

# IFE Level 4 Certificate in Fire Science and Fire Safety (HL)

## Unit 3: Fire Service Operations and Incident Command

Unit Reference Number: H/505/5933

### Introduction

This unit focuses on the strategies and activities required to assess and resolve fire and rescue incidents. It reflects the breadth of knowledge and understanding required by an Incident Commander operating at tactical level. It covers incident management as well as technical expertise and post-incident de-briefs and reviews.

### Learning Outcomes

Candidates who achieve this unit should be able to:

- Assess incidents and determine appropriate strategies to resolve them
- 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 deploy firefighting equipment and other resources
- Understand how to preserve the safety of firefighters and members of the public
- Assess and develop policies and procedures

### Unit Status

Optional

### Content

#### 1. Incident Command and Management

Assessment Objective	Knowledge, Understanding and Skills
1.1 Understand the key roles, responsibilities and limits of authority	<ul style="list-style-type: none"> <li>• The role and responsibilities of the Incident Commander at Tactical Level and limits to authority</li> <li>• The performance criteria involved in leading, monitoring and supporting people to resolve operational incidents</li> <li>• The role and responsibilities of Command Support at Tactical level incidents, including the role of Command Support Officer</li> </ul>
1.2 Understand the importance of successful leadership and the	<ul style="list-style-type: none"> <li>• The need for effective decision making</li> <li>• How to select and apply a range of tactics to resolve</li> </ul>

application of effective decision making during operational incidents	<p>different types of operational incidents</p> <ul style="list-style-type: none"> <li>• The term 'situational awareness' and its relevance to the role of Incident Commander</li> <li>• The key elements of leadership within the role of Incident Commander</li> </ul>
1.3 Understand the principles of successful risk management at operational incidents	<ul style="list-style-type: none"> <li>• The key points in minimising and controlling risks to operational personnel</li> <li>• The relationship between the analytical risk assessment process and the safe and effective management of risk at operational incidents</li> <li>• How to identify and control a strong appetite for risk in others</li> </ul>
1.4 Understand the benefits of inter-operability and the contribution of other agencies to the provision of specialist advice and support	<ul style="list-style-type: none"> <li>• The need for effective liaison with other agencies to achieve desired outcomes</li> <li>• The provision of information to other agencies which may assist in their decision making</li> <li>• The implications of establishing a successful media strategy at a developing incident</li> <li>• The benefits of inter-operability in obtaining and acting upon specialist advice and support from other agencies</li> </ul>
1.5 Explain the purpose of pre-planning and assess pre-planning requirements for any specified emergency	<p>Incidents to include:</p> <ul style="list-style-type: none"> <li>• Fires</li> <li>• Rescues involving trapped or stranded large animals.</li> <li>• Incidents involving civil disturbances and acts of terrorism.</li> </ul>
1.6 Explain and apply the principles for general control, tactics and strategy to resolve emergency incidents	<ul style="list-style-type: none"> <li>• Objectives of ventilation at fires and describe in detail the principles involved</li> <li>• Strategy and tactics involved in rescue work and how they are used in practice to accomplish efficient rescues</li> <li>• Procedures for ensuring the safety of both personnel and public</li> <li>• The need for evacuation at fires, emergency incidents and major disasters and discuss how this can be achieved</li> <li>• Firefighting procedures and tactics in fires involving hazardous materials.</li> <li>• Inter-relationship of logistics operations and technical support at incidents</li> <li>• Aims of salvage/damage control operations and the principles and technicalities involved</li> </ul>
1.7 Explain how to deploy equipment and other resources to resolve incidents including fires and other emergencies	<ul style="list-style-type: none"> <li>• Different types of firefighting media and equipment and its operational use</li> <li>• Selection and deployment of resources</li> <li>• Capabilities and limitations of personnel, appliances, special appliances and equipment</li> </ul>

## 2. Incidents Involving Buildings

Assessment Objective	Knowledge, Understanding and Skills
2.1 Assess incidents involving buildings and determine the firefighting and emergency procedures to be applied	<ul style="list-style-type: none"> <li>• Incidents in various types of building occupancies including residential, industrial, retail, health care, educational, commercial, leisure etc.</li> <li>• Incidents including fires, collapses, floods, releases of noxious chemicals, explosions etc.</li> </ul>
2.2 Explain the way in which building materials behave in fire, the hazards they present and the implications for firefighting on the incident ground	<p>Building materials to include:</p> <ul style="list-style-type: none"> <li>• Timber</li> <li>• Stone</li> <li>• Brick</li> <li>• Cement</li> <li>• Concrete (reinforced and pre stressed)</li> <li>• Metals</li> <li>• Glass</li> <li>• Building boards and building slabs</li> <li>• Insulating materials</li> <li>• Paint</li> <li>• Plastics</li> <li>• Sandwich panels</li> </ul>
2.3 Explain the way in which elements of structure behave in fire, assess the hazards they present and determine the implications for firefighting on the incident ground	<p>Elements of structure:</p> <ul style="list-style-type: none"> <li>• Columns</li> <li>• Beams</li> <li>• Walls</li> <li>• Floor</li> <li>• Roofs</li> <li>• Non load bearing walls and partitions</li> <li>• Stairways</li> <li>• Doors</li> <li>• Windows</li> <li>• Roof lights</li> <li>• Ceilings</li> </ul>
2.4 Assess and explain the implications of building facilities in relation to fire spread and firefighting operations	<ul style="list-style-type: none"> <li>• Heating</li> <li>• Ventilation</li> <li>• Air conditioning systems</li> <li>• Stairwell pressurisations systems</li> <li>• Ventilation and smoke handling systems</li> <li>• Electricity</li> <li>• Gas</li> <li>• Water</li> <li>• Lifts</li> <li>• Escalators</li> </ul>
2.5 Outline the design features, use, and operations of types of fixed installations and assess how they may contribute to the control, extinguishment and spread of fire	<ul style="list-style-type: none"> <li>• Sprinkler systems</li> <li>• Drencher and Water Spray Projector Systems</li> <li>• Rising mains</li> <li>• Hose reels</li> </ul>

	<ul style="list-style-type: none"> <li>• Foam systems</li> <li>• Gas/Vapour Systems</li> <li>• Dry Powder Systems</li> <li>• Fire Detection Systems - Smoke, Heat and Flame</li> <li>• Smoke control systems</li> </ul>
--	---

### 3. Incidents Involving all Types of Transport: Road, Rail (including Underground and Funicular railways) Shipping and Air

Assessment Objective	Knowledge, Understanding and Skills
3.1 Assess incidents involving transport and determine the firefighting and emergency procedures to be applied	<ul style="list-style-type: none"> <li>• Incidents at stations, interchanges, docks, airports and on road networks</li> <li>• Incidents in populated areas</li> <li>• Incidents in rural or remote areas</li> <li>• Rescue</li> <li>• Special hazards which may be encountered</li> </ul>
3.2 Understand the principles of construction in relation to ships and the implications for fire and rescue situations	<ul style="list-style-type: none"> <li>• Design and construction of ships including:                             <ul style="list-style-type: none"> <li>○ General cargo</li> <li>○ Container</li> <li>○ Chemical and gas carriers</li> <li>○ Bulk carriers</li> <li>○ Passenger vessels including liners</li> <li>○ Warships</li> </ul> </li> <li>• Measures incorporated into ships to provide fire detection and protection</li> <li>• Concept of stability and the procedures for ensuring stability during firefighting operations</li> <li>• Factors relevant to ship firefighting both in ports and at sea</li> </ul>
3.3 Understand the principles of construction in relation to railway systems and vehicles and the implications for fire and rescue situations	<ul style="list-style-type: none"> <li>• General features of railways</li> <li>• Types, design and construction of trains and rolling stock</li> <li>• Firefighting and emergency procedures for railway incidents</li> </ul>
3.4 Understand the principles of construction in relation to roads and vehicles and the implications for fire and rescue situations	<ul style="list-style-type: none"> <li>• Vehicle design</li> <li>• Freight</li> </ul>
3.5 Understand the principles of firefighting in relation to aviation incidents and the implications for fire and rescue situations	<ul style="list-style-type: none"> <li>• Firefighting and emergency procedures for incidents involving aircraft and/or airports</li> </ul>

#### 4. Incidents Involving Forests, Heaths, Bush and Crops (Wildland Fires)

Assessment Objective	Knowledge, Understanding and Skills
4.1 Discuss in detail firefighting and emergency procedures for incidents involving forests, heaths, bush and crops (wildland fires)	<ul style="list-style-type: none"> <li>• Incidents in rural or remote areas</li> <li>• Specialist firefighting techniques</li> <li>• Special hazards which may be encountered</li> <li>• Incidents close to populated areas</li> <li>• Rescue</li> </ul>

#### 5. Communications

Assessment Objective	Knowledge, Understanding and Skills
5.1 Understand the methods and types of communication systems available both at incidents and remotely	<ul style="list-style-type: none"> <li>• Importance of effective communication in recognising poor or inaccurate information and taking action to rectify</li> <li>• Types and methods of communication available to an Incident Commander</li> <li>• Range of remote information sources available</li> <li>• Role of Command Support in establishing effective communications at incidents</li> <li>• Requirement to ensure effective briefings are undertaken</li> </ul>
5.2 Discuss the planning, design, operation and functions of control centres suitable for emergency services	<ul style="list-style-type: none"> <li>• Discuss the methods by which stations can be alerted from a control centre</li> </ul>
5.3 Describe and evaluate the communications equipment available	<ul style="list-style-type: none"> <li>• Describe the various types of radio schemes and systems for fire service general and incident use</li> <li>• Discuss the use of computer aided mobilising systems</li> <li>• Discuss possible future developments in the use of technologically advanced systems for mobilisation and communications</li> </ul>

#### 6. Post-Incident Review and Evaluation

Assessment Objective	Knowledge, Understanding and Skills
6.1 Understand the principles of, and value of, debriefs and apply these principles to different incident contexts	<ul style="list-style-type: none"> <li>• How to conduct a post incident debrief appropriate to the type and scale of incident through open and constructive discussion and review</li> <li>• How to gather and review all relevant information from internal and external sources</li> <li>• How to engage crew in debriefing and to review crew welfare and learning issues</li> <li>• How to implement remedial measures to improve future practice and performance</li> <li>• How to Identify trends and their implications on</li> </ul>

	<p>performance</p> <ul style="list-style-type: none"> <li>• How to provide constructive feedback to other agencies to assist inter-operability</li> </ul>
6.2 Evaluate the effects and consequences of incidents	<ul style="list-style-type: none"> <li>• Indirect socio-economic consequences of fires, other emergency incidents and major disasters</li> <li>• Environmental effects and control measures in relation to fires</li> </ul>
6.3 Understand fire investigation principles and determine the requirements for preservation of evidence at a scene and for post-incident actions	<ul style="list-style-type: none"> <li>• Techniques of fire investigation into the cause, and damage that is inflicted by fire, emergency incident or major disaster</li> </ul>