



Australian Government

Department of Education, Employment and Workplace Relations

TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES

Revision Number: 1

TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the skills and knowledge required to plan and oversee the safe and efficient loading, stowage, security and unloading of dangerous cargoes.

Application of the Unit

Application of the unit	The unit has application in qualifications for Master or Chief Mate on a vessel of 500 gross tonnage or more operating in international waters, i.e. Advanced Diploma of Transport&Distribution(Maritime Operations - Master Unlimited).
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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, describing requirements for a Master or Chief Mate on a vessel of 500 gross tonnage or more operating in international waters.
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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 Plan the loading, stowage, security and unloading of dangerous cargo	- a The dangerous cargo to be loaded or unloaded is identified and its characteristics and dimensions established - b Communications between the vessel and the shore terminal are conducted prior to the vessel's arrival concerning loading and unloading arrangements - c The longitudinal stresses acting on vessel's hull for the intended dangerous cargo stowage configuration are calculated - d The trim and stability of the vessel during loading/unloading operations and when loaded are calculated, including the use of a GZ curve - e The vessel's stowage plan is prepared and interpreted in accordance with company procedures
2 Load, stow and unload dangerous cargo	- a Preparations for loading, stowage and unloading are carried out in accordance with operational and security procedures and stowage plan - b Relevant regulations, procedures and instructions pertaining to the type of dangerous cargo to be handled are accessed and interpreted prior to commencing operations

ELEMENT	PERFORMANCE CRITERIA
2 Load, stow and unload dangerous cargo (continued)	- c Techniques used for dangerous cargo calculations and handling are correctly applied as per the type of dangerous cargo to be loaded, stowed or unloaded - d Dangerous cargo is correctly identified, inspected and confirmed against documentation prior to loading, unloading and stowage operations - e Loading, stowage and unloading operations are conducted as per operational and security procedures and stowage plan for the dangerous cargo involved - f Communication is clear, concise and acknowledged at all times according to good dangerous cargo handling practice and regulations
3 Follow safety and hazard control procedures	- a Tests and inspections on dangerous cargo handling equipment are conducted in accordance with regulations and company procedures - b Dangerous cargo handling hazards are identified and action is taken to minimise or eliminate risk to personnel, dangerous cargo, vessel and the environment - c Safety, security and hazard minimisation procedures and regulations are followed at all times during dangerous cargo handling operations - d Where relevant, precautions and procedures necessary for gas freeing a tank and for the entry of personnel into a tank are correctly followed - e Where relevant, procedures and precautions necessary for entry into a pump room or other confined spaces on a vessel are correctly followed - f Action is taken in the event of a dangerous cargo handling incident or emergency to secure the dangerous cargo and the vessel and maintain the safety of the vessel and persons involved

ELEMENT	PERFORMANCE CRITERIA
4 Perform ballast management	- a Ballast requirements of port authority are identified and interpreted - b Ballast management procedures are carried out in accordance with company procedures and port authority requirements - c Ballast management problems are identified and necessary action taken to minimise risk to the environment
5 Complete dangerous cargo handling documentation	a Independent cargo surveyors are used in the loading stowage and unloading of dangerous cargo in accordance with company procedures

ELEMENT	PERFORMANCE CRITERIA
5 Complete dangerous cargo handling documentation (continued)	- b Correct log book entries are made relating to dangerous cargo handling operations and incidents - c A letter of protest is used in any untoward incident relating to cargo operations and care - d All cargo handling documentation is completed in accordance with requirements and regulations

Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

- 1 IMO STCW 95 Convention and Code, the International Ship and Port Facility Security (ISPS) Code and AMSA Marine Orders applicable to the management of dangerous cargo handling operations
- 2 Relevant OH&S and dangerous cargo handling legislation, codes of practice, policies and procedures
- 3 ISM Code safety management system
- 4 IMDG Code
- 5 Dangerous goods identification codes and signage requirements
- 6 Methods for handling various types of dangerous cargo
- 7 Characteristics, hazards and problems of different types of dangerous cargo and associated preventative and remedial action and solutions
- 8 Typical operational characteristics of different types of shipboard and terminal-based cargo handling equipment and facilities
- 9 Effects on dangerous cargo handling of wind, weather and sea conditions
- 10 Procedures for determining the forces acting on equipment used to lash dangerous cargo
- 11 Dangerous cargo handling communication techniques
- 12 Ballast management issues and procedures
- 13 Procedures for determining a vessel's displacement by draught survey
- 14 Factors that affect the reading of a vessel's draught
- 15 Procedures for calculating the longitudinal stresses acting on a vessel's hull using both manual and computer techniques
- 16 Effects of different types of cargo operations on vessel's trim and stability
- 17 Procedures for calculating the maximum deadweight available to a vessel that needs to subsequently enter various seasonal load-line zones
- 18 Procedures for calculating the stresses on lifting gear used in cargo handling operations

REQUIRED KNOWLEDGE

- 19 Dangerous cargo handling documentation, including documentation to limit claims on cargo carried

REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Communicate effectively with other personnel when planning and monitoring the carriage of dangerous cargoes
- 2 Interpret and follow procedures and precautions for planning and monitoring the carriage of dangerous cargoes
- 3 Work collaboratively with others when planning and monitoring the carriage of dangerous cargoes
- 4 Recognise and solve problems that may arise when planning and monitoring the carriage of dangerous cargoes
- 5 Carry out all required calculations and associated mathematical functions involved in planning and monitoring the carriage of dangerous cargoes
- 6 Organise own work activities when planning and monitoring the carriage of dangerous cargoes
- 7 Adapt to contingency, security and emergency situations that may arise during the planning and monitoring of carriage of dangerous cargoes
- 8 Conduct loading and unloading operations safely with appropriate equipment

Evidence Guide

Evidence Guide

TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES

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 oversee dangerous cargo handling operations: 1 safely in both normal and emergency situations 2 in normal and adverse weather conditions 3 across a representative range of typical dangerous cargo handling contexts - b Exercise all required safety, security, environmental and hazard control precautions and procedures when overseeing the handling of dangerous cargo during loading/unloading and stowage operations - c Identify typical dangerous cargo handling problems and hazards and take appropriate action - d Communicate effectively with others during dangerous cargo handling operations - e Complete all required dangerous cargo documentation requirements
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 overseeing dangerous cargo handling operations 2 identifying and evaluating dangerous cargo handling

Evidence Guide**TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES**

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| | problems and determining appropriate courses of action |
| | 3 identifying and implementing improvements to dangerous cargo handling procedures |
| | 4 applying safety precautions relevant to dangerous cargo handling operations |
| | 5 assessing operational capability of cargo handling equipment |
| c | Shows evidence of application of relevant workplace procedures, including: |
| | 1 relevant sections of IMO STCW Convention and Code, the International Ship and Port Facility Security (ISPS) Code and AMSA Marine Orders |
| | 2 ISM Code and associated vessel's safety management system and procedures |

Evidence Guide (continued)**TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES**
2 Evidence required for demonstration of consistent performance (continued)

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| 3 | OH&S regulations and hazard prevention policies and procedures |
| 4 | issue resolution procedures |
| 5 | job procedures and work instructions |
| 6 | relevant manufacturer's guidelines relating to the use of machinery, including instructions on equipment capability and limitations |
| 7 | quality procedures (where existing) |
| 8 | security procedures |
| 9 | following on-board housekeeping processes |
| 10 | waste, pollution and recycling management processes |

Evidence Guide (continued)**TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES**

	- d Action is taken promptly to report and/or rectify accidents and incidents in accordance with statutory requirements and company 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 among 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 or training vessel
4 Specific resources required for assessment	Access is required to opportunities to: - a plan and manage the actual dangerous cargo loading/unloading operations of a vessel; and/or - b plan and manage suitably simulated dangerous cargo loading/unloading operations over an appropriate range of dangerous cargo handling situations, weather and operational conditions

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 mandatory rules and regulations and IMO Conventions and Codes, including the relevant sections of the AMSA Marine Orders and ensuring that applicable codes, guidelines and standards recommended by IMO, the classification societies and maritime industry organisations are taken into account
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 planning and execution of a significant range of dangerous cargo handling techniques across a wide and often unpredictable variety of dangerous cargo types and operational contexts. Contribution to the development of a broad plan or strategy for dangerous cargo handling operations and stowage is required and accountability and responsibility for self and others in achieving the outcomes is involved

Range Statement**TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES**

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| d. Work requires: | 1 significant judgement in planning, technical and leadership functions related to dangerous cargo handling operations and procedures |
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2. WORKSITE ENVIRONMENT

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| a Dangerous cargo may be loaded or unloaded: | 1 from any Australian or international commercial vessel |
| b Dangerous cargo handling operations may be carried out: | 1 Dangerous cargo handling operations may be carried out
2 by day or night in both normal and emergency situations
3 under any permissible conditions of weather
4 at various shoreside loading and discharge terminals |

Range Statement (continued)**TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES**

VARIABLE	SCOPE
c Dangerous cargo may include the various classes of dangerous goods as detailed in the International Maritime	1 oil and petroleum products 2 corrosive and toxic chemicals 3 liquefied gas 4 toxic gas 5 toxic solid bulk cargo

Range Statement (continued)**TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES**

Dangerous Goods (IMDG) Code, including:	6	explosives
	7	munitions
	8	radioactive cargo
d Cargo handling equipment may include:	1	single swinging derricks
	2	union purchase derricks
	3	shipboard cranes
	4	terminal-based cranes
	5	pumps, valves and hoses
e Dangerous cargo handling hazards may include:	1	faulty cargo handling equipment
	2	damaged cargo
	3	cargo handling operations in poor weather or sea conditions
	4	incorrectly stowed dangerous cargo
	5	incorrectly lashed or secured dangerous cargo
	6	using equipment beyond safe working limits
	7	explosion
	8	fire
	9	spill of corrosive liquid
	10	spill or release of toxic liquid, gas or material
	11	radiation
	12	non-compliance with safe working procedures

Range Statement (continued)**TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES**

VARIABLE	SCOPE
f Documentation and records may include:	1 ISM Code safety management system plans, procedures, checklists and instructions 2 dangerous cargo handling operational orders and instructions 3 relevant sections of IMO STCW Convention and Code and the International Ship and Port Facility Security (ISPS) Code 4 relevant sections of AMSA Marine Orders 5 IMO SOLAS Convention 6 vessel's log 7 IMDG Code 8 vessel's 'Cargo Securing Manual' 9 vessel's Register of Materials Handling Equipment 10 vessel/shore safety checklist 11 company dangerous cargo handling procedures 12 cargo handling equipment manufacturer's instructions and procedures 13 instructions of relevant maritime authorities 14 relevant Australian and international standards and regulatory requirements

Range Statement (continued)**TDMMA307B PLAN AND MONITOR THE CARRIAGE OF DANGEROUS CARGOES**

g Applicable legislation, regulations and codes may include:	1	sections of IMO STCW Convention and Code and the International Ship and Port Facility Security (ISPS) Code related to dangerous cargo handling
	2	relevant sections of AMSA Marine Orders
	3	Part 32 as it relates to cargo gear
	4	Part 41 as it relates to dangerous cargoes
	5	relevant international, Commonwealth, State and Territory OH&S legislation
	6	IMO SOLAS Convention
	7	ISM Code

Unit Sector(s)

Not applicable.

Field

Field MA Handling Cargo and Vessel Stability

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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