



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **TDMMF6207A PREVENT, CONTROL AND FIGHT FIRES ON BOARD AN OCEAN-GOING VESSEL**

**Revision Number: 1**

## TDMMF6207A PREVENT, CONTROL AND FIGHT FIRES ON BOARD AN OCEAN-GOING VESSEL

### Modification History

Not applicable.

### Unit Descriptor

**UNIT DESCRIPTOR:**

**This unit involves the basic skills and knowledge required to prevent, fight and extinguish fires on board an ocean-going commercial vessel.**

**This unit incorporates the content of the previous two units *TDMMF901A Fight and extinguish fires* and *TDMMF1201A Minimise the risk of fire and maintain a state of readiness to respond to emergency situations involving fire* as the content applied to ocean-going vessels. It aligns with the AMSA approved course: *SC002 - Fire Prevention and Firefighting*.**

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### Application of the Unit

<b>Application of the unit</b>	The unit covers requirements for the management of firefighting and prevention activities on ocean-going vessels and has applications in qualifications for masters, engineers, watchkeepers and integrated ratings, i.e. Advanced Diploma of Transport&Distribution (Maritime Operations - Master Unlimited), Diploma and of Transport&Distribution (Maritime Operations - Deck Watchkeeper), Advanced Diploma of Transport&Distribution (Marine Engineering Class 1), Advanced Diploma of Transport&Distribution (Marine Engineering Class 2), Diploma of Transport&Distribution (Marine Engineering - Engineer Watchkeeper), Certificate III in Transport&Distribution (Maritime Operations - Integrated Rating).
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## Licensing/Regulatory Information

<b>Licensing/legislative requirements</b>	The unit is consistent with the relevant maritime regulations describing mandatory minimum requirements for basic fire prevention and firefighting skills and knowledge of crew on ocean-going vessels. This includes applicable sections of STCW 95 and AMSA certification and regulatory requirements under Marine Orders Part 3, Seagoing Qualifications, Issue 6.
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## Pre-Requisites

Not applicable.

## Employability Skills Information

Not applicable.

## Elements and Performance Criteria Pre-Content

<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.</i>
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<b>1 Carry out fire minimisation procedures</b>	<ul style="list-style-type: none"> <li>a Fire hazards on board vessel are identified and action is taken to eliminate or minimise them</li> <li>b Responsibilities for checking fire prevention equipment and systems are fulfilled and appropriate action is taken to ensure that they are operational</li> <li>c An awareness and understanding of the causes of fire and its minimisation is maintained through participation in fire drills and related instructional programs</li> <li>d A state of readiness to respond to fire emergencies is maintained at all times</li> </ul>

ELEMENT	PERFORMANCE CRITERIA
<p><b>1 Carry out fire minimisation procedures (continued)</b></p>	<p>e Where applicable, correct techniques are applied for the setting up of foam making equipment to extinguish B Class fires on board a vessel</p>
<p><b>2 Respond to emergency situations involving fire</b></p>	<p>a Emergency situations involving fire are correctly identified in accordance with established nautical practice</p> <p>b Type of fire is identified in accordance with the established classification system for fires</p> <p>c Initial action on becoming aware of fire emergency is in conformity with established practices and procedures</p> <p>d Action taken is timely and appropriate for seriousness of the fire emergency</p> <p>e Action taken on identifying muster signals for a fire emergency is appropriate and complies with established procedures</p> <p>f Appropriate precautions and procedures are implemented when responding to electrical fires</p> <p>g Appropriate precautions and procedures are implemented when responding to uptake and hydrogen fires</p> <p>h Communications are clear and concise at all times and orders are acknowledged in a timely and seamanlike manner</p>
<p><b>3 Operate firefighting equipment</b></p>	<p>a A, B and C classes of fires are correctly identified as per established firefighting practice</p> <p>b Correct portable firefighting equipment is selected and used to fight specific classes of fires</p> <p>c Correct techniques are applied for the use of hose lines to extinguish fires on board a vessel</p>

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
	d Class F fires are correctly extinguished with a fire blanket as per established firefighting practice
<b>4 Recharge portable fire extinguishers</b>	a Where applicable, correct techniques are used to recharge the various types of portable fire extinguisher b Portable firefighting equipment is confirmed as operational following recharging

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
<b>5 Carry out firefighting operations</b>	a Correct procedures and techniques are followed when fighting fires in simulated or real fire emergencies b Safety clothing, appliances and equipment are appropriate to the nature of the firefighting operations c Extinguishment of a fire is achieved using appropriate procedures, techniques, equipment and firefighting agents d Correct portable fire extinguisher(s) are selected and used for the class of fire involved in a fire emergency e Appropriate safety precautions and procedures are applied when fighting fires in accordance with regulatory requirements, vessel's procedures and established firefighting practice f The timing and sequence of individual actions when fighting fires on board a vessel are appropriate to the prevailing circumstances and conditions g Procedures for donning and starting up self-contained breathing apparatus (SCBA) are correctly followed h Procedures for the logging of SCBA operators on a BA Control Board are correctly followed in accordance with vessel's procedures and accepted firefighting practice i Search and rescue operations in a smoke filled environment

ELEMENT	PERFORMANCE CRITERIA
	are correctly conducted as a member of a firefighting team in accordance with accepted firefighting practice
	j Interior fires are extinguished using appropriate firefighting equipment and procedures as a member of a firefighting team in accordance with accepted firefighting practice
	k Lifeline signals are correctly used during interior firefighting operations
	l A compartment filled with high expansion foam is correctly entered as per accepted firefighting practice

## Required Skills and Knowledge

### REQUIRED KNOWLEDGE

*This describes the knowledge required for this unit.*

- 1 Relevant sections of maritime regulations applicable to fire prevention and firefighting on board a vessel
- 2 ISM Code and associated vessel's safety management system and procedures, where relevant
- 3 Duties and responsibilities as a member of the emergency response organisation on a vessel
- 4 The chemistry of fire and its relationship to materials typically carried on vessels, including:
  - a elements of fire and their relationship to the fire triangle
  - b dangers associated with fuels having a low flashpoint
  - c dangers associated with the heating of fuels to their self-ignition temperature
  - d situations where spontaneous combustion may occur
  - e importance of ensuring that fuels are outside their range of flammability
  - f safety precautions that should be adopted when using fuels with a high vapour density
  - g risks associated with finely divided fuels

## REQUIRED KNOWLEDGE

- 5 Principles underlying the spread of fire and its extinguishment
- 6 Fire hazards and risks found on board vessels
- 7 The different classes of fire, their characteristics and equipment needed for their extinguishment
- 8 Firefighting techniques, agents and precautions applicable to different classes of fire on board a vessel
- 9 Principles and procedures for the use of self-contained breathing apparatus (SCBA) when fighting fires
- 10 Firefighting clothing, outfits and personal safety equipment used when fighting a fire on board a vessel
- 11 Types firefighting appliances, equipment and systems used on board vessels, their features, principles of operation and the procedures for their use and maintenance
- 12 Fixed fire prevention and extinguishing installations used on vessels and their principles of operation
- 13 Relevant features of portable firefighting equipment and procedures for their use, including:
  - a The colour coding of portable fire extinguishers
  - b The processes for the extinguishment of A, B, or C Class fires using portable fire extinguishers
  - c Extinguishing an F Class fire with a fire blanket is demonstrated
  - d The recharging of portable fire extinguishers (where applicable)
  - e The use of hose lines to extinguish fires
  - f The setting up of foam making equipment to extinguish B Class fires
- 14 Procedures for interior search and rescue and firefighting operations as a member of a team, including:
  - a The donning and start up procedures of SCBA
  - b Procedures for search and rescue operations in a smoke filled space

- a The donning and start up procedures of SCBA
- c Procedures for interior fire extinguishing operations
- d Procedures for the logging of SCBA operators on a BA control board
- e After use maintenance of SCBA
- f Lifeline signals
- g Procedures for entering a compartment filled with high expansion foam without wearing SCBA



- a The donning and start up procedures of SCBA
- 15 The importance of testing and evaluating emergency procedures
- 16 Typical problems that can occur with shipboard firefighting equipment and operations and appropriate remedial action and solutions
- 17 Sources of information on shipboard fire prevention and extinguishment

## **REQUIRED SKILLS**

*This describes the basic skills required for this unit.*

- 1 Communicate effectively with other crew and passengers during simulated and real fire emergencies
- 2 Read, interpret and follow instructions on fire emergency procedures and on the use of fire prevention and firefighting equipment
- 3 Recognise and interpret fire alarms and respond as per emergency procedures
- 4 Work collaboratively with other shipboard personnel and passengers during a fire emergency
- 5 Determine the type and extent of a fire and take appropriate action
- 6 Participate as a member standard shipboard firefighting organisation on a vessel
- 7 Identify and use fixed fire detection and extinguishing systems as per operating instructions
- 8 Use portable fire extinguishers as per operating instructions
- 9 Recharge portable fire extinguishers as per instructions (where applicable)
- 10 Adapt to contingencies and variations in fire prevention and firefighting equipment
- 11 Recognise fire hazards on a vessel and take appropriate action to report them and minimise them

## **Evidence Guide**

<b>Evidence Guide</b> <b>TDMMF6207A PREVENT, CONTROL AND FIGHT FIRES ON</b> <b>BOARD AN OCEAN-GOING VESSEL</b>
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*The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.*

<b>1 Critical aspects of evidence required to demonstrate competency in this unit</b>	Assessment must confirm appropriate knowledge and skills to: <ul style="list-style-type: none"><li>a Implement fire prevention and minimisation measures and procedures on board a vessel</li><li>b Recognise fire hazards on board vessel and take appropriate action to eliminate or minimise them</li><li>c Assess the operational capability of fire detection and firefighting equipment and systems and initiate any required maintenance or replenishment action</li><li>d Respond to emergency situations involving fire</li><li>e Participate in simulated on-board firefighting activities</li><li>f Participate in search and rescue and firefighting teams</li><li>g Implement OH&amp;S principles and policies when carrying out firefighting duties</li><li>h Communicate effectively with others as required during fire emergencies</li></ul>
<b>2 Evidence required for demonstration of consistent performance</b>	<ul style="list-style-type: none"><li>a Performance is demonstrated consistently over a period of time and in a suitable range of contexts</li><li>b Consistently applies underpinning knowledge and skills when:<ul style="list-style-type: none"><li>1 responding to emergency situations involving fire</li><li>2 participating in simulated on-board firefighting activities</li><li>3 implementing the implementation of fire prevention measures and procedures</li><li>4 identifying and evaluating firefighting problems and</li></ul></li></ul>

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- determining appropriate courses of action
- 5 participating as a member of an interior search and rescue and firefighting team on board a vessel
- 6 assessing the operational capability of firefighting appliances, equipment and systems and taking any required maintenance or replenishment action
- c Shows evidence of application of relevant workplace procedures, including:
  - 1 relevant maritime regulations related to the prevention and fighting of fires on board a vessel
  - 2 ISM Code safety management system procedures, where applicable

**Evidence Guide (continued)**  
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**Evidence**  
**2 required for**  
**demonstration**  
**of consistent**  
**performance**  
**(continued)**

- 3 OH&S regulations and hazard prevention policies and procedures
- 4 relevant manufacturer's guidelines relating to the use of fire detection and firefighting equipment and systems
- 5 following on-board housekeeping processes and fire prevention measures
- 6 fire prevention and firefighting procedures and policies
- d Action is taken promptly to report and respond to fire emergencies, fire hazards and faulty fire detection and firefighting equipment and systems in accordance with established procedures
- e Work is completed systematically with required attention to detail
- f Recognises and adapts appropriately to cultural differences in the workplace, including modes of behaviour and interactions between crew and others

**Evidence Guide (continued)**  
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**3 Context of assessment**

- a Assessment of competency must comply with the assessment requirements of the relevant maritime regulations
- b Assessment of this unit must be undertaken within relevant marine authority approved and audited arrangements by a registered training organisation:
  - 1 As a minimum, assessment of knowledge must be conducted through appropriate written/oral examinations, and
  - 2 Appropriate practical assessment must occur:
    - i at the registered training organisation; and/or
    - ii on an appropriate working or training vessel

**4 Specific resources required for assessment**

- Access is required to opportunities to:
- a carry out a range of suitably simulated practical and knowledge assessments that demonstrate the skills and knowledge to carry out firefighting activities on board a vessel; and/or
  - b assist in firefighting drills on board an operational vessel
- Note: Simulated firefighting assessment exercises may require access to a fire training and assessment facility capable of simulating firefighting activities in a marine environment. Assessments must be conducted in accordance with relevant OH&S requirements. Protective clothing must be worn in accordance with current maritime practices and Australian OH&S standards. Simulated conditions should provide truly realistic simulated shipboard conditions, including, where practical, conduct of activities in darkness.

## Range Statement

**Range Statement**  
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*The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.*

### VARIABLE

### SCOPE

#### 1. GENERAL CONTEXT

<b>a. Work must be carried out:</b>	1 in compliance with the relevant maritime regulations applicable to the prevention and fighting of fires on board a vessel
<b>b. Work is performed:</b>	1 as a member of a team within defined firefighting situations, with some responsibility for self and others in achieving the prescribed outcomes
<b>c. Work involves:</b>	1 the application of prescribed principles and practice to the prevention and fighting of fires on board a vessel. Participation as a member of a firefighting team is involved
<b>d. Work requires:</b>	1 some judgement and teamwork in the execution of prescribed procedures for the fighting of fires that may occur on board a vessel

#### 2. WORKSITE ENVIRONMENT

<b>a Vessel may include:</b>	1 any Australian or international commercial vessel
<b>b Fires on board a vessel may</b>	1 by day or night in both normal and emergency situations 2 under any possible conditions of weather and loading

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<b>occur:</b>	<ul style="list-style-type: none"> <li>3 while underway</li> <li>4 during berthing and unberthing operations</li> <li>5 while anchoring or mooring</li> <li>6 while in port</li> <li>7 while moored or at anchor</li> </ul>
<b>c Types of fires which may occur on board a vessel include:</b>	<ul style="list-style-type: none"> <li>1 Classes A, B, C and F in the standard classification of fires</li> </ul>

**Range Statement (continued)**  
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<b>VARIABLE</b>	<b>SCOPE</b>
<b>d Fire hazard minimisation procedures may include:</b>	<ul style="list-style-type: none"> <li>1 housekeeping in work areas</li> <li>2 following of fire safety procedures</li> <li>3 checking and maintaining shipboard fire prevention systems</li> <li>4 identification and elimination or minimisation of fire hazards</li> <li>5 precautions when using and storing flammable materials</li> <li>6 precautions that need to be taken when responding to an electrical fire</li> <li>7 precautions that need to be taken when responding to uptake and hydrogen fires</li> </ul>

**Range Statement (continued)**  
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<b>e Firefighting equipment, appliances and systems may include:</b>	<ol style="list-style-type: none"><li>1 portable fire extinguishers, including foam, water, CO<sub>2</sub>, dry chemical and wet foam</li><li>2 fire blankets</li><li>3 CO<sub>2</sub> fixed systems</li><li>4 foam installations, including semi-portable and fixed systems</li><li>5 sprinkler systems</li><li>6 fire pumps (main and emergency fire pump)</li><li>7 fire hoses, hydrants, branches and international shore connection</li></ol>
<b>f Personal protection clothing and equipment may include:</b>	<ol style="list-style-type: none"><li>1 fire-resistant clothing</li><li>2 self-contained breathing apparatus (SCBA)</li><li>3 masks</li><li>4 eye and ear protection</li><li>5 gloves</li><li>6 boots</li></ol>
<b>g Consumable materials and items that may be used in fire detection and firefighting equipment may include:</b>	<ol style="list-style-type: none"><li>1 dry and wet chemicals used in fire extinguishers</li><li>2 batteries for fire detectors</li></ol>

**Range Statement (continued)**

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**h Sources of information and documentation may include:**

- 1 relevant maritime regulations applicable to the prevention and fighting of fires on board a vessel
- 2 vessel's instructions and procedures concerning minimisation of the risk of fire
- 3 publications on marine fire prevention and minimisation and emergency response
- 4 fire detection, firefighting and safety equipment operational and maintenance instructions and recommended procedures
- 5 instructions of relevant maritime authorities related to the maintenance and serviceability of shipboard firefighting and safety equipment and systems

**i Applicable regulations and legislation may include:**

- 1 IMO STCW 95 Convention and Code
- 2 relevant sections of AMSA Marine Orders related to the prevention and fighting of fires on board a vessel
- 3 applicable regulations for the maintenance of fire detection, firefighting and safety equipment and systems
- 4 relevant international, Commonwealth, State and Territory OH&S legislation

**Unit Sector(s)**

Not applicable.



## Field

Field MF Operational Quality and Safety

## Relationship to other units

<b>Relationship to other units</b>	The unit may be assessed in conjunction with other units that relate to the functions of the occupation(s) concerned.
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