ADR.OPS.B.010 Rescue and firefighting services

(a) The aerodrome operator shall ensure that:

(1) aerodrome rescue and firefighting facilities, equipment and services are provided;

(2) adequate equipment, fire extinguishing agents and sufficient personnel are available in a timely manner;

(3) rescue and firefighting personnel are properly trained, equipped and qualified to operate in the aerodrome environment; and

(4) rescue and firefighting personnel potentially required to act in aviation emergencies demonstrate their medical fitness to execute their functions satisfactorily, taking into account the type of activity.

(b) The aerodrome operator shall establish and implement a training programme for persons involved in rescue and firefighting services of the aerodrome;

(c) The aerodrome operator shall implement proficiency checks at adequate intervals to ensure continued competence;

(d) The aerodrome operator shall ensure that:

(1) adequately qualified and experienced instructors and assessors for the implementation of the training programme are used; and

(2) suitable facilities and means are used for the provision of the training.

(e) The aerodrome operator shall:

(1) maintain appropriate qualification, training and proficiency check records to demonstrate compliance with this requirement;

(2) on request, make such records available to its personnel concerned; and

(3) if a person is employed by another employer, on request, make such records of that person available to that new employer.

(f) Temporary reduction of the level of protection of the aerodrome's rescue and firefighting services, due to unforeseen circumstances, shall not require prior approval by the Competent Authority.

GM1 ADR.OPS.B.010(a)(1) Rescue and firefighting services

AVAILABILITY AND SCOPE OF RESCUE AND FIREFIGHTING SERVICES

Public or private organisations, suitably located and equipped, could be designated to provide the rescue and firefighting service. The fire station housing these organisations should normally be located on the aerodrome, although an off-aerodrome location is not precluded, provided that the response time can be met. The scope of the rescue and firefighting services is to save lives in the event of an aircraft accident or incident occurring at, or in the immediate surroundings of, the aerodrome. The operational objective is to create and maintain survivable conditions, to provide egress routes for occupants, and to initiate the rescue of those occupants unable to make their escape without direct aid. The rescue may require the use of equipment and personnel other than those assessed primarily for rescue and firefighting purposes. Ambulance and medical services are out of the scope of rescue and firefighting services as described in ADR.OPS.B.010. The role and responsibilities of ambulance and medical services during an emergency situation should be included in the aerodrome emergency plan (AEP), according to GM3 ADR.OPS.B.005(a).

AMC1 ADR.OPS.B.010(a)(2) Rescue and firefighting services

COMMUNICATION AND ALERTING SYSTEMS

The aerodrome operator should ensure that:

(a) a discrete communication system is provided linking a fire station with the control tower, any other fire station on the aerodrome, and the rescue and firefighting vehicles;

(b) an alerting system for rescue and firefighting personnel, capable of being operated from that station, is provided at the fire station, any other fire station on the aerodrome, and the aerodrome control tower;

(c) means are provided for communication between the rescue and firefighting service and the flight crew of an aircraft in emergency;

(d) communication means are provided to ensure the immediate summoning of designated personnel not on standby duty;

(e) communication means are provided to ensure two-way communication with the rescue and firefighting vehicles in attendance at an aircraft accident or incident.

(f) communications during emergencies should be recorded;

(g) communication means are provided between rescue and firefighting crew members

AMC2 ADR.OPS.B.010(a)(2) Rescue and firefighting services

RFFS LEVEL OF PROTECTION

(a) The aerodrome operator should ensure that:

(1) the level of protection normally available at an aerodrome is determined and expressed in terms of the category of the rescue and firefighting services (RFF aerodrome category) as described below and in accordance with the types, amounts, and discharge rates of extinguishing agents normally available at the aerodrome; and

(2) the aerodrome category for rescue and fire fighting is determined according to Table 1, based on the longest aeroplanes normally using the aerodrome and their fuselage width. If, after selecting the category appropriate to the longest aeroplane's overall length, that aeroplane's fuselage width is greater than the maximum width in Table 1, column 3, for that category, then the category for that aeroplane should actually be one category higher.

Aerodrome category for rescue and firefighting		
Aerodrome category (1)	Aeroplane overall length (2)	Maximum fuselage width (3)
1	0 m up to but not including 9 m	2m
2	9 m up to but not including 12 m	2m
3	12 m up to but not including 18 m	3m
4	18 m up to but not including 24 m	4m
5	24 m up to but not including 28 m	4m
6	28 m up to but not including 39 m	5m
7	39 m up to but not including 49 m	5m
8	49 m up to but not including 61 m	7m
9	61 m up to but not including 76 m	7m
10	76 m up to but not including 90 m	8m

Table 1

(3) the rescue and firefighting level of protection provided is appropriate to the aerodrome category determined using the principles in (2) above except that where the number of movements (landing or take-off) of the aeroplanes performing passenger transportation in the highest category, normally using the aerodrome, is less than 700 in the busiest consecutive three months, the level of protection provided in accordance with (2) above may be reduced by no more than one category below the determined one.

(b) Notwithstanding (a), the aerodrome operator may, during anticipated periods of reduced

activity (e.g. specific periods of the year or day), reduce the rescue and fire fighting level of protection available at the aerodrome. In this case:

(1) the level of protection should be no less than that needed for the highest category of aeroplane planned to use the aerodrome during that time, irrespective of the number of movements; and

(2) the periods of aerodrome operation with reduced rescue and firefighting level of protection should be published in the aeronautical information publication (AIP) or through notice to airmen (NOTAM).

(c) The level of protection required for all-cargo, mail, ferry, training, test, positioning and end of life aeroplane operations, including those carrying dangerous goods, irrespective of the number of movements, may be reduced in accordance with Table 2 as follows:

Aerodrome category	RFF level of protection required
1	1
2	2
3	3
4	4
5	5
6	5
7	6
8	6
9	7
10	7

Table 2

(d) The aerodrome operator, in order to assess whether the rescue and firefighting level of protection to be provided at the aerodrome is appropriate to the aerodrome rescue and firefighting category, should, at least annually, forecast the aeroplane traffic expected to operate at the aerodrome for the next twelve-month period. Upon knowledge of planned changes to traffic volume and structure, additional assessments might be necessary. In doing so, the aerodrome operator may use all information available from aeroplane operators as well as statistics on aeroplane movements during the year preceding the day of review.

(e) Unforeseen circumstances leading to temporary reduction of the aerodrome rescue and firefighting level of protection are considered as unplanned events that result in unavailability of facilities, equipment and resources.

(f) For emergency landings and occasions when in the pilot's-in-command opinion, a diversion or hold may create a more significant hazard, operation of aeroplanes whose required

category is higher than the level of protection provided by the aerodrome should be permitted regardless of the rescue and firefighting level of protection available.

AMC3 ADR.OPS.B.010(a)(2) Rescue and firefighting services

NUMBER OF RFFS VEHICLES AND RESCUE EQUIPMENT

(a) The aerodrome operator should ensure that:

(1) the minimum number of rescue and firefighting vehicles at the aerodrome to effectively deliver and deploy the agents specified for the aerodrome category will be in accordance with the following table; and

Aerodrome category	Rescue and fire fighting vehicles
1	1
2	1
3	1
4	1
5	1
6	2
7	2
8	3
9	3
10	3

Table 1

(2) rescue equipment commensurate with the level of aircraft operations is provided on the rescue and firefighting vehicles.

(b) If the aerodrome is located near a water/swampy area, or other difficult environment, or a significant portion of the approach/departure operations takes over these areas, the aerodrome operator should coordinate the availability of suitable rescue equipment and services.

AMC4 ADR.OPS.B.010(a)(2) Rescue and firefighting services

EXTINGUISHING AGENTS

The aerodrome operator should ensure that:

(a) both principal and complementary extinguishing agents are provided at the aerodrome;

(b) principal extinguishing agent includes:

(1) a foam meeting the minimum performance level A; or

(2) a foam meeting the minimum performance level B; or

(3) a foam meeting the minimum performance level C; or

(4) a combination of these agents; except for aerodromes in categories 1 to 3, where it should preferably meet a performance level B or C foam;

(c) the complementary extinguishing agent is a dry chemical powder suitable for extinguishing hydrocarbon fires, or any other alternate agent having equivalent firefighting capability;

(d) the amounts of water for foam production, and of the complementary agents provided on the rescue and firefighting vehicles are in accordance with the determined aerodrome category and Table 1,

except that for aerodrome categories 1 and 2, up to 100 % of the water may be substituted with complementary agent.

For the purpose of agent substitution, 1 kg of complementary agent is equivalent to 1 L of water for production of a foam meeting performance level A.

Note 1: The amounts of water specified for foam production are predicated on an application rate of 8.2 L/min/m2 for a foam meeting performance level A, 5.5 L/min/m2 for a foam meeting performance level B and 3.75 L/min/m2 for a foam meeting performance level C.

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

da) the quantity of foam concentrates separately provided on vehicles for foam production is in proportion to the quantity of water provided and the foam concentrate selected;

Minimum usable amounts of extinguishing agents								
	Foam meeting performance level A		Foam meeting performance level B		Foam meeting performance level C		Complementary agents	
Aerodrome category (1)	Water (L) (2)	Discharge rate foam solution/minute (L) (3)	Water (L) (4)	Discharge rate foam solution/minute (L) (5)	Water (L) (6)	Discharge rate foam solution/minute (L) (7)	Dry chemical powders (kg) (8)	Discharge rate (kg/sec) (9)
1	350	350	230	230	160	160	45	2.25
2	1 000	800	670	550	460	360	90	2.25
3	1 800	1 300	1 200	900	820	630	135	2.25
4	3 600	2 600	2 400	1800	1 700	1 100	135	2.25
5	8 100	4 500	5 400	3 000	3 900	2 200	180	2.25
6	11 800	6 000	7 900	4 000	5 800	2 900	225	2.25
7	18 200	7 900	12 100	5 300	8 800	3 800	225	2.25
8	27 300	10 800	18 200	7 200	12 800	5 100	450	4.5
9	36 400	13 500	24 300	9 000	17 100	6 300	450	4.5
10	48 200	16 600	32 300	11 200	22 800	7 900	450	4.5
Note: The quantities of water shown in columns 2, 4 and 6 are based on the average overall length of aeroplanes in a given category								

Table 1

(e) the amount of foam concentrate provided on a vehicle should be sufficient to produce, at least, two loads of foam solution;

(f) when a combination of different performance level foams are provided at the aerodrome, the total amount of water to be provided for foam production should be calculated for each foam type and the distribution of these quantities should be documented for each vehicle and applied to the overall rescue and firefighting requirement; (g) the discharge rate of the foam solution is not less than the rates shown in Table 1;

(h) the complementary agents comply with the appropriate specifications of the International Organisation for Standardisation (ISO);

(i) the discharge rate of complementary agents is not less than the values shown in Table 1;

(j) a reserve supply of foam concentrate equivalent to 200 % of the quantities identified in Table 1 is maintained on the aerodrome for vehicle replenishment purposes. Foam concentrate carried on fire vehicles in excess of the quantity identified in Table 1 can contribute to the reserve;

(k) a reserve supply of complementary agent equivalent to 100 % of the quantity identified in Table 1 is maintained on the aerodrome for vehicle replenishment purposes and sufficient propellant gas is included to utilize this reserve complementary agent. Complementary agent(s) carried on fire vehicles in excess of the quantity identified in Table 1 may contribute to the reserve;

(l) for Category 1 and 2 aerodromes that have replaced up to 100 % of the water with complementary agent a reserve supply of complementary agent of 200 % is maintained;

(m) where a major delay in the replenishment of the supplies is anticipated, the amount of reserve supply is increased as determined by a risk assessment;

(n) a water need analysis is conducted to determine the availability of sufficient quantities of water for firefighting;

(o) quantities of water and foam concentrate are recalculated and the amount of water and foam concentrate for foam production and the discharge rates for foam solution are increased accordingly, where operations by aeroplanes larger than the average size in a given category are planned;

oa) Where the level of protection is reduced in accordance with AMC2 ADR.OPS.B.010 (a)(2), a recalculation of quantities of extinguishing agents should be computed based on the largest aeroplane in the reduced category;

(ob) For all-cargo, mail, training, test, positioning and end-of-life aeroplane operations, including those carrying dangerous goods, the recalculation of quantities of extinguishing agents should be based on the largest aeroplane in the category specified in Table 2 of AMC2 ADR.OPS.B.010(a)(2);and

(p) arrangements are in place to manage extinguishing agents in terms of selection, storage, maintenance, and testing.

AMC5 ADR.OPS.B.010(a)(2) Rescue and firefighting services

RESPONSE TIME

The aerodrome operator should ensure that:

(a) rescue and firefighting service achieves a response time not exceeding three minutes with an operational objective of not exceeding two minutes from the initial call to the rescue and fire fighting services, to any point of each operational runway, in optimum visibility and surface conditions, and be in a position to apply foam at a rate of, at least, 50 % of the discharge rate specified in AMC4 ADR.OPS.B.010 Table 1;

(b) response times to any other part of the movement area, in optimum visibility and surface conditions, are calculated and included in the Aerodrome Emergency Plan;

(c) any vehicle, other than the first responding vehicle(s), required to achieve continuous agent application of the amount of extinguishing agents specified in Table 1 of AMC4 ADR.OPS.B.010 arrives no more than one minute after the first responding vehicle(s); and

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

AMC6 ADR.OPS.B.010(a)(2) Rescue and firefighting services

PERSONNEL

The aerodrome operator should ensure that:

(a) during flight operations and, at least, 15 minutes after the departure of last flight, sufficient trained personnel is detailed and readily available to ride the rescue and firefighting vehicles, and to operate the equipment at maximum capacity;

(b) personnel is deployed in a way that ensures the minimum response times can be achieved, and continuous agent application at the appropriate rate can be fully maintained considering also the use of hand lines, ladders, and other res-cue and firefighting equipment normally associated with aircraft rescue and firefighting operations;

(c) all responding rescue and firefighting personnel are provided with protective clothing and respiratory equipment to enable them to perform their duties in an effective manner; and

(d) any other duties carried out by rescue and firefighting personnel do not compromise the response, or their safety.

GM1 ADR.OPS.B.010(a)(2) Rescue and firefighting services

COMMUNICATION AND ALERTING SYSTEMS

The aerodrome operator should examine the possibility of utilizing means allowing the direct communication between the rescue and firefighting service and the flight crew of an aircraft in emergency. The decision could be based on the ability of the rescue and firefighting personnel to communicate effectively with the flight crew either verbally or using hand signals. Two-way radio communication system may be used as well as the hand signals described in Appendix 1 of Commission Implementing Regulation (EU) No 923/2012.

GM2 ADR.OPS.B.010(a)(2) Rescue and firefighting services

NUMBER OF RFFS PERSONNEL

In determining the number of personnel required to provide for rescue and firefighting, a Task and Resource Analysis should be performed, taking into consideration the types of aircraft operating at the aerodrome, the available rescue and firefighting vehicles and equipment, any other duties required from RFFS personnel, etc.

GM3 ADR.OPS.B.010(a)(2) Rescue and firefighting services

NUMBER OF RFFS VEHICLES AND RESCUE EQUIPMENT

Special firefighting equipment may not be provided for water areas; this does not prevent the provision of such equipment if it would be of practical use, such as when the areas concerned include reefs or islands. The objective should be to plan and deploy the necessary lifesaving flotation equipment, as expeditiously as possible, in a number commensurate with the largest aeroplane normally using the aerodrome.

GM4 ADR.OPS.B.010(a)(2) Rescue and firefighting services

REDUCTION OF RFFS LEVEL OF PROTECTION

Contingency arrangements to limit the need for changes to the promulgated rescue and firefighting level of protection should be developed. This may involve, for example, a maintenance plan to ensure the mechanical efficiency of equipment and vehicles for rescue and firefighting, and arrangements to cover unplanned absence of the minimum level of personnel including supervisory levels.

The following may be considered as unforeseen circumstances leading to temporary reduction of the level of protection of the aerodrome rescue and firefighting

(a) breakdown of RFFS vehicles;

(b) staff shortage;

(c) unavailability of extinguishing agents; and

(d) RFFS response to an accident.

Such changes, including estimated time of the reduction, should be notified without delay to the appropriate air traffic services (ATS) units and aeronautical information services (AIS) units (see GM1 ADR.OPS.A.005 Aerodrome data) to enable those units to provide the necessary information to arriving and departing aircraft.

A temporary reduction should be expressed in terms of the new category of the rescue and firefighting services available at the aerodrome. Where the temporary reduction involves resources not used to calculate the aerodrome RFF category (e.g. specialist rescue equipment for difficult environs), details should be notified. When such a temporary reduction no longer applies, the above units should be advised accordingly.

GM5 ADR.OPS.B.010(a)(2) Rescue and firefighting services

RESCUE AND FIREFIGHTING LEVEL OF PROTECTION

The following examples are intended to illustrate the way in which the various factors to be taken into account when calculating levels of protection should be applied:

Example 1 — Wider aeroplane fuselage

If an aeroplane has a fuselage length of 47.5 m, column 2 of Table 1 in AMC2 ADR.OPS.B.010(a)(2) indicates RFF category 7. However, the example aeroplane has a fuselage width of 5.5 m, therefore, according to (a)(2) in AMC2 ADR.OPS.B.010(a)(2), the appropriate level of protection is RFF category 8.

Example 2 — Longer than average aeroplane length

Where operations by aeroplanes larger than the average size in a given category are planned, the quantities of water should be recalculated, and the amount of water for foam production as well as the discharge rates for foam solution should be increased accordingly. The example below is based on an aeroplane with an overall length of 48 m and a maximum fuselage width of 5 m. The quantity of water and the discharge rate of foam solution have been calculated using the ICAO critical-area concept, and increased to reflect the greater practical critical area.

Minimum useable amounts of extinguishing agents (based on the provision of foam meeting performance level B)			
Aerodrome category	**Water (lt)**	**Discharge rate of foam solution (lt/min)**	**Dry chemical powder(kg)**
Category 7 minimum requirement	12 100	5 300	225
Requirement following recalculation	14 113	6 163	225

Example 3 — Less than 700 movements in the busiest consecutive 3 months

The following examples illustrate the method for the determination of the aerodrome's rescue and firefighting level of protection when considering the number of movements:

Aeroplane	Overall length	Fuselage width	Category	Movements
Airbus A320	37.6 m	4.0 m	6	600
Bombardier CRJ 900	36.4 m	2.7 m	6	300
Embraer 190	36.2 m	3.0 m	6	500
ATR 72	27.2 m	2.8 m	5	200

The longest aeroplanes are categorised by evaluating, based on Table 1 of AMC2 ADR.OPS.B.010(a)(2), firstly their overall length and secondly their fuselage width until 700 movements are reached. It may be seen that the number of movements of the longest aeroplanes in the highest category totals more than 700. The aerodrome, in this case, is category 6.

Aeroplane	Overall length	Fuselage width	Category	Movements
Airbus A350-900	66.8 m	6.0 m	9	300
Boeing 747-8	76.3 m	6.5 m	10	400
Airbus A380	72.7 m	7.1 m	10	400

The longest aeroplanes are categorised by evaluating, based on Table 1 of AMC2 ADR.OPS.B.010(a)(2), firstly their overall length and secondly their fuselage width until 700 movements are reached. It may be seen that the number of movements of the longest aeroplanes in the highest category totals more than 700. It may also be noted that when evaluating the category appropriate to the overall length of Airbus A380, e.g. category 9, the category selected is actually one level higher as the aeroplane's fuselage width is greater than the maximum fuselage width for category 9. The aerodrome, in this case, is category 10.

Aeroplane	Overall length	Fuselage width	Category	Movements
Boeing 737-900ER	42.1 m	3.8 m	7	300
Bombardier CRJ 900	36.4 m	2.7 m	6	500
Airbus A319	33.8 m	4.0 m	6	300

The longest aeroplanes are categorised by evaluating, based on Table 1 of AMC2 ADR.OPS.B.010(a)(2), firstly their overall length and secondly their fuselage width until 700 movements are reached. It may be seen that the number of movements of the longest aeroplanes in the highest category totals only 300. The minimum category for the aerodrome, in this case, is be category 6, which is one category level below that of the longest aeroplane.

Aeroplane	Overall length	Fuselage width	Category	Movements
Airbus A380	73.0 m	7.1 m	10	300
Boeing 747-8	76.3 m	6.5 m	10	200
Boeing 747-400	70.7 m	6.5 m	9	300

The longest aeroplanes are categorised by evaluating, based on Table 1 of AMC2 ADR.OPS.B.010(a)(2), firstly their overall length and secondly their fuselage width until 700 movements are reached. It may be seen that the number of movements of the longest aeroplanes in the highest category totals only 500. It may also be noted that when evaluating the category appropriate to the overall length of Airbus A380, e.g. category 9, the category selected is actually one level higher as the aeroplane's fuselage width is greater than the maximum fuselage width for category 9. The minimum category for the aerodrome, in this case, is category 9, which is one category level below that of the longest aeroplane.

Aeroplane	Overall length	Fuselage width	Category	Movements
Airbus A321	44.5 m	4.0 m	7	100
Boeing 737-900ER	42.1 m	3.8 m	7	300
ATR 42	22.7 m	2.9 m	4	500

The longest aeroplanes are categorised by evaluating, based on Table 1 of AMC2 ADR.OPS.B.010(a)(2), firstly their overall length and secondly their fuselage width until 700 movements are reached. It may be seen that the number of movements of the longest aeroplanes in

the highest category totals only 400. The minimum category for the aerodrome is category 6. However, even if there is a relatively wide range of difference between the length of the longest aeroplane (Airbus A321) and the aeroplane for which the 700th movement is reached (ATR 42), the minimum category for the aerodrome may only be downgraded to category 6.

Example 4 — Anticipated periods of reduced activity

The level of protection should be no less than that needed for the highest category of aeroplanes planned to use the aerodrome during that period. If the aerodrome has promulgated RFFS category 7, but between 23:00 and 6:00, the largest aeroplane operating has an overall length of 27.5 m and a maximum fuselage width of 3.9 m, the promulgated category may be downgraded to category 5 for that time frame.

Example 5 — All-cargo and mail aeroplane operations including dangerous goods

An all-cargo aeroplane is an aeroplane operated for the transportation of cargo including dangerous goods. If an all-cargo aeroplane has an overall length of 47.5 m and a maximum fuselage width of 4.2 m, according to Table 1, category 7 is indicated. As the aeroplane is an all-cargo one, according to Table 2, a reclassification to category 6 may be applied.

GM6 ADR.OPS.B.010(a)(2) Rescue and firefighting services

CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER

(a) The ICAO critical-area concept is applied for rescuing the occupants of an aeroplane. It seeks to control only that area of fire adjacent to the fuselage. The objective is to safeguard the integrity of the fuselage and maintain tolerable conditions for the occupants of the aeroplane. The size of the controlled area required to achieve this for a specific aeroplane has been determined by experimental means.

(b) There is a need to distinguish between the theoretical critical area, within which it may be necessary to control the fire, and the practical critical area, which is representative of actual aeroplane accident conditions. The theoretical critical area serves only as a means of categorising aeroplanes in terms of the magnitude of the potential fire hazard in which they may become involved. It is not intended to represent the average maximum or minimum spill fire size associated with a particular aeroplane. The theoretical critical area is a rectangle having as one dimension the overall length of the aeroplane and as the other dimension a length which varies with the fuselage's length and width.

(c) From experiments performed, it has been established that for an aeroplane with a fuselage length equal to or greater than 24 m, in wind conditions of 16–19 km/h and at right angles to the fuselage, the theoretical critical area extends from the fuselage to a distance of 24 m upwind and 6 m downwind. For smaller aeroplanes, a distance of 6 m on either side is adequate. To provide for a progressive increase in the theoretical critical area however, a transition is used when the fuselage length is between 12 and 24 m.

(d) The overall length of the aeroplane is considered appropriate for the theoretical critical area as the entire length of the aeroplane must be protected from burning. If not, the fire might burn through the skin and enter the fuselage. Moreover, other aeroplanes, such as T-tail ones, often have engines or exit points in their extended portion.

(e) The formula for the theoretical critical area A_T should be the following:

Overall length	Theoretical critical area A_T
L < 12m	L x (12 + W)
12m ≤ L < 18m	L x (14 + W)
18m ≤ L < 24m	L x (17 + W)
L ≤ 24m	L x (30 + W)

where 'L' is the overall length of the aeroplane, and 'W' is the maximum width of the aeroplane fuselage.

(f) In practice, it is seldom that the entire theoretical critical area is subject to fire; thus, a smaller area for which it is proposed to have firefighting capacity is referred to as the practical critical area. As a result of a statistical analysis of actual aeroplane accidents, the practical critical area A_P has been found to be approximately two thirds of the theoretical critical area A_T, or

$A_P = 0.667 \times A_T$

(g) The quantity of water for foam production should be calculated with the following formula:

$Q = Q_1 + Q_2$, where:
— 'Q' is the total water required;

— 'Q_1' is the water used to control the fire in the practical critical area; and

— 'Q_2' is the water required after control of the fire has been established, and is needed for maintaining this control and/or extinguishing the remaining fire.

(h) The water required for control of the fire in the practical critical area (Q_1) may be expressed by the following formula:

$Q_1 = A_p \times R \times T$, where:
— 'A_p' is the practical critical area;

— 'R' is the rate of application; and

— 'T' is the time of application.

(i) The amount of water required for Q_2 may not be exactly calculated as it depends on a number of variables. The factors considered to be of primary importance are:

(1) the maximum gross mass of the aeroplane;

(2) the maximum passenger capacity of the aeroplane;

(3) the maximum fuel load of the aeroplane; and

(4) previous experience (analysis of aeroplane RFF operations).

These factors, when plotted on a graph, are used to calculate the total amount of water required for each airport category. The volume of water for Q_2, as a percentage of Q_1, varies from about 0 % for category 1 aerodromes to about 190 % for a category 10 aerodrome.

(j) The relation between Q_1 and Q_2 for aeroplanes representative of each airport category is shown in the following table:

Aerodrome category	Q_2 = percentage of Q_1
1	0%
2	27%
3	30%
4	58%
5	75%
6	100%
7	129%
8	152%
9	170%
10	190%

GM1 ADR.OPS.B.010(a)(3) Rescue and firefighting services

TRAINING OF RESCUE AND FIREFIGHTING PERSONNEL

The training of rescue and firefighting personnel may include training in, at least, the following areas:

(a) aerodrome familiarisation;

(b) aircraft familiarisation;

(c) rescue and firefighting personnel safety;

(d) emergency communications systems on the aerodrome, including aircraft fire related alarms;

(e) use of the fire hoses, nozzles, turrets, and other appliances;

(f) application of the types of extinguishing agents required;

(g) emergency aircraft evacuation assistance;

(h) firefighting operations;

(i) adaptation and use of structural rescue and firefighting equipment for aircraft rescue and firefighting;

(j) dangerous goods;

(k) familiarisation with fire fighters' duties under the aerodrome emergency plan;

(l) low visibility procedures;

(m) human performance, including team coordination;

(n) protective clothing and respiratory protection;

(o) composite materials; and

(p) recognition of aircraft ballistic parachute systems during emergency operations.

AMC1 ADR.OPS.B.010(a)(4) Rescue and firefighting services

MEDICAL STANDARDS FOR RFFS PERSONNEL

The aerodrome operator should ensure that appropriate medical standards are met by RFFS personnel.

GM1 ADR.OPS.B.010(a)(4) Rescue and firefighting services

MEDICAL ASSESSMENT

1. General

Rescue and firefighting personnel, when responding to an accident, need to be capable of withstanding physically aggressive conditions whilst performing efficiently. Additionally, managing life-threatening situations which put at risk aircraft occupants' safety requires also mental fitness. For this reason, decision-making and stress management should not be impaired.

The key fitness components for rescue and firefighting personnel are aerobic fitness, anaerobic fitness, flexibility and medical fitness. Optimum physical and medical fitness would mean that a firefighter is able to carry out rescue and firefighting activities safely, successfully and without unjustified fatigue.

In order to understand better the key fitness components, the following aspects may have to be considered:

Aerobic fitness refers to the ability to continue to exercise for prolonged periods of time at low to moderate or high intensity. This depends upon the capacity of the body's heart, lungs and blood to get the oxygen to the muscles (VO2) providing the sustained energy to maintain prolonged exercise. **Anaerobic fitness** works differently to aerobic fitness. It is an activity that requires high levels of strength and is done for only a very short period of time at a high level of intensity. Anaerobic fitness may be defined as higher levels of muscular strength, speed and power.

Flexibility refers to the ability to move the limbs and joints into specific positions at the extreme of their normal range of movement. Flexibility is important as it will allow the body to work in cramped positions without unduly stressing the muscles, tendons and ligaments and may reduce the risk of injury.

2. Definitions

For the purpose of this guidance, the following definitions can be considered:

'Assessment' refers to the conclusion on the medical fitness of a person based on the evaluation of the applicant's medical history, medical examinations and medical tests which are performed.

'Medical staff' refers to general medical practitioners (GMPs) and occupational health medical practitioners (OHMPs) who have appropriate qualifications and/or experience in the field of occupational medicine practice or aeromedical examiners (AMEs) or aeromedical centres (AeMCs).

'Significant' refers to a degree of a medical condition, the effect of which would prevent the safe performance of duties related to rescue and firefighting.

3. Medical confidentiality

All persons involved in medical examinations and assessments ensure that medical confidentiality is respected at all times. For this reason, all reports and records are to be securely held with accessibility restricted only to authorised personnel.

4. Decrease in medical fitness

Rescue and firefighting personnel need to exercise a duty of care and not to perform their duties when they are aware of any decrease in their medical fitness, to the extent that this condition might render them unable to perform their duties. Furthermore, without undue delay, medical advice is needed when they:

(a) have undergone a surgical operation or invasive procedure;
(b) have commenced the regular use of any medication;
(c) have suffered any significant personal injury;
(d) have been suffering from any significant illness;
(e) are pregnant; and
(f) have been admitted to hospital or medical clinic.

In these cases, the medical fitness of the person is assessed by medical staff in order to decide whether the person is fit to resume duties. Additionally, following recovery from significant illness or injury, it may be necessary, after recommendation of the medical staff, to undergo any relevant physical fitness tests prior to a return to operational duty.

5. Medical staff

(a) Medical examinations and/or assessments are conducted by medical staff who have knowledge of the rescue and firefighting personnel's workloads and risk factors.

(b) When conducting medical examinations and/or assessments, the medical staff member:

(1) ensures that communication with the person can be established without language barriers; and

(2) makes the person aware of the consequences of providing incomplete, inaccurate or false statements on their medical history.

(c) After completion of the medical examinations and/or assessments, the medical staff member:

(1) advises the person whether they have been assessed as fit or unfit;

(2) informs the person of any limitation(s) to operational duty;

(3) completes a medical report;

(4) informs the person of their responsibilities in the case of decrease in medical fitness; and

(5) if the person has been assessed as unfit, informs them of their right of a secondary review.

6. Medical assessment programme

A medical assessment programme is a tool to promote and facilitate that rescue and firefighting personnel are free of any physical or mental illness, which might lead to incapacitation or inability to perform their assigned duties and responsibilities.

The programme includes an initial assessment prior to employment and re-examinations at regular intervals. The frequency of the re-examinations may take into account the age of the person, the medical history, etc.

7. Medical assessment

(a) The objective of a medical assessment is to assess the physical and mental ability of the rescue and firefighting personnel to:

(1) undergo the training which is necessary to acquire and maintain competence in the execution of their tasks related to rescue and firefighting, such as working in a high temperature environment, using protective breathing equipment in a simulated smoke filled environment, assisting trapped or injured passengers to escape the aircraft, etc.; and

(2) perform their duties in psychologically demanding circumstances.

(b) Fit rescue and firefighting personnel will be free from any:

(1) abnormality, congenital or acquired;

(2) active, latent, acute or chronic disease or disability;

(2) wound, injury or sequel from an operation;

(4) effect or side effect of any prescribed or non-prescribed therapeutic, diagnostic or preventive medication taken, which entails a degree of functional incapacity that is likely to interfere with the performance of their duties or could render them likely to become suddenly unable to perform their duties.

(c) The initial medical assessment includes at least:

(1) an assessment of the medical history; and

(2) a clinical examination of the following:
(i) cardiovascular system;
(ii) respiratory system;
(iii) musculoskeletal system;
(iv) otorhinolaryngology (ENT); and
(v) visual system.

(d) Each subsequent medical assessment includes:

(1) an assessment of the medical history; and
(2) a clinical examination (if deemed necessary) in accordance with best medical practices.

Nevertheless, if during any medical assessment there is a doubt or if clinically indicated, additional medical examinations, tests or investigations may also be conducted if considered necessary by the medical staff

CLINICAL EXAMINATION AND INVESTIGATION

Clinical examination may include the following:

(a) Cardiovascular system

(1) blood pressure measurement; and
(2) a standard 12-lead resting ECG and report. An extended cardiovascular assessment (including an exercise ECG) is required when clinically indicated.

(b) Respiratory system

(1) pulmonary function tests; and
(2) chest X-ray on clinical indication.

(c) Musculoskeletal system

(d) Ear Nose and Throat (ENT)

(1) a routine inspection of ears, nose and throat;
(2) a conversational hearing test during which the person is able to understand correctly conversational speech when tested with each ear at a distance of 2 metres from and with their back turned towards the medical staff; and
(3) on clinical indication, pure tone audiometry measured at 500, 1000, 2000, 3000, and 4000 Hz.

(e) Visual system using standard techniques
(1) distance vision;
(2) near vision;
(3) visual fields, on clinical indication;

(4) colour vision (initial only or on clinical indication);
(5) eye movements; and
(6) ocular inspection.

(f) Urine tests for blood, protein and sugar

(g) Blood tests

Persons will undergo a blood test, taking into account the medical history and following the physical examination of:

(1) full blood count;
(2) liver function;
(3) kidney function;
(4) blood sugar; and
(5) serum lipids, including cholesterol.

8. Medical report

After the completion of each medical assessment, a written medical report will be provided by the medical staff to the person concerned, as well as to the organisation employing them.
The report indicates the date of the medical assessment, whether the person has been assessed as fit or unfit, the date of the next medical assessment and, if applicable, any limitation(s). All other elements are subject to medical confidentiality; therefore, they are not included in the report.

9. Limitations

If any person does not fully satisfy the established medical criteria, they may be allowed to exercise their tasks with some limitations. The limitations will be detailed by the medical staff and listed in the medical report.

Removal of the limitations is normally taking place following a re-assessment by the medical staff.

EXAMPLES OF LIMITATIONS

Depending on the case, operational limitations and/or use of aids may be imposed, as follows (list not exhaustive and based on the fit assessment and operational requirements):

(a) Wearing of corrective lenses;

(b) Wearing of hearing aids;

(c) Reduction of the interval between consecutive medical examinations or assessments. In this case, the persons concerned will present themselves for re-examination when advised and follow any medical recommendations;

(d) Operational restrictions such as:
(1) use of breathing apparatus;
(2) work in confined spaces;
(3) ladder climbing;
(4) working at heights;

(5) driving;
(6) operating or carrying heavy equipment; and
(7) descending the pole; and

(e) Working only in specific periods of the day (e.g. day shifts only).

GM2 ADR.OPS.B.010(a)(4) Rescue and firefighting services

MEDICAL CRITERIA FOR RFSS PERSONNEL

1. CARDIOVASCULAR SYSTEM

(a) General

(1) Rescue and firefighting personnel with any of the following conditions are assessed as unfit:

(i) aneurysm of the thoracic or supra-renal abdominal aorta, before or after a surgery;
(ii) significant functional abnormality of any of the heart valves;
(iii) heart or heart/lung transplantation;
(iv) symptomatic sinoatrial disease;
(v) complete atrioventricular block;
(vi) a sub-endocardial pacemaker;
(vii) symptomatic channelopathies including QT prolongation and Brugada syndrome;
(viii) an automatic implantable defibrillating system;
(ix) a ventricular anti-tachycardia pacemaker; and
(x) pulmonary hypertension.

(2) Rescue and firefighting personnel with a suspected or established diagnosis of any of the following conditions are assessed as unfit. Following satisfactory treatment and specialist review, a fit assessment can be considered.

(i) Coronary arterial disease before or after intervention;
(ii) Peripheral arterial disease before or after a surgery;
(iii) Aneurysm of the infra-renal abdominal aorta, before or after a surgery;
(iv) Functionally insignificant cardiac valvular abnormalities;
(v) After a cardiac valve surgery;
(vi) Significant disorder of cardiac rhythm, including pacemakers and ablation therapy;
(vii) Abnormality of the pericardium, myocardium or endocardium;
(viii) Congenital abnormality of the heart, before or after a corrective surgery;
(ix) Recurrent vasovagal syncope;
(x) Arterial or venous thrombosis;
(xi) Pulmonary embolism; and
(xii) Cardiovascular condition that requires systemic anticoagulant therapy.

(b) Peripheral arterial disease

Rescue and firefighting personnel with peripheral arterial disease, before or after a surgery, undergo a satisfactory cardiological evaluation including an exercise ECG. Further tests may be

required which should show no evidence of myocardial ischaemia or significant coronary artery stenosis. A fit assessment may be considered provided that:

(1) a Doppler echocardiography of the affected area is satisfactory; and

(2) there is no sign of significant coronary artery disease or evidence of significant atheroma elsewhere, and no functional impairment of the end organ supplied.

(c) Aortic aneurysm

Rescue and firefighting personnel:

(1) with an aneurysm of the infra-renal abdominal aorta are assessed as unfit;
(2) may be assessed as fit after a surgery for an infra-renal aortic aneurysm without complications and subject to being free of disease of the carotid and coronary circulation.

(d) Cardiac valvular abnormalities

Rescue and firefighting personnel:

(1) with previously unrecognised cardiac murmurs will undergo a cardiological evaluation. If considered significant, further investigation may be required subject to the recommendation of the cardiologist;

(2) with minor cardiac valvular abnormalities may be assessed as fit. Regular cardiological follow-up, including at least a 2D Doppler echocardiography, as determined by the cardiologist is required;

(3) with significant abnormality of any of the heart valves are assessed as unfit.

(4) with bicuspid aortic valve may be assessed as fit if no other cardiac or aortic abnormality is demonstrated and if their effort capacity is not adversely affected. Regular cardiological follow-up, including a 2D Doppler echocardiography, is required;

(5) with mild aortic stenosis may be assessed as fit if their effort capacity is not adversely affected. Annual cardiological follow-up is required which includes a 2D Doppler echocardiography;

(6) with aortic regurgitation may be assessed as fit only if regurgitation is minor and there is no evidence of volume overload. There will be no demonstrable abnormality of the ascending aorta on a 2D Doppler echocardiography. Cardiological follow-up including a 2D Doppler echocardiography is required;

(7) with rheumatic mitral stenosis may only be assessed as fit in favourable cases after a cardiological evaluation including a 2D Doppler echocardiography;

(8) with uncomplicated minor mitral valve regurgitation may be assessed as fit if their effort capacity is not adversely affected. Regular cardiological follow-up including a 2D Doppler echocardiography is required;

(9) with mitral valve prolapse and mild mitral regurgitation may be assessed as fit if their

effort capacity is not adversely affected;

(10) with evidence of volume overloading of the left ventricle demonstrated by increased left ventricular end-diastolic diameter are assessed as unfit;

(11) with cardiac valve replacement/repair are assessed as unfit. After a satisfactory cardiological evaluation, a fit assessment may be considered; and

(12) after a valvular surgery without any symptom may be assessed as fit after 6 months subject to:

(i) normal valvular and ventricular function as judged by a 2D Doppler echocardiography;

(ii) satisfactory symptom-limited exercise ECG or equivalent;

(iii) demonstrated absence of coronary artery disease unless this has been satisfactorily treated by re-vascularisation;

(iv) no cardioactive medication being required;

(v) annual cardiological follow-up to include an exercise ECG and a 2D Doppler echocardiography. Longer periods may be acceptable once a stable condition has been confirmed by cardiological evaluations; and

(i) with implanted mechanical valves are assessed as unfit. Persons with implanted biological valves may be assessed as fit subject to documented exemplary compliance with their anti-platelet therapy. Age factors are part of the risk assessment.

(e) Thromboembolic disorders

Rescue and firefighting personnel with arterial or venous thrombosis or pulmonary embolism are assessed as unfit during anticoagulation. Rescue and firefighting personnel with pulmonary embolism will also be evaluated by a cardiologist. Following cessation of anticoagulant therapy, for any indication, they need to undergo a re-assessment before returning to duty.

(f) Other cardiac disorders

Rescue and firefighting personnel:

(1) with an abnormality of the pericardium, myocardium or endocardium are assessed as unfit. A fit assessment may be considered following a complete resolution and a satisfactory cardiological evaluation which may include a 2D Doppler echocardiography, an exercise ECG, a 24-hour ambulatory ECG, and/or a myocardial perfusion scan or an equivalent test. Coronary angiography or an equivalent test may be indicated. Regular cardiological follow-up may be required; and

(2) with a congenital abnormality of the heart, including those who have undergone surgical correction, are assessed as unfit. Rescue and firefighting personnel with minor abnormalities that are functionally relevant and do not adversely affect their effort

capacity may be assessed as fit following a cardiological assessment. No cardioactive medication is acceptable. Investigations may include a 2D Doppler echocardiography, an exercise ECG and a 24-hour ambulatory ECG. Regular cardiological follow-up may be required.

(g) Syncope

(1) Rescue and firefighting personnel with a history of recurrent episodes of syncope are assessed as unfit. A fit assessment may be considered after a sufficient period of time without recurrence provided that a cardiological evaluation is satisfactory.

(2) A cardiological evaluation following a single episode of syncope includes at least:

(i) a satisfactory symptom-limited exercise ECG. If the exercise ECG is abnormal, a myocardial perfusion scan or an equivalent test is required;

(ii) a 2D Doppler echocardiogram showing neither significant selective chamber enlargement nor structural or functional abnormality of the heart, valves or myocardium;

(iii) a 24-hour ambulatory ECG recording showing no conduction disturbance, complex or sustained rhythm disturbance or evidence of myocardial ischaemia; and

(iv) a tilt test carried out to a standard protocol showing no evidence of vasomotor instability.

(3) Neurological review may be required.

(h) Blood pressure

(1) Blood pressure will be within normal limits.
(2) Rescue and firefighting personnel:

(i) with symptomatic hypotension; or

(ii) whose blood pressure at examination consistently exceeds 140 mmHg systolic and/or 90 mmHg diastolic, with or without treatment; or

(iii) who have initiated a medication for the control of blood pressure,
will require a period of suspension from the duties in order to assess the severity of the condition, impose or change the treatment and/or to establish the absence of significant side effects.

(3) The investigation of possible hypertension and confirmation of adequate control on medication includes a 24-hour blood pressure monitoring.

(4) Anti-hypertensive medication may include:

(i) non-loop diuretic agents;

(ii) angiotensin converting enzyme (ACE) inhibitors;

(iii) angiotensin II receptor blocking agents;

(iv) long-acting slow channel calcium blocking agents; and

(v) certain (generally hydrophilic) beta-blocking agents.

(5) Following initiation of medication for the control of blood pressure, rescue and firefighting personnel are re-assessed to verify that the treatment is compatible with the safe exercise of their duties.

(i) Coronary artery disease

(1) Rescue and firefighting personnel with chest pain will undergo a full investigation before a fit assessment may be considered. Rescue and firefighting personnel with angina pectoris are assessed as unfit, whether or not it is abolished by medication.

(2) Rescue and firefighting personnel with suspected asymptomatic coronary artery disease undergo a cardiological evaluation including an exercise ECG. Further tests (myocardial perfusion scanning, stress echocardiography, coronary angiography or equivalent) may be required, which should show no evidence of myocardial ischaemia or significant coronary artery stenosis.

(3) After an ischaemic cardiac event, including revascularisation (PTCI/stent and CABG), rescue and firefighting personnel without symptoms need to have reduced any vascular risk factors to an appropriate level. Medication, when used to control cardiac symptoms, is not acceptable. All rescue and firefighting personnel will be on acceptable secondary prevention treatment.

(i) A coronary angiogram or equivalent obtained around the time of, or during, the ischaemic myocardial event, and a complete, detailed clinical report of the ischaemic event and of any operative procedures is available.

(A) There is no stenosis more than 50 % in any major untreated vessel, in any vein or artery graft or at the site of an angioplasty/stent, except in a vessel subtending a myocardial infarction. More than two stenoses between 30 % and 50 % within the vascular tree are not acceptable.
(B) The whole coronary vascular tree is assessed as satisfactory by a cardiologist, and particular attention is paid to multiple stenoses and/or multiple revascularisations.

(C) An untreated stenosis greater than 30 % in the left main or proximal left anterior descending coronary artery is not acceptable.

(ii) At least 6 months from the ischaemic myocardial event, including revascularisation, the following investigations need to be completed:

(A) an exercise ECG showing neither evidence of myocardial ischaemia nor rhythm or conduction disturbance;

(B) an echocardiogram or an equivalent test showing satisfactory left ventricular function with no important abnormality of wall motion (such as dyskinesia or akinesia) and a left ventricular ejection fraction of 50 % or more;

(C) in cases of angioplasty/stenting, a myocardial perfusion scan or equivalent test, which shows no evidence of reversible myocardial ischaemia. If there is any doubt about myocardial perfusion, in other cases (infarction or bypass grafting), a perfusion scan is also required; and

(D) further investigations, such as a 24-hour ECG, may be necessary to assess the risk of any significant rhythm disturbance.

(iii) Follow-up is conducted annually (or more frequently, if necessary) to ensure that there is no deterioration of the cardiovascular status. It includes a cardiological evaluation, an exercise ECG and a cardiovascular risk assessment. Additional investigations may be required.

(iv) After coronary artery vein bypass grafting, a myocardial perfusion scan or an equivalent test is performed on clinical indication, and in all cases within 5 years from the procedure.

(vi) In all cases, coronary angiography, or an equivalent test, is considered at any time if symptoms, signs or non-invasive tests indicate myocardial ischaemia.

(vii) Rescue and firefighting personnel may be assessed as fit to undergo the physical fitness tests after successful completion of the 6-month or later review.

(j) Rhythm and conduction disturbances

(1) Rescue and firefighting personnel with any significant rhythm or conduction disturbance may be assessed as fit after a cardiological evaluation and with appropriate follow-up. Such an evaluation includes:

(i) an exercise ECG to show no significant abnormality of rhythm or conduction, and no evidence of myocardial ischaemia. Withdrawal of cardioactive medication prior to the test is required;

(ii) a 24-hour ambulatory ECG to demonstrate no significant rhythm or conduction disturbance; and

(iii) a 2D Doppler echocardiogram to show no significant selective chamber enlargement or significant structural or functional abnormality, and a left ventricular ejection fraction of at least 50 %.

Further evaluation may include:

(iv) 24-hour ECG recording repeated as necessary;

(v) electrophysiological study (EPS);

(vi) myocardial perfusion imaging or equivalent test;

(vii) cardiac magnetic resonance imaging (MRI) or equivalent test; and

(viii) coronary angiogram or equivalent test.

(2) Rescue and firefighting personnel with supraventricular or ventricular ectopic complexes on a resting ECG may require no further evaluation, provided that the frequency can be shown to be no greater than one per minute; for example, on an extended ECG strip. Rescue and firefighting personnel with asymptomatic isolated uniform ventricular ectopic complexes may be assessed as fit but frequent or complex forms require a full cardiological evaluation.

(3) Ablation

(i) Rescue and firefighting personnel who have undergone ablation therapy are assessed as unfit for a minimum period of 2 months.

(ii) A fit assessment may be considered following successful catheter ablation provided that an EPS demonstrates satisfactory control has been achieved.

(iii) Where EPS is not performed, longer periods of unfitness and cardiological follow-up needs to be considered.

(iv) Follow-up includes a cardiological assessment.

(4) Supraventricular arrhythmias

Rescue and firefighting personnel with significant disturbance of supraventricular rhythm, including sinoatrial dysfunction, whether intermittent or established, are assessed as unfit. A fit assessment may be considered if a cardiological evaluation, including the prospective risk of stroke, is satisfactory. Anticoagulation therapy is disqualifying.

(i) For pre-employment assessments, for rescue and firefighting personnel with atrial fibrillation/flutter, a fit assessment is limited to those with a single episode of arrhythmia which is considered to be unlikely to recur.

(ii) Rescue and firefighting personnel with asymptomatic sinus pauses up to 2.5 seconds on a resting ECG may be assessed as fit following a satisfactory cardiological evaluation. The cardiological evaluation includes at least the following: an exercise ECG, a 2D Doppler echocardiography and a 24-hour ambulatory ECG.

(iii) Rescue and firefighting personnel with symptomatic sino-atrial disease are assessed as unfit.

(5) Mobitz type 2 atrio-ventricular block
Rescue and firefighting personnel with Mobitz type 2 AV block may be assessed as fit after a full cardiological evaluation confirms the absence of distal conducting tissue

disease.

(6) Complete right bundle branch block
Rescue and firefighting personnel with complete right bundle branch block undergo a cardiological evaluation on first presentation.

(7) Complete left bundle branch block

A fit assessment may be considered, as follows:

(i) At first assessment, rescue and firefighting personnel may be assessed as fit after a full cardiological evaluation showing no pathology. Depending on the clinical situation, a period of stability may be required.

(ii) Rescue and firefighting personnel, during a periodic assessment of their medical fitness with a de-novo left bundle branch block may be assessed as fit after a cardiological evaluation showing no pathology. A period of stability may be required.

(iii) A cardiological evaluation is recommended after 12 months in all cases.

(8) Ventricular pre-excitation

Rescue and firefighting personnel with pre-excitation may be assessed as fit if they are asymptomatic, and an electrophysiological study, including an adequate drug-induced autonomic stimulation protocol, reveals no inducible re-entry tachycardia and the existence of multiple pathways is excluded. Cardiological follow-up will be required including a 24-hour ambulatory ECG recording showing no tendency to symptomatic or asymptomatic tachy-arrhythmia.

(9) QT prolongation

Rescue and firefighting personnel with QT prolongation need to have a cardiological evaluation. A fit assessment may be considered in asymptomatic persons.

2. RESPIRATORY SYSTEM

(a) Rescue and firefighting personnel with significant impairment of pulmonary function are assessed as unfit. A fit assessment could be considered once pulmonary function has recovered and is satisfactory.

(b) Rescue and firefighting personnel with any sequelae of disease or surgical intervention in any part of the respiratory tract likely to cause incapacitation, are assessed as unfit. A fit assessment could be considered after a specialist evaluation.

(c) Following significant respiratory illness, physical fitness tests will be performed prior to a return to operational duty.

(d) Examination

(1) A spirometry is required for initial examination. An FEV1/FVC ratio less than 75 % requires
an evaluation by a specialist in respiratory disease before a fit assessment can be considered.

(2) Posterior/anterior chest radiography may be required at initial, revalidation or renewal
examinations when indicated on clinical or epidemiological grounds.

(e) Chronic obstructive airways disease

Rescue and firefighting personnel with chronic obstructive airways disease are assessed as unfit. Rescue and firefighting personnel with only minor impairment of their pulmonary function may be assessed as fit after a specialist respiratory evaluation. Limitation of duties may be required. Rescue and firefighting personnel with pulmonary emphysema may be assessed as fit for limited duties excluding use of breathing apparatus following a specialist evaluation showing that the condition is stable and not causing significant symptoms.

(f) Asthma

Rescue and firefighting personnel with asthma that requires medication may be assessed as fit if the asthma is considered stable with satisfactory pulmonary function tests and medication is compatible with the safe execution of the duties. Operational limitations may be appropriate.

(g) Inflammatory disease

(1) For rescue and firefighting personnel with active inflammatory disease of the respiratory system, a fit assessment may be considered following a specialist evaluation when the condition has resolved without sequelae and no medication is required.

(2) Rescue and firefighting personnel with chronic inflammatory diseases may be assessed as fit following a specialist evaluation that shows mild disease with no risk of acute worsening with acceptable pulmonary function test, including bronchial challenge test, and medication compatible with the safe execution of duties. Operational limitations may be required.

(h) Sarcoidosis

(1) Rescue and firefighting personnel with active sarcoidosis are assessed as unfit. A specialist evaluation is undertaken with respect to the possibility of systemic, particularly cardiac, involvement. A fit assessment may be considered if minimal medication is required, and the disease is limited to hilar lymphadenopathy and inactive.

(2) Rescue and firefighting personnel with cardiac or neurological sarcoid are assessed as unfit.

(i) Pneumothorax

Rescue and firefighting personnel with a spontaneous pneumothorax are assessed as unfit. A fit assessment may be considered:

(1) 6 weeks after the event provided full recovery from a single event has been confirmed in a full respiratory evaluation including a CT scan or equivalent; and

(2) following surgical intervention in the case of a recurrent pneumothorax provided that there is satisfactory recovery.

(j) Thoracic surgery

(1) Rescue and firefighting personnel that require a thoracic surgery are assessed as unfit until such time as the effects of the operation are no longer likely to interfere with the safe exercise of their duties.

(2) A fit assessment may only be considered after satisfactory recovery and a full respiratory evaluation including a CT scan or equivalent. The underlying pathology which necessitated the surgery is considered in the assessment process.

(k) Sleep apnoea syndrome/sleep disorder

(1) Rescue and firefighting personnel with unsatisfactorily treated sleep apnoea syndrome and suffering from excessive daytime sleepiness are assessed as unfit.

(2) Rescue and firefighting personnel with obstructive sleep apnoea undergo a cardiological and pneumological evaluation.

(3) A fit assessment may be considered subject to the extent of symptoms, and satisfactory treatment.

3. DIGESTIVE SYSTEM

(a) Rescue and firefighting personnel with any sequelae of disease or surgical intervention in any part of the digestive tract or its adnexa likely to cause incapacitation, are assessed as unfit. A fit assessment may be considered after a specialist evaluation.

(b) Oesophageal varices
Rescue and firefighting personnel with oesophageal varices are assessed as unfit.

(c) Pancreatitis

(1) Rescue and firefighting personnel with pancreatitis are assessed as unfit pending an assessment. A fit assessment may be considered if the cause (e.g. gallstone, other obstruction, medication) is removed.

(2) Alcohol may be a cause of dyspepsia and pancreatitis. A full evaluation of its use/abuse is required.

(d) Gallstones
Rescue and firefighting personnel:

(1) with a single large gallstone may be assessed as fit after an evaluation;

(2) with multiple gallstones may be assessed as fit while awaiting assessment or treatment provided that the symptoms are unlikely to interfere with duties.

(e) Inflammatory bowel disease
Rescue and firefighting personnel with an established diagnosis or history of chronic inflammatory bowel disease may be assessed as fit if the disease is in established stable remission, and only minimal, if any, medication is being taken. Regular follow-up is required.

(f) Hernia
Rescue and firefighting personnel will be free of hernia. A fit assessment may be considered subject to the extent of symptoms, satisfactory treatment and after a specialist evaluation. The risk of secondary complications or worsening should be minimal and the rescue and firefighter will be subject to regular follow-up.

(g) Dyspepsia
Rescue and firefighting personnel with recurrent dyspepsia that requires medication needs to be investigated by internal examination including radiologic or endoscopic examination. Laboratory testing includes a haemoglobin assessment. Any demonstrated ulceration or significant inflammation requires evidence of recovery before a fit assessment may be considered.

(h) Abdominal surgery
Rescue and firefighting personnel who have undergone a surgical operation on the digestive tract or its adnexa, including a total or partial excision or a diversion of any of these organs, are assessed as unfit. A fit assessment may be considered after full recovery, the applicant is asymptomatic, and the risk of secondary complications or recurrence is minimal.

4. METABOLIC AND ENDOCRINE SYSTEMS

(a) Rescue and firefighting personnel with metabolic, nutritional or endocrine dysfunction may be assessed as fit if the condition is asymptomatic, clinically compensated and stable with or without replacement therapy, and regularly reviewed by an appropriate specialist.

(b) Obesity

(1) Obese rescue and firefighting personnel (e.g. with a body mass index (BMI) ≥ 35) may be assessed as fit only if the excess weight is not likely to interfere with the safe exercise of duties. A cardiovascular risk factor review and a pneumological examination by a specialist needs to be considered. The presence of sleep apnoea syndrome needs to be ruled out.

(2) Functional testing in the working environment may be necessary before a fit assessment may be considered.

(c) Thyroid dysfunction

Rescue and firefighting personnel with hyperthyroidism or hypothyroidism attain a stable euthyroid state before a fit assessment may be considered. Follow-up includes periodic thyroid function blood tests.

(d) Abnormal glucose metabolism
Glycosuria and abnormal blood glucose levels needs to be investigated. A fit assessment may be considered if normal glucose tolerance is demonstrated (low renal threshold) or impaired glucose tolerance without diabetic pathology is fully controlled by diet and regularly reviewed.

(e) Diabetes mellitus
Subject to an at least annual specialist endocrinological assessment, absence of complications likely to interfere with performance of duties, evidence of control of blood sugar with no significant hypoglycaemic episodes, rescue and firefighting personnel with diabetes mellitus:

(1) that do not require medication or require non-hypoglycaemic antidiabetic medications may be assessed as fit;

(2) that require the use of potentially hypoglycaemic medication(s) including sulphonyl ureas and insulin, may be assessed as fit with an operational limitation (or limitations), including documented testing whilst performing duties. For rescue and firefighting personnel treated with insulin, a review to include the results of operational blood sugar testing will be undertaken every 6 months;

(3) other cardiovascular risk factors including cholesterol will require cardiovascular risk factor management. An exercise ECG will be performed when diagnosed, every 5 years under 40 years of age, and annually thereafter;

(4) undergo HbA1c measurement every 3 months, with the exception of the rescue and firefighting personnel that do not require sulphonyl urea or insulin treatment where an extension of the testing to 6 months is acceptable; and

(5) require annual follow-up by a specialist including demonstrating the absence of diabetic complications such as neuropathy, retinopathy, arteriopathy or nephropathy.

5. HAEMATOLOGY

(a) Rescue and firefighting personnel with any significant haematological condition are assessed as unfit. Following a specialist evaluation, a fit assessment can be considered.

(b) Anaemia

(1) Anaemia demonstrated by a reduced haemoglobin level needs to be investigated. A fit assessment may be considered in cases where the primary cause has been treated (e.g. iron or B12 deficiency) and the haemoglobin or haematocrit has stabilised at a satisfactory level, for the required duties.

(2) Anaemia which is unamenable to treatment is disqualifying.

(c) Haemoglobinopathy and red cell enzyme defects
Rescue and firefighting personnel with a haemoglobinopathy and red cell enzyme defects are assessed as unfit. A fit assessment may be considered where minor thalassaemia, sickle

cell disease or other conditions are diagnosed without a history of crises and where full functional capability is demonstrated.

(d) Coagulation disorders

(1) Rescue and firefighting personnel with significant coagulation disorders are assessed as unfit. A fit assessment may be considered if there is no history of significant bleeding or clotting episodes and the haematological data indicates that there is no interference with the safe performance of duties.

(2) Rescue and firefighting personnel that require anticoagulants are assessed as unfit.

(e) Disorders of the lymphatic system

Lymphatic enlargement requires investigation. A fit assessment may be considered in cases of an acute infectious process which is fully recovered, or Hodgkin's lymphoma, or other lymphoid malignancy which has been treated and is in full remission. Regular follow-up needs to be performed.

(f) Leukaemia

(1) Rescue and firefighting personnel with acute leukaemia are assessed as unfit. Once in established remission, applicants may be assessed as fit.

(2) Rescue and firefighting personnel with chronic leukaemia are assessed as unfit. A fit assessment may be considered after remission and a period of demonstrated stability.

(3) Rescue and firefighting personnel with a history of leukaemia will have no history of central nervous system involvement and no continuing side effects from treatment likely to interfere with the safe performance of duties. Haemoglobin and platelet levels need to be satisfactory.

(4) Regular follow-up is recommended in all cases of leukaemia.

(g) Splenomegaly

Splenomegaly needs to be investigated. A fit assessment may be considered if the enlargement is minimal, stable and no associated pathology is demonstrated, or if the enlargement is minimal and associated with another acceptable condition.

(h) Splenectomy

Following splenectomy, a fit assessment may be considered if there is full recovery and the platelet level is acceptable.

6. GENITOURINARY SYSTEM

(a) The urine will not contain any abnormal element considered to be of pathological significance.

(b) Rescue and firefighting personnel with any sequelae of disease or surgical procedures on the

genitourinary system or its adnexa likely to cause incapacitation, in particular any obstruction due to stricture or compression, are assessed as unfit. A fit assessment may be considered following a specialist evaluation.

(c) Abnormal urinalysis
Any abnormal finding including proteinuria, haematuria and glycosuria on urinalysis needs to be investigated.

(d) Renal disease

(1) Rescue and firefighting personnel presenting with any signs of renal disease are assessed as unfit. A fit assessment may be considered if blood pressure is satisfactory and renal function is acceptable and there are no significant lesions.

(2) Rescue and firefighting personnel that require dialysis are assessed as unfit.

(e) Urinary calculi

(1) Rescue and firefighting personnel with an asymptomatic calculus or a history of renal colic need to be investigated. A fit assessment may be considered after successful treatment for a calculus and with appropriate follow-up.

(2) Residual calculi are disqualifying unless they are in a location where they are unlikely to move and give rise to symptoms.

(f) Renal and urological surgery

(1) Rescue and firefighting personnel who have undergone a major surgical operation on the genitourinary system or its adnexa involving a total or partial excision or a diversion of any of its organs are assessed as unfit until recovery is complete, the person is asymptomatic and the risk of secondary complications is minimal.

(2) Rescue and firefighting personnel with compensated nephrectomy without hypertension or uraemia may be assessed as fit.

(3) Rescue and firefighting personnel who have undergone renal transplantation may be considered for a fit assessment after full recovery with evidence that it is fully compensated and tolerated with only minimal immuno-suppressive therapy. Limitation(s) to duties will be considered.
(4) Rescue and firefighting personnel who have undergone total cystectomy may be considered for a fit assessment if there is satisfactory urinary function, no infection and no recurrence of primary pathology.

7. INFECTIOUS DISEASES

(a) Rescue and firefighting personnel diagnosed with or presenting symptoms of an infectious disease will undergo specialist evaluation and may be considered fit when they are asymptomatic and providing that the therapy does not compromise the safe performance of their duties.

(b) In cases of an infectious disease, consideration is given to a history of, or clinical signs indicating, underlying impairment of the immune system.

(c) Tuberculosis

(1) Rescue and firefighting personnel with active tuberculosis are assessed as unfit. A fit assessment may be considered following completion of therapy.

(2) Rescue and firefighting personnel with quiescent or healed lesions may be assessed as fit. A specialist evaluation needs to consider the extent of the disease, the treatment required and possible side effects of medication.

(d) HIV positivity

(1) Rescue and firefighting personnel who are HIV positive may be assessed as fit if a full investigation provides no evidence of HIV-associated diseases that might give rise to incapacitating symptoms. Frequent review of the immunological status and a neurological evaluation by an appropriate specialist needs to be carried out. A cardiological review may also be required depending on medication.

(2) Rescue and firefighting personnel with an AIDS-defining condition are assessed as unfit except in individual cases for limited duties after complete recovery and dependent on the review.

(3) The assessment of cases under (1) and (2) is dependent on the absence of symptoms or signs of the disease and the acceptability of serological markers. Treatment will be evaluated by a specialist on an individual basis for its appropriateness and any side effects.

(e) Syphilis
Rescue and firefighting personnel with acute syphilis are assessed as unfit. A fit assessment may be considered in the case of those fully treated and recovered from the primary and secondary stages.

(f) Infectious hepatitis
Rescue and firefighting personnel with infectious hepatitis are assessed as unfit. A fit assessment may be considered once the person has become asymptomatic after treatment and a specialist evaluation. Regular review of the liver function needs to be carried out.

8. OBSTETRICS AND GYNECOLOGY

(a) Gynaecological surgery
Rescue and firefighting personnel who have undergone a major gynaecological surgery undergo a specialist assessment. A fit assessment can be considered subject to a satisfactory gynaecological evaluation after successful treatment and/or full recovery after a surgery.

(b) Pregnancy
In the case of pregnancy, rescue and firefighting personnel are assessed as unfit. A fit assessment may be considered after the 12th week of gestation provided that obstetric evaluation continuously indicates a normal pregnancy. Such a fit assessment is valid until the 30th week of gestation. Additional operational limitations may be imposed. A fit assessment

may be considered following a specialist assessment after full recovery following the end of the pregnancy.

9. MUSCULOSKELETAL SYSTEM

(a) Rescue and firefighting personnel will have satisfactory functional use of the musculoskeletal system to enable them to safely perform their duties.

(b) Rescue and firefighting personnel with static or progressive musculoskeletal or rheumatologic conditions or a surgery likely to interfere with the safe performance of their duties will undergo further assessment. A fit assessment can be considered subject to a satisfactory workplace assessment after successful treatment or full recovery after a surgery.

(c) Rescue and firefighting personnel with a limb prosthesis should have satisfactory functional use as demonstrated by a workplace assessment.

(d) Rescue and firefighting personnel with any significant sequelae from disease, injury or congenital abnormality affecting the bones, joints, muscles or tendons with or without a surgery need to have a full evaluation prior to a fit assessment.

(e) Abnormal physique, including obesity, or muscular weakness may require a medical assessment and particular attention needs to be paid to workplace assessment.

(f) Locomotor dysfunction, amputations, malformations, loss of function and progressive osteoarthritic disorders are assessed on an individual basis in conjunction with the appropriate operational expert with a knowledge of the complexity of the tasks of that need to be performed.

(g) Rescue and firefighting personnel with inflammatory, infiltrative, or degenerative disease of the musculoskeletal system may be assessed as fit provided that the condition is in remission and the medication is acceptable and does not adversely affect the discharge of their duties.

(h) For rescue and firefighting personnel who have undergone a reconstructive surgery or joint replacement procedures, particular attention will be paid to the risks associated with the particular implant or prosthesis and its functional operational range.

(i) Where there is doubt about the operational fitness, rescue and firefighting personnel undergo the operational physical fitness assessment prior to a return to full duties. A limitation (or limitations) may be required.

10. PSYCHIATRY

(a) Rescue and firefighting personnel with a mental or behavioural disorder due to alcohol or other use or misuse of psychoactive substances, including recreational substances with or without dependency, are assessed as unfit until after a period of documented sobriety or freedom from psychoactive substance use or misuse and subject to a satisfactory psychiatric evaluation after successful treatment.

(b) Rescue and firefighting personnel with a psychiatric condition such as:

(1) mood disorder;

(2) neurotic disorder, e.g. claustrophobic or acrophobic symptoms;

(3) personality disorder;

(4) mental or behavioural disorder;

(5) post-traumatic stress disorder;

(6) significant stress-related symptoms; and

(7) single or repeated acts of deliberate self-harm, will undergo treatment, as necessary, and a satisfactory psychiatric assessment before a fit assessment can be considered. A psychological evaluation may be required as part of, or complementary to, a specialist psychiatric or neurological assessment.

(c) Disorders due to alcohol or other substance use

(1) A fit assessment may be considered after successful treatment, a period of documented sobriety or freedom from substance use, and review by a psychiatric specialist. The OHMP, with the advice of the psychiatric specialist, will determine the duration of the period to be observed before a fit assessment can be made.

(2) Depending on the individual case, treatment may include inpatient treatment of variable duration.

(3) Continuous follow-up, including blood testing and peer reports, may be required indefinitely.

(d) Mood disorder

Rescue and firefighting personnel with an established mood disorder are assessed as unfit. After full recovery and after full consideration of an individual case, a fit assessment may be considered, depending on the characteristics and gravity of the mood disorder. If stability on maintenance psychotropic medication is confirmed, a fit assessment may be considered. In some cases, an operational limitation may be required. If the dosage of the medication is changed, a further period of unfit assessment is required. Regular specialist supervision needs to be considered. Any use of medication needs to be evaluated further by a specialist.

(e) Psychotic disorder

Rescue and firefighting personnel with a history, or the occurrence, of a functional psychotic disorder are assessed as unfit unless it can be confirmed that the original diagnosis was inappropriate or inaccurate or was a result of a single toxic episode.

(f) Deliberate self-harm

A single self-destructive action or repeated overt acts entail unfitness. A fit assessment may be considered after full consideration of an individual case and requires psychiatric or psychological review.

11. NEUROLOGY

(a) Rescue and firefighting personnel with an established history or clinical diagnosis of:

(1) epilepsy except in the cases in (b)(1) and (2) below;

(2) recurring episodes of disturbance of consciousness of uncertain cause; and

(3) conditions with a high propensity for cerebral dysfunction,
are assessed as unfit.

(b) Rescue and firefighting personnel with an established history or clinical diagnosis of:

(1) epilepsy without recurrence after the age of 5;

(2) epilepsy without recurrence and off all treatment for more than 5 years;

(3) epileptiform EEG abnormalities and focal slow waves;

(4) progressive or non-progressive disease of the nervous system;

(5) a single episode of disturbances or loss of consciousness;

(6) brain injury, affliction or inflammation;

(7) spinal or peripheral nerve injury, affliction or inflammation;

(8) disorders of the nervous system due to vascular deficiencies including haemorrhagic and ischaemic events; and

(9) vertigo, need to undergo a specialist evaluation before a fit assessment may be considered.

(c) Electroencephalography (EEG)
EEG will be carried out based on the person's history or on clinical grounds.

(d) Epilepsy

(1) Rescue and firefighting personnel who have experienced one or more convulsive episodes after the age of 5 are assessed as unfit.

(2) A fit assessment may be considered if:

(i) the rescue and firefighting personnel are seizure free and off medication for at least 5 years; and

(ii) a full neurological evaluation shows that a seizure was caused by a specific nonrecurrent cause, such as trauma or toxin.

(3) Rescue and firefighting personnel who have experienced an episode of benign Rolandic
seizure may be assessed as fit provided that the seizure has been clearly diagnosed

including a properly documented history and typical EEG result and the rescue and firefighting personnel have been free of symptoms and off treatment for at least 5 years.

(e) Neurological disease
Rescue and firefighting personnel with any stationary or progressive disease of the nervous system which has caused or is likely to cause a significant disability are assessed as unfit. A fit assessment may be considered in cases of minor functional losses associated with stationary disease after a full neurological evaluation and a workplace assessment. An operational limitation may be required.

(f) Disturbance of consciousness
Rescue and firefighting personnel with a history of one or more episodes of disturbed consciousness may be assessed as fit if the condition can be satisfactorily explained by a nonrecurrent cause. Operational limitations may be imposed. A full neurological evaluation is necessary.

(g) Head injury
Rescue and firefighting personnel with a head injury which was severe enough to cause loss of consciousness will be evaluated by a consultant neurologist. A fit assessment may be considered if there has been a full recovery and the risk of post-traumatic epilepsy has fallen to a sufficiently low level. Behavioural and cognitive aspects will be taken into account where there is evidence of significant penetrating brain trauma or contusion.

12. VISUAL SYSTEM

(a) Distant and near visual acuity, with or without optimal correction, will be 6/9 (0.7) or better in each eye separately, and visual acuity with both eyes will be 6/6 (1) or better.

(b) Rescue and firefighting personnel need to have fields of vision and binocular function appropriate to the operational tasks.

(c) Rescue and firefighting personnel at the initial assessment having monocular or functional monocular vision, including eye muscle balance problems, may be assessed as fit provided that an ophthalmological examination and an operational evaluation are satisfactory. Operational limitations may be necessary.

(d) Rescue and firefighting personnel who have undergone an eye surgery are assessed as unfit until full recovery of the visual function. A fit assessment may be considered subject to a satisfactory ophthalmologic evaluation.

(e) Rescue and firefighting personnel with a clinical diagnosis of keratoconus may be assessed as fit subject to a satisfactory examination by an ophthalmologist.

(f) Rescue and firefighting personnel with diplopia are assessed as unfit.

(g) Corrective lenses
If satisfactory visual function for the rescue and firefighting duties is achieved only with the use of correction, the spectacles, inserts or contact lenses must provide optimal visual function, be well tolerated, and suitable for rescue and firefighting duties, including the wearing of breathing apparatus.

(h) Eye examination

STANDARD TESTS FOR VISION

(1) At each medical examination, an assessment of vision will be undertaken and the eyes are examined with regard to possible pathology.

(2) The routine eye examination includes:

(i) history;

(ii) visual acuities — near and distant vision; uncorrected and with best optical correction if needed;

(iii) morphology by ophthalmoscopy; and

(iv) further examination on clinical indication.

(3) Visual acuity is tested using Snellen charts, or equivalent, under appropriate illumination. Where clinical evidence suggests that Snellen may not be appropriate, Landolt 'C' may be used.

(4) All abnormal and doubtful cases are referred to an ophthalmologist. Conditions which indicate a comprehensive ophthalmological examination include, but are not limited to, a substantial decrease in the uncorrected visual acuity, any decrease in best corrected visual acuity, and/or the occurrence of eye disease, eye injury, or eye surgery.

(5) In case of multiple pathological conditions of the eye, their effect is evaluated by an ophthalmologist with regard to possible cumulative effects. Functional testing in the working environment may be necessary to consider a fit assessment.

(i) Refractive error

Rescue and firefighting personnel without symptoms with high refractive error in excess of +5.0/-6.0 dioptres, high anisometropia >3D, or high astigmatism >3D may be assessed as fit provided that the visual standards are met in both eyes, optimal correction has been considered and no significant pathology is demonstrated. Risk of visual incapacitation arising from the refractive error or shape of the eye may be acceptable.

(j) Substandard vision

Rescue and firefighting personnel with reduced central vision in one eye may be assessed as fit if the binocular visual field is normal and the underlying pathology is acceptable according to an ophthalmological evaluation. Testing includes functional testing in the appropriate working environment.

(k) Heterophoria

Rescue and firefighting personnel with heterophoria (imbalance of the ocular muscles) will undergo further ophthalmological evaluation before a fit assessment is considered.

(l) Eye surgery

(1) Refractive surgery
After a refractive surgery or a surgery of the cornea including cross linking, a fit assessment may be considered, provided that:

(i) the pre-operative refraction was less than +5 dioptres;

(ii) satisfactory stability of refraction has been achieved (less than 0.75 dioptres variation diurnally);

(iii) the examination of the eye shows no post-operative complications;

(iv) the glare sensitivity is normal;

(v) the mesopic contrast sensitivity is not impaired; and

(vi) the specialist evaluation is undertaken by an ophthalmologist.

(2) Cataract surgery
Rescue and firefighting personnel who have undergone a cataract surgery may be assessed as fit after 6 weeks provided that the visual requirements are met either with corrective lenses, or with intraocular lenses which are non-tinted.

(3) Retinal surgery/retinal laser therapy

(i) After a retinal surgery, rescue and firefighting personnel may be assessed fit 6 months after a successful surgery. Annual ophthalmological follow-up may be necessary. Longer periods may be acceptable after 2 years on recommendation of the ophthalmologist.

(ii) After successful retinal laser therapy, rescue and firefighting personnel may be assessed as fit provided that an ophthalmological evaluation shows stability.

(4) Glaucoma surgery
After a glaucoma surgery, rescue and firefighting personnel may be assessed as fit 6 months after a successful surgery. Ophthalmological examinations undertaken every 6 months to follow-up secondary complications caused by the glaucoma may be necessary.

(5) Extraocular muscle surgery
A fit assessment may be considered not less than 6 months after a surgery and after a satisfactory ophthalmological evaluation.

(6) Visual correction
Spectacles, contact lenses and mask inserts should permit the rescue and firefighting personnel to meet the visual requirements at all distances.

COLOUR VISION

(a) Rescue and firefighting personnel who fail to correctly identify 9 or more of the first 15 plates of the 24-plate edition of Ishihara pseudoisochromatic plates undergo further specialist evaluation. A fit assessment may be considered if the results of the evaluation and/or operational testing demonstrate that the duties can be performed safely.

(b) Advanced or fictional colour vision testing is assessed using means able to demonstrate acceptable colour vision.

13. OTORHINOLARYNGOLOGY

(a) Rescue and firefighting personnel do not have a hearing loss of more than 35 dB at any of the frequencies 500, 1 000 or 2 000 Hz, and 50 dB at 3 000 Hz, in either ear separately.

(b) Rescue and firefighting personnel who do not meet the hearing criteria above will undergo a specialist assessment before a fit assessment may be considered. In these cases, the rescue and firefighting personnel undergo a functional hearing test in the operational environment. Initial candidates who do not meet the hearing criteria above will undergo a speech discrimination test.

(c) Hearing aids
A fit assessment may be considered if the use of a hearing aid (or aids) or of an appropriate prosthetic aid improves the hearing to achieve a normal standard as assessed by fully functional testing in the operational environment.

(d) Rescue and firefighting personnel with:

(1) an active chronic pathological process of the internal or middle ear;

(2) unhealed perforation or dysfunction of the tympanic membrane(s);

(3) disturbance of vestibular function;

(4) significant malformation or significant chronic infection of the oral cavity or upper respiratory tract; and

(5) significant disorder of speech or voice reducing intelligibility, will undergo further specialist examination and assessment to establish that the condition does not interfere with the safe performance of their duties.

(e) Examination

(1) An otorhinolaryngological examination includes:

(i) history;

(ii) clinical examination including otoscopy, rhinoscopy, and examination of the mouth and throat; and

(iii) clinical assessment of the vestibular system.

(2) ENT specialists involved in the assessment of rescue and firefighting personnel should have an understanding of the functionality required.

(3) Where a full assessment and functional check is needed, due regard is paid to the operating environment in which the operational functions are undertaken.

(f) Hearing

(1) The follow-up of a rescue and firefighting personnel with hypoacusis is decided by the medical staff. If at the next annual test there is no indication of further deterioration, the normal frequency of testing may be resumed.

(2) Full functional and environmental assessments is carried out with the chosen prosthetic equipment in use.

(g) Ear conditions
Rescue and firefighting personnel with perforation is considered unfit. A fit assessment can be made following a specialist evaluation, treatment and full recovery.

(h) Vestibular disturbance
The presence of vestibular disturbance with vertigo (e.g. Meniere's disease) and spontaneous or positional nystagmus requires a complete vestibular evaluation by a specialist and entails unfitness until successful treatment and/or full recovery.

(i) Speech disorder
Rescue and firefighting personnel with a speech disorder are assessed with due regard to the operational environment in which the operational functions are undertaken. Rescue and firefighting personnel with significant disorder of speech or voice are assessed as unfit.

14. DERMATOLOGY

(a) Rescue and firefighting personnel will not have any established dermatological condition likely to interfere with the safe performance of their duties and the wearing of protective equipment. A fit assessment could be considered following a specialist dermatological assessment.

(b) Systemic effects of radiation or pharmacological treatment for a dermatological condition will be evaluated before a fit assessment can be considered.

(c) Rescue and firefighting personnel with a skin condition that causes pain, discomfort, irritation or itching may only be assessed as fit if the condition can be controlled and does not interfere with the safe performance of the duties and with wearing of personal protective equipment.

(d) In cases where a dermatological condition is associated with a systemic illness, full consideration will be given to the underlying illness before a fit assessment may be considered.

15. ONCOLOGY

(a) After diagnosis of primary or secondary malignant disease, rescue and firefighting personnel are assessed as unfit.

(b) After completion of primary treatment and full recovery, the rescue and firefighting personnel will undergo a specialist evaluation before a fit assessment could be considered.

(c) Rescue and firefighting personnel with an established history or clinical diagnosis of a malignant intracerebral or pulmonary tumour are assessed as unfit.

(d) Rescue and firefighting personnel who have been diagnosed with malignant disease may be assessed as fit provided that:

(1) after primary treatment, there is no evidence of residual malignant disease likely to interfere with the performance of duties;

(2) time appropriate to the type of tumour has elapsed since the end of the primary treatment;

(3) the risk of incapacitation from a recurrence or metastasis is sufficiently low;

(4) there is no evidence of short- or long-term sequelae from treatment. Special attention should be paid to cardiac risk in persons who have received anthracycline chemotherapy; and

(5) satisfactory oncology follow-up reports are provided to the medical staff.

(e) Rescue and firefighting personnel receiving ongoing chemotherapy (other than adjuvant preventative therapy) or radiation treatment are assessed as unfit.

(f) Rescue and firefighting personnel with a benign intracerebral tumour may be assessed as fit after a satisfactory specialist and neurological evaluation and provided that the condition does not compromise the safe performance of duties.

(g) Rescue and firefighting personnel with pre-malignant conditions may be assessed as fit if treated or excised as necessary and there is a regular follow-up.

GM3 ADR.OPS.B.010(a)(4) Rescue and firefighting services

PHYSICAL FITNESS EVALUATION PROGRAMME

The physical fitness of rescue and firefighting personnel will be evaluated at regular intervals. For this reason, a physical fitness evaluation programme is necessary.

The evaluation should be anti-discriminatory, non-punitive or non-competitive. The results of the evaluation may be used to establish the person’s baseline or measured against the person’s previous assessments.

A physical fitness evaluation will also be considered following significant absence, illness or injury prior to a return to operational duty.

The physical fitness evaluation includes:

(a) a pre-evaluation health questionnaire;

(b) an evaluation of aerobic capacity; and

(c) an evaluation of muscular strength, endurance and flexibility.

PRE-EVALUATION PROCEDURE

(a) Rescue and firefighting personnel complete a pre-assessment screening questionnaire to identify contraindications for participation in the fitness assessment.

(b) If rescue and firefighting personnel have an incapacitating medical problem or a newly acquired chronic medical condition, the physical fitness assessment will be postponed until the rescue and firefighting personnel have been assessed as fit by the medical staff. In such circumstances, the rescue and firefighting personnel are assessed as unfit.

FITNESS TESTS

Individual physical fitness is tested as follows:

(a) Operational fitness tests
Physical fitness is evaluated using appropriate standard protocols. The physical fitness test ensure that the rescue and firefighting personnel are able to effectively demonstrate the following representative operational competencies:

(1) Stair or ladder climbing while carrying an additional load;

(2) Ladder raise and extension;

(3) Equipment carry;

(4) Rescue drag;

(5) Operating in an enclosed space;

(6) Hose drill and operations;

(7) Operating in a high temperature environment with breathing apparatus; and

(8) Aerobic fitness assessment:

(i) For full operational duties, a VO2 Max of at least the firefighters' average or better for age and gender and not less than 35 ml/kg/min is recommended.

(ii) The estimation of VO2 Max may be performed using the following tests

(A) Shuttle run;

(B) Validated step test, e.g. Cooper, Chester;

(C) Cycle ergometer;

(D) Treadmill; and

(E) Full spiro-ergometry

The above functions may be included as part of an operational exercise or carried out separately.

(b) Simulated operational physical fitness tests

Tests conducted in an appropriate facility may be used as an alternative for new recruits, untrained personnel or where the operational test is unavailable and where there is evidence that the simulated tests are a reasonable representation of operational tasks. The choice of the appropriate test depends on various aspects such as ease of administration, safety, cost and predictive value. The following methods may be used for the fitness evaluation of rescue and firefighting personnel:

(1) Muscular strength

(i) Handgrip dynamometer;

(ii) Static bicep curl with dynamometer;

(iii) Lat pull;

(iv) Static leg press with dynamometer;

(v) Bench press; and

(vi) Leg press.

(2) Muscular endurance

(i) Push-ups, modified push-ups;

(ii) Pull-ups;

(iii) Bent knee sit-ups; and

(iv) Crunches in a given time, crunches to cadence.

(3) Flexibility

(i) Sit and reach, modified sit and reach;

(ii) Trunk extension; and

(iii) Shoulder elevation.

AMC1 ADR.OPS.B.010(b);(c) Rescue and firefighting services

TRAINING PROGRAMME OF RFFS PERSONNEL - GENERAL

The provisions of AMC1 ADR.OR.D.017 (a);(b) apply also for the training programme of RFFS personnel.

In addition, the aerodrome operator should ensure that:

(a) rescue and firefighting personnel actively participate in live fire drills commensurate with the types of aircraft, and type of rescue and firefighting equipment in use at the aerodrome, including pressure-fed fuel fire drills or any other type of fuel, provided that they apply the same extinguishing techniques as for jet fuel; and

(b) the rescue and firefighting personnel training programme includes training in human performance, including team coordination.

AMC2 ADR.OPS.B.010(b);(c) Rescue and firefighting services

TRAINING PROGRAMME OF RFFS PERSONNEL – CHECKING OF RFFS TRAINEES

Checking of RFFS trainees should be made in accordance with AMC2 ADR.OR.D.017 (a);(b)

AMC3 ADR.OPS.B.010(b);(c) Rescue and firefighting services

RULES AND PROCEDURES

(a) The aerodrome operator should ensure that rescue and firefighting personnel are aware of the rules and procedures relevant to operation of the aerodrome and the relationship of their duties and responsibilities to the aerodrome operation as a whole.

(b) Proficiency checks should verify that rescue and firefighting personnel are aware of the rules and procedures relevant to their duties and responsibilities.

GM1 ADR.OPS.B.010(b);(c) Rescue and firefighting services

TRAINING PROGRAMME OF RFFS PERSONNEL – RECURRENT, REFRESHER AND DIFFERENCES TRAINING

The provisions of recurrent, refresher and differences training contained in GM1 ADR. OR.D.017 (a);(b) apply also for rescue and firefighting personnel.

GM2 ADR.OPS.B.010(b);(c) Rescue and firefighting services

TRAINING PROGRAMME OF RFFS PERSONNEL – CHECKING OF TRAINEES

The methods described in GM2 ADR.OR.D.017 (a);(b) apply also for rescue and firefighting trainees checking.

GM1 ADR.OPS.B.010(c) Rescue and firefighting services

PROFICIENCY CHECKS

(a) Proficiency checks should be conducted by nominated assessors in accordance with AMC1 ADR.OPS.B.010 (d).

(b) The maximum interval between two proficiency checks should not exceed 12 calendar months for rescue and firefighting personnel. The first proficiency check should be completed within the first year since the completion of the initial training programme.

(c) The proficiency check programme should include a validation process that measures the effectiveness of the programme.

(d) The proficiency check programme should identify checking responsibilities and relevant checking methods, including procedures to be applied in the event that personnel do not achieve the required standards.

(e) I information related to the proficiency check programme should be included in the aerodrome manual.

GM2 ADR.OPS.B.010(c) Rescue and firefighting services

PROFICIENCY CHECKS

The provisions contained in GM2 ADR.OR.D.017 (c) apply also for rescue and firefighting personnel.

AMC1 ADR.OPS.B.010(d) Rescue and firefighting services

INSTRUCTORS – ASSESSORS

The provisions contained in AMC1 ADR.OR.D.017 (d) for instructors and assessors apply also for rescue and firefighting personnel instructors and assessors.

AMC1 ADR.OPS.B.010(e) Rescue and firefighting services

RFFS PERSONNEL RECORDS

The provisions contained in AMC1 ADR.OR.D.017 (e) equally apply for RFFS personnel records.

GM1 ADR.OPS.B.010(e) Rescue and firefighting services

RFFS PERSONNEL – TRAINING RECORDS

The provisions contained in GM1 ADR.OR.D.017 (e) equally apply for RFFS personnel training records.

GM2 ADR.OPS.B.010(e) Rescue and firefighting services

RFFS PERSONNEL – PROFICIENCY CHECK RECORDS

The provisions contained in GM2 ADR.OR.D.017 (e) equally apply for RFFS personnel proficiency check records.