



# **Advisory Circular**

**AC 139 – RFFS - 02**

**GUIDELINES IN DETERMINING THE MINIMUM  
NUMBER OF ARFF PERSONNEL FOR AERODROMES**

**February 2017**

**Advisory Circulars (AC) are intended to provide recommendations and guidance, illustrate a means-but not necessarily the only means of complying with regulatory requirements, or to explain certain regulatory requirements by providing interpretative and explanatory materials.**

**CAAP will generally accept that when the provisions of an Advisory Circular have been met, compliance with the relevant regulatory obligations has been satisfied.**

**Where an AC is referred to in a “Note” within regulatory documentation, the AC remains as a guidance material.**

**ACs should always be read in conjunction with the referenced regulations.**

**1. PURPOSE**

This Advisory Circular (AC) provides information to determine the minimum number of personnel for Aerodrome Rescue and Fire Fighting (ARFF).

**2. APPLICATION**

The material contained in this AC is applicable for use on all categories of civil aerodromes except where otherwise specified. The guidance contained in this AC is recommended to be used for ARFF Service.

**3. REFERENCES:**

- 3.1 Civil Aviation Regulations - Aerodromes.
- 3.2 Manual of Standards for Aerodromes
- 3.3 ICAO Airport Services Manual Doc 9137: Part 1: Rescue and Fire Fighting

**4. REQUIREMENTS FOR AERODROMES**

The MOS Chapter 14, Section 14.9.1 requires that:

*“During flight operations, sufficient trained personnel should be detailed and be readily available to ride the rescue and fire fighting vehicles and to operate the equipment at maximum capacity. These trained personnel should be deployed in such a way that ensures the minimum response times can be achieved and that continuous agent application at the appropriate rate can be fully maintained. Consideration should be given to for personnel to use hand lines, ladders and other equipment normally associated with aerodrome rescue and firefighting operations.”*

The recommendations in this AC comprise a method for meeting this provision. The minimum requirements of personnel for ARFF are listed below.

**4.1 Minimum Number of ARFF personnel**

4.1.1 The total number of personnel, whether regular or auxiliary, required to deploy and operate the RFF service should be determined so as to meet the following criteria:

- a) the RFF vehicles should be staffed so as to ensure their ability to discharge at their maximum designed capability extinguishing agents, principal or complementary, both effectively and simultaneously, at an aircraft accident/incident; and

- b) any control room or communications facility operated by, and serving, the RFF service can continue to provide this service until alternative arrangements to undertake this function are initiated by the airport emergency plan.

4.1.2 In addition, in determining the minimum number of RFF personnel required, a task resource analysis (see 4.2) should be completed and the level of staffing documented in the Aerodromes Manual. During flight operations sufficient trained and competent personnel should be designated to be readily available to ride the RFF vehicles and to operate the equipment at maximum capacity.

## **4.2 Task and Resource Analysis**

**4.2.1 Introduction.** The following guidance describes the stages that should be considered by an airport operator in carrying out a Task Resource Analysis (TRA) to establish justification as to the minimum number of qualified/competent personnel required to deliver an effective airport RFF service (RFFS) to deal with an aircraft incident/accident. If an airport operator requires the RFFS to attend structural incidents and road traffic accidents in addition to aircraft incidents/accidents, due regard must be given to the inability of not meeting required response times and robust procedures should be introduced accordingly.

**4.2.2 Purpose.** By using a qualitative risk based approach, which focuses upon probable and credible worst- case scenarios a task and resource analysis should be done to identify the minimum number of personnel required to undertake identified tasks in real time before supporting external services are able to effectively assist RFFS (see Table 10-1).

Consideration should also be given to the types of aircraft using the aerodrome, as well as the need for personnel to use self-contained breathing apparatus, handlines, ladders and other RFF equipment provided at the aerodrome associated with aircraft RFF operations. The importance of an agreed framework for incident command should form a primary part of the considerations.

**4.2.3 General information.** The airport operator should first establish the minimum requirements including: minimum number of RFFS vehicles and equipment required for the delivery of the extinguishing agents at the required discharge rate for the specified RFF category of the airport.

**4.2.4 Task analysis/risk assessment.** A task analysis should primarily consist of a qualitative analysis of the RFFS response to a realistic, worst-case, aircraft accident scenario. The purpose should be to review the current and future staffing levels of the RFFS deployed at the aerodrome. The qualitative analysis could be supported by a quantitative risk assessment to estimate the reduction in risk. This risk assessment

could be related to the reduction in risk to passengers and aircrew from deploying additional personnel. One of the most important elements is to assess the impact of any critical tasks or pinch points identified by the qualitative analysis.

**4.2.5 Qualitative approach.** The task analysis including a workload assessment aims to identify the effectiveness of the current staffing level and to identify the level of improvement resulting from additional staffing. A credible worst-case accident scenario should be analyzed to assess the relative effectiveness of at least two levels of RFFS staffing.

**4.2.6 Quantitative risk assessment.** This assessment will generally be used to support the conclusions of the qualitative analysis by examining the risks to passengers and aircrew from aircraft accidents at the airport. This comparison of the risk allows the benefit of employing additional RFFS staff to be evaluated in terms of the risk reduction in passengers and aircrew lives saved. This could be expressed in monetary terms and may be compared with additional costs incurred in employing the additional personnel. However, this is of little, if any, value in determining minimum levels of personnel.

**4.2.7 Task analysis.** The following items will assist in determining the basic contents of an analysis:

- a) Description of aerodrome(s) including the number of runways;
- b) Promulgated RFFS categories (Aeronautical Information Publication);
- c) Response time criteria (area, times and number of fire stations);
- d) Current and future types of aircraft movements;
- e) Operational hours;
- f) Current RFFS structure and establishment;
- g) Current level of personnel;
- h) Level of supervision for each operational crew;
- i) RFFS qualifications/competence (training programmes and facilities);
- j) Extraneous duties (to include domestic and first aid response);
- k) Communications and RFFS alerting system including extraneous duties;
- l) Appliances and extinguishing agents available;
- m) Specialist equipment— fast rescue craft, hovercraft, water carrier, hose layer, extending boom technology;
- n) First aid — role responsibility;
- o) Medical facilities — role responsibility;
- p) Pre-determined attendance: local authority services — police, fire and ambulance, etc.;
- q) Incident task analysis — feasible worst-case scenarios) (workload assessment) (human Performance/Factors. To include: mobilization, deployment to scene, scene management, firefighting, suppression and extinguishment, application of complementary agent(s), post fire

security/control, personnel protective equipment, rescue team(s), aircraft evacuation and extinguishing agent replenishment;

*Note. — The aim is to identify any pinch points within the current workload and proposed workload.*

- r) Appraisal of existing RFFS provision;
- s) Future requirements. Aerodrome development and expansion;
- t) Enclosures could include: airport maps, event trees to explain tasks and functions conducted by the RFFS, etc.); and
- u) Airport emergency plan and procedures.

*Note. — The above list is not exhaustive and should only act as a guide.*

#### **4.2.7.1 Phase 1**

The airport operator must be clear as to the aims and objectives for the RFF services, and the required tasks that personnel are expected to carry out.

##### **Example**

**Aim:** To maintain a dedicated RFFS of qualified and competent fire and rescue personnel equipped with vehicles and specialist equipment to make an immediate response to an aircraft incident/accident on or in the immediate vicinity of the airport within the specified response time criteria.

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

##### **Tasks:**

- a) meet the required response time;
- b) extinguish an external fire;
- c) protect escape slides and exit routes;
- d) assist in the self-evacuation of the aircraft;

- e) create a survivable situation;
- f) rescue trapped personnel;
- g) maintain post fire security/control; and
- h) preserve evidence;

*Note. - The above list is not exhaustive and all relevant tasks must be identified before moving to Phase 2.*

*Each task/mission may include numerous functional activities/actions.*

#### **4.2.7.2 Phase 2**

Identify a selection of representative realistic, feasible accidents that may occur at the airport. This can be achieved by a statistical analysis of previous accidents on airports and by analysing data from international, national and local sources.

*Note. — All incidents should involve fire to represent a feasible worst-case scenario that would require an RFFS response.*

Examples:

- a) aircraft engine failure on take-off with a fire (aborted take-off);
- b) aircraft aborts and overruns into the runway end safety area (RESA) with a fire on take-off;
- c) aircraft into aircraft with fire (collision);
- d) aircraft into structure- terminal building(s) with a fire;
- e) aircraft leaves the runway on landing into the runway strip (full emergency evacuation); and
- f) internal aircraft fire (cabin fire, baggage hold, cargo hold, avionics bay(s)).

#### **4.2.7.3 Phase 3**

Identify the types of aircraft commonly in use at the airport; this is important as the type of aircraft and its configuration has a direct bearing on the resources required in meeting Phase 1. It may be necessary to group the aircraft types in relation to common aircraft configurations for ease of analysis or identify precise aircraft type that may have a unique configuration.

Example:

- a) long wide-bodied aircraft with multiple passenger decks and multiple aisles;
- b) long narrow-bodied aircraft with single aisle, high passenger density; and
- c) short narrow-bodied aircraft with single aisle, high passenger density.

A representative aircraft type can then be chosen, i.e. Airbus A 380, Airbus A 340, Airbus A 320, Boeing 747, Boeing 777, Boeing 757 and Boeing 737.

#### **4.2.7.4 Phase 4**

Every airport is unique in that the location, environment, runway and taxiway configuration, aircraft movements, airport infrastructure and boundary, etc., may present specific additional risks.

In order that the feasible accident scenario can be modelled/simulated, a major factor is to consider the probable location for the most realistic accident type that may occur.

To confirm the location of the scenario, it is important that a facilitator using a team of experienced fire service personnel, who have knowledge of the airport and the locations in which an aircraft accident is likely to occur, evaluate the scenario.

The role of the facilitator is to seek agreement in identifying the credible worst-case locations and, by using a scoring system place, these locations in order of relevance and priority. The team must determine why the locations have been identified and provide a rationale for each location. One methodology would be to award a weighted number to each location, then total the numbers in relation to each identified location.

Example:

The team may have identified that the following contributed to a worst-case location:

- a) response time;
- b) route to the accident site (on or off paved surfaces);
- c) terrain;
- d) crossing procedures for active runway(s);
- e) aircraft congestion on route (taxiways);
- f) surface conditions;
- g) communications;
- h) supplementary water supplies;
- i) adverse weather conditions — low visibility procedures; and
- j) daylight or darkness.



An additional time delay for any of the factors listed above should be estimated and recorded, then the location with the highest additional response time could be identified as the worst-case location.

It is important to note that the location of an accident could have an impact on the resources and tasks that will be required to be carried out by RFF personnel.

From the above analysis, a location or a number of locations could be identified, in agreement with the airport operator and the TRA facilitator.

Example:

- 1) Taxiway Bravo: Runway holding position Bravo 1- leading onto runway 06L;
- 2) Runway 13— Runway and service road crossing point (grid reference A5);
- 3) Runway 28 overrun RESA;
- 4) Runway 24 undershoot RESA;
- 5) Aircraft stand A33 (Alpha apron);
- 6) Grid reference A6 (Runway 06 localizer road);
- 7) Taxiway Alpha: Intermediate taxi-holding position — A3; and
- 8) Aircraft stand A5 (on taxilane).

#### **4.2.7.5 Phase 5**

Phase 5 combines the accident types to be examined as described in Phase 2, with the aircraft identified in Phase 3 and the locations as described in Phase 4; the accident types should be correlated with the possible location. In some cases this could be in more than one location on an airport, for which a task and resource analysis needs to be carried out.

The above information is to be built into a complete accident scenario that can be analysed by experienced supervisors and firefighters for the task and resource analysis in Phase 6.

Example:

Scenario No 1:

Accident type : Aircraft overrun into Runway 06 RESA - Phase 2.  
Aircraft identified : Boeing 747-400 - Phase 3.  
Accident location : Runway 06 RESA - Phase 4.

The Boeing 747 400 is a wide-bodied multi-deck aircraft. Its typical seating configuration can be 340 economy, 23 business, and 18 first class passengers on the lower deck. On the upper deck, provision is made for a further 32 business class passengers, giving an estimated aircraft seating capacity of 413 excluding the crew. The aircraft typically has four exits on both sides of the lower deck and one on each side of the upper deck.

During the take-off phase, the aircraft suffers a fire in the number 3 engine and the pilot decides to abort the take-off. During this phase, the fire develops rapidly and impinges on the fuselage. The aircraft overruns the runway and comes to rest in the RESA. The flight deck crew orders an evacuation.

The RFF services are informed by air traffic control (ATC) and respond accordingly and the aerodrome emergency procedures are activated.

#### **4.2.7.6 Phase 6**

- a) in passenger and crew self-evacuation;
- b) access aircraft to carry out specific tasks if required, e.g. firefighting, rescue;
- c) support and sustain the deployment of firefighting and rescue equipment; and
- d) support and sustain the delivery of supplementary water supplies; and need

By using a TRA facilitator with teams of experienced airport supervisors and firefighters the accident scenario(s) developed in Phase 5 is subject to a task and resource analysis carried out in a series of tabletop exercises/simulations.

When carrying out a task and resource analysis, the principal objective should be to identify in real time and in sequential order the minimum number of RFF personnel required at any one time to achieve the following:

- a) receive the message and dispatch the RFF service (the dispatcher may have to respond as part of the minimum riding strength);
- b) respond utilizing communications, taking appropriate route and achieving the defined response criteria;
- c) position appliances/vehicles in optimum positions and operate RFF appliances effectively;

- d) use extinguishing agents and equipment accordingly;
- e) instigate incident command structure — supervisors; and
- f) assist to replenish foam supplies as needed.

The task and resource analysis should identify the optimum time when additional resources will be available to support/augment and/or replace resources supplied by RFF services (aerodrome emergency plan). It can also provide vital evidence to support the level of RFF vehicles and equipment.

In order to start a task and resource analysis the required category of the airport must be identified as required by the regulatory authority. This should confirm the minimum number of vehicles, and the minimum extinguishing agent requirements and discharge rates, this should also determine the minimum number of personnel required to functionally operate the vehicles and equipment.

The results of the analysis should be recorded in a table or spreadsheet format and should be laid out in a method that ensures that the following is recorded:

- a) receipt of message and dispatch of the RFF response;
- b) time — this starts from the initial receipt of call and the timeline continues in minutes and seconds until additional external resources arrive or the facilitator decides an end-time;
- c) list of assessed tasks, functions and priorities achieved;
- d) the resources (personnel, vehicles and equipment) required for each task should be defined;
- e) comments to enable team members to record their findings; and
- f) identified pinch points.

#### **4.2.7.7** Working example of a qualitative task resource analysis — Scenario 1.

##### **4.2.7.7.1** Key to working example:

- Major foam tenders are identified as MFT A, B, C and D.
- Minimum number of personnel riding the MFTs are identified as: A1, A2, B1, B2, etc. See Table 4-1.

##### **4.2.7.7.2** Major foam tenders:

- four MFTs carrying 11,00 Litres with a total water capacity of 44 000 Litres: (A, B, C and D).
- Minimum number of RFFS personnel: total 14.

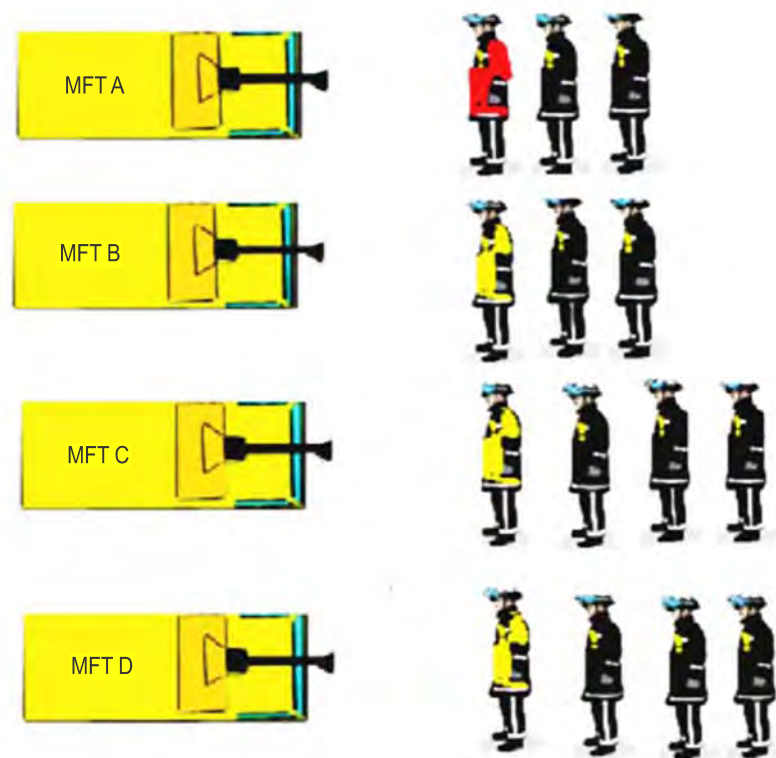
##### **4.2.7.7.3** Supervisors:

- Watch commander: 1 = A1
- Crew commanders: 3 = B1, C1 and D1

**4.2.7.7.4** Firefighters:

- Total — 10.
- A2 and A3.
- B2 and B3.
- C2, C3 and C4.
- D2, D3 and D4.

**Table 4-1. Minimum numbers of appliances/vehicles and personnel riding the MFTs**



*Notes:*

1. *For this example, the RFFS is deployed from a single fire station at an airport with a single runway, designated 06-24.*
2. *Time has been defined in minutes and seconds.*
3. *For this TRA the dispatcher is outside of the minimum number of RFF personnel.*

*Stated objectives for the RFFS:*

- a) *instigate aerodrome emergency plan;*
- b) *respond within the required response time;*
- c) *select appropriate route and communications;*
- d) *position appliances in optimum positions and operate effectively;*
- e) *instigate incident command system;*
- f) *suppress/extinguish any fires;*
- g) *assist with self-evacuation of the aircraft;*
- h) *if appropriate, extinguish any internal fire;*
- i) *if required, ventilate aircraft to create survivable conditions;*
- j) *maintain post fire control of the critical area; and*
- k) *preserve evidence.*

**Table 4-2. Task and resource analysis**

<b>Time</b>	<b>Tasks</b>	<b>Resources</b>	<b>Comments</b>
00.00	Call received from ATC as aircraft accident runway 06 RESA. Boeing 747-400.	Dispatcher	Achieved
00.00	RFF personnel mobilized by dispatcher.	Dispatcher	Achieved
00.15	Call made to operate the airport emergency plan.	ATC/dispatcher/operations unit	Achieved ATC
00.30	Personnel donning in appropriate PPE.	Minimum riding strength	Achieved
00.40	Route selected and all appliances mobile en route to 06 RESA.	MFTs A, B, C and D	Achieved supervisors and drivers.
00.50	Supervisor(s) utilize appropriate communications (RTF): discreet frequency, ATC, local authority, etc.	Supervisor(s)	Achieved <i>Note.— Aircraft may have already instigated</i>

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<i>Time</i>	<i>Tasks</i>	<i>Resources</i>	<i>Comments</i>
02.00	All appliances in position: Priority identified by supervisor(s) to extinguish ground pool fire and fire in number 3 engine that is impinging on fuselage.	Supervisors and drivers MFTs A, B, C and D	Achieved  A, B and C deploy monitors.
	A1 instigates ICS.	A1 supervisor B1 supervisor C1 supervisor D1 supervisor	
02.15	Create and maintain survivable conditions for the passengers to reach a place of safety. Complementary agent required. D1 is supervisor. D2 is pump operator. Breathing apparatus entry control officer (BAECO).	A2 A3 B1 B2 B3 C1 C2 C3 D1 D2 D3 deploy, use complementary agent donned in RPE D4	
03.15	All external fires extinguished.	MFTs A, B, C and D All crewmembers	Achieved
03.20	Assist with self-evacuation, and maintain survivable conditions for the passengers to reach a	MFTs A B B1 A2 A3 B2 B3	Achieved: hand-lines deployed accordingly
03.20	Crew prepares to enter aircraft in RPE.	MFT D D1 D3 and D2 (pump)	Achieved D1 D3 briefed by BAECO
03.20	Crew prepares appropriate entry point and hand-line.	C1 C2 C3 C4	Achieved by use of: specialist vehicle/equipment/
	<i>Note.— MFT A maintains post fire control.</i>	A2 A3	Achieved
03.55	Crew enters aircraft in RPE with hand-line (BAECO).  Ladder made safe for internal crew.  Crews assist with hand-line for BA entry team.	D1 D3 D4  C4  B2 B3	Achieved Achieved  Achieved  Achieved
04.15	Following self-evacuation of aircraft, provide assistance with gathering passengers and crew to place of safety.	C1 C2 C3	Achieved. Assistance provided by aircraft crew and additional responders from airport in accordance with the emergency procedures

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<i>Time</i>	<i>Tasks</i>	<i>Resources</i>	<i>Comments</i>
04.15	A2 remains as monitor/turret operator, and provides escape route protection.	MFT A	Achieved
04.30	Supervisor A1 liaises with ATC, rendezvous point officer and arriving emergency services to ensure appropriate resources are brought forward to the accident site/location.	A1	Achieved
04.50	Supervisor A1 instructs airside operations to assist in containing exiting passengers and crew and obtaining a head count of survivors.	A1	Achieved
04.55	D1 reports 20 survivors still on board aircraft require medical aid and assistance. There is no smoke in cabin or flight deck areas and survivors are having no difficulty with breathing.	D1 A1	Achieved
05.05	External emergency services are brought forward to the accident site with additional equipment to support the removal of the remaining survivors and to transport the survivors to the appropriate safety zone.	A1 and external commanders: <ul style="list-style-type: none"> <li>• police</li> <li>• fire</li> <li>• ambulance</li> <li>• medical, etc.</li> </ul>	Achieved

<b>Additional Points</b>			
	<i>Note 1.— At this point, the airport emergency plan is fully instigated and the supporting services can relieve D1 D3, provide supplementary water if required from the nearest hydrant or emergency water supply, assist in the deployment of specialist fire ground equipment and if required support the teams that are engaged in removing the survivors to a place of safety.</i>		
	<i>Note 2. — The facilitator may decide to terminate the analysis at this point or continue with the exercise to evaluate specific elements of the emergency plan, e.g. preservation of evidence.</i>		

*Notes:*

1. *It can be seen that ten firefighters and four supervisors including the officer in charge are required to achieve the above supported by four major foam*

tenders.

2. *The timeline can be further verified by the use of practical exercises and individual analysis to establish if the times are realistic and achievable for each task and function.*
3. *Each of the above tasks can be subdivided into individual functions associated with the specific task performed at a particular time.*

*Example (see Table 4-3):*

- a) *How long does it take to don protective clothing?*
- b) *How long does it take to don self-contained breathing apparatus?*
- c) *How long does it take to slip and pitch a ladder?*
- d) *How long does it take to open an aircraft door from the head of a ladder? (If required).*
- e) *How long does it take to deploy one, two, three (etc.) lengths of delivery hose?*
- f) *How long does it take to carry any item of rescue equipment over a specified distance and get to work?*

**Table 4-3. RFFS activities**

Timeline assessment for personnel: firefighters and supervisors.

This table gives an indication of the timeline from the above analysis and can be utilized to verify an individual task, function or identify “pinch points” ensuring each task is achievable effectively within the timeline.

<i>Task</i>	<i>A1</i>	<i>A2</i>	<i>A3</i>	<i>B1</i>	<i>B2</i>	<i>B3</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>D1</i>	<i>D2</i>	<i>D3</i>	<i>D4</i>
Time														
00.00														
00.15														
00.30														
00.40	A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3	D4



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Task	A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3	D4
00.50														
02.00	A1			B1			C1				D1			
02.15		A2	A3	B1	B2	B3	C1	C2	C3		D1	D2	D3	D4
03.15														
03.20		A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3	
03.20														
03.20		A2	A3											
03.55					B2	B3				C4	D1		D3	
04.15							C1	C2	C3					
04.15														
04.30	A1													
04.50	A1													
04.55	A1										D1			
05.05	A1													

*Notes.— From the above table it can be seen that a potential pinch point exists with firefighters A2 and A3. However, the tasks that they are performing are achievable as A2 and A3 are already utilizing a foam hand-line to maintain the evacuation route and maintaining post fire control. This is considered logical and an achievable process for this crew.*

**4.2.7.8 Conclusion.** A task analysis can be as detailed as necessary. The aim is to itemize the knowledge and practical skills (doing) involved in carrying out the task or function effectively and to the correct the standard of competence based on a qualitative analysis. Having gathered the appropriate data and agreed to the outcome, the TRA should enable an RFFS to confirm and subsequently provide the correct level of vehicles, equipment and personnel. It would also enable the RFFS to develop a training specification, and a learning programme can then be designed around role and task. When planning a task and resource analysis, ask the following questions:

- a) What is done?
- b) Why is it done?
- c) When is it done?
- d) Where is it done?
- e) How is it done?
- f) Who does it?

**4.2.7.9** It is often difficult to assess the overall effectiveness of a complete unit by observation only. However, observation/demonstration does allow you to assess the effectiveness of individual units and any element(s) of the emergency arrangements. Documentary evidence relating to previous accidents or exercises may also assist in establishing if the current RFFS is staffed at an appropriate level. The overall objective is to be satisfied that the RFFS is organized, equipped, staffed, trained and operated to ensure the most rapid deployment of facilities to the maximum effect in the event of an accident. The above process can also be used to identify equipment shortages and training needs for personnel required to deal with identified tasks.

## **7. RELATED RULES**

This Advisory Circular relates specifically to the requirements of Civil Aviation Regulations Governing Aerodromes (CAR-Aerodromes) Part 2.5.005 (3) Aerodrome Rescue and Fire Fighting Services.

## **8. ACKNOWLEDGEMENT**

The AANSOO of the Civil Aviation Authority of the Philippines acknowledges the valuable information from the ICAO guidance materials from which this advisory circular is adopted.

## **9. CHANGE NOTICE**

This is the initial issue.

## **10. COPIES OF THIS AC**

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*End of Advisory Circular*

  
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