



Australian Government

Department of Education, Employment and Workplace Relations

TDMMF5807A ADAPT TO BASIC INDUSTRY AND REGULATORY REQUIREMENTS FOR TANKER OPERATIONS

Release: 1

TDMMF5807A ADAPT TO BASIC INDUSTRY AND REGULATORY REQUIREMENTS FOR TANKER OPERATIONS

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the basic skills and knowledge required to safely perform the duties of a Watchkeeper on various types of tankers and gas carriers.

This includes a knowledge of tanker types, characteristics and toxicity of cargoes, hazards and hazard control procedures, safety equipment and protection of personnel, and precautions and processes for pollution prevention.

It also includes the skills required to: (1) recognise tanker types, (2) use correct terminology to describe the various types of tankers, their cargoes and related operational and emergency procedures, (3) recognise hazards associated with tankers and apply appropriate hazard control procedures, (4) use personal protective equipment and (5) take appropriate measures to prevent pollution.

Application of the Unit

Application of the unit	The unit applies to qualifications for Master (Unlimited), Watchkeeper (Deck), Master (Less than 500 GT) and Integrated Rating, i.e. Advanced Diploma of Transport&Distribution (Maritime Operations - Master Unlimited) Diploma of Transport&Distribution (Maritime Operations - Deck Watchkeeper) Certificate III in Transport&Distribution (Maritime Operations - Integrated Rating).
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Licensing/Regulatory Information

Licensing/legislative requirements	Relevant maritime regulations relating to Watchkeepers on various types of tankers and gas carriers, including AMSA Marine Orders and pertinent IMO STCW 95 Code and SOLAS Convention and the International Ship and Port Facility Security (ISPS) Code.
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Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

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

ELEMENT	PERFORMANCE CRITERIA
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1 Recognise tanker types	- a The principal features of various types of tankers are identified - b The layouts for various types of tankers and gas carriers are recognised and differences between them are determined - c Terminology relating to the structure, capacities and operations of tankers is correctly used when describing the features of various types of tankers and gas carriers and differences between them

ELEMENT	PERFORMANCE CRITERIA
2 Identify the characteristics of tanker cargoes	- a The principal features and distinguishing characteristics of various types of tanker cargoes are correctly identified - b, Information on the principal features and distinguishing characteristics of various types of tanker cargoes is correctly applied during watchkeeping duties on a tanker or gas carrier

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ELEMENT	PERFORMANCE CRITERIA
3 Apply hazard control procedures on tankers	- a The dangers, hazards and toxicity of various types of tanker cargoes are recognised - b Precautions and hazard control procedures necessary when carrying out watchkeeping functions on various types of tanker are demonstrated in appropriately simulated situations - c Various types of reactivity hazards are recognised and appropriate hazard control procedures applied - d Various types of corrosion hazards are recognised and appropriate hazard control procedures applied
4 Use appropriate safety equipment and ensure the protection of personnel on board tankers	- a Measuring instruments are correctly used to test environments on tankers and gas carriers as per manufacturer's instructions and standard operating procedures. - b Personal protective clothing and equipment required when working on tankers and gas carriers is correctly selected and used as per manufacturer's instructions, regulatory requirements and standard operating procedures - c The use of tanker evacuating equipment and rescue and escape equipment is correctly demonstrated as per standard operating procedures in an appropriately simulated tanker emergency situation

ELEMENT	PERFORMANCE CRITERIA
5 Take measures to prevent pollution from tankers and gas carriers	- a Measures to prevent air and water pollution during normal and emergency situations on a tanker or gas carrier are applied in accordance with regulatory requirements and standard operating procedures - b All relevant information is immediately reported to appropriate officials when a spill is detected or a malfunction has occurred which poses a risk of a spill - c Shore-based response personnel are promptly notified in the event of a spillage on a tanker or gas carrier - d All required shipboard spill containment procedures are properly implemented in accordance with regulatory and standard operating requirements

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Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

- 1 Relevant sections of maritime regulations, codes and conventions related to the watchkeeper responsibilities on tankers and gas carriers
- 2 Relevant OH&S legislation and policies
- 3 The general layout of tankers, including related regulatory requirements
- 4 The terminology relating to the structure, capacities and operations of various types of tankers and gas carriers
- 3 The features and characteristics of various types of tanker cargoes, including:
 - a the physical properties of oil, chemicals and gases carried in bulk
 - b the relationship between vapour pressure and temperature

REQUIRED KNOWLEDGE

- c the influence of pressure on boiling temperature
 - d saturated vapour pressure
 - e diffusion
 - f partial pressure
 - g flammability limits
 - h flashpoint
 - i auto-ignition temperature
 - j practical significance of flashpoint and lower flammable limit
 - k types of electrostatic charge generation
- 5 Basic principles of chemistry as they relate to tanker operations, including:
- a chemical symbols and structures
 - b elements of the chemistry of acids
 - c elements of the chemistry of bases
 - d chemical reactions of well-known groupings
- 6 Hazards associated with the carriage of bulk liquids and gases, including:
- a principles and basic concepts of toxicity, including toxicity limits, acute and chronic effects of toxicity, and systemic poisons and irritants
 - b explosion and flammability hazards, including flammability limits and sources of ignition and explosion
 - c health hazards, including the danger of skin contact, inhalation and ingestion
 - d oxygen deficiency with particular reference to inert gas systems

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- e harmful properties of cargo carried

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 - f accidents to personnel and associated first aid dos and don'ts
- 7 Hazards to environment, including:
- a the effect on human and marine life from the release of oil, chemicals or gases.
 - b effect of specific gravity and solubility
 - c danger from vapour cloud drift
 - d effect of vapour pressure and atmospheric conditions
- 8 Reactivity hazards, including:
- a self reaction
 - b polymerisation
 - c effect of temperature
 - d impurities as catalysts
 - e reaction with air, water and other chemicals
- 9 Corrosion hazards, including:
- a dangers to personnel
 - b attacks on constructional materials
 - c effects of concentration and evolution of hydrogen
 - d effect of vapour pressure and atmospheric conditions
- 10 Hazard control procedures on tankers and gas carriers, including:
- a tank cleaning
 - b inerting
 - c water padding
 - d drying agents and monitoring techniques
 - e anti-static measures
 - f ventilation

- e harmful properties of cargo carried
 - g cargo compatibility and segregation
 - h cargo inhibition and the importance of compatibility of materials
- 11 The functions and processes for the calibration of various types of measuring instruments and equipment used to test environments on tankers and gas carriers
 - 12 Procedures for the safe use of protective clothing and equipment
 - 13 Procedures for the use of tanker evacuating equipment and rescue and escape equipment

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- 14 Procedures to be followed to prevent air and water pollution
- 15 Actions to be taken in the event of spillage, including:
 - a immediately reporting all relevant information to the appropriate officials when a spill is detected or a malfunction has occurred which poses a risk of a spill.
 - b promptly notifying the shore-based response personnel.
 - c properly implementing shipboard spill containment procedures

14 Procedures to be followed to prevent air and water pollution

REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Communicate effectively with other personnel on matters related to watchkeeping duties on various types of tankers and gas carriers
- 2 Interpret and follow regulations, instructions and procedures when carrying out watchkeeping duties on various types of tankers and gas carriers
- 3 Interpret and apply a knowledge of tanker layouts, tanker cargo features, characteristics and hazards and related hazard prevention strategies to watchkeeping duties on various types of tankers and gas carriers
- 4 Read and interpret material safety data sheets
- 5 Read and interpret specifications, equipment drawings, operational manuals, and electrical circuit diagrams
- 5 Communicate with multilingual crew where applicable using established techniques
- 6 Prepare reports on matters related to watchkeeping duties on various types of tankers and gas carriers
- 7 Analyse and interpret relevant workplace data on tankers and gas carriers, for example, incident and environmental monitoring, to identification of hazards and assessment of safety risks
- 8 Provide leadership to other shipboard personnel when keeping watch on various types of tankers and gas carriers
- 9 Recognise problems and hazards that can arise when managing workplace safety on a tanker and take appropriate remedial action and initiate appropriate solutions
- 10 Plan and organise the resources needed to establish and maintain safety management systems on a tanker or gas carrier within the limits of responsibility of a watchkeeper, including appropriate risk control measures
- 11 Adapt to different tankers and gas carriers, instrumentation, equipment and systems and related standard operating procedures
- 12 Select and use tools and equipment required when carrying out watchkeeping duties on various types of tankers and gas carriers

Evidence Guide

Evidence Guide

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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.

1 Critical aspects of evidence required to demonstrate competency in this unit	Assessment must confirm appropriate knowledge and skills to: - a Recognise tanker types and apply information on tanker structures and layouts to watchkeeping functions - b Identify the features, characteristics and hazards of tanker cargoes - c Apply hazard control procedures on tankers - d Use appropriate safety equipment and ensure the protection of personnel on board tankers - e Take appropriate measures to prevent pollution from tankers and gas carriers - f Communicate effectively with others during watchkeeping operations on a tanker or gas carrier
2 Evidence required for demonstration of consistent performance	- a Performance is demonstrated consistently over a period of time and in a suitable range of contexts - b Consistently applies underpinning knowledge and skills when: 1 recognising tanker types and applying information on tanker structures and layouts to watchkeeping functions 2 identifying the features, characteristics and hazards of tanker cargoes 3 applying hazard control procedures on tankers

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| 4 | using appropriate safety equipment and ensuring the protection of personnel on board tankers |
| 6 | taking appropriate measures to prevent pollution from tankers and gas carriers |
| c | Shows evidence of application of relevant workplace procedures, including: |
| 1 | relevant sections of IMO STCW Code and AMSA Marine Orders |
| 2 | IMO International Ship and Port Facility Security (ISPS) Code |
| 3 | ISM Code and associated vessel's safety management system and procedures |
| 4 | OH&S regulations and hazard prevention policies and procedures |
| 5 | standard operating procedures and work instructions |
| d | Action is taken promptly to report and/or rectify non-compliance with regulations for tanker operations |
| e | Work is completed systematically with required attention to detail |

Evidence Guide (continued)

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2 Evidence required for demonstration of consistent performance (continued)	f Recognises and adapts appropriately to cultural differences in the workplace, including modes of behaviour and interactions between crew and others
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 tanker or gas carrier
4 Specific resources required for assessment	Access is required to opportunities to: - a participate in a range of role plays, case studies and other simulated practical and knowledge assessments that demonstrate the skills and knowledge to apply basic industry and regulatory requirements during watchkeeping operations on tankers and gas carriers; and/or - b apply basic industry and regulatory requirements during watchkeeping operations on an operational tanker or gas carrier

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

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

a. Work must be carried out:	1 in compliance with relevant Australian and/or international regulations and codes related to watchkeeping functions on tankers and gas carriers
b. Work is performed:	1 relatively independently under broad operational requirements, with accountability and responsibility for self and others in achieving the prescribed outcomes
c. Work involves:	1 significant judgement in monitoring compliance with legislative requirements and measures when carrying out watchkeeping functions on tankers and gas carriers across a wide and often unpredictable variety of operational contexts

2. WORKSITE ENVIRONMENT

a Vessel may include:	1 any Australian or international commercial tanker or gas carrier
b Watchkeeping functions may be carried out:	1 by day or night in both normal and emergency situations 2 under any possible conditions of weather and loading 3 while underway 4 during berthing and unberthing operations 5 while berthed, anchored or moored 6 while anchoring or mooring
c Tankers may include:	1 bulk oil tankers 2 bulk chemical tankers 3 bulk gas carriers

Range Statement (continued)

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VARIABLE	SCOPE
d Hazards on tankers include:	1 toxicity 2 explosion and flammability 3 health hazards 4 environmental hazards 5 reactivity hazards 6 corrosion hazards
e Hazard control procedures include:	1 tank cleaning 2 inerting 3 water padding 4 drying agents and monitoring techniques 5 anti-static measures 6 ventilation 7 cargo compatibility and segregation 8 cargo inhibition and the importance of compatibility of materials
f Actions to be taken in the event of spillage include:	1 the need to immediately report all relevant information to the appropriate officials when a spill is detected or a malfunction has occurred which poses a risk of a spill 2 the need to promptly notify the shore-based response personnel

VARIABLE	SCOPE
	3 the need to properly implement shipboard spill containment procedures
g Documentation and records may include:	1 ISM Code safety management system plans, procedures, checklists and instructions 2 operational orders 3 relevant regulations, codes and conventions, including the IMO SOLAS Convention and the International Ship and Port Facility Security (ISPS) Code 4 Australian and international OH&S statutory regulations 5 vessel's log 6 company procedures 7 material safety data sheets 8 insurance documentation 9 vessel manufacturer's instructions and recommended procedures

Range Statement (continued)

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VARIABLE	SCOPE
g Documentation and records may include: (continued)	10 notices and instructions of relevant maritime authorities 11 relevant Australian and/or international standards

VARIABLE	SCOPE
h Applicable legislation, regulations and codes may include:	1 IMO STCW 95 Convention and Code 2 relevant sections of AMSA Marine Orders 3 relevant dangerous goods codes and regulations 4 international conventions and Australian regulations on the protection of life at sea 5 IMO International Ship and Port Facility Security (ISPS) Code 6 relevant international, Commonwealth, State and Territory OH&S, environmental and other legislation applicable to international and Australian vessels

Unit Sector(s)

Not applicable.

Field

Field MF Operational Quality and Safety

Relationship to other units

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