



Australian Government

Department of Education, Employment and Workplace Relations

TDMMH1007B NAVIGATE A HIGH SPEED VESSEL

Revision Number: 1

TDMMH1007B NAVIGATE A HIGH SPEED VESSEL

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the skills and knowledge required to safely navigate a high speed commercial vessel, including special watchkeeping and bridge team requirements when operating at high speed, constructing and applying a passage plan for a high speed vessel, using visual, radar and other navigational information for effective high speed navigation, using 'north-up' radar presentation at high speed, allowing for the manoeuvring characteristics of a high speed vessel, and applying the International Regulations for the Prevention of Collisions at Sea in the high speed context.

Application of the Unit

Application of the unit	Additional special unit of competency for Masters, Mates and Watchkeepers (Deck) of vessels who are responsible for the operation and navigation of a high speed vessel (a vessel operating at speeds in excess of 30 knots).
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Licensing/Regulatory Information

Licensing/legislative requirements	The unit is consistent with the relevant maritime regulations describing special requirements for a Master, Mate or Watchkeeper of a high speed vessel as defined in AMSA Marine Orders, State/Territory regulatory requirements, the National Standard for Commercial Vessels (NSCV) and the USL 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
1 Construct a passage plan for a high speed craft	- a Information on prevailing weather, traffic density, operating zones and operational requirements are obtained and interpreted in accordance with high speed navigational procedures - b A passage plan for a high speed vessel is constructed in accordance with regulatory requirements and due allowance for prevailing conditions, traffic density and the manoeuvring characteristics of the high speed vessel - c Passage plan is documented and communicated to others in accordance with established procedures and relevant regulatory requirements
2 Organise bridge team and operations to fulfil high speed watchkeeping	- a Command and control procedures when operating a vessel at high speed are carried out in accordance with regulatory requirements of the High Speed Craft Code and STCW 95 Code - b Bridge team duties are organised and reorganised to appropriately respond to changes in workload and emergencies when operating a craft at high speed

ELEMENT	PERFORMANCE CRITERIA
requirements	
ELEMENT	PERFORMANCE CRITERIA
2 Organise bridge team and operations to fulfil high speed watchkeeping requirements (continued)	c Clear and timely operational and communication procedures are used at all times during high speed craft operation
3 Apply information from visual observation and electronic aids	a Information from visual observation, radar and other navigational aids and sources is appropriately used in combination to navigate the safe passage of a high speed craft b Attention between visual, radar and other navigational information is divided to maximise safe operation when operating at high speed 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 required by company procedures and regulatory requirements
4 Operate radar and ARPA at high speed	a Radar is correctly operated during high speed operation using the 'north-up' presentation and CPAs of targets are accurately determined in accordance with established procedures b Effective and timely alterations of course are made to clear collision situations in accordance with established high speed navigational procedures c ARPA is effectively used during high speed operations

ELEMENT	PERFORMANCE CRITERIA
	- d Parallel index lines are correctly used to determine cross track error - e Techniques for determining course made good and alteration of course are applied in accordance with established procedures
5 Use GPS, ECDIS and radar for high speed navigation	- a GPS/DGPS data is correctly obtained and interpreted - b GPS/DGPS position and waypoint information is effectively entered into the radar in accordance with established procedures - c Radar maps for use in navigation are correctly constructed - d Radar target information is transferred to ECDIS in accordance with established procedures

ELEMENT	PERFORMANCE CRITERIA
6 Ensure compliance with regulations when operating at high speed	- a Requirements of the International Regulations for the Prevention of Collisions at Sea are correctly interpreted in the context of high speed vessel operation - b Rules of relative movement are applied when making alterations to the course of a vessel at high speed - c High speed craft is manoeuvred in accordance with the requirements of the International Regulations for the Prevention of Collisions at Sea - d Safety and navigational incident involving a high speed craft are investigated and reported in accordance with the relevant maritime regulations

Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

- 1 Sections of relevant maritime regulations relevant to the navigation of a commercial high speed vessel, including the International Code of Safety for the Operation of High Speed Craft
- 2 International Regulations for the Prevention of Collisions at Sea
- 3 SOLAS requirements
- 4 OH&S regulations related to the safe use of electronic navigational aids
- 5 ISM Code safety management system Procedures related to the navigation of high speed vessels
- 6 The different types of electronic navigational aids used on high speed craft, including their features, key applications and operational characteristics
- 7 Procedures for the initialisation and operation of radar, ARPA and various other types of electronic navigational aids
- 8 The limitations and potential errors associated with each type of electronic navigational aid when used for high speed navigation
- 9 Manoeuvring and engine characteristics for high speed vessels, including stopping distances and turning circles in various operational situations
- 10 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 a high speed vessel, including the selection of the appropriate range for radar when operating at high speed
- 11 Methods for the interpretation and analysis of navigational information during a high speed passage, including visual information and that produced by radar, ARPA and various other types of electronic navigational aids. This should include:
 - a concept of area of concern
 - b due allowance for the limitations and potential errors associated with each type of electronic navigational aid
 - c the use of parallel index lines to determine cross track error
 - d techniques for determining course made good and alteration of position

REQUIRED KNOWLEDGE

- 12 Action and precautions required to avoid a potential collision situations when operating a high speed vessel based on the International Code of Safety for the Operation of High Speed Craft and the International Regulations for the Prevention of Collision at Sea
- 13 Maritime communication techniques when operating a high speed vessel
- 14 Problems in the navigation of a high speed vessel and appropriate courses of action and solutions

REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Communicate effectively with others during high speed vessel manoeuvres
- 2 Issue helm and engine orders
- 3 Read and interpret vessel manufacturer's instructions on high speed vessel operation
- 4 Read and interpret vessel marine regulations, rules and instructions concerning high speed vessel operations
- 5 Collect, manage and interpret information required for the safe navigation of the high speed vessel
- 6 Use data generated by radar, ARPA and various other types of electronic navigational aids to assist in the safe navigation of a high speed vessel, including the selection of the appropriate range for radar when operating at high speed
- 7 Interpret and analyse navigational information during a high speed passage, including visual information and that produced by radar, ARPA and various other types of electronic navigational aids
- 6 Plan the timing and sequence of high speed vessel operations to be appropriate to the prevailing circumstances, sea and weather conditions and any navigational hazards
- 9 Work collaboratively with other shipboard personnel and passengers during high speed vessel operations
- 10 Make appropriate determinations and calculations required during the course of high speed vessel operations

REQUIRED SKILLS

- 11 Determine the type and extent of an emergency and determine the appropriate survival action to be taken
- 12 Determine appropriate procedures to allow for interaction effects with passing vessels
- 13 Recognise the effects of various operational situations such as squat, shallow water and narrow channel on high speed vessel's handling and determine appropriate manoeuvring action required
- 14 Initialise and operate radar, ARPA and various other types of electronic navigational aids on a high speed vessel
- 15 Operate the high speed vessel in accordance with manufacturer's instructions and regulatory requirements
- 16 Turn the high speed vessel in various operational situations

Evidence Guide

Evidence Guide

TDMMH1007B NAVIGATE A HIGH SPEED VESSEL

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 Construct a passage plan for a high speed vessel - b Organise bridge team and operations to fulfil high speed watchkeeping requirements - c Ensure compliance with relevant maritime regulations when operating at high speed - d Initialise and operate electronic navigation systems typically used in high speed vessels
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Evidence Guide**TDMMH1007B NAVIGATE A HIGH SPEED VESSEL**

	- e Operate radar and ARPA during a high speed passage - f Use GPS, ECDIS and radar for high speed navigation - g Interpret and analyse data generated by electronic navigation systems and use it to inform navigational command decisions in conjunction with visual information - h Apply information from visual observation and other electronic aids in appropriate combination - i Identify typical problems in the navigation of high speed vessels and take appropriate action - j Communicate effectively with others when navigating a high speed 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 constructing a passage plan for a commercial high speed vessel 2 organising bridge team and operations to fulfil high speed watchkeeping requirements 3 ensuring compliance with relevant maritime regulations when operating at high speed 4 initialising and operating electronic navigation systems typically used in high speed vessels 5 operating radar and ARPA during a high speed passage 6 using GPS, ECDIS and radar for high speed navigation

Evidence Guide (continued)**TDMMH1007B NAVIGATE A HIGH SPEED VESSEL****2 Evidence required for demonstration of consistent performance (continued)**

- 7 interpreting and analysing data generated by electronic navigation systems and using it to inform navigational command decisions in conjunction with visual information
- 8 applying information from visual observation and other electronic aids in appropriate combination
- 9 assessing operational capability of various types of electronic navigational aids
- c Shows evidence of application of relevant workplace procedures, including:
 - 1 International Code of Safety for the Operation of High Speed Craft
 - 2 relevant sections of maritime regulations
 - 3 ISM Code and associated vessel's safety management system and procedures
 - 4 OH&S regulations and hazard prevention policies and procedures
 - 5 job procedures and work instructions
 - 6 relevant manufacturer's guidelines relating to the navigation of high speed vessels
- d Action is taken promptly to report and/or rectify problems in the navigation of a high speed vessel in accordance with established procedures
- f Recognises and adapts appropriately to cultural differences in the workplace, including modes of behaviour and interactions and communication with others

Evidence Guide (continued)**TDMMH1007B NAVIGATE A HIGH SPEED VESSEL****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)**TDMMH1007B NAVIGATE A HIGH SPEED VESSEL****4 Specific resources required for assessment**

- Access is required to opportunities to:
- a carry out assignments or exercises on the navigation of a high speed vessel using an appropriate electronic navigation simulator meeting the requirements of the IMO STCW 95 Code, over a representative range of navigational incidents for the speed bands for which the person is being assessed; and/or
 - b navigate a high speed vessel during sea time on the voyage of a commercial or training high speed 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 mandatory rules and regulations and IMO Conventions and Codes, including the relevant sections of the AMSA Marine Orders, NSCV, USL Code and International Code of Safety for the Operation of High Speed Craft
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 relevant principles and procedures to effectively apply visual, electronic and other forms of navigation information to assist the safe navigation of a high speed craft across a wide and often unpredictable variety of navigational situations. Construction and implementation of a plan for a high speed passage is required. 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 integrated use of electronic navigational aids to maintain the safe navigation of commercial high speed craft

2. WORKSITE ENVIRONMENT

Range Statement**TDMMH1007B NAVIGATE A HIGH SPEED VESSEL**

a Vessel may include:	1 any Australian or international commercial vessel operating at speeds in excess of 30 knots
b Navigation of a high speed craft may occur:	1 by day or night in both normal and emergency situations 2 under any possible conditions of weather and loading 3 during both low and high speed operations 4 during berthing and unberthing operations 5 while anchoring or mooring

Range Statement (continued)**TDMMH1007B NAVIGATE A HIGH SPEED VESSEL**

VARIABLE	SCOPE
c Applicable certification speed bands for a high speed craft are:	1 low speed - less than 30 knots 2 high speed - 30 knots to 50 knots 3 very high speed - 50 knots to 80 knots 4 ultra high speed - more than 80 knots
d 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

Range Statement (continued)**TDMMH1007B NAVIGATE A HIGH SPEED VESSEL**

	6 integrated navigation systems
e The use of electronic navigational aids on a high speed vessel 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
f Documentation and records may include:	1 International Code of Safety for the Operation of High Speed Craft 2 safety management system plans, procedures, checklists and instructions 3 SOLAS requirements 4 operational orders and standard operating procedures 5 navigational charts 6 radar plotting charts 7 International Regulations for Preventing Collisions at Sea 8 IMO STCW 95 Convention and Code 9 relevant sections of AMSA Marine Orders, State/Territory maritime regulations, NSCV and USL Code applicable to high speed vessels 10 vessel's log 11 manufacturer's instructions and recommended procedures 12 notices and instructions of relevant maritime authorities 13 Australian and international standards relevant to high speed vessels

Range Statement (continued)**TDMMH1007B NAVIGATE A HIGH SPEED VESSEL**

VARIABLE	SCOPE
g Applicable legislation, regulations and codes may include:	1 relevant sections of IMO STCW 95 Code, AMSA Marine Orders, State/Territory maritime regulations, NSCV and USL Code 2 International Code of Safety for the Operation of High Speed Craft 3 ISM Code 4 SOLAS Convention 5 International Regulations for the Prevention of Collisions at Sea 6 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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