



Australian Government

Department of Education, Employment and Workplace Relations

TDMMF1607B PLAN AND IMPLEMENT SPECIAL SAFETY, MAINTENANCE AND EMERGENCY PROCEDURES FOR OIL TANKERS

Release: 1

TDMMF1607B PLAN AND IMPLEMENT SPECIAL SAFETY, MAINTENANCE AND EMERGENCY PROCEDURES FOR OIL TANKERS

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the skills and knowledge required to plan and implement special safety, maintenance and emergency procedures for oil tankers, including developing vessel emergency plans, carrying out emergency shut down of oil cargo operations, taking special precautions when carrying out on-board maintenance operations, taking appropriate action in the event of failure of systems or services essential to oil cargo, applying medical first aid in relation to oil cargo accidents, using resuscitation equipment and breathing apparatus for safe entry into and rescue from enclosed spaces, and taking appropriate action following collision, stranding or oil spillage.

Application of the Unit

Application of the unit	The unit has application within a supplementary Statement of Attainment for competencies required by a Master or Chief Mate on an oil tanker.
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Licensing/Regulatory Information

Licensing/legislative requirements	The unit is consistent with the relevant sections of STCW 95, the International Ship and Port Facility Security (ISPS) Code and Marine Orders under the Australian Navigation Act 1912.
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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
1 Develop and implement operational and emergency plans relevant to oil tankers	a Plans for tanker operations are developed are prepared in accordance with operational orders, company procedures, the tanker's ISM Code safety management system, international and national codes, conventions and regulatory requirements, and company procedures b Safety and emergency procedures are planned and implemented in accordance with the tanker's ISM Code safety management system, international and national codes, conventions and regulatory requirements and company procedures c Tests, inspections and repairs of tanker machinery and equipment and associated safety devices, control systems and alarms are conducted in accordance with safety regulations and company procedures d Action is taken in the event of machinery, pump, valve or equipment failure or emergency to secure the machinery and the tanker and maintain the safety of the tanker and persons involved in accordance with shipboard emergency, and contingency plans are followed

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ELEMENT	PERFORMANCE CRITERIA
1 Develop and implement operational and emergency plans relevant to oil tankers (continued)	- e Correct emergency action is taken in the event of the failure of shipboard systems or services essential to the safe carriage, loading and discharge of oil and petroleum cargo - f Emergency shut down of oil cargo operations is initiated upon identification of a defined emergency situation in accordance with the tanker's ISM safety management plan, international and national codes, conventions and regulatory requirements, and company procedures - g Escape equipment, breathing apparatus, personal protective clothing and equipment, resuscitation equipment and decontamination equipment are correctly used in emergency situations in accordance with manufacturer's instructions, regulatory requirements and company procedures - h Appropriate action is taken following collision, stranding or oil spillage in accordance with the vessel's emergency plans and procedures, the requirements of relevant port authorities, and relevant international and national codes, conventions and regulatory requirements - i Appropriate medical first aid is applied in relation to oil cargo accidents and emergencies in accordance with established first aid practice and company procedures - j All emergency and safety incidents are reported and recorded in accordance with the tanker's ISM Code safety management system, regulatory requirements and company procedures
2 Take special precautions when carrying out maintenance	- a Special maintenance procedures are developed and implemented that take due account of the potential hazards that may occur during maintenance on an oil tanker - b Maintenance and repair hazards are identified and action is

ELEMENT	PERFORMANCE CRITERIA
operations on oil tankers	taken to minimise or eliminate risk to personnel, tanker and the environment c Safety, hazard minimisation and pollution control procedures and national and international regulations are followed at all times during maintenance and repair operations d Personal protective clothing and equipment are correctly used when carrying out maintenance work on an oil tanker e When required during maintenance operations, breathing apparatus is correctly used in accordance with manufacturer's instructions, regulatory requirements and company procedures f Where relevant, procedures and precautions necessary for entry into a pump room, tanks or other confined spaces when carrying out maintenance operations on an oil tanker are correctly followed

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Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

- 1 Relevant sections of IMO STCW 95 Code and AMSA Marine Orders applicable for oil tankers
- 2 Relevant OH&S and pollution control legislation, codes of practice, policies and procedures
- 3 The basic principles and trends in oil tanker design and cargo containment and handling systems, including:
 - a typical piping and pumping arrangements
 - b typical deck arrangements
 - c cargo tank arrangements

REQUIRED KNOWLEDGE

- d types of cargo pumps and their application to various types of oil and petroleum cargo
 - e tank cleaning, gas freeing and inerting systems
 - f the major components of an inert gas plant
 - g cargo tank venting and accommodation ventilation systems and procedures
 - h the requirements of shipboard gauging systems and their associated instrumentation and alarms
 - i the requirements for cargo heating systems on oil tankers
 - j the safety aspects of electrical systems on oil tankers
- 4 Procedures and regulatory requirements for loading, discharge, handling and condition monitoring of oil cargo, including:
- a cargo loading and discharging preparations and procedures
 - b loading and discharge plans for multiple grade tanker cargoes with due regard to cargo segregation and cargo care on passage.
 - c loading and discharging procedures, including vessel-to-vessel transfers
 - d the use of checklists, including the vessel/shore checklist.
 - e the importance of correct supervision and use of monitoring equipment
 - f the procedure for tank cleaning and gas freeing operations
 - g crude oil washing procedures
 - h the use and maintenance of inert gas atmospheres during cargo handling operations and its role in the gas freeing process
 - i regulations and procedures for the control of entry into pump rooms and confined spaces
 - j the principle of operation of gas detection equipment
 - k appropriate gas detection equipment for given shipboard scenarios
 - l the use of load-on-top techniques

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- m proper ballasting and deballasting procedures
 - n procedures to prevent air and water pollution, including disposals of wastes and washings
 - o emergency procedures, i.e. preplanned action in the event of leaks, fire, collision, stranding, emergency cargo discharge and personnel casualty
- 5 Oil cargo handling systems and equipment and the procedures for their use
- 6 The chemical and physical characteristics of oil cargoes, including:
- a the basic chemistry of hydrocarbons and simple chemical reactions
 - b the physical characteristics of a variety of oil cargoes
 - c the practical significance of flashpoint, flammable range and auto-ignition temperature
- 7 Special precautions and procedures when carrying out repairs and maintenance on oil tankers
- a the special safety factors and precautions necessary in the performance of hot work on an oil tanker
 - b correct hot work procedures, including requirements for permits to carry out work
 - c safety precautions with respect to repair and maintenance work, including that affecting pumping, piping, and electrical and control systems which may be contaminated with toxic vapours or liquid
- 8 The hazards associated with oil cargoes, including:
- a an understanding of the types of hazards and their causes
 - b safety and hazard minimisation procedures used on oil tankers
 - c the sources of ignition that may be present on tankers
 - d the principles of electrostatic generation and the possible situations which might lead to a discharge aboard a tanker
 - e the design features of the vessels which minimise or eliminate the major

- m proper ballasting and deballasting procedures hazards
 - f the health hazards of associated cargoes and the means to prevent incidents
- 9 Principles and procedures for emergency operations on an oil tanker, including:
- a the importance of developing tanker emergency plans
 - b techniques for emergency shut down of cargo operations
 - c actions to be taken in the event of failure of services essential to oil cargo
 - d action following a collision, grounding or spillage, including a vapour release from an oil tanker
 - e the correct procedures for the use of breathing apparatus, escape equipment, resuscitation equipment, rescue equipment, decontamination equipment and protective clothing and equipment
 - f the procedures for entry into and effecting a rescue from enclosed spaces

- m proper ballasting and deballasting procedures
- 10 Maritime communication techniques as they are applied in the loading, discharge, handling and condition monitoring of oil cargo

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REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Read and interpret instructions, regulations, procedures and information relevant to planning and implementing special safety, maintenance and emergency procedures for oil tankers
- 2 Communicate effectively with others when planning and implementing special safety, maintenance and emergency procedures for oil tankers
- 3 Provide leadership to others on matters related the planning and implementing special safety, maintenance and emergency procedures for oil tankers
- 4 Take appropriate initiatives related to the planning and implementing special safety, maintenance and emergency procedures for oil tankers
- 5 Interpret and apply security and safety practices and regulations when planning and implementing special safety, maintenance and emergency procedures for oil tankers
- 6 Modify activities dependent on differing workplace contingencies, risk situations and environments
- 7 Identify and solve problems associated with the planning and implementing special safety, maintenance and emergency procedures for oil tankers and take appropriate action based on available information
- 8 Monitor and anticipate problems and risks related to the special safety, maintenance and emergency procedures for oil tankers, and take appropriate action
- 9 Adapt to differing types of vessels, port facilities, oil cargoes and equipment
- 10 Monitor the use of equipment required for the planning and implementing special safety, maintenance and emergency procedures for oil tankers

Evidence Guide

Evidence Guide

TDMMF1607B PLAN AND IMPLEMENT SPECIAL SAFETY, MAINTENANCE AND EMERGENCY PROCEDURES FOR OIL TANKERS

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 Plan and implement special safety, maintenance and emergency procedures on an oil tanker - b Identify typical safety, maintenance and emergency problems and hazards on an oil tanker and take appropriate action - c Apply relevant international conventions, IMO and national codes, tanker safety guides and port regulations related to oil tanker operations - d Communicate effectively with others when carrying out special safety, maintenance and emergency procedures on an oil tanker
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 planning and implementing special safety, maintenance and emergency procedures for oil tankers 2 identifying and evaluating oil cargo safety, maintenance and emergency problems and hazards and determining appropriate courses of action 3 identifying and implementing improvements to oil cargo safety, maintenance and emergency procedures

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| | <p>c Shows evidence of application of relevant workplace procedures, including:</p> <ol style="list-style-type: none"> 1 relevant sections of IMO STCW Convention and Code and AMSA Marine Orders 2 OH&S and pollution control regulations and hazard prevention policies and procedures 3 ISM Code safety management system procedures and work instructions on the conduct of maintenance on oil tankers 4 job procedures and work instructions 5 following on-board housekeeping processes 6 pollution management processes |
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Evidence Guide (continued)

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2 Evidence required for demonstration of consistent performance (continued)

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| | <p>d Action is taken promptly to report and/or rectify operational accidents and incidents in accordance with established procedures</p> <p>e Work is completed systematically with required attention to detail</p> <p>f Recognises and adapts appropriately to cultural differences in the workplace, including modes of behaviour and interactions among crew and others</p> |
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3 Context of assessment

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| | <p>a Assessment of competency must comply with the assessment requirements of the relevant maritime regulations</p> <p>b Assessment of this unit must be undertaken within relevant marine authority approved and audited arrangements by a registered training organisation:</p> <ol style="list-style-type: none"> 1 As a minimum, assessment of knowledge must be conducted through appropriate written/oral examinations |
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	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 participate in a range of practical exercises, case studies and/or other exercises that demonstrate the skills and knowledge to plan and implement special safety, maintenance and emergency procedures on an oil tanker; and/or b plan and implement special safety, maintenance and emergency procedures on board an operational oil tanker

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	
a. Work must be carried out:	1 in compliance with the relevant maritime regulations, tanker safety guides and port regulations related to oil tanker safety, operations and pollution control

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

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 the application of special safety precautions, operational procedures and hazard minimisation strategies to the management of the operations, maintenance and emergency situations on an oil tanker. Contribution to the development of integrated safety management plan for an oil tanker is required and accountability and responsibility for self and others in achieving the outcomes is involved
d. Work requires:	1 significant judgement in planning, technical and leadership functions related to the development and implementation of an ISM safety management plan for operations, maintenance activities and emergencies on an oil tanker

2. WORKSITE ENVIRONMENT

a Vessel may include:	1 any Australian or international commercial oil tanker
b Operational, maintenance and emergency procedures may be carried out:	1 by day or night in both normal and emergency situations 2 under any possible operational conditions 3 during loading and discharging of cargo 4 during ballasting and deballasting 5 during tank cleaning 6 during crude oil washing procedures

Range Statement (continued)

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VARIABLE	SCOPE
b Operational, maintenance and emergency procedures may be carried out: (continued)	7 during oil cargo monitoring and maintenance 8 during oil cargo sampling
c Operational cargo handling cycle of an oil tanker may include:	1 oil loading preparation and operations 2 load-on-top operations 3 monitoring and maintenance operations during a loaded voyage 4 oil discharging preparation and operations 5 tank stripping and cleaning operations 6 ballasting operations 7 maintenance operations during a ballast voyage 8 deballasting operations
d Oil cargo handling systems and equipment may include:	1 pumps and pumping arrangements and venting and vapour-return systems, piping systems and valves 2 filters and strainers 3 expansion devices 4 flame screens 5 commonly used inert gases

VARIABLE	SCOPE
	6 storage, generation and distribution systems 7 temperature and pressure monitoring systems 8 inert gas systems 9 gas freeing systems 10 cargo gauging, instrumentation systems and alarms 11 gas detection and monitoring systems
e Personal protective clothing and equipment may include:	1 masks and goggles 2 breathing apparatus 3 resuscitation equipment

Range Statement (continued)

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VARIABLE	SCOPE
e Personal protective clothing and equipment may include: (continued)	4 protective clothing, including headgear, gloves and footwear 5 escape and rescue equipment
f Hazards associated with oil cargoes may include:	1 sources of ignition leading to explosion and fire 2 electrostatic generation leading to discharge 3 environmental hazards to air and water 4 reactivity hazards, including effects of self-reaction, temperature and effects of air, water, impurities and other

VARIABLE	SCOPE
	chemicals and reagents 5 spills or release of toxic fluids, vapours and gases, involving skin contact and inhalation 6 corrosion hazards to personnel, vessel structures and equipment 7 working in confined spaces
g Documentation /records may include:	1 ISM Code safety management system plans, procedures, checklists and instructions 2 vessel's safety, maintenance and emergency procedures 3 established tanker and company oil cargo operations procedures 4 sections of the AMSA Marine Orders and the IMO STCW Convention and Code related to oil tankers 5 International Safety Guide for Oil Tankers and Terminals, ICS/OCIMF 6 Ship to Ship Transfer Guide (Petroleum), ICS/OCIMF 7 Clean Seas Guide for Oil Tankers (Retention of Oil Residues on Board), ICS/OCIMF 8 material safety data sheets 9 tanker manufacturer's instructions and recommended procedures 10 OH&S procedures relevant to the handling of oil cargoes 11 instructions of relevant maritime authorities concerning oil cargo operations 12 relevant Australian and international standards

Range Statement (continued)

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VARIABLE	SCOPE
h Applicable procedures and codes may include:	1 IMO STCW 95 Convention and Code related to oil tankers 2 relevant sections of AMSA Marine Orders 3 International Regulations for Preventing Collisions at Sea 4 relevant international, Commonwealth, State and Territory OH&S and pollution control legislation

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 the unit: <i>TDMMA601B Manage procedures for the handling, loading and discharging of oil cargoes.</i>
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