



CIVIL AVIATION
SAFETY AUTHORITY
AUSTRALIA

MOS Part 139H—Standards Applicable to the Provision of Aerodrome Rescue and Fire Fighting Services

VERSION 1.1: FEBRUARY 2003

UNCONTROLLED VERSION

MOS Part 139H—Standards Applicable to the Provision of Aerodrome Rescue and Fire Fighting Services

This is a CASA policy manual. It contains specifications (standards) prescribed by CASA, of uniform application, determined to be necessary for the safety of air navigation.

This manual is incorporated in the Civil Aviation Safety Regulations Part 139H—Standards Applicable to the Provision of Aerodrome Rescue and Fire Fighting Services by reference.

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This manual may be amended from time to time. Such amendment service will be provided by the Document Control Unit, Civil Aviation Safety Authority.

Any comments about the content or requests for clarification should be directed to:

Branch Head, Airspace, Air Traffic and Aerodrome Standards Branch, Aviation Safety Standards, CASA.

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CHAPTER 1: INTRODUCTION

Section 1.1: General

1.1.1 Background

- 1.1.1.1 The standards pertaining to the provision of ARFFS stated in this part will be established by Civil Aviation Regulation 139H, which reflects Australia's commitment to the International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPs), especially those stated in ICAO Annex 14, Chapter 9.2.1.
- 1.1.1.2 The above ICAO documents provide the basis for the standards to be supplied for the provision of Aerodrome Rescue and Fire Fighting Services in Australia for airports that achieve the criteria specified for Level 1. However, where there is a difference between a standard prescribed in these documents and the one in the Manual of Standards, the MOS standards shall prevail.
- 1.1.1.3 Civil Aviation Regulation (CASR), Part 139, Subpart H sets out general standards that an ARFFS must comply with. The Manual of Standards sets out the detailed requirements, as authorised by those Regulations.

1.1.2 Document Set

- 1.1.2.1 The document hierarchy consists of:
 - (a) relevant Civil Aviation Safety Regulations (CASRs);
 - (b) the Manual of Standards (MOS); and
 - (c) Advisory Circulars (ACs).
- 1.1.2.2 The regulatory documents establish, for service providers, a comprehensive description of system requirements and the means of meeting them.
- 1.1.2.3 **CASRs** establish the regulatory framework (*Regulations*) within which all service providers must operate.
- 1.1.2.4 The **MOS** comprises specifications (*Standards*) prescribed by CASA, of uniform application, determined to be necessary for the safety of air navigation. In those parts of the MOS where it is necessary to establish the context of standards to assist in their comprehension, the sense of parent regulations has been reiterated. The MOS is a disallowable instrument. This means that it is a legislative instrument that becomes effective on publication in the Government Gazette and it must be tabled in Parliament within fifteen sitting days from when it was made and is subject to scrutiny by Parliament.
- 1.1.2.5 Readers should understand that in the circumstance of any perceived disparity of meaning between MOS and CASRs, primacy of intent rests with the regulations. Where there is any inconsistency between the regulations and the MOS, the regulations prevail.

- 1.1.2.6 Readers should understand that in the circumstance of any perceived disparity of meaning between MOS and CASRs, primacy of intent rests with the regulations.
- 1.1.2.7 Service providers must document internal actions (*Rules*) in their own operational manuals, to ensure the maintenance of and compliance with standards.
- 1.1.2.8 **ACs** are intended to provide recommendations and guidance to illustrate a means, but not necessarily the only means of complying with the Regulations. ACs may explain certain regulatory requirements by providing interpretive and explanatory materials. It is expected that service providers will document internal actions in their own operational manuals, to put into effect those, or similarly adequate, practices.

1.1.3 Differences between ICAO Standards and those in MOS

- 1.1.3.1 Notwithstanding the above, where there is a difference between a standard prescribed in ICAO documents and the Manual of Standards (MOS), the MOS standard shall prevail.

1.1.4 Differences Published in AIP

- 1.1.4.1 Differences from ICAO Standards, Recommended Practices and Procedures are published in AIP Gen 1.7.

1.1.5 MOS Documentation Change Management

- 1.1.5.1 Responsibility for the approval of the publication and amendment of the Manual of Standards (MOS) resides with the Branch Head, Airspace, Air Traffic and Aerodrome Standards Branch, of the Aviation Safety Standards Division, Civil Aviation Safety Authority.
- 1.1.5.2 This document is issued and amended under the authority of the Branch Head, Airspace, Air Traffic and Aerodrome Standards Branch.
- 1.1.5.3 Requests for **any change** to the content of the MOS may be intimated from:
 - (a) technical areas within CASA;
 - (b) aviation industry service providers;
 - (c) other aviation industry service providers.
- 1.1.5.4 The need to **change standards** in the MOS may be generated by a number of causes. These may be to:
 - (a) ensure safety;
 - (b) ensure standardisation;
 - (c) respond to changed CASA standards;
 - (d) respond to ICAO prescription;
 - (e) accommodate new initiatives or technologies.

1.1.6 Related Documents

1.1.6.1 These standards should be read in conjunction with:

- (a) ICAO Annex 14;
- (b) Airports Services Manual Part 1;
- (c) Australian Standard ISO 9002: 1944—Quality systems model for Quality Assurance in production installation and servicing.

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Section 1.2: Definitions

Definition	Meaning
Advisory Circulars	Guidance material on the means of achieving the minimum compliance with the CASR and MOS standards.
AEP	Aerodrome Emergency Plan.
Aerodrome	A defined area of land or water, including any buildings, any installations, and equipment intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.
Aerodrome operator	Authority to operate as per CAR 89C(1).
Aerodrome Rescue and Fire Fighting Service (ARFFS)	An organisation that provides aerodrome rescue and fire fighting services established under the CASA criteria.
ACFT	Aircraft.
AFC	Australian Fire Competency.
AIP	Aeronautical Information Publication.
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.
Airport Services Manual	Part 1 Rescue and Fire Fighting, International Civil Aviation Organisation (Doc 9137-AN/898) and related to ICAO Aerodromes Annex 14.
Annex 14	Aerodromes, Annex 14, to the Convention on International Civil Aviation Organisation.

Definition	Meaning
Apron	A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance.
AS	Australian Standard.
ATS	Air Traffic Services.
CARs	Civil Aviation Regulations 1998.
CASR	Civil Aviation Safety Regulation.
Certificate of Competency	A Certificate issued by a Registered Training Organisation at the completion of all competency modules within a level.
Certificate of Proficiency	Local and general competency in addition to competencies held under AFC qualification.
Air transport operation	An aircraft operation involving the transport of passengers, for remuneration or hire.
Competency	Possessing knowledge, skill and judgement needed to perform specific tasks.
Criteria	A standard to establish an aerodrome rescue and fire fighting service.
DCP	Dry Chemical Powder.
DoTRS	Department of Transport and Regional Services.
ERSA	Enroute Supplement Australia.
Facility	One or more items of equipment essential to provide a discrete technical function or amenity. A facility can be equivalent to a service.
ICAO	International Civil Aviation Organisation.
International passengers	A passenger who flies on an international service.
International air service	An air service that passes through the airspace of more than one country.
Licensee	An entity authorised under the Civil Aviation Regulation, Part 89B (1) to operate an airport.
Manual of Standards (MOS)	A document that contains the minimum Standards required.

Definition	Meaning
Movement area	That part of an aerodrome to be used for take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the aprons.
MOU	Memorandum of Understanding with a third party providing a service or responding emergency services or sub-contractor.
Must	Mandatory requirement.
Nationality of ACFT	An aircraft registered in a contracting State (ICAO States) has the Nationality of the contracting State.
NOTAM	Notice to airmen. A notice to airmen issued by the Australian NOTAM Office and containing information, or means instruction concerning the establishment, condition or change in facility, service, procedure or hazard.
Provider	A legal entity (individual or company) nominated by the airport owner, and certified by CASA, to provide an aerodrome rescue and fire fighting service at the nominated aerodrome.
Representative	An individual who is legally responsible for the management of the aerodrome rescue and fire fighting service delivery and is identified to CASA by the airport owner, and who will be the focal point for day to day dealings with the Authority.
Regulations	Civil Aviation Safety Regulations 1998 (CAR 1998).
Safety Case	Defined in CASA Advisory Circular CASA/AA MOU. AIRWAYS-1(0).
Service delivery	The act of allocating aerodrome rescue and fire fighting service facilities, equipment and resources to support the infrastructure and activities of a Provider.
SOP	Standard Operating Procedures.
Statement of Attainment	Formal recognition of CASA required competency within a level.

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CHAPTER 2: CRITERIA FOR ESTABLISHMENT OR DISESTABLISHMENT OF ARFFS

CASR Reference **CAR 1998 regulation 139.710, 139.720, 139.735, 139.795
and 139.800**

Section 2.1: General

2.1.1 Standard: Category Definition for Level 1

2.1.1.1 Level 1:

- (a) an aerodrome from or to which an international passenger air service operates; and
- (b) any domestic aerodrome through which more than 350,000 passengers passed through on air transport flights during the previous financial year.



Note: The disestablishment of ARFFS may be considered when the number of annual passengers on air transport falls below 300,000 and remains below this level for a 12-month period. The ARFFS provider shall provide CASA with a Safety Case which should justify the closure of the ARFFS. Refer CASA/AA MOU. AIRWAYS–1(0).

- 2.1.1.2 Where there is a change in aircraft size that would result in a change in the aerodrome category the ARFFS provider may apply to CASA for reduction in ARFFS by submitting a Safety Case based on the requirements defined in [Chapter 3](#) of the MOS.



2.1.2 Standards for ARFFS

- 2.1.2.1 The level of protection provided must be in accordance with ICAO Standards, Chapter 9 of the Annex 14 to the Chicago Convention.

2.1.3 Level 1 Coverage

- 2.1.3.1 The level of protection must be in accordance with the specified critical aircraft and fire extinguishing agent performance criteria. The aerodrome category will be determined by the table in [Chapter 3](#), and extinguishing agent performance defined in the table in [Chapter 7](#), of this Manual.
- 2.1.3.2 Response times must meet International obligations as defined in [Chapter 6](#) of this Manual.

- 2.1.3.3 The minimum number of Vehicles to achieve adequate protection for Level 1 is as follows:

Minimum Number of Vehicles	
Airport Category	ARFFS Vehicles
1 to 5	1
6 to 7	2 (min)
8 to 10	3 (min)

- 2.1.3.4 All operational vehicles must be driven and operated on operational responses by ARFFS AFC qualified staff.

2.1.4 Obtaining Air Transport Data

- 2.1.4.1 On the 1st November of each year, passenger figures can be obtained from DOTRS to allow ARFFS providers to forecast operational requirements. Aerodromes achieving air transport figures that achieve criteria Level 1 or Level 2 will be required to provide an ARFFS to the specified level for the critical aircraft using the aerodrome within a period not exceeding 12 months.



Section 2.2: ARFFS Level 2 Coverage

2.2.1 Standard: Category Definition for Level 2

- 2.2.1.1 Aerodromes where the number of annual passengers on air transport is less than 350,000 may provide a level of ARFFS. The ARFFS will be subject to audit if published in ERSA and form part of the AEP.
- 2.2.1.2 The Aerodrome Emergency Plan that must apply will be in accordance with ICAO Standards, Chapter 9, of Annex 14 to the Chicago Convention.
- 2.2.1.3 Where an ARFFS is provided, it must be notified in ERSA.

2.2.2 ARFFS Level 2 Coverage

- 2.2.2.1 Where ACFT with less than 30 seats operate as air transport, an ARFFS must be provided at a minimum of category 2.
- 2.2.2.2 Where ACFT with 30 passenger seats or greater operate as air transport, an ARFFS must be provided at a minimum of category 4.

Note: The **disestablishment** of a service can occur at any time subject to advice to CASA, NOTAM action, (NOTAM advice to remain in force until ERSA has been amended) and notification to all other regular users of the aerodrome and advice to ERSA of the withdrawal of service.

- 2.2.2.3 The aerodrome category will be determined by the table in [Chapter 3](#), and extinguishing agent performance in the table in [Chapter 7](#), of this Manual.
- 2.2.2.4 Response time must meet CASA Standards defined in [Chapter 6](#) of this Manual.
- 2.2.2.5 The minimum number of vehicles to achieve adequate protection for Level 2 is as follows.

Minimum Number of Vehicles	
Airport Category	ARFFS Vehicles
1 to 5	1
6 to 7	2 (min)
8 to 10	3 (min)

- 2.2.2.6 All operational vehicles must be driven and operated on operational responses by ARFFS AFC qualified staff.

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CHAPTER 3: DETERMINING THE CATEGORY OF THE AERODROME

CASR Reference **CAR 1998 regulation 139.720, 139.725 and 139.800**

Section 3.1: General

3.1.1 Standard: Determining Critical Aircraft

- 3.1.1.1 Each aerodrome must be categorised in accordance with the following table.
- 3.1.1.2 A figure of 700 movements of the busiest consecutive three-months of the preceding 12 months is used as the benchmark.
- 3.1.1.3 Determining frequency of operation for an aircraft type is called a movement which is either a take-off or a landing.
- 3.1.1.4 The aerodrome category for ARFFS is calculated on the overall length of the longest aircraft normally using the aerodrome and the maximum width of the fuselage.

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

- 3.1.1.5 To categorise the aerodrome using the aircraft, evaluate its over-all length and then its fuselage width. If, after selecting the appropriate category the fuselage width exceeds the maximum indicated in the table, then the category for that aerodrome will be one category higher.

3.1.2 Aerodrome Category

3.1.2.1 Should the longest aircraft not reach 700 movements and therefore not be deemed to be the 'critical' aircraft, the category can be set at one category below the designated category specified in the table in Chapter 3 (this chapter). This standard will apply to aerodromes meeting Level 1 criteria defined in Chapter 2 of this Manual.

3.1.2.2 The correct level of ARFFS protection shall be available at all times that the ARFFS is operational. ARFFS providers are required to maintain periodic checks on all aircraft operations to ensue the correct category is supplied.



3.1.3 Aerodrome Category Reductions

3.1.3.1 Aerodromes operating at Level 2 criteria may have the ruling relaxed on fuselage length, following receipt of a risk analysis of the aircraft type presented for CASA consideration and subsequent approval.

3.1.3.2 If advertised in ERSA, NOTAM action must be taken for any reduction below specified ARFFS category as per table in Chapter 3 (this chapter). Further reference is provided in [Chapter 25](#), Interruptions to Level of Operational Service and Contingency Plans, Service Failure.

3.1.4 Advisory Circular

3.1.4.1 Additional information to assist in determining the level of service to be provided for an aerodrome criterion is available in Advisory Circular - No.1.

CHAPTER 4: ARFFS VEHICLES

CASR Reference *CAR 1998 regulation 139.795, 139.800 and 139.805*

Section 4.1: General

4.1.1 **Standard: Fire Vehicles**

- 4.1.1.1 The minimum number of operational rescue and fire fighting vehicles must be available commensurate with the aerodrome category as defined in [Chapters 2](#) and [3](#) of this Manual.
- 4.1.1.2 All ARFFS vehicles excluding boats must be capable of meeting response times as specified in [Chapter 6](#), of this Manual and must contain a crew compartment sufficient for the safe conveyance of ARFFS staff.
- 4.1.1.3 Vehicle selection and availability must be able to provide the required fire extinguishing agent that achieves the performance criteria set out in [Chapter 7](#), of this Manual.
- 4.1.1.4 Vehicle performance and specification must be in accordance with [Chapter 5](#), of this Manual.
- 4.1.1.5 As vehicles are replaced they must meet ADR, State or Territory road worthy requirements.
- 4.1.1.6 All operational vehicles must have a current State or Territory road worthy certificate.
- 4.1.1.7 Vehicle colour will be 'signal red' in accordance with Australian Standard 2700 colour R13.
- 4.1.1.8 All ARFFS vehicles must be fitted with visual audible warning systems that comply with State or Territory Legislation for emergency vehicles.
- 4.1.1.9 Revolving obstruction beacons for ARFFS vehicles must be red and placed on the vehicle to be observed for 360°.

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CHAPTER 5: VEHICLE PERFORMANCE

CASR Reference *CAR 1998 regulation 139.795, 139.800 and 139.805*



Section 5.1: General

5.1.1 Standard: Vehicle Performance

- 5.1.1.1 ARFFS vehicle performance and specification are referred to in [Chapter 6](#), ICAO, Airports Service Manual, Part 1, Rescue and Fire Fighting.
- 5.1.1.2 Additional information is available in National Fire Protection Association (NFPA) 414, Aircraft Fire Fighting Vehicles.

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CHAPTER 6: RESPONSE TIME

CASR Reference **CAR 1998 regulation 139.710, 139.730, 139.740 and 139.800**

Section 6.1: General

6.1.1 Standard: Response Time

- 6.1.1.1 Response time is defined as the time between the initial call to the ARFFS and the time when the first responding vehicle(s) is (are) in position, and if required, produce foam at a rate of at least 50% of the discharge rate specified in the Table defined in [Chapter 7](#) of this Manual.
- 6.1.1.2 All other vehicles required to deliver the amount of extinguishing agent detailed in [Chapter 7](#), must be capable of arriving so as to provide continuous agent application at the required rate.
- 6.1.1.3 The operational directive of the ARFFS must be to achieve response times not exceeding three minutes to the end of each runway in optimum visibility and surface conditions.
- (a) the operational objective of the ARFFS is to achieve a two minute response time to the end of each runway;
 - (b) the operational objective of the ARFFS is to achieve a response time not exceeding three minutes to any part of the movement area;
 - (c) response times for all vehicles must be documented for validation.

Note: Optimum visibility and surface conditions are defined as: day time, good visibility, no precipitation, with normal response route free of surface contamination; ie, water, ice or snow.

6.1.2 Staffing to Achieve Response Time

- 6.1.2.1 Staffing to achieve response times. Refer to [Chapter 20](#) of this Manual.

6.1.3 Emergency Access Roads

- 6.1.3.1 Emergency access roads must be provided at aerodromes where terrain conditions permit their construction so as to minimise response times. Particular attention should be given to the provision of ready access to approach areas up to 1000 metres from the threshold, or at least within the aerodrome boundary.
- 6.1.3.2 Access roads and any associated bridges must be capable of supporting the heaviest ARFFS vehicle which may use them and must be constructed so as to be effective in all weather conditions.

- 6.1.3.3 Where an aerodrome is fenced, access to outside areas must be achieved by provision of emergency or frangible barriers; and
- 6.1.3.4 Emergency gates must be readily identifiable to the public to indicate their purpose.

6.1.4 Difficult Terrain

- 6.1.4.1 At aerodromes where a significant proportion of aircraft movements take place over water, swampy areas or other difficult terrain in the immediate vicinity of the aerodrome and where conventional fire vehicles may not be capable of achieving effective response times the operational procedures and equipment must be availability to respond to accidents which may occur in these areas.
- 6.1.4.2 These facilities need not be located on the aerodrome if they can be made immediately available within a reasonable response time by off aerodrome agencies as part of the Aerodrome Emergency Plan. In all cases the Aerodrome Emergency Plan must determine and specify in advance the response area for which it undertakes to provide a rescue service. Ref: Chapter 11 of this Manual and formal arrangements will be required and endorsed by CASA.
- 6.1.4.3 On aerodrome facilities will be required to cover difficult environments within a distance of 1000 metres from the threshold of affected runways.
- 6.1.4.4 The objective of each operation must be to create conditions in which survival is possible and from which the total rescue operation can succeed. This concept anticipates that the initial, rapid response attendance may have to provide a preliminary level of assistance while waiting the arrival of a larger rescue force. The first stage response would have as its objective the removal of immediate hazards to survivors, their protection, including the first aid treatment of injuries, and their communications equipment to identify the location to which additional rescue forces must respond. The emphasis will be on rescue and may not include any fire fighting capacity in the first instant.

CHAPTER 7: FIRE EXTINGUISHING AGENT PERFORMANCE CRITERIA

CASR Reference **CAR 1998 regulation 139.785 and 139.795**

Section 7.1: General

7.1.1 Standard: Fire Extinguishing Agent Performance Criteria

7.1.1.1 Having determined the category of the aerodrome, the category figure is then applied to the Table below which determines the minimum amount of water and discharge rate of produced foam required as well as the mandatory amount of complementary agent.

MINIMUM USABLE AMOUNTS OF EXTINGUISHING AGENTS

Aerodrome Category	Foam Meeting Performance Level A		Foam Meeting Performance Level B		Complementary Agent
	Discharge rate foam solution		Discharge rate foam solution		Dry chemical powder
	Water litres	Discharge rate l/m	Water litres	Discharge rate l/m	DCP kg
1	350	350	230	230	45
2	1000	800	670	550	90
3	1800	1300	1200	900	135
4	3600	2600	2400	1800	135
5	8100	4500	5400	3000	180
6	11800	6000	7900	4000	225
7	18200	7900	12100	5300	225
8	27300	10800	18200	7200	450
9	36400	13500	24300	9000	450
10	48200	16600	32300	11200	450

7.1.1.2 The required quantities of extinguishing agent must be available for discharge from operational fire vehicles within the response times detailed in [Chapter 6](#) of this Manual.

- 7.1.1.3 The quantity of foam concentrate separately provided on vehicles for foam production must be in proportion to the quantity of water provided and the foam concentration selected. The amount of foam concentrate should be sufficient to supply at least two full tank loads of water.
- 7.1.1.4 Foam concentrate of different types or from a different manufacturer must not be mixed except where it has been established that they are interchangeable and compatible.
- 7.1.1.5 The ARFFS provider may apply to CASA for approval to substitute extra water capacity in lieu of Complementary Agent.
- 7.1.1.6 For aerodrome categories 1 and 2 up to 100% of water may be replaced by a complementary agent.

7.1.2 Fire Extinguisher Agent Performance Criteria

- 7.1.2.1 For aerodromes with categories ranging from 3 to 10, a maximum of 30% of specified water capacity for foam production meeting performance “Level A” listed in the Table, for each category may be replaced by a complementary agent. For the purpose of substitution, 1kg of foam compatible DCP, equals 1 litre of water for production of foam meeting performance level A, or 1 kg of foam compatible DCP equals 0.66 litres of water for production of foam meeting performance level B.
- 7.1.2.2 CASA must be advised of the performance level foam to be used as well as providing a manufacturers certificate verifying that the foam achieves the Standard specified. Ref: ICAO Airport Service Manual, Part 1, Rescue and Fire Fighting, Extinguishing Agent Characteristics, Chapter 8, para, 8.1.5 and Table 8-1.
- 7.1.2.3 The foam production monitors must be aspirated and have an effective discharge range at least equal to the length of the longest aircraft normally used in determining the aerodrome ARFFS category and have the capability to deliver foam in a dispersed pattern.
- 7.1.2.4 Vehicles may employ mobile monitor mode operations and /or extendible monitors to assist in or to meet these requirements, subject to a satisfactory demonstration of its ability to CASA.
- 7.1.2.5 Further information for level of protection and categorisation can be found in ICAO, Airport Services Manual, Part 1, Chapter 2.

7.1.3 Reserve Stock of Fire Fighting Agent

- 7.1.3.1 A minimum of 200% of foam concentrate and 200% of foam compatible dry chemical powder must be held in reserve and be available at all times on the aerodrome. The amount of reserve stock is calculated and based on the category of the aerodrome, using the foam discharge rates and complementary agent figures in the Table. Additional stocks of extinguishing agents are required for training.
- (a) extinguishing agents reserves may have to be increased if delivery is delayed;
 - (b) reserve expellant gas to discharge the 200% of reserve stock of DCP must be available at all times.
- 7.1.3.2 Apart from a domestic water supply, sufficient supplementary water supply must be readily available to replenish fire vehicles. A hydrant system with delivery outlets consistent with the requirements of the ARFFS and local fire brigade must be provided for at the aerodrome fire station.
- 7.1.3.3 Hydrant/s with minimum flow of 30 l/s and must be available for the refilling of emergency fire service appliances. The hydrant/s must be conveniently located for ease of access and identified in the ARFFS SOPs.
- 7.1.3.4 Mobile water tankers may be utilised, provided they are readily available and meet the minimum flow rate.

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CHAPTER 8: TEST EQUIPMENT PERFORMANCE CRITERIA

CASR Reference

CAR 1998 regulation 139.825

Section 8.1: General

8.1.1 Standard: Test Equipment for Operational Equipment

- 8.1.1.1 The necessary test equipment must be available and regularly calibrated to ensure accuracy of measurement/weight for all operation equipment.
- 8.1.1.2 The findings must be recorded and maintained as per [Chapter 28](#) of this Manual.
- 8.1.1.3 Documentation and performance test criteria must be available for each piece of operational equipment.
- 8.1.1.4 Facilities that require testing are listed below (this is not a comprehensive list):
- (a) vehicle acceleration tests for response times;
 - (b) breathing apparatus compressor recharging equipment (where installed);
 - (c) discharge of foam output and quality;
 - (d) foam concentrate purity;
 - (e) operational hose;
 - (f) hydrant flow and pressure;
 - (g) vehicle pump performance;
 - (h) communication equipment;
 - (i) pressure cylinders/vessels and high pressure hoses.

Note: Should there be no Australian Standard (AS), other recognised International Standards will apply.

- 8.1.1.5 The above list is not a comprehensive list. All testing should be carried out in accordance with AS, State and Federal Government requirements.

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CHAPTER 9: ARFFS PROVISION FOR PUBLISHED HOURS OF OPERATION

CASR Reference **CAR 1998 regulation 139.770 and 139.775**

Section 9.1: General

9.1.1 **Standard: Hours of ARFFS Coverage**

- 9.1.1.1 Where an ARFFS is established operational hours must be published in ERSA .
- 9.1.1.2 Where ARFFS are established facilities and services must be sufficient to offer protection to the type and extent of aircraft movements at an aerodrome.
- 9.1.1.3 At locations where ARFFS are established fire service protection is only required for the duration of air operations including delayed flights.
- 9.1.1.4 At aerodromes where the hours of coverage are less than 24 hours the ARFFS must be fully operational at a minimum of 15 minutes prior to the scheduled aircraft arrival/departure and the operational crew must remain on duty and in operational readiness for 15 minutes following the last aircraft departure.

- 9.1.1.5 At Level 2 aerodromes where the provision of ARFFS is published in ERSA the hours of availability must also be published.

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CHAPTER 10: SAFETY HAZARD AND RISK MANAGEMENT

CASR Reference **CAR 1998 regulation 139.765, 139.890, 139.895 and
139.900**

Section 10.1: General

10.1.1 Standard: Risk Assessment

- 10.1.1.1 A safety hazard analysis and risk assessment must be produced for ARFFS operational response at the location for which the licence is issued.
- 10.1.1.2 Safety hazard analysis and risk assessment must be documented for validation.
- 10.1.1.3 ARFFS staff must have the knowledge, equipment and training to effectively respond to any hazard on the aerodrome as a result of the risk assessment carried out for the aerodrome.
- 10.1.1.4 Guidelines for the preparation of a safety case for the airways system is explained in CASA Advisory Circular, CASA/AA MOU. AIRWAYS–1(0), February 1998, and is also available on the CASA Internet Website.

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CHAPTER 11: INTERFACE ARRANGEMENTS WITH STATE OR TERRITORY FIRE BRIGADES AND OTHER THIRD-PARTY PROVIDERS

CASR Reference

CAR 1998 regulation 139.780

Section 11.1: General

11.1.1 Standard: Interface Arrangements

- 11.1.1.1 Arrangements must ensure that any interface needed between internal groups is defined and consistent with its safety accountabilities.
- 11.1.1.2 The interface arrangements, contracts, service level agreements or memoranda of understanding must be in place and address requirements to accept service and data from service providers external to its own operation.
- 11.1.1.3 The interface arrangements must seek to ensure the integrity and reliability of the data or service being accepted.
- 11.1.1.4 The third party service provider must have in place management processes which will support the service provided.
- 11.1.1.5 The third party service provider must have in place processes which will detect any operational change which could affect the integrity and reliability of the data and/or service provided and must facilitate prompt rectification.
- 11.1.1.6 Documentation must be made available to ensure that arrangements exist to address the integrity and efficiency of communication procedures with the aviation industry (eg; general alerting mechanism, NOTAMs etc).

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CHAPTER 12: ARFFS OPERATIONAL PROCEDURES/SAFETY MANAGEMENT

CASR Reference **CAR 1998 regulation 139.850, 139.85, 139.890, 139.895
and 139.900**

Section 12.1: General

12.1.1 Standard: Standard Operating Procedures

12.1.1.1 A series of Standard Operating Procedures (SOPs) must be developed that will include operational practices. SOPs must be readily available, maintained and amended as appropriate.

12.1.2 Licence to Operate

12.1.2.1 ARFFS staff must have a current AFC for the operating positions that they hold.

12.1.2.2 ARFFS staff must hold local competencies for their specific location.

12.1.2.3 ARFFS staff must hold a current/valid CASA Certificate of Competency (Licence) for their operating position.

12.1.3 Response Times

12.1.3.1 Response time requirements. Refer to [Chapter 6](#) of this Manual.

12.1.4 Hazard Identification

12.1.4.1 Safety hazard identification. Refer to [Chapter 10](#) of this Manual.

12.1.5 Hazard Management Strategy

12.1.5.1 To control and manage safety hazards and any change to existing systems, equipment or procedures and to ensure that any unacceptable hazards are eliminated will require strategies and procedure development which must result in an SOP. Refer to [Chapter 10](#) of this Manual.

12.1.6 Advisory Circular

12.1.6.1 An example of an SOP can be found in Advisory Circular – No 2.

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CHAPTER 13: ANCILLARY EQUIPMENT

CASR Reference **CAR 1998 regulation 139.795(4 & 5), 139.800 and 139.805**

Section 13.1: General

13.1.1 Standard: Ancillary Equipment

13.1.1.1 Ancillary equipment must conform to Australian Standards (AS), or in the lack of AS, acceptable International Standards must apply.

13.1.1.2 A list of ancillary equipment must be developed and some of this equipment must be carried at all times. The ancillary equipment list must be submitted to CASA for approval.

13.1.1.3 Ancillary equipment required for operational use must include the following:



- (a) axes;
- (b) crowbars;
- (c) bolt-cutters;
- (d) shovel;
- (e) fire blanket;
- (f) ladders/suitable for aircraft type;
- (g) lights/hand lamps;
- (h) lines;
- (i) power saws;
- (j) lifting and forcing tools;
- (k) breathing apparatus sets dependent on aerodrome category and numbers as per Advisory Circular – No.3;
- (l) webbing seat-belt cutting tools;
- (m) gloves;
- (n) first aid kit/general*;
- (o) first aid kit/crash*;
- (p) hand tools;
- (q) fire fighting branches;
- (r) fire hoses;
- (s) portable fire extinguishers;
- (t) standpipe—per vehicle;
- (u) one full set of adaptors per vehicle (location specific).

13.1.2 Optional Ancillary Equipment

13.1.2.1 Optional equipment is listed below:

- (a) air bags;
- (b) pneumatic tools;
- (c) oxygen resuscitation equipment (ORE);
- (d) automatic external defibrillator (AED).

13.1.3 Reserve Stocks

13.1.3.1 Reserve stocks of ancillary equipment must be sufficient to ensure continuous operation of the required category.

13.1.4 Ancillary Equipment

13.1.4.1 Examples of ancillary equipment by category and level can be found in Advisory Circular – No.3.

13.1.5 Advisory Circulars

13.1.5.1 * First aid kit contents can be found in Advisory Circular – No 4.

CHAPTER 14: ARFFS PROTECTIVE CLOTHING

CASR Reference *CAR 1998 regulation 139. 815*

Section 14.1: General

14.1.1 Standard: Protective Clothing

14.1.1.1 Sufficient personal issue of protective clothing must be provide to enable operational rescue and fire fighting staff to perform their function safely and effectively. Protective fire fighting equipment must conform to Australian Standards (AS) or in the lack of AS, accepted International Standards must apply.

14.1.2 Personal Issue

14.1.2.1 All rescue and fire fighting personnel must be provided with a personal issue of at least the following:

- (a) helmet and visor;
- (b) protective coat;
- (c) protective over-trousers and braces;
- (d) gloves/fire fighting/general/first aid;
- (e) boots;
- (f) pocket line.

14.1.3 Hazchem Protective Clothing

14.1.3.1 At locations where transportation of hazardous freight is known to be undertaken the ARFFS personnel must be provided with suitable protective clothing, including breathing apparatus to enable them to deal safely with an incident that may occur.

- (a) hazardous freight should be identified/classified as per the requirements of [Chapter 10](#), Safety Hazard and Risk Management of the MOS
- (b) ARFFS staff must have the necessary qualification as per [Chapter 18](#), of this Manual.

14.1.3.2 Where a response to hazardous freight is not performed by ARFFS, arrangements must be in place as per [Chapter 11](#) of this Manual and noted in the AEP accordingly.

14.1.4 Clothing for Water Operations

14.1.4.1 At locations where inshore rescue boats are provided operational staff must be issued with appropriate safety equipment and clothing for the environment in which they operate.

- (a) wetsuits;
- (b) drysuits where applicable;
- (c) personal flotation devices;
- (d) goggles.

14.1.4.2 Personal Issue

- (a) body suits;
- (b) rubber boots.

Note: AS 4602 refers to tabards colour identification at major disasters.

CHAPTER 15: Reports of an Accident or Incident

CASR Reference *CAR 1998 regulation 139.865 and 139.875*

Section 15.1: General

15.1.1 Standard: Report Procedures

15.1.1.1 Procedure must be developed to record the details of any aircraft accident, incident, building fire, or hazardous incident.

15.1.1.2 The report detail must be sufficient to meet the requirements of a coronial inquiry.

15.1.1.3 The procedures will include the process of advising CASA, the ARFFS provider and maintaining records as per [Chapter 28](#) of this Manual.



CASA must be provided with a hard copy of the form format.

15.1.1.4 The procedure of recording the details can be either hard copy or electronic.

15.1.1.5 Individual reports are required for the following:

- (a) aircraft crash/fire report;
- (b) stand-by/s;
- (c) building fire report;
- (d) incident report;
- (e) first aid report;
- (f) hazchem report.

15.1.2 Advisory Circular

15.1.2.1 AC No 5 provides a list of detailed information required in the compilation of reports for accidents and incidents where the ARFFS has responded.

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CHAPTER 16: QUALITY CONTROL

CASR Reference **CAR 1998 regulation 139.850, 139.855 and 139. 890**
Australian/New Zealand Standard ISO 9000 Series
Quality systems model for quality assurance in
production, installation and servicing.

Section 16.1: General

16.1.1 Standard: Internal Quality Assurance

16.1.1.1 Internal quality assurance procedures must be established and robust to ensure compliance with the standards.

16.1.2 Compliance and Safety Inspection Audit Requirements

16.1.2.1  The ARFFS provider must, at any reasonable time after an application is made or a licence issued, permit authorised CASA staff members to conduct safety inspections or safety audits of the certificate holder's premises, facilities, documents, records, and processes against the requirements of this Part. On-going compliance audits will be carried out by CASA on a regular basis so that CASA may determine compliance with this Part, and to ensure that it discharges its aviation safety surveillance responsibilities under the Civil Aviation Act.

16.1.2.2 Any applicable fees or charges prescribed by CASA for a safety inspection or audit must be paid by a Certificate holder.

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CHAPTER 17: ARFFS PERSONNEL—RECRUITMENT

CASR Reference

CAR 1998 regulation 139. 840 and 139.845

Section 17.1: General

17.1.1 Standard: Recruitment Suitability for Employment

17.1.1.1 When recruiting fire staff, suitable applicants must have a police clearance as their place of employment is in a secure area.

17.1.2 Medical Requirements for Recruitment

17.1.2.1 Personnel recruited for ARFFS will be required to undergo a medical examination prior to recruitment and be subject to ongoing medical examination as defined in [Chapter 21](#), of this Manual.

17.1.2.2 The hazardous nature of the job makes most types of ongoing medication inadvisable. For example, antihistamines and tranquillisers may cause drowsiness and a slowing of reaction time. Sufferers from hay fever who regularly use antihistamines may be assessed as unfit for fire service duty.

17.1.2.3 The criteria to be considered in establishing a recruitment medical policy is as follows:

- (a) general physique;
- (b) upper limbs;
- (c) locomotion;
- (d) hearing;
- (e) vision;
- (f) general fitness.

17.1.2.4 Personnel recruited for ARFFS duties may be required to be multi-skilled in other aerodrome activities.

17.1.2.5 Recruitment policy must reflect obligations under State, Territory and Federal Laws reflecting OH&S, Equity and Diversity and any other legislation that may impact on the recruitment process.

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CHAPTER 18: COMPETENCY LEVELS

CASR Reference *CAR 1998 regulation 139.745 and 139.845*

Section 18.1: General

18.1.1 Standard: Competency Levels for Fire Fighting Staff

- 18.1.1.1 All operational fire fighting staff must hold the appropriate competencies, which is commensurate with the functional position to be occupied.
- 18.1.1.2 This will be detailed and recorded to include, but not restricted to:
- (a) AFC qualifications;
 - (b) local and general ratings;
 - (c) special skills if required;
 - (d) drivers licence;
 - (e) aerodrome licence;
 - (f) aerodrome security number;
 - (g) 90 day competency checks.
- 18.1.1.3 All operational fire fighting staff must be given on-the-job training programme to ensure that core competency applicable to the functional level are maintained and validated regularly with a maximum permissible interval of 90 days. (Refer to [Chapter 20](#) of the MOS.)
- 18.1.1.4 All ARFFS staff must attend a CASA accredited ARFFS training course at intervals not exceeding four years for instruction on technological changes and to practice revised fire fighting procedures.
- 18.1.1.5 All operational ARFFS staff must comply with CASA standards that require a current qualification and Certificate of Competency commensurate with the functional role at a specific location. (Refer to paragraph [12.1.2.3](#).)
- 18.1.1.6 The following AFC qualifications as prescribed by the Australian Qualification Framework (AQF) apply:
- | | |
|--------------------------|-----------------------------|
| (1) AFC Certificate 2 | (fire fighting operations) |
| (2) AFC Certificate 3 | (fire fighting operations) |
| (3) AFC Certificate 4 | (fire fighting supervision) |
| (4) AFC Diploma | (fire fighting management) |
| (5) AFC Advanced Diploma | (fire fighting management). |

Note: AFC qualifications are the CASA recognised standard. However, a new qualification set by the Industry Advisory Training Board is pending and may supersede the recognised CASA qualification on its introduction.

- 18.1.1.7 All operational staff must hold a current competency in Aviation Fire Fighting Operations for the skill qualifications required for the operating position in accordance with CASA requirements of the AFC Training Modules.
- 18.1.1.8 Officers in Charge of ARFFS operations at Level 1 aerodromes must be a person who holds the following qualification:
- (a) **for aerodromes categorised, category 6 and above**, a minimum of an ARFFS AFC Advanced Diploma;
 - (b) **for aerodromes categorised, category 5 and below**, a minimum of an ARFFS AFC Diploma.
- 18.1.1.9 Officers in Charge of ARFFS operations at Level 2 aerodromes where established in accordance with [Chapter 2](#) of the MOS must be a person who holds the qualification's of:
- (a) for aerodromes categorised, category 6 and above, a minimum of an ARFFS AFC Advanced Diploma;
 - (b) for aerodromes categorised, category 5 and below, a minimum of an ARFFS AFC Diploma.
- 18.1.1.10 All shift supervisor/s on a crew of operational fire fighters must hold an ARFFS AFC Diploma competency in accordance with CASA requirements of the AFC Training Modules, and
- 18.1.1.11 The CASA ARFFS minimum requirements of the AFC Training Modules for fire fighters, fire officers responsible for any activities of a crew and the fire officer in charge of ARFFS are identified in the following schedule.



CASA CERTIFICATE OF ATTAINMENT				
Certificate II	Certificate III	Certificate IV	Diploma	Advanced Diploma
1.01 Health & Fitness 1.02 Preparation cleaning & Maintenance of Equipment, appliances and facilities 1.05 Alarms & Sprinklers 1.06 Occupational Hazards 1.07 Personal Protection 1 1.10 Building Structures 1 1.11 Urban Fire Suppression 1 1.15 Open Circuit Breathing Apparatus 1.16 Casualty Assistance 1.17 Emergency Care 1.22 Fire Service Awareness 1 1.23 Work Teams Communications 2.05a Emergency Life Support Techniques 2.15a Salvage & Overhaul 2.15b Ventilation 2.16 Dangerous Substances 1 2.34 Aviation Fire Suppression 1	1.04 Driving Vehicles 1 1.19 Communication Systems 1.21 Workplace Communications 2.02 Inspect & Test Equipment 2.03a Drive Vehicles on Road 2.03b Drive Vehicles off Road 2.04 Operate Pumps 2.05b Operate Life Support Equip 2.07 Occupational Hygiene 2.08 Detection & Suppression Systems 2.09 Building Evacuation Systems 2.10 Mechanical Venting & Air Handling 2.11 Building Structures 2 2.12 Structural Fire Behaviour 2.13 Fire Suppression 2 2.20d Foam/Water Tender 2.21 Fire Prevention 1 2.24 Fire Agency Awareness 2 2.25 Present Information (Public Education)	3.01 Occupational Health & Safety 3.04 Fireground Operations 3.06 Aviation Fire Suppression 2 3.07 Dangerous Substances 2 3.09 Workplace Trainer Category A 3.10 Writing Workplace Documents 3.12 Dealing with Conflict 3.13 Negotiation Skills 3.14 Leadership 3.15 Supervising Teams 3.21 Introduction to Fire Law 3.22 Workplace Assessment 4.04 Incident Control Systems – Agency Specific	3.05 Building Fire Safety 1 4.02 Pre Incident Planning 1 4.03 Operational Management *4.07 Fire Prevention 2 *4.08 Building Fire Safety 2 *4.09 Building Fire Service 4.11 Communication 1 4.12 Interviews 4.13 Workplace Trainer Category B 4.16 Leadership & Team Management 4.18 Human Resources Management 1 5.02 Incident Planning 5.03 Logistics Management 5.04 Incident Management Skills 5.05 Operational Analysis	4.01 Resource Evaluation 5.01 Resource Upgrading and Development Management 5.06 Project Management 5.07 Communication 2 5.08 Public Relations B 5.09 Team Performance 5.10 Managing Finance-Budget 5.11 Human Resource Management 2 5.12 Planning and Managing Change 5.13 Occupational Health and Safety Management 6.01 Pre-Incident Planning 2 6.02 Major Operations Management

<p>Note 1: Hazmat responses will require additional Modules 2.06 – Personal protection 2.</p> <p>Note 2: Inshore rescue responses will require additional Modules 2.20d. Part A – IRM and 2.20d, Part B – Launch and Operate IRB</p>	<p>Note 1: Module 3.09 – Workplace Trainer Category A allows for training on a one on one basis. For Training programming and design, Module 4.13 – Workplace Trainer Category B must be achieved.</p>	<p>Note 1: For the development and management of a fire station Advanced Diploma Modules: 4.01 - Resource Evaluation 6.01 - Pre-incident Planning 2 6.02 - Major Operations Management are mandatory requirements.</p> <p>Note 2: * Denotes Modules that are required if aerodrome facilities are established and are location Specific.</p>
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- 18.1.1.12 As the above minimum requirements represent a CASA AFC qualification, a **Statement of Attainment** will be issued by an approved CASA training establishment. The Statement of Attainment can be utilised by participants towards gaining further AFC Certificates.
- 18.1.1.13 Current Competencies must be demonstrated during the 90-day validity cycle.
- 18.1.1.14 A Statement of Attainment must include all prerequisite requirements.
- 18.1.1.15 The fire officer qualifications must hold all prerequisites (i.e. Certificate of Attainment in AFC Diploma).
- 18.1.1.16 The issue of an AFC Certificate acknowledges that all modules and prerequisite have been completed.

18.1.2 Competency Assessor

- 18.1.2.1 The assessment of a Module can only be facilitated by a qualified workplace assessor (AFC Certificate 4 - Module 3.22) using curriculum approved assessment tools. The assessor must be in possession of the minimum modules for each AFC certificate or Diploma that requires aviation theoretical or practical fire fighting elements (ie 2.34 and 3.06) and be verified by an accredited validator under the AFC qualification process.
- 18.1.2.2 Prior to a Certificate or a Statement of Attainment being issued, each module must be validated by an approved CASA training establishment. A Statement of Attainment (for Certificate 2,3,4 or Diploma), or a qualification for Certificate 2,3,4 or Diploma, must only be issued from an approved CASA training establishment.
- 18.1.2.3 An AFC Certificate and a Statement of Attainment must be issued after validation by an independent third party.
- 18.1.2.4 It should be noted that some prerequisites for the AFC modules may also be required from a training institution. However, recognition of prior competencies or prior learning regimes can be applied which may satisfy the prerequisite requirements.
- 18.1.2.5 Some modules can be achieved at local *Colleges or learning institutions that provide fire technological courses, whereas modules that require specific aviation fire service practical skill input, can only be achieved from a CASA accredited aviation fire training provider. Refer to [Chapter 20](#) of this Manual.

Note: Local competencies that cannot be specified within the above AFC modules (ie aircraft familiarisation, topography, FSCC and any specific fire fighting vehicle, rescue or emergency medical service equipment) must be developed by the provider having jurisdiction of the ARFFS.

- 18.1.2.6 * Any College or Institution that is utilised by an ARFFS provider to undertake the above training regimes must be advised by the authority having jurisdiction of the ARFFS, of accreditation required by CASA in [Chapter 19](#), of this Manual.

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CHAPTER 19: ARFFS QUALIFICATION TRAINING ESTABLISHMENTS

CASR Reference **CAR 1998 regulation 139.705(2) and 139.845**

Section 19.1: General

19.1.1 Standard: Training Establishment

19.1.1.1 Training establishments that issue AFC competency certificates for ARFFS staff must develop:

- (a) a procedure for CASA Accreditation of Training Establishments;
- (b) an establishment which provides training courses for aviation rescue and fire fighting staff must have CASA accreditation. Establishments are to apply to CASA in writing for accreditation.

19.1.2 Training Facilities

19.1.2.1 The application by the training establishment must:

- (a) describe the facilities provided for theoretical and practical training; course curricula; and assessment and validation arrangements;
- (b) detail the training establishment's management structure and safety accountabilities and the qualifications and experience of staff with management responsibilities;
- (c) provide samples of the proposed procedures for the conduct of written, oral and practical tests, together with the arrangements for assessment;
- (d) provide evidence of the arrangements to cater for the general needs of students undergoing training.

19.1.3 Accreditation Process

19.1.3.1 The initial CASA accreditation process will consist of five phases:

- (a) informal discussion, at which CASA's overall requirements will be explained and any questions answered;
- (b) document assessment, in which all supplied documentation e.g. course content, details of staff course structure etc. will be examined;
- (c) practical assessment, in which physical and practical facilities will be formally inspected and sessions sampled;
- (d) external training accreditation reviewed, whereby existing registrations as an accredited tertiary or private provider of vocational education and training are confirmed; and
- (e) an examination of quality management and quality assurance documentation.

19.1.4 Training Establishment Accreditation

- 19.1.4.1 On meeting all the CASA standards and successful completion of the above process, training establishments will be accredited as meeting CASA training standards.
- 19.1.4.2 CASA will advise the training establishment in writing of its accreditation status.
- 19.1.4.3 The issue of accreditation by CASA will be dependent upon the management of that establishment attesting in writing that the requirements for continuing accreditation have been noted.
- 19.1.4.4 Continued CASA accreditation is dependent upon continuing compliance with CASA's standards. CASA will periodically audit the training establishments to monitor compliance.
- 19.1.4.5 In the event that a CASA audit finds that there is a continual shortfall in compliance with the standards, CASA will formally notify the training establishment of the items of non-compliance. The written notice shall specify a time frame in which the non-compliance is to be rectified.
- 19.1.4.6 If, following this written notification and the rectification period, the standards remain below the level required, CASA shall notify the training establishment that its CASA accreditation has lapsed, and of the consequent restrictions which are to be placed on its further training course undertakings until accreditation is re-gained.
- 19.1.4.7 To regain accreditation, the training establishment will need to satisfy a CASA audit that it has rectified the non-compliance's.
- 19.1.4.8 Training establishments may be required to meet CASA charges for both initial accreditation and subsequent audits. This is subject to the outcome of the review of CASA's cost recovery arrangements and may not apply.

19.1.5 Training Programs

- 19.1.5.1 Training programs must:
 - (a) demonstrate a method of maintaining up-to-date course content and training material;
 - (b) demonstrate a high standard of initial and ongoing training;
 - (c) provide a continuing programme, designed to ensure a complete familiarity with technological developments, AFC curriculum reviews and all theoretical and practical aspects of rescue and fire fighting, equipment and aircraft;
 - (d) have the capability and capacity to provide the full range of courses, however, the establishment may be approved to conduct single courses; and
 - (e) maintain all training records for 5 years.

CHAPTER 20: ARFFS PERSONNEL STAFFING AND TRAINING REQUIREMENTS

CASR Reference **CAR 1998 regulation 139.705, 139.745, 139.835, 139.840
and 139.845**

Section 20.1: General

20.1.1 Standard: Staff Qualifications

- 20.1.1.1 Officers in charge of ARFFS operations at Level 1 aerodromes must be a person who holds the following qualification:
- (a) **for aerodromes categorised, category 6 and above**, a minimum of an ARFFS AFC Advanced Diploma;
 - (b) **for aerodromes categorised, category 5 and below**, a minimum of an ARFFS AFC Diploma.
- 20.1.1.2 Officers in Charge of ARFFS operations at Level 2 aerodromes where established in accordance with [Chapter 2](#) of the MOS must be a person who holds the qualification:
- (a) **for aerodromes categorised, category 6 and above**, a minimum of an ARFFS AFC Advanced Diploma;
 - (b) **for aerodromes categorised, category 5 and below**, a minimum of an ARFFS AFC Diploma.
- 20.1.1.3 Any shift supervisors responsible for any activities or a crew of operational fire fighters must hold an AFC Diploma competency in accordance with CASA requirements of the AFC Training Modules, and
- 20.1.1.4 All operational staff must hold a current/valid CASA Certificate of Competency and a current competency in Aviation Fire Fighting Operations for the skill qualifications required for the operating position in accordance with CASA requirements of the AFC Training Modules.

20.1.2 Staffing Levels Recommendations

- 20.1.2.1 During promulgated hours of operation and while any other movements of aircraft that require to use a licensed aerodrome are taking place, sufficient trained personnel are to be detailed and readily available to crew the rescue and fire fighting vehicles and to operate the equipment at the discharge rates appropriate to the aerodrome category. These trained personnel must be deployed in a way that ensures the minimum response time can be achieved and that continuous agent application at the appropriate rate can be fully maintained should an aircraft accident occur.

- 20.1.2.2 Aerodromes meeting Level 1 criteria (refer to [Chapter 2](#) of this Manual) must ensure that the designated fire crew is available to provide protection for all aircraft movements for the duration of their operational shift.
- 20.1.2.3 At non 24 hour aerodromes the ARFFS must be fully operational 15 minutes prior to and after departure of the nominated aircraft coverage as advertised in ERSA.
- 20.1.2.4 Aerodromes meeting Level 2 criteria (refer to [Chapter 2](#) of this Manual) the ARFFS fire stations where established must be fully operational for a minimum of 15 minutes prior to the scheduled aircraft arrival and must remain on duty and in operational readiness for 15 minutes following the last air transport departure.
- 20.1.2.5 When formulating staff numbers, consideration must be given to the type of aircraft using the aerodrome and the need for personnel for vehicle operation, to use handlines, ladders, and other rescue and fire fighting operations including command and control of fire ground as the combatant authority.
- 20.1.2.6 ARFFS staff engaged in extraneous duties must be capable of meeting the response time from those duties. They must not be employed on fuelling duties when forming part of the minimum crew due to the hazard of fuel contaminated clothing and the safety requirements in closing down such an operation.
- 20.1.2.7 Fire vehicles capable of producing foam or other media through a monitor, must ensure that the role of the monitor operator must not be performed by the driver of that vehicle, other than when the vehicle is stationary.
- 20.1.2.8 Introduction of new technology that can reduce staffing levels in vehicle operation may be approved subject to the requirements of Chapter 23, Change Management Systems.

20.1.3 ARFFS Training Requirements

- 20.1.3.1 Processes must be in place to allow supervisory staff who are qualified and competent to perform the tasks required of them to monitor the continuing competency levels of the staff under their control on a periodic basis.
- 20.1.3.2 Training can be divided into the following categories:
 - (a) initial training to achieve a new qualification or competency;
 - (b) training to transfer or upgrade from a current qualification or competency to a new qualification or competency;
 - (c) special requirements for 'direct entry' staff;
 - (d) local aerodrome ARFFS competencies;
 - (e) all operational fire fighting staff must be given on-the-job training programme to ensure that core competency applicable to the functional

level are maintained and validated regularly with a maximum permissible interval of 90 days.

- 20.1.3.3 Core competency training for each qualification held is required within the 90-day period. The core competencies are listed below. This list is not conclusive and may require local ratings, e.g. Water Rescue Service.
- (a) application of foam onto a fire by an attack appliance;
 - (b) topography;
 - (c) aircraft familiarisation;
 - (d) fire Station Communication Centre;
 - (e) fire alarms:
 - (i) indicator panels;
 - (ii) detection and suppression systems;
 - (f) driving and operation of appliances;
 - (g) don and start-up of BA;
 - (h) firemanship to include:
 - (i) hose and branch work;
 - (ii) knots and lines;
 - (iii) use of ladders;
 - (iv) agent application applied through operational branch's use of rescue equipment;
 - (i) first aid CPR/EAR and injury management;
 - (j) perform ICS skills in simulated operations/or incidents;
 - (k) pre-incident planning; SOPs, MOAs, AEP and tactical plan.
- 20.1.3.4 ARFFS staff training can be by either conducting approved in-house training to the levels required or by out sourcing any or all of its training to an establishment approved by CASA.
- 20.1.3.5 A yearly fire station Training Programme that complements the 90-day validity check must be developed, displayed and retained in accordance with [Chapter 28](#) of the MOS.
- 20.1.3.6 In-house training must define, document and maintain processes which address the integrity of staff training compatible with the Australian Fire Competency (AFC) or other qualification accepted and approved by CASA.
- 20.1.3.7 Where in-house training is conducted the training program for each course must be comprehensive and achieve the goals established in the training program.

- 20.1.3.8 The assessment process must include a robust record keeping system which records all progress and completion assessments.
- 20.1.3.9 A remedial process must be implemented to identify deficiencies in technique, application or knowledge and must rectify them promptly with follow up action to ensure compliance. The process must ensure that officers in need of remedial training are afforded the appropriate level of counselling and assistance.
- 20.1.3.10 When developing a training programme a time limit on validity of elements of a training programme must be set.
- 20.1.3.11 ARFFS training conducted by an external sources must ensure that the training establishment has been approved by CASA for this purpose.
- 20.1.3.12 ARFFS external training must provide the following:
- (a) a process for reporting staff experience levels and qualifications of the training establishments; and
 - (b) a process for identifying staff requiring update or new competency training.
- 20.1.3.13 The safe transition of recently qualified staff into operational service must be through:
- (a) a transition process; and
 - (b) consolidation of acquired skills prior to full operational service.
- Local competency requirements must include:
- (a) topography on/off aerodrome;
 - (b) first aid;
 - (c) Fire Station Communication Centre (FSCC);
 - (d) aircraft familiarisation:
 - (i) vehicle and water rescue equipment where applicable;
 - (ii) difficult environment that may be encountered within the response area;
 - (e) Hazchem procedures;
 - (f) Incident Command System (ICS).
- 20.1.3.14 A process must be in place for maintaining and updating records of staff qualifications including Certificates of Competency for all levels.

Note 1: This section refers to competency levels identified in Chapter 18 of this Manual.

Note 2: Core competencies Maintenance schedule will be identified in an AC and will cover all competency levels.

CHAPTER 21: ARFFS MEDICAL/PHYSICAL FITNESS

CASR Reference

CAR 1998 regulation 139. 840

Section 21.1: General

21.1.1 Standard: Medical Standards for ARFFS Recruitment

- 21.1.1.1 Prior to commencing initial ARFFS training, prospective candidates must pass a medical examination in accordance with CASA Aviation Medical Certificate Class 2.
- 21.1.1.2 ARFFS staff must take into account their obligations under OH&S and the responsibilities under Duty of Care and notify their employer of any existing medical condition that would adversely affect their ability to perform ARFFS duties.

21.1.2 Medical requirements for ARFFS staff

- 21.1.2.1 All staff must ensure that they maintain a continued level of medical and physical fitness to enable them to perform at the level required for their function.
- 21.1.2.2 ARFFS staff must take into account their obligations under OH&S and the responsibilities under Duty of Care and notify their employer of any existing medical condition that would adversely affect their ability to perform ARFFS duties.
- 21.1.2.3 A physical fitness policy must be developed for all operational staff to maintain a continued level of medical and physical fitness to enable them to perform at the level required for their function.
- 21.1.2.4 A physical fitness test should be developed for prospective employees.

21.1.3 Fitness for Duty

- 21.1.3.1 A person must not act in any capacity for which the authority of the ARFFS Certificate of Competency as defined in this manual is required if:
 - (a) by reason of having consumed, used, or absorbed liquor, drug, pharmaceutical or medical preparation or other substance, the persons capacity so to act is impaired; or
 - (b) the person, during the period of 8 hours immediately proceeding the commencement of the period of duty in which the person acts, consumes any alcoholic liquor
 - (c) ARFFS staff should also be aware that certain medications can affect their ability to operate fire vehicles and associated firefighting equipment and should seek professional advice regarding the suitability of such medication in relation to the performance of ARFFS functions levels.

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CHAPTER 22: ARFFS FACILITIES

CASR Reference **CAR 1998 regulation 139.740, 139.760, 138.805,
139.820, 139.825 139.830, 139.885 139.860 and 139.895**

Section 22.1: General

22.1.1 Standard: Fire Station Facility

- 22.1.1.1 Facilities must be established (where not provided) that are appropriate to enable the fire service to respond to airport emergencies.
- 22.1.1.2 The siting of a fire station facility must take into consideration the requirement of achieving response times as defined in [Section 6.1](#), of this Manual.
- 22.1.1.3 New or modified fire stations at Level 1 must provide a FSCC where all landings and take-offs of air transport aircraft are observed so as not to delay response times.

22.1.2 FSCC Requirements

- 22.1.2.1 Where a new Fire Station Communication Centre (FSCC) is provided the control cabin must provide clear vision of the runway and 'short final' approaches. This may require the elevation of the FSCC cabin.
- 22.1.2.2 Crash Alarm and Direct Lines facilities must be provided where a TWR is located on the same aerodrome.
- 22.1.2.3 Aerodrome fire alarms to terminate at aerodrome ARFFS FSCC.
- 22.1.2.4 Transfer facilities to be provided to either the TWR or Local Fire Brigade.
- 22.1.2.5 Communication facilities for notification of emergency services.
- 22.1.2.6 Alerting P/A system for fire staff personnel located at the fire station and its environs.
- 22.1.2.7 All aircraft landings and take-off of air transport must be observed by the FSCC operator or designated officer.
- 22.1.2.8 Aerodromes meeting Level 2 category requirements may provide a FSCC.

22.1.3 Access Roads to Movement Areas

- 22.1.3.1 Access roads to movement areas will be constructed to enhance operational responses.

22.1.4 Communication Equipment

- 22.1.4.1 All ARFFS vehicles must be provided with suitable communication equipment.

22.1.4.2 Communication equipment frequencies must be compatible with associated Air Traffic Services and Marine Frequencies (where appropriate).

22.1.4.3 Communication equipment within the fire station and work areas must be provided, be inter-linked with the FSCC alerting system and have the ability to communicate with the flight deck of the aircraft.

22.1.5 Vehicle Maintenance Facilities

22.1.5.1 An ARFFS provider must have in place a process which will ensure that maintenance facilities or an appropriate maintenance provider will service and repair equipment, vehicle and radio's to manufacturers specifications.

22.1.5.2 After (fire service) use areas for vehicle which would include a vehicle wash down area, replenishment area, hose cleaning and drying area must be provided.

22.1.6 Training Facilities

22.1.6.1 Training facilities that must be provided for ARFFS use are listed:

- (a) training ground that can support fire appliances and adequate facilities to allow hot fires, tactical positioning and application of extinguishing agents;
- (b) a raised platform for ladder and branch work and suitable for the use of BA;
- (c) a suitable lesson room for theoretical training.

22.1.6.2 Storage facilities must be provided for the safe storage of reserve stocks of fire fighting agent.

Note: All training facilities must conform to the Local, State and Federal Government's Environmental Laws.

22.1.7 Inshore Rescue Boats

22.1.7.1 Where located, Inshore Rescue Boats must be housed under cover, and appropriate facilities must be made available for wetsuits, and drysuits where applicable, personal flotation devices (PFD) and associated equipment drying and stowage areas must be provided.

22.1.7.2 Flotation platforms/life rafts for 50% of passengers on the largest aircraft using the aerodrome must be provided.

22.1.7.3 Launch ramps on aerodromes must be well lit, identified and maintained to enable a quick response to any emergency response.

22.1.7.4 Where a Rescue Boat is located, appropriate facilities must be maintained for towing and launching at designated locations within the airport boundary.

22.1.7.5 Arrangements for testing and recording of maintenance of floatform platforms/life rafts and certification must be undertaken to ensure serviceability of the equipment as per the appropriate Australian Standard or in the absence of a standard the manufacturers instructions.

22.1.8 Commissioning of a New Service or Vehicles

22.1.8.1 An ARFFS provider may not commission a new service, vehicle or facility unless:



- (a) the requirements of MOS are complied with in respect to the new service or facility, and the applicable inclusions have been made to the holder's operations manual;
- (b) a formal acknowledgment which includes the new service vehicle or facility has been issued by CASA to the holder;
- (c) the commissioning is carried out in accordance with the commissioning process included in the holder's operations manual.

22.1.8.2 Commissioning of a new service or vehicle also needs to take into account the requirements of [Chapter 23](#), Change Management Systems.

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CHAPTER 23: CHANGE MANAGEMENT SYSTEMS

CASR Reference

CAR 1998 regulation 139.895

Section 23.1: General

23.1.1 Standard: Safety Management

- 23.1.1.1 A change management system must be established and documented, which defines the policy, procedures and practices for managing the safety of the ARFFS and any change in their provision of service.
- 23.1.1.2 The procedure must be designed to reduce the risk to any changes that may occur within the operational service and may employ any, or a combination of the following (this is not a restrictive list):
- (a) process and/or procedural redesign;
 - (b) equipment redesign/new equipment;
 - (c) introduction of new extinguishing agents;
 - (d) staff training;
 - (e) administrative controls;
 - (f) any additional ARFFS operational hazard.
- 23.1.1.3 The procedures must ensure that all changes are documented in such a way that all users are informed of the change and details approval authorities who are linked to the identified safety accountabilities.
- 23.1.1.4 The approving authority is required to be linked to any action relating to system design, system operation or restoration of a service and monitoring system, these areas can be defines as:
- (a) system design authority who is responsible for the design of the system and procedures;
 - (b) operating authority who is responsible for the general operation of the system or procedure; and
 - (c) maintenance authority who is responsible for the maintenance of the system or procedure.
- 23.1.1.5 Introduction of new technology that can reduce staffing levels in vehicle operation may be approved by CASA following the submission of a safety case.

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CHAPTER 24: FACILITY MAINTENANCE PLAN

CASR Reference

CAR 1998 regulation 139.870 and 139.885



Section 24.1: General

24.1.1 Standard: Appliances Electrical Ancillary BA Sets Radio

- 24.1.1.1 A methodology must be in place to ensure the integrity of systems and maintenance schedules for the provision of the ARFFS.
- 24.1.1.2 A maintenance program including preventive maintenance must be established.

24.1.2 Engine Heaters Battery

- 24.1.2.1 A maintenance program including preventative maintenance must be established.

24.1.3 Chargers Flotation Platforms

- 24.1.3.1 Maintenance schedules must conform to the requirements of [Chapter 26](#) of this Manual.
- 24.1.3.2 Guidelines for a facility maintenance plan will need to consider the requirements of Australian Standards, Manufacturers Instructions and Guidelines.

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CHAPTER 25: INTERRUPTION OR CHANGE TO LEVEL OF OPERATIONAL SERVICE AND CONTINGENCY PLANS

CASR Reference **CAR 1998 regulation 139.860, 139.870, 139.885 and
139.910**

Section 25.1: General

25.1.1 Standard: Change to Level of Operational Service

25.1.1.1 Any proposed change to the provision of ARFFS as defined in [Chapter 3](#) of the MOS must be approved by CASA prior to publication in ERSA.

25.1.2 Service Failure

25.1.2.1 A procedure must be in place to minimise the impact of any interruption to the level of operational service.

25.1.2.2 A procedure must be in place to report and rectify any failure which results in a loss of level of service as detailed in this Manual.

25.1.2.3 These contingency procedures must prescribe detailed requirements for operational staff in the event of any interruption to the level of service provision.

25.1.2.4 The process will ensure that all affected and interested parties are promptly notified of the interruption to the operational service and its consequences. The notification process will address both internal and external industry needs.

25.1.3 Reporting Action

25.1.3.1 If there is a need to temporarily reduce the category of the ARFFS provision due to an unforeseen circumstance affecting impending aircraft movements, all affected parties shall be notified immediately by NOTAM.

25.1.3.2 NOTAM action is not necessary for temporary reductions in ARFFS provisions, provided that the type of aircraft movement planned for the aerodrome during the temporary reduction, does not exceed the reduced category. In these circumstances ARFFS is to advise ATC of the details of the reduction by direct recorded line.

25.1.3.3 Procedures for the re-establishment of normal service must ensure the safe and orderly transition to full operational service for parties affected.

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CHAPTER 26: SERVICE AND FACILITY MANAGEMENT REQUIREMENTS

CASR Reference **CAR 1998 regulation 139.740, 139.885, 139.890 and
139.900**

Section 26.1: General

26.1.1 Standard: Service and Facility Management

- 26.1.1.1 Procedures must be defined and documented which will ensure the continuous, safe operation of, or reduction of, the level of service and facility provided.
- 26.1.1.2 To assure the satisfactory operation of systems, equipment and procedures in accordance with the safety management requirements, the following processes must be in place.
- (a) the current configuration. This is to be identified in specifications, drawings and documents to assure the system is being operated to a known state;
 - (b) preventive and corrective maintenance and quality assurance procedures. This requirement must assure the ongoing operation is in accordance with the performance standards;
 - (c) reliability and maintainability data analysis to confirm performance standards and/or safety assessment;
 - (d) integrity monitoring and control processes to assure ongoing operation of the system is in accordance with its performance standards;
 - (e) defect reporting processes to ensure equipment and procedures meet an ongoing performance standard equal to its performance expectation at design, acquisition, acceptance and after modification;
 - (f) a critical system failure reporting procedure as a means of linking the performance of the elements of the airways system to management accountabilities; and
 - (g) an equipment fault and air safety incident reporting system to ensure that there is a method of monitoring the level of service provision against that required by the users.

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CHAPTER 27: DOCUMENT AND DATA CONTROL

CASR Reference

CAR 1998 regulation 139.875

Section 27.1: General

27.1.1 Standard: Documentation

27.1.1.1 The following procedures must be in place:

- (a) define, document and maintain a process for document control;
- (b) ensure that the authority for issue and/or amendment is appropriate to the management and safety accountability structures;
- (c) ensure that the latest version of all documentation is readily available to all users requiring provision;
- (d) ensure that a master copy of all operational and technical documents are secure;
- (e) ensure that a copy of obsolete documentation is archived and all other versions are destroyed promptly;
- (f) check that operational and technical instructions conform with agreed policy and internal documentation standards;
- (g) encourage all levels of operation to confine like type documents to standard presentation formats.

27.1.2 Electronic Data

27.1.2.1 An electronic system to record all voice data and system activation in relation to ARFFS operation in the FSCC.

27.1.2.2 Electronic recording of radio transmission dealing with aircraft emergencies and operational incidents must be recorded.

27.1.3 Amendment Control

27.1.3.1 Amendments may be proposed by industry or as a result of information received through safety audits, incidents or occurrence reports or other mechanisms.

27.1.3.2 Amended documents must be duly noted and dated.

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CHAPTER 28: RECORDS

CASR Reference **CAR 1998 regulation 139.865 and 139.875**
Australian Standard 4390.1-6, 1996

Section 28.1: General

28.1.1 Standard: Record Keeping

- 28.1.1.1 A recognised quality assurance procedures must be established to identify, collect, index, store update and maintain records necessary for the safe provision of service. The procedures must ensure that legible and permanent records and a traceable history are kept.
- 28.1.1.2 These records may be called upon by ATSB, CASA, the State Coroner, required for police reports and other authorised agencies.
- 28.1.1.3 Records must be maintained and available for five years or for a specified time as indicated below.

28.1.2 Record Types and Retention Period

Record Type	Time period
Aircraft rescue and fire fighting report	2 years
Airways operational journal or computer print out	3 months
ARFFS equipment maintenance records	5 years
ARFFS facility fault register	2 years
ARFFS Incident report	2 years
ARFFS staff development appraisal	1 year
Building fire report	2 years
Certificate of Proficiency Life of employee at location	
Competency based training records	5 years
Equipment maintenance	3 years
First aid	5 years
Fire Station Communication Centre computer print-out (if applicable)	3 months
Fire Station Communication Centre tape voice Recordings	3 months
Hazchem reports	

Record Type	Time period
Staff involved (OH&S requirement)	5 years
NOTAM action	3 months
Personal protective equipment	1 year
Register of staff competency	5 years
Fire station training programme	7 years
Vehicle maintenance records	Life of vehicle
Validity check of competency	90 days
Vehicle inspection and tests	5 years

Note: This is not a comprehensive list, other areas may be added to the list at the discretion of the provider.

28.1.3 Advisory Circular

28.1.3.1 AC No. 5 provides a list of detailed information required in the compilation of reports for accidents and incidents where the ARFFS has responded.

CHAPTER 29: APPLICANT'S ORGANISATION

CASR Reference *CAR 1998 regulation 139.880 and 139.905*

Section 29.1: General

29.1.1 Standard: Provider's Credentials

29.1.1.1 Potential ARFFS providers must establish with the aerodrome operator that sufficient resources are available to enter into contractual arrangements to provide an ARFFS at the level specified for the category of the aerodrome.

29.1.1.2 It is recommended that the licensee need to consider the following:

- (a) operational expertise/ training qualifications
- (b) financial structure;
- (c) suppliers of essential supplies;
- (d) human resource management policies;
- (e) environmental policy;
- (f) training policy;
- (g) quality assurance policy;
- (h) provision of operational manual;
- (i) vehicle performance records;
- (j) vehicle specification/performance and ability to supply ARFFS at the specified level;
- (k) vehicle equipment maintenance policy and the ability to provide a continual provision of ARFFS.

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REVISION HISTORY

Note: The Revision History shows the most recent amendment first. Scroll down the table to view details of previous amendments.

Version	Date	Chapter/ Section	Details
1.1	February 2003	2.1.1 (Note) 2.1.1.2 2.1.4	“Aerodrome operator” changed to “ARFFS provider”
		3.1.2.2	“Aerodrome operator” changed to “ARFFS provider”
		Chapter 5	ICAO reference amended to “Chapter 6 ...”
		9.1.1.4.	“Departure” added to paragraph 9.1.1.4
		13.1.1.3	Items “j” and “u” amended in paragraph 13.1.1.3
		15.1.1.3	“Aerodrome operator” changed to “ARFFS provider”
		16.1.2.1	“Aerodrome operator” changed to “ARFFS provider”
		18.1.1.11	Note 1 under Diploma column in the CASA Certificate of Attainment schedule at paragraph 18.1.1.11 amended
		22.1.8.1	“Aerodrome operator” changed to “ARFFS provider”
		Chapter 24	Previous paragraphs 24.1.2 and 24.1.3 replaced with paragraphs 24.1.2, 24.1.3 and 24.1.4
1.0	June 2002	All	First issue of MOS Part 139H

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