the path of the aircraft.

2.1.12.2 Rescue operations should be accomplished through regular doors and hatches wherever possible but fire fighters must be trained in forcible entry procedures with the necessary tools.

2.1.13 Care of Equipment

2.1.13.1 A thorough knowledge of all equipment is essential in order to ensure its correct handling and to ensure thorough maintenance which is essential to guarantee operational efficiency under all circumstances. It is vitally important that every fire fighter be satisfied that any piece of equipment which may be used will work properly and in the case if ancillary equipment, that it is in its correct stowage position.

3 . ON-JOB TRAINING

3.1 Personnel who have completed the Basic Course shall receive the following on- job training in the fire station they are posted to:

3.1.1 Airport Familiarization

3.1.1.1 A thorough knowledge of the airport and its immediate vicinity is essential. The training shall encompass those areas of operation dealing with:

a) thorough familiarization of the movement area so that fire fighters can demonstrate their ability to:

1) select the best routes to any point on the airport;
2) select alternative routes to any point on the movement area when normal routes are blocked;
3) recognize landmarks which may be indistinctly seen;
4) use detailed grid maps as an aid to respond to an aircraft accident or incident; and
5) recognize airport signs, marking and lighting.

b) the use of guidance equipment when it is available. Air traffic control may be of assistance in providing information on the location of the accident site and position of other aircraft or vehicles on the airport which may obstruct or impair vehicular movement.

3.1.2 Aircraft Familiarization

3.1.2.1 It is essential that all fire fighters have an intimate knowledge of all types of aircraft using the airport. Information about the following design features is of special importance to fire fighters to ensure effective use of their equipment:

a) location and operation of normal and emergency exits;
b) seating configuration;
c) type of fuel and location of fuel tanks;
d) location of batteries; and
e) position of break-in points on the aircraft.

APPENDIX 2

FIRE FIGHTER COURSE

1 COURSE SYLLABUS

1.1 Fire Fighter Course should be designed to equip experienced airport fire fighters with the theory, principles and practice of fire station management, tactical fire-fighting involving various emergencies and fire-ground command to prepare them for their roles as airport fire officers. Majority of the training should be devoted to practical exercises. The Fire Fighter Course should include at least the following areas:

1.1.1 Proficiency Test and Rating System

1.1.1.1 This lesson provides general guidelines on the subjects to be covered in the operational rating system. It is also a reference for organizing and standardizing the proficiency rating and revalidation system to maintain the proficiency standards of all airport fire-fighters. The documentation and proficiency rating records to facilitate audit checks will be discussed.

1.1.2 Critical Area Concept and Response Time

1.1.2.1 The training programme shall enable participants to determine the theoretical and practical critical area for a given aircraft type and calculate the quantity of water to be provided at an aerodrome. They will also need to be able to calculate response time based on certain assumptions and recognize factors affecting response time.

1.1.3 Aircraft Internal Fire (Passenger and Freighter Aircraft)

1.1.3.1 Participants shall acquire a thorough knowledge on aircraft internal fire. They shall be able to explain differences between post crash fires and inflight fires, know the types of cabin furnishings and toxic gases produced. The participants must also know the causes of internal fires, flashover and backdraft. The training programme shall also include rescue and firefighting procedures during an aircraft internal fire.

1.1.4 Breathing Apparatus Application

1.1.4.1 Fire fighters may be called upon to effect a rescue from an aircraft cabin in conditions of great stress working in an atmosphere heavily laden with smoke and fumes. As such, they must be carefully trained to use self-contained breathing apparatus. Simulators to train personnel to operate in such environments will be necessary.

1.1.5 On-scene Commander at Crash Site

1.1.5.1 It is important that the fireground be managed by using all resources of personnel, equipment, water supply and assisting agencies. Being capable of assimilating all available information about the actual scene is paramount to safe action. The training program shall equip participants with the necessary skills to undertake the position of On-scene Commander during an emergency. They shall be taught on the various types of stand-by positions taken by the ARFFS for various declared aircraft emergencies and be able to explain the overall strategy of Fireground Leadership during aircraft fire fighting and rescue operations. The course shall also include Airport Emergency Planning.

1.1.6 Rescue and Fire Fighting Equipment

1.1.6.1 The Authority requires airport, airstrip and heliport operators to provide rescue and firefighting equipment and services. Fire fighters participating in this training shall be able to determine the quantity and types of equipment to be carried on fire vehicle(s) and recommend suitable personal protective equipment for rescue and fire fighting operations.

1.1.7 Airport Water Supply

1.1.7.1 The training program shall provide a basic guidance in master planning and overall water supply system for airport fire protection, taking into consideration domestic water usage where a combined fire protection and domestic water system is utilized.

1.1.7.2 It will also include basic selection criteria for water supply source and standards for a water distribution system designed to support aircraft and fire-fighting operations in airports.

1.1.8 Airport Categorization and Levels of Protection

1.1.8.1 Participants shall be able to determine the airport category of an aerodrome and understand the level of protection to be provided. They shall also be able to state the minimum quantities of water, level A and B foams and other complementary extinguishing agents required for protection. The participants shall be taught the basic need and number of vehicles required at an airport to effectively deliver and deploy the agents specified for the airport category.

1.1.9 Leadership in the Fire Service

1.1.9.1 As the fire service evolves and becomes an increasingly diverse and dynamic industry, the need for competent leadership also grows. The training program shall include the three theories of leadership and the relationship between leadership style and the decision making process.

1.1.10 Building Fire-Fighting and Rescue

1.1.10.1 The training program shall include the significance and importance of the various basic divisions of fire-fighting strategy. The participants shall be able to demonstrate effective execution on firefighting tactics and techniques in combating building fires.

1.1.11 Fireground Hydraulics

1.1.11.1 Hydraulics is a critical element in firefighting. As soon as movement of water through a hose line is attempted, knowledge of hydraulics is required. The training program shall include the principles, variables and calculations concerned with the practical application of water as utilized in the fire service. An overview of fire characteristics, properties of water, apparatus and appliances, fire streams and hydraulic calculations shall be addressed to establish a functional understanding of fireground hydraulics.

1.1.12 Fire Pumps and Primers (Theory and Practical)

1.1.12.1 Water-based fire-suppression systems rely on an adequate water supply for proper operation, and fire pumps are often required to increase available water pressure. Training must be given to equip personnel with the necessary knowledge to understand and effectively operate the pumps.

1.1.13 Handling of Uncommon Emergencies

1.1.13.1 Fire fighters may be called upon to respond to an incident or accident involving hazardous materials. The training program shall provide instructions on operational procedures and tactical concepts of water rescue operations for aircraft accidents in the water. Participants shall also be informed about the types of radioactive materials, radioactive hazards and the strategic procedures of combating an aircraft fire involving radioactive materials.

1.1.14 Foaming Agents

1.1.14.1 A major aircraft accident typically involves a fuel-spill fire and the main extinguishing agent is foam. MOZCAR and MOZCATS. require that significant quantities of a foam/water agent be available to support aircraft fire fighting and rescue operations. Training shall be given to participants to enable them to understand the type of foams used in relation to aircraft fire fighting.

1.1.15 Communication Procedures and System

1.1.15.1 Knowledge of operating radio communication equipment, proper procedures of radiotelephony communications and basic hand signals is essential to fire fighters in their operations. Participants shall be trained to have a thorough knowledge in radiotelephony procedures.

1.1.16 Fire in Aircraft Hangars

1.1.16.1 The extremely high value of aircraft, hangars, and their ancillary facilities requires the thoughtful application of knowledge of the hazards involved. The training program shall present to the participants the various hazards, restriction of movement, needs for evacuation, structural vulnerability and various other factors to be considered when dealing with such fires.

1.1.17 Post Crash Incident Report

1.1.17.1 Participants shall be taught on how to write reports based on the NFPA accident/incident format using standardized words to give relevant information to improve methods of saving lives.

1.1.18 Techniques of Instruction

1.1.18.1 An airport fire officer may be tasked to conduct lessons or give presentations to fellow firefighting personnel. The training program shall equip the officer with the necessary skills.

1.1.19 Principles of Supervision

1.1.19.1 An airport fire officer will need to exercise direct supervision over assigned staff. Training must be able to cover this aspect as well.

1.1.20 Fire Prevention Inspection

1.1.20.1 Participants shall be taught on the objectives of fire prevention and the fire protection system to prevent fire from spreading and further endangering life and property.

1.1.21 Aircraft Involved in Unlawful Act

1.1.21.1 The training program shall examine the risks involved and the ways to deal with a situation where an aircraft is subjected to unlawful interference namely hijack, bomb threat and chemical/biological sabotage.

1.1.22 Smoke Hazards

1.1.22.1 The training program shall cover hazards of gases and smoke. It will also cover the 3 phases of fire, procedures when working in smoke-filled atmosphere and case studies of aircraft incidents with smoke impact.

Other relevant modules which should also for part of the curriculum include the following:

i). Fire Science algebra, mensuration, chemistry, heat, electricity, elementary hydraulic

(ii) Fire and fire extinction

(iii) Extinguishing agents, dry chemical powders

(iv) Airport familiarization

(v) Aircraft seating layouts etc.

(vi) Aviation fuels, types, fire prevention

(vii) Aircraft engines

(viii) Helicopter fire and analysis

(ix) Aircraft post accident procedure

(x) Emergency organization

(xi) Fire prevention LPG (Liquid Petroleum and Gaseous substances), hazard and installation

(xii) Aircraft rescue procedures

(xiii) First aid training.

APPENDIX 3

CREW COMMANDER COURSE

1. COURSE SYLLABUS

1.1 Crew Commander Course should be designed to equip senior fire officers with the theory, principles and practice of fire station management, facilities and fire safety planning, as well as command and control at aircraft crash site to prepare them for their roles as senior fire officers. The Crew Commander Course should include at least the following areas:

1.1.1 Aerodrome Safety Management System

1.1.1.1 Related closely to safety policy (and safety culture) is how an organization sets its objectives. Clearly stated objectives can lead to a commitment to action that will enhance the safety of the organization. In some organization no explicit safety objectives are stated. A few exceptional organizations set their objectives formally, clearly enunciating their vision, defining desired outcomes, spelling out the attainable steps for meeting the objectives, and documenting the process. They have agreed to relevant safety indicators and have adopted realistic safety targets.

1.1.2 Airport Fire Safety

1.1.2.1 The key to successful fire safety is not just airport fire and rescue services, but a holistic approach to the whole airport environment. Participants shall be taught on fire safety measures for airport terminal buildings and hangars. Fire prevention and fire safety practices in airports shall also need to be covered. The course shall equip participants with the knowledge to advice on the formation of emergency control organizations (*a person or persons appointed by the emergency planning committee to direct and control the implementation of the airport's emergency response procedures*).

1.1.3 ARFF Vehicles' Standards

1.1.3.1 The ability to respond to airport emergencies with adequate and appropriate equipment is paramount to ARFF personnel. The course shall enable participants to:

a) State NCAA requirements on ARFF vehicles;

b) Stipulate requirements of ARFF vehicles for an airport;

c) Select from options available for ARFF vehicles; and

d) Specify the performance of ARFF vehicles for the purpose of procurement.

1.1.3.2 Participants should be informed on the latest technology and advanced ARFF vehicles that are used in major airports around the world.

1.1.4 Budgeting in Airport Fire Service

1.1.4.1 Estimates of expenditure are a projection of the fiscal records of a particular department to operate off efficiently. Participants shall at least appreciate the need for budgeting and be able to differentiate between the two estimates submissions.

1.1.4.2 The course should briefly cover the various headings for budgetary allocations of the Airport Emergency Services.

1.1.5 Design and Siting of Airport Fire Station

1.1.5.1 The primary focus of airport fire station design is to provide rapid response for fire fighters and vehicles responding to an alert. Station configuration should incorporate maximum views of the airfield and direct access from the apparatus bays to the road and runway system. The training program shall provide standards and guidance for planning, siting, designing and construction of airport fire stations.

1.1.6 Emergency On-line Communication System

1.1.6.1 Each level of the fire ground organization has a different need and capability to communicate. Those differences will necessarily affect the entire communications process as fire operations continue. The On-scene Commander is on the command level and deals with decisions making, assignments, coordination, revision and control as he determines the overall strategy and manages the attack plan.

1.1.7 Fire Precaution in Buildings

1.1.7.1 Fire precautions are the measures taken and the fire protection provided in a building or other fire risk to minimize the risk to the occupants, contents and structure from an outbreak of fire. The Crew Commander course shall include the aims for taking fire precautions in buildings and the concepts in building construction relevant to fire precaution.

1.1.8 Fire Service Administration

1.1.8.1 Participants shall be taught on the managerial role of a senior fire officer and the seven basic functions of management in the fire service. They shall be able to distinguish between management and leadership.

1.1.9 Fire Vehicle Performance Test

1.1.9.1 The training program shall cover the standard for aircraft fire vehicle six-monthly performance test in accordance to NCAA-AC-ARD007 section 10.2, Inspection and Testing of Equipment and Appliances.

1.1.10 Hangar Fire Protection

1.1.10.1 The extremely high value of aircraft, hangars, and their ancillary facilities requires the thoughtful application of knowledge of the hazards involved. Participants shall be taught on fire protection recommended for aircraft hangars.

1.1.11 Hazards of Aircraft Fuelling Operations

1.1.11.1 The aerodrome operator, the aircraft operator and the fuel supplier each has responsibilities in respect of the safety measures to be taken during fuelling operations. Training must be able to cover this aspect.

1.1.12 Aerodrome Manual

1.1.12.1 The training program shall cover parts of Aerodrome Manual that are related to aerodrome rescue and firefighting i.e. the ARFFS Operations Manual with their relevant Standard Operating Procedures (SOPs) and the Aerodrome Emergency Plan.

1.1.13 Mass Casualty Evacuation

1.1.13.1 A mass casualty incident would significantly stress airport resources and would require fatality management capabilities and a surge in Emergency Medical Services (EMS) and hospital response. The training programme shall equip participants with the skills and knowledge to manage this.

1.1.14 Planning and Development of ARFFS

1.1.14.1 Senior Fire Officers will likely be involved in master planning for their ARFFS.

As such, the course shall be able to cover this.

1.1.15 Training and Proficiency Test

1.1.15.1 One of the objectives of the course is to ensure that Senior Fire Officers are conversant with the basic and specialist training required for ARFFS personnel to deal with aircraft emergencies.

1.1.16 Water Rescue Plan

1.1.16.1The course shall include basic planning procedures, facilities and equipment to effectively perform rescue operations when an aircraft crashes into a body of water, swamp, or tidal area where normal ARFFS vehicles are unable to reach the accident scene.

1.1.17 Equipment Specification and Evaluation

1.1.17.1 Specifying and purchasing firefighting equipment can be a difficult exercise for officers who are unfamiliar with the procedures involved. Many purchasers rely solely on the advice and guidance of the salesperson. This can add to the apprehension and anxiety of the officer who is tasked to obtain the required equipment at a reasonable price. The course shall impart adequate information and guidance materials to the participants on equipment specification.

Other relevant modules which should also form part of the curriculum include the following:

(i). Fire practice ground tactics
(ii) Operational principles and management of foam and water tenders
(iii) General fire prevention on aerodromes
(iv) Dry chemical powders, operations and techniques
(v) Fire prevention legislation
(vi) Breathing apparatus
(vii) Halogenated hydrocarbons
(viii) Station training, planning of training programme at station level
(ix) Incident report
(x) Aircraft fuel
(xi) Report writing
(xii) Aircraft construction materials
(xiii) Aircraft rescue tactics
(xiv) Work of air traffic control and liaising with fire service
(xv) Dangerous goods
(xvi) Aerodrome licensing requirements
(xvii) Functional leadership, health and safety at work etc.

APPENDIX 4

WATCH COMMANDER COURSE

The syllabus content includes:

The syllabus is designed to acquaint officers with development in the field of airport fire prevention rescue and fire fighting, appliance design and handling etc. The syllabus content includes:

(i) . Extinguishing agents and foam-making liquids
(ii). Major foam tenders operations and use of monitors
(iii). Aircraft internal fire
(iv). Aviation fuels
(v) . Specialist rescue equipment
(vi) Station management
(vii) Post accident procedures and scene management
(viii) General design and functional requirement of aerodrome fire appliances
(ix) Droughts ventilation unit
(x) Principles and organization of aerodrome fire prevention
(xi) Development in fire engineering
(xii) Aircraft design features
(xiii) Planning fire emergency organization
(xiv) LPGs
(xv) Station training/management
(xvi) Breathing apparatus
(xvii) Aerodrome manual
(xviii) Aerodrome categorization
(xix) Aerodrome inspection and maintenance
(xx) Risk assessment
(xxi) Transportation of dangerous goods

APPENDIX 5

SPECIALIST COURSES

1.1 A general knowledge of all equipment is essential in order to ensure correct handling and thorough maintenance which is essential to guarantee operational efficiency under all circumstances. All fire fighters must be trained in the operation and maintenance of the range of basic rescue equipment, which involve training on the following:

1) Breathing apparatus wearer;
2) Breathing apparatus instructor;
3) Breathing apparatus compressor;
4) General fire instructor;
5) Fire accident/Incident;
6) Driving/pump operation;
7) Fire prevention;
8) Watchroom procedures;
9) Airside driving;
10) Medical first aid equipment;
11) Lighting equipment;
12) Power operated tools;
13) Hand tools;
14) Forcing equipment;
15) Equipment capable of delivering water spray within aircraft fuselages;
16) Equipment capable of delivering a fresh air supply, probably by means of a powered-fan unit and incorporating trunking to suit aircraft delivery purposes.

APPENDIX 6

TRAINING SIMULATORS

1. ESSENTIAL TRAINING SIMULATORS

1.1 A proper range of training simulators is critical to equip fire fighters with the necessary skills to perform their tasks. Improper training or lack of simulators may not only impede their performance but be dangerous to themselves and people involved in the accident or incident.

1.2 The training provider shall have or an agreement with a third party who has the following essential simulators:

a) Breathing apparatus simulator;
b) Military aircraft fire simulator;
c) Civil aircraft fire simulator;
d) Fire pits/trays;
e) Flashover simulator;
f) Confined space simulator;

1.3 A simulated aircraft fire must include a pit fire or a fire with an aircraft mock-up or similar device using enough fuel to provide a fire intensity which simulates realistic firefighting conditions.

1.4 At times when a simulator or other firefighting training facilities is unserviceable, the training provider needs to ensure that it is rectified as soon as possible, and in the meantime, source for an alternative or replacement to ensure that training provided by the organization will not be affected and thus standards will not be compromised.

APPENDIX 7

TRAINING INSTRUCTORS

1. CRITERIA FOR TRAINING INSTRUCTORS

1.1 It is imperative that the instructors are able to accommodate a broad range of training needs. Besides good knowledge of National Standards and best practices, instructors must be able to meet a set of entry requirements.

1.2 The following set of requirements apply to instructors providing training for Basic Course and Fire Fighter Training:

a) must have a minimum of 5 years' experience with an ARFF service provider;

b) leadership exposure in operations with an ARFF service provider;

c) pass the Fire fighter training course;

d) pass the Breathing Apparatus Operations Training Course;

e) must possess relevant instructional techniques;

f) must possess effective communication skills;

g) must be able to conduct theoretical and practical assessments; and

h) must possess a valid Medical First Aid certification.

1.3 As for instructors providing training for the Crew Commander course, he shall, in addition to the set of requirements listed above, pass the Crew Commander course.

ATTACHMENT A

APPLICATION FORM

APPLICATION FOR APPROVAL AS AN ARFF TRAINING PROVIDER

(Please tick √ as appropriate)

Initial Issue ☐ Renewal ☐

Basic Particulars

Name of Organization :			
Address of Organization :			
Full Name of Accountable Manager :	Email	:	
	Tel No.	:	
	Fax No.	:	

Please indicate any documents, training courses, programs, syllabus, instructional methods, simulators, facilities, etc for seeking approval of ARFF Training Provider. (If insufficient space, please attach a separate list).

Submission Instructions

This form is to be completed and submitted with the Training and Procedures Manual. The completed form and manual should be forwarded to the following address:

Director of Air Navigation Services),
Mozambique Civil Aviation Authority,
Alameda do Aeroporto.

Any enquiry regarding approval of ARFF training provider should be sent to the above address.

Declaration

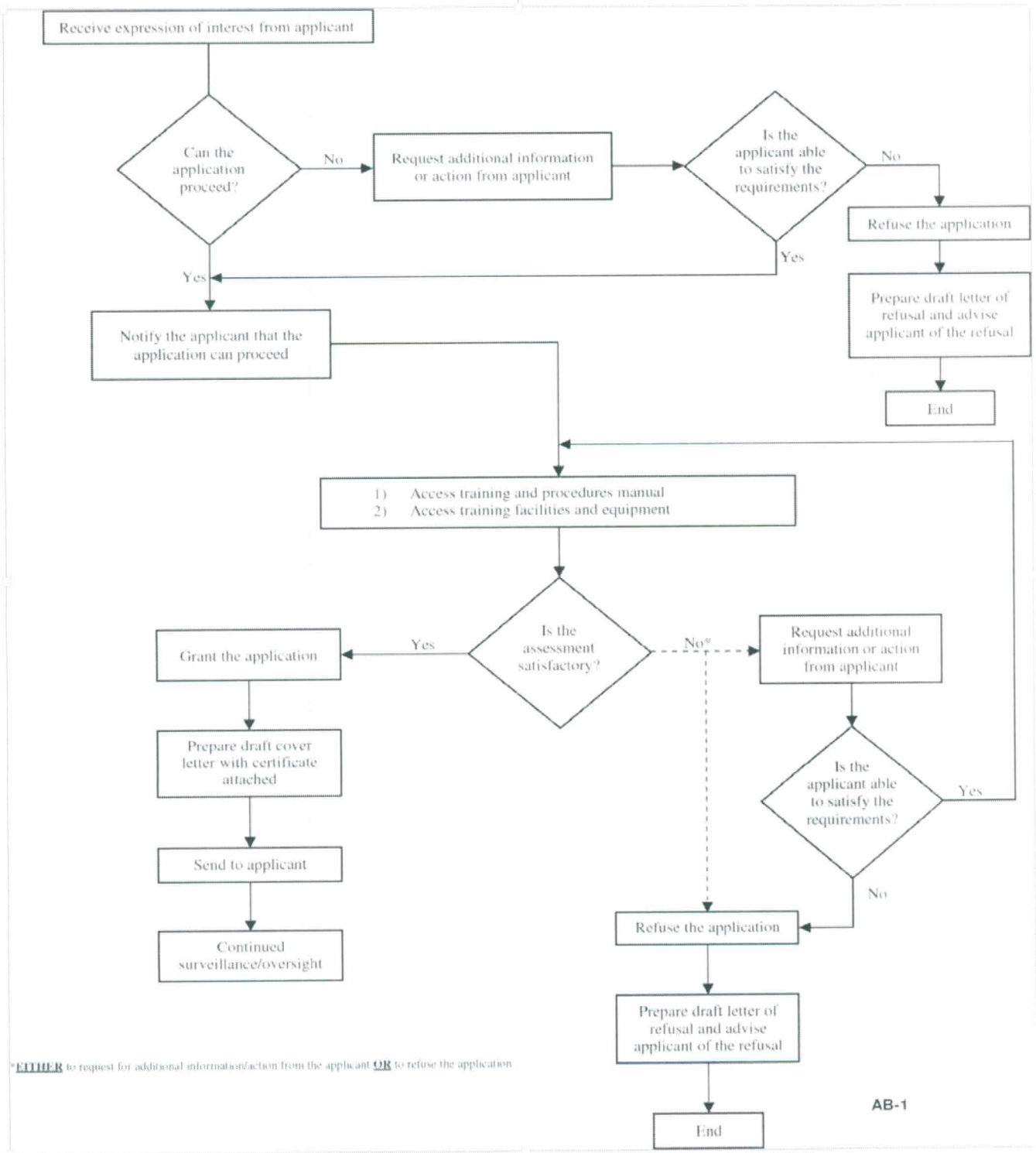
I declare that the above particulars and all documents submitted in support of this application are true in every respect.

_____ _____

Name & Designation of Applicant Signature & Date

ATTACHMENT B

FLOWCHART FOR APPROVAL PROCESS



Attachment B

GRANT OF AN AERODROME RESCUE AND FIRE FIGHTING TRAINING PROVIDER CERTIFICATE OF ACCREDITATION

{REF. No.}

{dd/mm/yyy}

{Applicant's name}
{Training Provider's Name}
{Training Provider's Address} Dear Sir/Madam,

Subject: ISSUE OF CERTIFICATE OF ACCREDITATION OF {NAME OF} AS AN ARFF TRAINING PROVIDER

I refer to your letter dated {dd/mm/yyyy} and your application for accreditation of {name of} as an ARFF Training Provider.

Your application has been approved and ARFF Training Provider Certificate of accreditation, number {xxxx} is enclosed. This certificate is valid for two (2) years from dd/mm/yyyy to dd/mm/yyyy

Your training organization will now commence (or continue) and shall be subjected to regular routine surveillance by Aerodrome Safety Inspectors (Fire and Safety) of the Authority.

This safety oversight function and any day-to-day matter in relation to your training organization shall be performed by Aerodrome Safety Inspectors (Fire and Safety) of the Authority.

Consequently, you are to contact the Authority in case of any queries regarding this certificate or any other ARFF training related matters.

Please accept the assurances of my highest regards.

Capt. João Martins de Abreu
The Chairman of the Board and CEO

INSTITUTE OF CIVIL AVIATION OF MOZAMBIQUE
THE CHAIRMAN OF THE BOARD AND CEO

Capt. João Martins de Abreu