



Australian Government

Department of Education, Employment and Workplace Relations

TDMMH207B DETERMINE POSITION OF THE VESSEL AND THE ACCURACY OF THE RESULTANT POSITION

Release: 1

TDMMH207B DETERMINE POSITION OF THE VESSEL AND THE ACCURACY OF THE RESULTANT POSITION

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the skills and knowledge required to determine the position of a commercial vessel and to determine the accuracy of the resultant position by any means. This includes determining and allowing for compass errors.

Application of the Unit

Application of the unit	The unit has application in qualifications for Master 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 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

Not applicable.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Determine the position of a vessel	- a Primary position fixing method is selected in accordance with prevailing conditions - b Position is fixed using the selected method - c Appropriate allowance is made for random, instrument, system and data errors - d Time interval between fixes is appropriate to the prevailing navigational conditions - e Verification of primary position fixing is regularly carried out using appropriate methods - f Performance checks and tests of navigation position fixing instruments and systems are carried out as per procedures and manufacturer's instructions - g Position of vessel is recorded as per y procedures and regulatory requirements
2 Allow for compass errors in the fixing of a vessel's position	- a Regulations relating to the use of the vessel's compasses are accessed and interpreted - b The intensity and direction of the earth's magnetic field is determine with the aid of the relevant charts - c Inspect and maintain vessel's compasses as per manufacturer's instructions and standard marine practice as described in relevant maritime publications

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ELEMENT	PERFORMANCE CRITERIA
2 Allow for compass errors in the fixing of a vessel's position (continued)	- d Vessel's magnetic compass is swung to determine the deviation on all headings - e Appropriate remedial actions are taken where excessive deviation is identified - f Errors in the use of a gyro compass are determined and appropriate allowances made
3 Record a vessel's position	- a The vessel's position is recorded on a chart and in the vessel's log in accordance with company procedures - b The estimated accuracy of the vessel's position, including allowances for compass errors is recorded in the vessel's log in accordance with company procedures

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Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

- 1 Sections of IMO STCW Convention and Codes and AMSA Marine Orders applicable for vessels of 500 gross tonnage and over as they relate to the fixing of a vessel's position and the use of a vessel's compasses
- 2 IMO SOLAS Convention
- 3 Methods for fixing the position of a vessel
- 4 Navigational instruments, equipment and systems typically found on commercial vessels of 500 gross tonnage or more and their operating characteristics and applications
- 5 Procedures for using relevant navigational instruments and equipment to fix the position of a vessel by various methods
- 6 Problems experienced when fixing the vessel's position and appropriate action and solutions
- 7 Limitations and errors in electronic navigation instruments
- 8 Principles of operation of magnetic and gyro compasses
- 9 Construction and features of compasses, including:
 - a a magnetic compass and binnacle
 - b a transmitting magnetic compass
 - c a gyro compass

REQUIRED KNOWLEDGE

- 10 Typical operational characteristics for different types of vessel's compasses
- 11 Principles of compass compensation
- 12 The effects of a vessel's magnetic field
- 13 Procedures for the use of published charts to determine the intensity and direction of the earth's magnetic field
- 14 Procedures for making allowance for compass errors
- 15 The causes of deviation and changes in deviation
- 16 AMSA Marine Orders Part 21 as it relates to magnetic compasses
- 17 Procedures for the maintenance and adjustment of vessel's compasses
- 18 Procedures for swinging a vessel to determine deviation

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REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Communicate effectively with other personnel when determining the position of the vessel, estimating accuracy of the position and allowing for compass errors
- 2 Interpret and apply information on the regulations relating to the use of the vessel's compasses
- 3 Keep records of a vessel's position and the related estimate of accuracy
- 4 Recognise compass errors and taking appropriate remedial action
- 5 Conduct performance checks of navigation position fixing instruments and systems
- 6 Work collaboratively with other shipboard personnel when determining the position of the vessel, estimating accuracy of the position and allowing for compass errors
- 7 Carry out calculations involved in:
 - i fixing a vessel's position.

REQUIRED SKILLS

- ii making allowances for random, instrument, system and data errors
 - iii determining compass errors.
 - iv estimating the accuracy of the fix of a vessel's position.
- 8 Use compasses and other relevant instruments when fixing the position of a vessel

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 Fix the position of a vessel using the range of navigational instruments and equipment found on a commercial vessel of 500 gross tonnage or more - b Determine errors in navigational instruments and compasses and make due allowance in the position of the vessel - c Identify problems in fixing the position of a vessel and take appropriate action - d Communicate effectively with others during position fixing operations - e Record the vessel's position in accordance with company procedures and regulatory 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 completing manoeuvring operations 2 identifying and evaluating manoeuvring problems and determining appropriate courses of action 3 identifying and implementing improvements to manoeuvring procedures 4 applying safety precautions relevant to manoeuvring operations 5 assessing operational capability of vessel and manoeuvring plant and equipment
	c Shows evidence of application of relevant workplace procedures, including: 1 relevant sections of IMO STCW 95 Convention and Code and AMSA Marine Orders 2 vessel's Safety management system and procedures 3 OH&S regulations and hazard prevention policies and procedures 4 job procedures and work instructions 5 relevant manufacturer's guidelines relating to the use of machinery 6 following on-board housekeeping processes

Evidence Guide (continued)

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2 Evidence required for demonstration of consistent performance (continued)	d	Work is completed systematically with required attention to detail
	e	Recognises and adapts appropriately to cultural differences in the workplace, including modes of behaviour and interactions and communication with others
	4	applying safety precautions relevant to manoeuvring operations

	5 assessing operational capability of vessel and manoeuvring plant and equipment c Shows evidence of application of relevant workplace procedures, including: 1 relevant sections of IMO STCW 95 Convention and Code and AMSA Marine Orders 2 ISM Code and associated vessel's Safety management system and procedures 3 OH&S regulations and hazard prevention policies and procedures 4 job procedures and work instructions 5 relevant manufacturer's guidelines relating to the use of machinery, including instructions on equipment capability and limitations 6 following on-board housekeeping processes d Work is completed systematically with required attention to detail
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

Evidence Guide (continued)

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4 Specific resources required for assessment	Access is required to opportunities to either: - a participate in a range of assignments, case studies and other simulated practical and knowledge assessments that demonstrate the skills and knowledge to fix the position of a vessel using the typical range of navigational instruments and equipment found on a commercial vessel of 500 gross tonnage or more; and/or - b assist in the fixing of a vessel's position on board an operational commercial or training vessel
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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
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1. GENERAL CONTEXT

a. Work must be carried out:	1 in compliance with applicable maritime regulations
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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.

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 a significant range of fundamental nautical principles and complex manoeuvring techniques across a wide and often unpredictable variety of operational contexts. Contribution to the development of a broad plan, budget or strategy for vessel operations 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 manoeuvring operations and procedures for vessels of 500 gross tonnage or more

2. WORKSITE ENVIRONMENT

a Vessel may include:	1 any Australian or international commercial vessel of 500 gross tonnage or more
b Fixing of a vessel's position 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 while at anchor or moored

Range Statement (continued)

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VARIABLE	SCOPE
c Instrumentation and equipment used in fixing a vessel's position may include:	1 Radar equipment, including ARPA
	2 Loran C Navigation System
	3 GPS and DGPS satellite navigation systems
	4 ECS and ECDIS systems
	5 integrated navigation systems
	6 magnetic compasses
	7 gyro compasses
	8 gyro repeaters
	9 chronometers
	10 sextants
	11 azimuth mirrors
	12 azimuth vanes
	13 pelorus
	14 doppler and electromagnetic logs
	15 echo sounders
d Documentation and records may include:	1 ISM Code safety management system plans, procedures, checklists and instructions
	2 operational orders
	3 navigational charts

VARIABLE	SCOPE
	4 IMO STCW 95 Convention and Code
	5 AMSA Marine Orders
	6 vessel's log
	7 relevant marine navigation publications
	8 company procedures
	9 navigation instruments and equipment manufacturer's instructions and recommended procedures
	10 instructions of relevant maritime authorities
	11 pilot instructions where relevant
	12 relevant Australian and international standards

Range Statement (continued)

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VARIABLE	SCOPE
e Applicable legislation, regulations and codes may include:	1 IMO STCW Convention and Code related to vessels of 500 gross tonnage or more 2 relevant sections of AMSA Marine Orders 3 International Regulations for Preventing Collisions at Sea 4 IMO SOLAS Convention

Unit Sector(s)

Not applicable.

Field

Field MH Navigation

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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