



Australian Government

Department of Education, Employment and Workplace Relations

TDMMH307B MANAGE SAFE NAVIGATION THROUGH THE USE OF RADAR AND OTHER NAVIGATIONAL AIDS

Release: 1

TDMMH307B MANAGE SAFE NAVIGATION THROUGH THE USE OF RADAR AND OTHER NAVIGATIONAL AIDS

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the skills and knowledge required of a Master to manage the safe navigation of a commercial vessel through the use of radar and other navigational aids, including automatic radar plotting aids (ARPA). This includes initialisation and operation of radar and other modern navigational systems, interpreting all available navigational data and making, and implementing command decisions for avoiding collisions and directing the safe navigation of the vessel.

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 AMSA Marine Orders for a Master of an ocean-going vessel.
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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 Operate electronic navigational systems	- a Radar or ARPA is initialised and set up to track other vessels - b Radar or ARPA is operated as per company procedures and manufacturer's instructions to produce data on the position of other vessels and fixed objects - c An ARPA is initialised to acquire and track vessels in both manual and automatic acquisition modes - d A radar plot is constructed on a radar plotting sheet using systematic radar observations - e Relevant electronic navigational aids are initialised and used as per procedures and manufacturer's instructions to assist in the safe navigation of the vessel
2 Interpret and evaluate information from electronic navigational systems	- a Data on the radar plotting sheet is interpreted and analysed to anticipate potential collisions - b Data produced by other electronic navigational aids is interpreted and used to assist navigational command decisions, taking into account known limitations and errors associated with each type of aid

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ELEMENT	PERFORMANCE CRITERIA
2 Interpret and evaluate information from electronic navigational systems (continued)	- c Information obtained through the a single vessel or multiple vessel analysis of the radar plots or other electronic navigation data is used to make command decisions on action needed to avoid collision - d Radar data is used to obtain a position fix for the vessel using electronic bearing lines and variable range markers
3 Maintain navigational records	- a Radar plotting sheets used to analyse navigational situations and to make command decisions are stored as per company procedures and regulations - b Records of navigational data produced by electronic navigational aids are stored electronically or in hard copy as required by company procedures and regulatory requirements - c Details of navigational command decisions made on the basis of data produced from the use of radar, ARPA and other electronic navigational aids are recorded in the vessel's log as per company procedures and regulatory requirements

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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 Convention and Code and AMSA Marine Orders
- 2 SOLAS requirements
- 3 OH&S regulations related to the safe use of electronic navigational aids
- 4 ISM Code Safety management system Procedures related to the use of electronic navigational aids
- 5 The different types of electronic navigational aids, including their features, key applications and operational characteristics
- 6 Procedures for the initialisation and operation of radar, ARPA and various other types of electronic navigational aids
- 7 The limitations and potential errors associated with each type of electronic navigational aid
- 8 Methods for the interpretation and analysis of navigational data produced by radar, ARPA and various other types of electronic navigational aids, including due allowance for the limitations and potential errors associated with each type of electronic navigational aid
- 9 Procedures for the use of data generated by radar, ARPA and various other types of electronic navigational aids to assist in the safe navigation of the vessel
- 10 Action required to avoid a close quarters situation based on the International Regulations for the Prevention of Collision at Sea
- 11 Maritime communication techniques when using electronic navigation aids to assist in the safe navigation of a vessel
- 12 Problems in the use of electronic navigation systems to aid the navigation and appropriate courses of action and solutions

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REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Use appropriate verbal communication skills required when managing safe navigation through the use of radar and other navigational aids
- 2 Read, interpret and apply charts, regulations, operational orders and operating manuals relevant to safe navigation
- 3 Read and interpret radar displays and indications
- 4 Interpret and analyse navigational data produced by radar, ARPA and various other types of electronic navigational aids
- 5 Use data generated by radar, ARPA and various other types of electronic navigational aids to assist in the safe navigation of the vessel
- 6 Complete any required operational records
- 7 Work safely and collaboratively with others when managing safe navigation through the use of radar and other navigational aids
- 8 Select and use relevant tools and equipment as per instructions
- 9 Recognise faulty radar equipment and take appropriate action as per operating instructions
- 10 Recognise routine problems when using radar and other navigational aids and take appropriate action
- 11 Adapt to differences in vessels, radar and other navigational aids and operating procedures
- 12 Operate radar equipment and other forms of navigational aids as per standard operating procedures

Evidence Guide

Evidence Guide

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RADAR AND OTHER NAVIGATIONAL AIDS

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 Initialise and operate electronic navigation systems used in commercial vessels - b Interpret and analyse data generated by electronic navigation systems and use it to inform navigational command decisions - c Use data generated by electronic navigation systems to fix the position of the vessel - d Use data generated by electronic navigation systems to plot the tracks of other vessels - e Identify problems in the use of electronic navigation systems and take appropriate action - f Communicate effectively with others when using electronic navigational aids to assist in the safe navigation of the vessel
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 using electronic navigational aids to assist in safe navigation 2 identifying and evaluating problems in the use of electronic navigational aids and the navigational data they produce and determining appropriate courses of action 3 identifying and implementing improvements to procedures for the use of electronic aids for the safe navigation of the vessel 4 assessing and maintaining the operational capability of

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| | various types of electronic navigational aids |
| c | Shows evidence of application of relevant workplace procedures, including: <ol style="list-style-type: none"> 1 relevant sections of AMSA Marine Orders and State and Territory marine regulations, NSCV/USL Code as applicable 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 manufacturer's guidelines relating to the use of electronic navigational aids |

Evidence Guide

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2 Evidence required for demonstration of consistent performance (continued)	6 security procedures when using electronic navigational aids d Action is taken promptly to report and/or rectify problems in the use of electronic navigational aids 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 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 carry out electronic navigation assignments or exercises using an appropriate electronic navigation simulator meeting the requirements of Section A I/12 of the IMO STCW 95 Code, over a representative range of navigational incidents; and/or - b assist in the use of electronic navigational aids to maintain safe navigation during sea time on the voyage of a commercial or training vessel

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 relevant 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 the principles and procedures of electronic navigation systems to assist the safe navigation of a vessel across a wide and often unpredictable variety of navigational situations. Contribution to the development of plans and procedures for the use of electronic navigational aids to maintain the safe navigation of the vessel is required
d. Work requires:	1 significant judgement in planning, technical and leadership functions related to the use of electronic navigational aids

2. WORKSITE ENVIRONMENT

a Vessel may include:	1 any Australian or international commercial vessel of 500 gross tonnage or more
b Electronic navigational aids may be operated:	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 anchoring or mooring

Range Statement (continued)

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VARIABLE	SCOPE
c Electronic navigational aids may include:	1 radar 2 automatic radar plotting aid (ARPA) 3 hyperbolic navigation systems 4 Loran C navigation system 5 ECS and ECDIS systems 6 integrated navigation systems
d The use of electronic navigational aids to assist safe navigation may include:	1 avoidance of collision with another vessel 2 fixing the position of the vessel 3 tracking of other vessels 4 assistance in making of command navigational decisions 5 navigating during search and rescue operations
e Documentation and records may include:	1 safety management system plans, procedures, checklists and instructions 2 SOLAS requirements 3 operational orders and company procedures for the use of navigational aids 4 navigational charts 5 radar plotting charts 6 Regulations for Preventing Collisions at Sea

VARIABLE	SCOPE
	7 IMO STCW Convention and Code 8 AMSA Marine Orders and relevant sections of State and Territory marine regulations, NSCV/USL Code as applicable 9 vessel's log 10 navigation systems manufacturer's instructions and recommended procedures 11 notices and instructions of relevant maritime authorities 12 relevant Australian and international standards
f Applicable legislation, regulations and codes may include:	1 IMO STCW Convention and Code 2 relevant sections of State and Territory marine regulations, NSCV/USL Code 3 ISM Code where applicable 4 relevant sections of AMSA Marine Orders

Range Statement (continued)

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VARIABLE	SCOPE
f Applicable legislation, regulations and codes may include: (continued)	5 SOLAS Convention 6 Regulations for the Prevention of Collisions at Sea 7 relevant international, Commonwealth, State and Territory OH&S legislation

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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