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

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<th>Assessment Objective</th>
<th>Knowledge, Understanding and Skills</th>
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<tr>
<td>1.1 Explain the key roles, responsibilities and understand limits of authority</td>
<td>• The role and responsibilities of the Incident Commander at Tactical Level and limits to authority</td>
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<td>• The performance criteria involved in leading, monitoring and supporting people to resolve operational incidents</td>
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<td>• The role and responsibilities of Command Support at Tactical level incidents, including the role of Command Support Officer</td>
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<td>1.2 Understand the importance of successful leadership and the</td>
<td>• The need for effective decision making to meet both short and long term objectives</td>
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| Application of effective decision making during operational incidents | - 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  
- The key elements of leadership within the role of Incident Commander |
| 1.3 Understand the principles of successful risk management at operational incidents | - The key points in minimising and controlling risks to operational personnel  
- The 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 |
| 1.4 Understand the benefits of interoperability and the contribution of other agencies to the provision of specialist advice and support | - The need for effective liaison with other agencies to achieve desired outcomes  
- The provision of information to other agencies which may assist in their decision making  
- The implications of establishing a successful media strategy at a developing incident  
- The benefits of interoperability in obtaining and acting upon specialist advice and support |
| 1.5 Explain the purpose of pre-planning and assess pre-planning requirements for any specified emergency | - Incidents to include:  
  - All fire situations  
  - All Rescue situations  
  - Major incidents and incidents involving civil disturbance  
  - Acts of terrorism and natural disaster  
  - Incidents involving hazardous materials  
- Conforming with legal requirements  
- Working to meet organisational strategy and budgets  
- Impacts on environmental protection  
- Consultation with partners/stakeholders and government officials |
| 1.6 Explain and apply the principles for general control, tactics and strategy to resolve emergency incidents | - Objectives of ventilation at fires and the principles involved  
- Strategy and tactics involved in rescue work and how they are used to accomplish efficient rescues  
- Procedures for ensuring the safety of both personnel and public  
- The need for evacuation at fires, emergency incidents and major disasters and discuss how this can be achieved  
- Firefighting procedures and tactics in fires involving hazardous materials.  
- Inter-relationship of logistics operations and technical support at incidents  
- Aims of salvage/damage control operations and the principles and technicalities involved |
1.7 Explain how to deploy equipment and other resources to resolve incidents including fires and other emergencies

- 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

2. Incidents Involving Buildings

2.1 Assess incidents involving buildings and determine appropriate strategies and tactics commensurate with requirements and risk

- Incidents including fires, collapses, floods, hazardous materials, explosions etc.
- Buildings include:
  - Occupied, unoccupied, derelict properties and temporary structures
  - Residential, Commercial, Industrial, Retail, Health Care, Educational and Leisure use
  - Laboratories, Refrigerant buildings, Petrochemical installations
  - Premises used for the distribution, storage or supply of gas, LPG, electricity, solar panels and other sources of power.
  - Roofs, High rise properties, Atriums, Basements and tunnels
  - Historical buildings and premises containing valuable artefacts including Heritage buildings, museums and galleries

2.2 Evaluate how a fire or collapse situation has compromised a building’s integrity or stability, determining the hazards present and the implications for firefighting and rescue operations on the incident ground

Building methods to include:
- Framed and unframed buildings
- Steel and concrete frame
- Concrete construction methods
- Composite and Modular construction
- Portal frame and Glulam construction
- Claddings and fixing methods
- Staircases
- Roofs, ceilings and roof lights
- Flooring and fixing methods
- Doors and windows
- Non load bearing walls and partitions

Elements of structure include:
- Columns and Beams
- Load bearing and compartment walls
- Floors and frames
- Enclosed protected shafts and staircases

2.3 Assess the implications of building facilities in relation to fire spread and firefighting/rescue operations

Building facilities to include:
- Heating and Air Conditioning systems
- Ventilation and smoke handling systems
- Stairwell and pressurisation systems
- Lifts and Escalators
- Service utilities such as electricity, gas, oil and water
2.4 Explain how fixed installations may be utilised to assist firefighting operations

Fixed installation to include:
- Sprinkler, drencher and water spray projection systems
- Rising mains, falling mains and hose-reels
- Foam and flooding systems including gas/vapour and dry powder systems
- Automatic fire detection and alarm systems
- Communication and security systems

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

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| 3.1 Assess incidents involving transport and determine the firefighting and emergency procedures that will need to be applied | - Incidents at railway stations, interchanges, docks, airports and on road networks  
- Incidents in populated areas  
- Incidents in rural or remote areas  
- Rescue procedures  
- Special hazards which may be encountered |
| 3.2 Explain the principles of construction in relation to ships and assess incidents and implications for fire and rescue situations | - Design and construction of ships including:  
  - General cargo  
  - Container  
  - Chemical and gas carriers  
  - Bulk carriers  
  - Passenger vessels including liners  
  - Warships  
  - Measures incorporated into ships to assist with firefighting and to provide fire detection and protection  
  - Concept of stability and the procedures for ensuring stability during firefighting operations  
  - Factors relevant to ship firefighting both in ports and at sea |
| 3.3 Explain the principles of construction in relation to railway systems and vehicles and assess incidents and implications for fire and rescue situations | - General features of railways  
- Types, design and construction of trains and rolling stock  
- Firefighting and emergency procedures for railway incidents  
- Hazard identification of freight including signage of goods carriages and information retrieval procedures  
- Hazards presented by railway/train power systems |
| 3.4 Explain the principles of construction in relation to roads and vehicles and assess incidents and implications for fire and rescue situations | - Vehicle design, to include motor cars, buses, coaches, light and heavy goods vehicle  
- Hazards presented by construction materials and fuel systems  
- Hazard identification on goods vehicles and... |
3.5 Explain the principles of firefighting in relation to aviation incidents and assess the implications for fire and rescue situations

- Firefighting and emergency procedures for incidents involving aircraft and/or airports
- Design of both civilian (passenger/cargo) and military aircraft (assault/troop transport/cargo/surveillance/search and rescue) including fixed wing and rotary wing aircraft
- Hazards presented by construction materials, engines, fuel/power/pressurised systems of both civil and military aircraft
- Hazard information retrieval procedures for both civilian and military aircraft

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

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<td>4.1 Assess incidents involving forests, heaths, bush and crops (wildland fires) and determine the firefighting and emergency procedures that will need to be applied</td>
<td>• Incidents in rural or remote areas • Specialist firefighting techniques • Special hazards which may be encountered • Incidents close to populated areas • Rescue</td>
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5. Communications

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<td>5.1 Understand the methods and types of communication systems available both at incidents and remotely</td>
<td>• 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 • Range of remote information sources available • Role of Command Support in establishing effective communications at incidents • Requirement to ensure effective briefings are undertaken</td>
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<td>5.2 Explain the planning, design, operation and functions of control centres suitable for emergency services</td>
<td>• Methods by which stations can be alerted from a control centre • Use of different methods</td>
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<td>5.3 Describe and evaluate the communications equipment available</td>
<td>• Types of radio schemes and systems for fire service general and incident use • Use of computer-aided mobilising systems • Possible future developments in the use of technologically advanced systems for mobilisation and communications</td>
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### 6. Post-Incident Review and Evaluation

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| 6.1 Explain the principles and value of debriefs and apply these principles to different incident contexts | • 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 engage crew in debriefing and to review crew welfare and learning issues  
• 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 interoperability |
| 6.2 Evaluate and consequences of incidents | • Indirect socio-economic consequences of emergency incidents, fires and major disasters  
• Environmental effects and control measures in relation to fires and other emergency incidents  
• Health and Safety/Welfare arrangements for staff  
• Liaison with outside agencies, local government and media representatives |
| 6.3 Understand 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  
• Further investigation to include:  
  • Fire Investigation  
  • Fire Safety Investigation  
  • Health and Safety Investigation  
  • Criminal Investigation  
  • Internal Investigation  
• Investigative techniques for emergency incidents and major disasters  
• Collation of factual information and the preparation of documents to present at formal proceedings such as post mortems, public and judicial enquiries  
• The involvement of external agencies and legal compliance |