



**Australian Government**

# **MARF4001A Manage firefighting and fire prevention activities on board a vessel**

**Release 1**

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## **Modification History**

Release 1

This is the first release of this unit.

This unit replaces and is equivalent to TDMMF6107A Manage marine fire fighting and prevention activities on board a vessel.

## **Unit Descriptor**

This unit involves the skills and knowledge required to manage firefighting and fire prevention activities on board a vessel.

## **Application of the Unit**

This unit applies to deck and engine officers who are required by Marine Order 3 to be in charge of firefighting activities on board a vessel.

## **Licensing/Regulatory Information**

Not applicable.

## **Pre-Requisites**

Not applicable.

## **Employability Skills Information**

This unit contains employability skills.

## **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

- 1 Manage fire prevention activities**
  - 1.1 *Hazards* including dangerous goods on board a vessel are identified and appropriate action is implemented as determined by industry standard documentation
  - 1.2 Legislative requirements and current industry standards relating to the maintenance and operation of *fire detection, firefighting equipment* and *systems* on board are met and complied with
  - 1.3 Inductions or other educational activities are organised to ensure awareness of causal factors of on-board fires, prevention methods and standard operating procedures when fire alarms are activated
- 2 Plan for fire emergencies**
  - 2.1 Vessel *fire control plan* is consulted to review and develop appropriate response to any fire
  - 2.2 *Contingencies* are anticipated, planned for and practised
  - 2.3 Evacuations are prepared for and practised according to regulatory requirements
  - 2.4 Roles/functions of command and firefighting team members, as related to fire prevention and suppression, are established and reviewed according to regulatory and organisational requirements
  - 2.5 Firefighting training exercises are developed and implemented according to regulatory and organisational requirements
  - 2.6 Training exercises are prepared, practised and debriefed according to regulatory and organisational requirements, to ensure readiness for any fire emergency
- 3 Coordinate tactical firefighting activities in response to a fire emergency**
  - 3.1 Gathering of full and accurate information on the nature and extent of the fire by the command team is overseen
  - 3.2 Order of priority and sequence of actions appropriate to the requirements of the incident is determined and communicated to the responding crew clearly and accurately
  - 3.3 Evacuation of personnel, if appropriate, is conducted according to regulatory requirements
  - 3.4 Search and rescue operations are conducted using established marine firefighting best practice
  - 3.5 Controlled ventilation techniques are correctly applied during fire suppression and rescue operations
  - 3.6 Treatment of injured personnel is timely and according to current best

casualty management practice

- 3.7 Operational tactics are monitored for their effectiveness and adjusted when required to ensure best outcomes
  - 3.8 Operational tactics are monitored to ensure vessel stability and integrity is maintained
  - 3.9 All shore-side involvement in an on-board fire emergency is coordinated and monitored effectively
- 4 Manage post-fire activities**
- 4.1 Fire watch is coordinated to prevent re-ignition
  - 4.2 Fire affected area is secured prior to investigation according to regulatory and organisational requirements
  - 4.3 Equipment is *restored* to operational condition where applicable
  - 4.4 Cause of the fire is investigated and determined according to regulatory and organisational requirements
  - 4.5 Incident reports are completed according to regulatory and organisational requirements

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required Skills:

- Communicate effectively with crew and passengers during fire emergencies
- Determine the type and extent of the fire and initiate appropriate, timely, actions
- Evaluate effectiveness of firefighting activities and tactics during a fire emergency
- Initiate appropriate action and provide solutions to problems with firefighting equipment and operations during a fire emergency
- Liaise with shore-based emergency organisations during a fire emergency
- Manage fire prevention and suppression activities on a vessel
- Manage on-board firefighting training for shipboard firefighting teams
- Manage shipboard firefighting teams and their tactical activities during a fire emergency
- Manage the maintenance of firefighting equipment and systems
- Provide leadership to shipboard personnel and passengers during a fire emergency
- Recognise and interpret fire alarms and initiate appropriate response

### Required Knowledge:

- Assessment of cause of incidents involving fire
- Chemistry of fire and its relationship to combustible materials typically found on vessels
- Communication and coordination during firefighting operations
- Composition and allocation of personnel to fire parties
- Control of fuel and electrical systems
- Different classes of fire and the most appropriate extinguishing agents, application equipment and methods of extinguishment for each
- Fire-detection systems: fixed fire-extinguishing systems; portable and mobile fire-extinguishing systems, including appliances, pumps and rescue, salvage, life-support, personal protective and communication equipment
- Fire precautions and hazards associated with the storage and handling of materials (paints etc.)
- Firefighting procedures at sea and in port, with particular emphasis on organisation, tactics and command
- Firefighting process hazards (dry distillation, chemical reactions, boiler uptake fires etc.)
- Firefighting involving dangerous goods
- Implications of shipboard firefighting management in port and the procedures that must be followed to comply with port and state regulations
- Importance of maintenance of fire detection and firefighting equipment on board vessels
- Life and health risks associated with fires on vessels

- Management and control of injured persons
- Maritime communication techniques applicable to the management of fire prevention and firefighting activities on board a vessel
- Methods for checking and replacing consumable materials in fire detection, fire-fighting equipment and systems on board vessels
- Preparation of contingency plans
- Principle of operation of fixed fire suppression systems
- Principles underlying the spread of fire and its extinguishment
- Problems likely to be encountered during the management of a shipboard fire and related tactics and solutions that can be applied
- Procedure for safe activation of fixed firefighting systems
- Procedures for coordination of shore-based firefighters
- Relevant regulations, codes of practice, policies and procedures relating to the maintenance of fire detection, firefighting equipment and systems on board vessels
- Requirements for on-board firefighting training
- Requirements for statutory and classification surveys
- Safety data sheets/material safety data sheets relevant to the various products and substances carried on vessels
- Strategies and tactics for control of fires in various parts of the vessel
- Strategies for rapid briefing of shore-based emergency organisations using the vessel fire control plan
- Types of fire detection, firefighting equipment and systems used on vessels, their features, principles of operation, the procedures for their use and remediating problems that can occur during use
- Typical actions of passengers in a shipboard fire
- Use of water for fire extinguishing, the effect on ship stability, precautions and corrective procedures
- Ventilation control, including smoke extraction
- Work health and safety (WHS)/occupational health and safety (OHS) requirements and safe work practices

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, the required skills and knowledge, the range statement and the Assessment Guidelines for the Training Package.

**Critical aspects for assessment and evidence required to demonstrate competency in** The evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the Elements, Performance Criteria, Required Skills, Required

**this unit**

Knowledge and include:

- safeguarding personal safety during fire control activities at all times
- taking actions to control fires based on a full and accurate assessment of the incident, using all available sources of information
- transmitting information promptly, accurately, completely and clearly
- ensuring order of priority, timing and sequence of actions are appropriate to the overall requirements of the incident and minimise damage and potential damage to the vessel, injuries to personnel, and impairment of the operational effectiveness of the vessel.

**Context of and specific resources for assessment**

Performance is demonstrated consistently over time and in a suitable range of contexts.

Resources for assessment include access to:

- industry-approved site where managing teams fighting and extinguishing fires in a simulated environment using live fire and smoke can be conducted
- tools, equipment and personal protective equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities
- range of relevant exercises, case studies and/or other simulated practical and knowledge assessments
- appropriate range of relevant operational situations in the workplace.

In both real and simulated environments, access is required to:

- relevant and appropriate materials and equipment
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.

**Method of assessment**

Practical assessment must occur in an:

- appropriately simulated workplace environment and/or
- appropriate range of situations in the workplace.

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate to this unit:

- direct observation of the candidate managing firefighting and fire prevention activities on board a vessel
- direct observation of the candidate applying relevant WHS/OHS requirements and safe work practices.

**Guidance information for**

Holistic assessment with other units relevant to the industry

**assessment**

sector, workplace and job role is recommended.

In all cases where practical assessment is used it should be combined with targeted questioning to assess Required Knowledge.

Assessment processes and techniques must be appropriate to the language and literacy requirements of the work being performed and the capacity of the candidate.



## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.

- Hazards must include:
- Contents of adjacent spaces
  - Dangerous goods
  - Electricity and wiring systems
  - Flammable or explosive atmospheres
  - Oxygen deficiency or enrichment
  - Physical obstructions
  - Poor visibility
  - Restricted access
  - Toxic liquids, solids, gases, vapours and dusts
- Fire detection, firefighting equipment and systems may include:
- Common on board suppression systems
  - Hoses and nozzles
  - Pumps
  - Rescue equipment
  - Self contained breathing apparatus (SCBA)
  - Thermal and smoke detectors
- Fire control plan must include:
- Applications of the BC Code
  - Applications of the IMDG Code
  - Communication strategy
  - Contingency plans for fires involving hazardous materials
  - Evacuation plan
  - Handling and treatment of injured personnel
  - Hazard control strategies
  - Search and rescue operations
  - Strategies for liaison with shore-based agencies (such as environmental protection agencies, fire services, medical teams, port authorities)
  - Strategies for shipboard firefighting management in port
  - Tactical methods for fighting fires involving hazardous materials
  - Tactical plan of action
- Contingencies may include:
- Change in fire behaviour or extent
  - Equipment failure or unavailability
  - Unexpected personnel involvement
- Restored must include:
- After use, maintaining SCBA to industry standards
  - Cleaning
  - Recharging extinguishers according to Australian

Standards

- Re-stowing
- Servicing

**Unit Sector(s)**

Not applicable.

**Competency Field**

Operational Quality and Safety