

IFE Level 4 Certificate in Fire Science and Fire Safety

Unit 4 – Aviation Fire Operations

Examiner Report – March 2020

Introduction

Entries for this examination were low and only 16 candidates attended to sit their examination.

25% of the candidates who sat the examination achieved a Pass. This was in line with 2019 when 26% of candidates achieved a Pass.

Candidates generally performed best on question 3 and least well on question 4.

Question 1

When preparing an Aerodrome Emergency Plan (AEP) the Aerodrome Operator must ensure that the Airport Rescue and Firefighting Service (ARFFS) is correctly provisioned to deal with all foreseen aircraft-related incidents.

- a) *An integral element of ensuring a correctly provisioned ARFFS can deal with all foreseen aircraft-related incidents is the Task Resource Analysis (TRA). Describe the purpose of a TRA. (2 marks)*
- b) *Detail the actions that should be completed by the Aerodrome Operator in preparation for a TRA being carried out. (6 marks)*
- c) *The TRA is a six-phase process. Describe the six phases. (12 marks)*

Examiner Feedback

This question was not a popular option for candidates. Those candidates that did attempt the question usually obtained very low marks.

The Task Resource Assessment process is a standard process across many of the Airport Rescue and Firefighting Services (ARFFS) regulatory bodies including ICAO, EASA, NFPA and UK CAA and has been used for many years. It was therefore anticipated that this would be a familiar framework for candidates.

Candidates should be aware that the six phases cover the following:

- Phase 1 - The airport operator must be clear as to the aims and objectives for the ARFFS and the tasks that personnel are expected to carry out.

- 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.
- 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 above.
- Phase 4 – Identify the credible worst-case locations and by using a scoring system place these locations in order of relevance and priority.
- Phase 5 - This phase 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.
- Phase 6 - By using a TRA facilitator with teams of experienced airport supervisors and firefighters the accident scenario(s) developed in Phase 5 are subject to a task and resource analysis carried out in a series of table-top exercises/simulations.

Question 2

As the Senior Airport Fire Officer (SAFO), the Airport Operations Manager has just informed you that one of the airport's biggest aircraft operators is to start using a Jetstream 41 aircraft for 10 flights (inbound/outbound) daily. Currently, the biggest aircraft operating from the airport is a Cessna Citation X aircraft.

The BAE Jetstream 41 aircraft length is 19.25mtrs long with a fuselage width of 2.0mtrs. The Airport Rescue and Firefighting Services (ARFFS) provision is currently ICAO 4 utilising a single ARFFS vehicle carrying 4000ltrs of water, 500ltrs of Level B foam (6%) and 135kg of dry powder. This vehicle is staffed by a total of four ARFFS personnel.

Describe the actions that need to be carried out to ensure that the ARFFS provision meets the requirements of this new aircraft. (20 marks)

Examiner Feedback

This question was often answered poorly. However, one candidate attained the maximum marks available.

Level 4 qualifications require individuals to be able to analyse, interpret and evaluate relevant information. Candidates working in job roles at this level should be able to use key information such as that provided in the question to calculate the requirements for individual aircraft with regards to fire-fighting media, categories and vehicle requirements.

Question 3

You are the Senior Airport Fire Officer (SAFO) at a large international airport. You are developing an emergency plan for situations that involve an aircraft crash off-aerodrome within close proximity and within the aerodrome's area of responsibility.

State the other agencies that you would expect to be involved in responding to this incident and describe the actions that you would expect them to take to assist in resolving the incident.

(20 marks)

Examiner Feedback

This question was a popular option with all candidates attempting it. It and was usually answered well and the average mark attained was 12.

Question 4

Aerodrome categories are set using the size of the largest aircraft operating from that location. However, there are several examples of when an aircraft can operate at a reduced level of Airport Rescue and Firefighting Services (ARFFS) provision.

- a) *Explain the meaning of the term “Reduced Hazard Profile” and detail the reductions that are acceptable. (6 marks)*
- b) *Explain the reductions that are acceptable for a Nominated Diversion Aerodrome (NDA). (1 mark)*
- c) *Describe the actions that the aerodrome licence holder should complete prior to implementing any ARFFS reduction as detailed in parts a) and b) above. (6 marks)*
- d) *Regulations require that licensed Category 3 airports and above have a full-scale emergency exercise every two years. Outline the requirements for this exercise. (7 marks)*

Examiner Feedback

This question was the least popular option for candidates and was also the least well answered. Most candidates failed to demonstrate understanding of Reduced Hazard Profile Category operations. This is a process used across ICAO, EASA and UK CAA Regulations.

Candidates should be aware that the level of ARFFS response required for all-cargo, mail, ferry, training, test, positioning and end-of-life aircraft operations, including those carrying dangerous goods, irrespective of the number of movements, may be reduced by providing enough water quantity Q1 for the control of fire. This is based on the need to protect only the area around the cockpit of an all-cargo aircraft in the critical area concept.

Where marks were attained for this question, this was usually in relation to part d) of the question. However, even responses to part d) of the question were particularly poor considering the importance of this full-scale exercise which is a mandatory requirement for obtaining a licence from all ARFFS regulators.

Question 5

There are several different types of foam concentrate from which effective firefighting foams can be produced. Explain the factors to be taken into consideration when selecting or using the different types of foam concentrates available. (20 marks)

Examiner Feedback

This question was a popular option for candidates which reflects the fact that foam is the primary firefighting media utilised by ARFFS across the world.

Unfortunately, the responses to the question were often poor with few candidates having a detailed understanding of the different types of foam concentrates available to ARFFS.

The different types of foams which could have been included in responses include Protein, Aqueous Film Forming Foam (AFFF), Fluoroprotein Foam, Film Forming Fluoroprotein (FFFP) Foam and synthetics foams. Candidates could have considered factors such as the logistics of foam production, concentrations, characteristics, properties, compatibility (or otherwise) with other extinguishing media, effect on equipment and environment etc.

Question 6

A fixed Emergency Operations Centre should be available to deal with emergency situations at each aerodrome. Certain emergency situations will also require a Mobile Command Post at the scene, normally under the direction of the airport authority's on-scene Commander.

- a) *Describe the main features and role of an Aerodrome Emergency Operations Centre (EOC). (10 marks)*
- b) *Describe the main features and role of an Aerodrome Mobile Command Post (MCP). (10 marks)*

Examiner Feedback

All candidates attempted this question and many secured good marks. The average mark attained for this question was 8.

Responses provided evidence that the candidates were aware of the processes that take place elsewhere on the aerodrome when they are responding to emergency incidents. This together with question 3 identified the importance of an effective Aerodrome Emergency Plan (AEP) which is fully understood by the ARFFS personnel.

Question 7

The principal objective of the Airport Rescue and Firefighting Services (ARFFS) is to save lives in the event of an aircraft accident or incident occurring at, or in the immediate vicinity of, an aerodrome. Describe the tasks, tactics, techniques and procedures that would need to be considered to ensure that this principal objective is met. (20 marks)

Examiner Feedback

This question, which addressed the principal objectives of ARFFS which are standard across both civil and military sectors, was attempted by all candidates.

Unfortunately, responses were often poor with few candidates providing detailed responses linked to the relevant tasks, tactics, techniques and procedures at an incident.

Candidates who discussed issues such as meeting the required response time, extinguishing external fires, protecting exit routes/slides, assisting in evacuation, creating a survival environment etc were able to score high marks.

Question 8

Incidents/emergencies involving aircraft are categorised for both civil and military at aerodromes.

- a) *Compare the different classifications used for civil and military incidents/emergencies in terms of the implications for the Airport Rescue and Firefighting Services (ARFFS).*
(15 marks)
- b) *Detail the type of information that both civilian and military ARFFS Incident Commanders would expect to be provided by Air Traffic Control (ATC) when responding to incidents involving aircraft.*
(5 marks)

Examiner Feedback

This question was a popular option for candidates and many candidates attained a good mark. The average mark attained was 8.

Whilst there was little understanding of the military classifications of aircraft related-emergencies, most candidates were able to attain the all of the 5 marks available for question 8b) indicating that they understood the emergency messages delivered by ATC to the ARFFS Control Room.

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