IFE Level 4 Certificate in Fire Science and Fire Safety

Unit 4: Aviation Fire Operations

Unit Reference Number: K/505/5934

Introduction

This unit focuses on the strategies and activities required to assess and resolve fire and rescue incidents in aviation contexts. It covers pre-planning for incidents, resolving incidents and post-incident activities.

Learning Outcomes

Candidates who achieve this unit should be able to:

• assess incidents in aviation contexts (civil and military) and identify appropriate strategies to resolve them
• explain the principles that underpin the provision of firefighting and rescue facilities at airports and airfields
• understand the issues to be taken into account in reviewing and determining incident status, assuming responsibility and taking over command and control operations
• understand how to provide leadership and how to work with colleagues and external stakeholders

Unit Status

Optional

Content

1. Emergency Planning and Procedures

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<tr>
<th>Assessment Objective</th>
<th>Knowledge, Understanding and Skills</th>
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</table>
| 1.1 Understand the importance of pre-planning for emergencies and know how to develop a plan | • Preparing for appropriate response  
• How to protect responders, the public and the environment  
• How to mitigate the impact of incident |
| 1.2. Identify and assess the issues to take into consideration when planning for emergencies | • Airport location and topography  
• Access  
• Rendezvous points and marshalling areas  
• Water supplies and drainage systems  
• Rescue and firefighting response and capability  
• Communications  
• Air traffic control |
1.3 Explain the involvement of external partners in pre-planning and explain how to engage with each partner

- Stakeholders and local partners
- Joint working in planning and incident review
- Importance of involving the local community
- Detail the role of each emergency service at the scene of an aircraft accident

1.4 Detail the categorisation (civil and military) of emergencies at airports and assess the implications

- Aircraft Accident
- Aircraft Accident Imminent
- Aircraft Crash – Off-airfield
- Full Emergency
- Local Standby
- Aircraft Ground Incident
- Bomb Alert/Bomb Suspected
- Weather Standby
- Domestic Fire

1.5 Describe the areas of an airport, explain safety implications and be able to plan for incidents

Areas to include:
- Runway
- Aircraft stand
- Air bridge
- Apron
- Airside/landside security
- Taxiway
- Airport terminal buildings
- Airport cargo buildings
- Baggage areas
- Maintenance facilities
- Fuel storage

1.6 Describe the range of aircraft, explain safety implications and be able to plan for incidents

- Types of aircraft:
  - Fixed wing
  - Rotary wing (helicopters, autogyro etc.)
  - Gliders
  - Microlights
- Civilian and military contexts
- Incidents on and off airport to include:
  - Scheduled/chartered flights
  - Military
  - Private flights
  - Air shows and other events

1.7 Explain the importance of maintaining operational readiness and explain how this can be managed

- Training requirements of rescue and firefighting personnel
- Training needs analysis
- Methods of training available to test contingency and pre-determined emergency plans and how they can be improved
- Large-scale training exercise involving all responding emergency services to major aircraft disasters

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| 1.8 Assess how the lessons learned from aviation disasters can be used in pre-planning and maintaining operational readiness | • Maintaining availability of resources  
• Procedures in relation to operational readiness  
• Dissemination of information nationally and internationally |

### 2. Incident Command and Management in Aviation Contexts

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| 2.1 Understand the key roles, responsibilities and limits of authority | • Role and responsibilities of the Incident Commander at Tactical level  
• Performance criteria involved in leading, monitoring and supporting people to resolve operational incidents  
• Role and responsibilities of Command Support at Tactical level incidents, including the role of Command Support Officer  
• Potential limits to the authority of the Incident Commander |
| 2.2 Understand the importance of successful leadership and the application of effective decision making during operational incidents | • Need for effective command decision making  
• How to select and apply a range of tactics to resolve different types of operational incidents  
• The term 'situational awareness' and its relevance to the role of Incident Commander  
• Key elements of leadership within the role of Incident Commander |
| 2.3 Understand the principles of successful risk management at operational incidents | • Key points in minimising and controlling risks to operational personnel  
• Relationship between the analytical risk assessment process and the safe and effective management of risk at operational incidents  
• How to identify and control a strong appetite for risk in others |
| 2.4 Understand the benefits of inter-operability and the contribution of other agencies to the provision of specialist advice and support | • Need for effective liaison with other agencies to achieve desired outcomes  
• Provision of information to other agencies which may assist in their decision making  
• Benefits of inter-operability in obtaining and acting upon specialist advice and support from other agencies |
| 2.5 Explain the principles for general control, tactics and strategy in relation to resolving emergency aviation incidents on airport and off airport | • Objectives of ventilation at fires and the principles involved  
• Strategy and tactics involved in rescue work and how they are used in practice to accomplish efficient rescues  
• Procedures for ensuring the safety of both personnel and public  
• Need for evacuation and how this can be achieved |
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<th>2.6 Detail the principles of good site management at the scene of a major aircraft incident</th>
<th>• The concepts of critical areas and control</th>
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</table>
| 2.7 Analyse the environmental hazards that might be encountered and determine approaches to minimise negative effects | • Prevention of pollution of water courses and rivers by collection and impounding of firefighting run-off water 
• Environmental hazards associated with firefighting foams 
• Hazards of vapour cloud/toxic gas cloud off site during and after fire or other operations |
| 2.8 Assess the implications of liaison with the media before, during and after a major incident | • Role of a media centre at a major incident and the liaison agreements with the emergency services 
• Factors to be considered in running a press conference during a major incident |

3. Provision for Firefighting and Rescue Facilities at Airports and Airfields

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<tr>
<td>3.1 Outline the criteria to be taken into account when designing and providing airport fire stations</td>
<td>• Specification and considerations to be taken into account when designing and providing new airport fire appliances</td>
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</tbody>
</table>
| 3.2 Explain how to deploy equipment and other resources to resolve incidents including fires and other emergencies on airport and off airport scenarios | • Different types of firefighting media and equipment and its operational use 
• Selection and deployment of resources 
• Capabilities and limitations of personnel, appliances, special appliances and equipment |

4. Communications

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| 4.1 Understand the methods and types of communication systems available both at incidents and remotely | • Importance of effective communication in recognising poor or inaccurate information and taking action to rectify 
• Types and methods of communication available to an Incident Commander at Tactical level 
• Range of remote information sources available to an Incident Commander 
• Role of Command Support in establishing effective communications at incidents |
### 4.2 Describe the planning, design, operation and functions of control centres suitable for emergency services

- Requirement to ensure effective briefings are undertaken
- Methods by which stations can be alerted from a control centre

### 4.3 Describe and evaluate the communications equipment available

- Types of radio schemes and systems for fire service general and incident use
- Computer aided mobilising systems
- Possible future developments in the use of technologically advanced systems for mobilisation and communications and their implications

## 5. Heliports

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| 5.1 Explain how to deploy equipment and other resources to resolve incidents including fires and other emergencies in relation to heliports | - Define and show an understanding of the terms “obstacle limitation surfaces” and “transitional surfaces”
- The main features to be considered in the designing of off-shore heliports
- Concept of critical area as applied to helicopters
- Response times for firefighting and rescue personnel at surface level and at elevated heliports
- Provision of Aerodrome Rescue and Firefighting (ARFF) Services for helicopters at Unlicensed Onshore operating sites. |

## 6. Post-incident Procedures and Considerations

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| 6.1 Understand the principles of debriefs | - How to conduct a post-incident debrief appropriate to the type and scale of incident through open and constructive discussion and review
- How to gather and review all relevant information from internal and external sources
- How to implement remedial measures to improve future practice and performance
- How to identify trends and their implications on performance
- How to provide constructive feedback to other agencies to assist inter-operability |
| 6.2 Evaluate the effects and consequences of incidents | - Indirect socio-economic consequences of fires, other emergency incidents and major disasters
- Environmental effects and control measures in relation to fires
- Post-incident/crash groups (including external partners) to analyse and formulate reports/recommendations |
| 6.3 Understand fire investigation principles and determine the requirements for preservation of evidence at a scene and for post-incident actions | • Techniques of fire investigation into the cause and damage that is inflicted by fire, emergency incident or major disaster  
• How to preserve the site and evidence and the gathering of other evidence |
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<td>6.4 Explain the need for post-accident counselling for rescue personnel</td>
<td>• Critical Incident Stress in the context of rescue workers and ways in which the effects can be minimised</td>
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| 6.5 Explain the procedures and implications in dealing with fatalities | • Removal and moving of bodies including the recording of positions and locations  
• Factors to be taken into account in setting up a temporary morgue  
• Hazards of handling human remains at the site of a major aircraft accident and at the temporary morgue  
• Health and safety legal considerations to be taken into account when planning and establishing a temporary morgue |