



Australian Government

Department of Education, Employment and Workplace Relations

TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS

Revision Number: 1

TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the skills and knowledge required to forecast weather and oceanographic conditions during the voyage of a commercial vessel, including taking measurements of relevant meteorological and oceanographic parameters, observing current weather and ocean conditions and cloud formations, acquiring weather charts, reports and satellite images, interpreting available weather and oceanographic data, making forecasts of local weather and oceanographic conditions and taking appropriate action to adjust vessel operations based on local weather predictions.

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, the International Ship and Port Facility Security (ISPS) Code and Marine Orders under the Australian Navigation Act 1912, describing requirements for a Master 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

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 Collect and interpret weather and oceanographic data	<ul style="list-style-type: none"> a Ocean and weather conditions are observed and correctly interpreted in accordance with established nautical and meteorological practice b Measurements of current local meteorological and oceanographic parameters are correctly made and recorded using appropriate shipboard instruments in accordance with established practice c Meteorological charts, publications and related documentation are updated, stored and maintained in accordance with company procedures and chart/publication publisher's instructions d Meteorological charts, publications and related documentation are handled and used in ways that ensure continued availability, utility and length of life e Observations of weather and cloud formations are made and interpreted in accordance with established practice f Weather charts and satellite images are acquired and interpreted g Weather reports are obtained and interpreted

ELEMENT	PERFORMANCE CRITERIA
2 Forecast local weather and oceanographic conditions	<ul style="list-style-type: none"> a A wave forecast is made based on observation of ocean and weather conditions and collected weather data b Calculations are made for the height of the tide at a given time and place using appropriate tide charts and/or diagrams c The effects of local topographical features on wind flow and weather conditions are correctly predicted from available information d Forecasts of local weather and oceanographic conditions are correctly made using available weather information e Potentially dangerous weather conditions are identified and correctly predicted and appropriate action is taken to secure the vessel
3 Maintain records of weather and oceanographic information and forecasts	<ul style="list-style-type: none"> a Weather and oceanographic measurements, observations, reports and forecasts are recorded and filed in accordance with company procedures and regulatory requirements b Action on vessel operations initiated as a result of weather and oceanographic forecasts is documented as required

Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

- 1 Applicable sections of relevant maritime regulations, codes and conventions
- 2 Principles and procedures of weather forecasting using information obtained from observations, charts, satellite images, reports and instruments, including:
 - a vertical division of the atmosphere
 - b air masses and fronts

REQUIRED KNOWLEDGE

- c cloud classifications
- d heat exchange process
- e synoptic chart analysis
- f pressure systems, cold and warm fronts
- g cyclones, storms and gales
- h tropical meteorology
- i ocean currents
- j weather data provided by shipboard instruments
- k sea state
- l tide prediction
- m use of tide tables

REQUIRED KNOWLEDGE

- 3 Basic principles and procedures for making meteorological and oceanographic measurements using appropriate instruments and interpreting and deciphering the results
- 4 Procedures for the calculation of the height of tide for a given time at any place listed using tide tables
- 5 Procedures for making a wave forecast
- 6 Procedures for predicting topographical effects on wind flow
- 7 Effects on navigation and vessel handling of wind, currents and bottom topography
- 8 Typical problems in the forecasting of weather and oceanographic information and appropriate action and solutions
- 9 Sources of weather and oceanographic reports and methods for their interpretation
- 10 Procedures for the application of forecast of likely weather and ocean conditions to vessel operations
- 11 Procedures to be followed during gale conditions and cyclones, including the means of securing a vessel in a cyclone
- 12 Procedures for filing and handling weather and oceanographic reports, records of observations and instrument readings
- 13 Maritime communication techniques

REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Use relevant communication skills required when collecting and interpreting weather and oceanographic data and applying it to the navigation of a vessel within limits of responsibility of a Master (Unlimited)
- 2 Read, interpret and apply weather information and oceanographic reports
- 3 Read and interpret standard procedures for making meteorological and oceanographic measurements using appropriate instruments and interpreting and deciphering the results

REQUIRED SKILLS

- 4 Observe, interpret and forecast weather and oceanographic conditions within limits of responsibility of a Master (Unlimited)
- 5 Complete any required records of observations and forecasts
- 6 Work collaboratively with others when interpreting and applying weather and oceanographic information to navigation
- 7 Select and use relevant instruments and equipment as per instructions
- 8 Recognise problems that may occur when interpreting and applying weather information to navigation and take appropriate action
- 9 Adapt to differences in vessels, equipment and standard operating procedures
- 10 Interpret and apply weather information within limits of responsibility of a Master (Unlimited)

Evidence Guide

Evidence Guide (continued)

TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS

2 Evidence required for demonstration of consistent performance (continued)

- d Action is taken promptly to report and/or rectify any problems that may arise when forecasting weather and oceanographic conditions 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 and communication with 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

Evidence Guide (continued)**TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS**

	<p>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, and 2 Appropriate practical assessment must occur: <ol style="list-style-type: none"> i at the registered training organisation; and/or ii on an appropriate working or training vessel
<p>4 Specific resources required for assessment</p>	<p>Access is required to opportunities to:</p> <ol style="list-style-type: none"> a participate in a range of suitably simulated practical and knowledge assignments and exercises that demonstrate the ability to collect appropriate weather and oceanographic data from observations, charts, satellite images, reports and basic measurements and make forecasts of local weather and oceanographic conditions; and/or b collect weather and oceanographic data from observations, charts, satellite images, reports and basic measurements and make forecasts of local weather and oceanographic conditions when on an operational commercial or training vessel

Range Statement

Range Statement

TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS

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, codes and conventions
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 interpretation of meteorological information, observations, reports and instrument measurements to the forecasting of weather and ocean conditions

2. WORKSITE ENVIRONMENT

a Vessel may include:	1 any Australian or international commercial vessel
b Sources of weather and oceanographic data may include:	1 measurements using appropriate instruments 2 observations of local weather and ocean conditions and cloud formations 3 weather charts and reports 4 visible and infra red satellite images

Range Statement
TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS

	5	tide tables and/or diagrams
	6	information on the effects of local topographical features on wind flow and weather
c Instruments may include:	1	air and sea thermometers
	2	barometers
	3	hydrometers
	4	anemometers
	5	wind strength and direction instruments

Range Statement (continued)
TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS

VARIABLE	SCOPE	
c Instruments may include: (continued)	6	instruments for measuring sea swell height, direction and period
d Meteorological and oceanographic parameters may include:	1	atmospheric pressure
	2	pressure gradient
	3	air temperature
	4	relative humidity
	5	wind strength and direction
	6	swell height, direction and period

Range Statement (continued)**TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS**

	7	visibility
	8	cloud cover
e Documentation and records may include:	1	operational orders
	2	navigational charts of coastal waters
	3	meteorological and oceanographic publications
	4	weather charts and reports
	5	annual and weekly notices to mariners
	6	Nautical Almanac
	7	navigational warning records
	8	relevant regulations, codes and conventions
	9	vessel's log
	10	company procedures
	11	vessel manufacturer's instructions and recommended procedures
	12	notices and instructions of relevant maritime authorities
	13	relevant Australian and international standards
f Applicable legislation, regulations and codes may include:	1	IMO STCW 95 Convention and Code
	2	relevant sections of AMSA Marine Orders
	3	relevant sections of State and Territory maritime regulations, NSCV/USL Code
	4	International Regulations for Preventing Collisions at Sea
	5	relevant international, Commonwealth, State and Territory OH&S legislation

Range Statement (continued)**TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS**

6 Guidelines and Criteria for Ship Reporting Systems

Evidence Guide**TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS**

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	<p>Assessment must confirm appropriate knowledge and skills to:</p> <ul style="list-style-type: none"> a Make relevant measurements of meteorological and oceanographic parameters b Acquire and interpret relevant weather and oceanographic information from appropriate sources c Use available weather and oceanographic information to make a local forecast of weather and oceanographic conditions d Take appropriate action to adjust vessel operations based on a local forecast of weather and oceanographic conditions
2 Evidence required for demonstration of consistent performance	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 1 observing weather and ocean conditions 2 using shipboard instruments to collect basic meteorological and oceanographic data 3 obtaining and deciphering weather and oceanographic data collected from observations, charts, satellite images, reports and basic measurements

Evidence Guide**TDMMH907B FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS**

- 4 forecasting weather and ocean conditions and applying the forecasts to vessel operations
- 5 identifying and evaluating weather forecasting problems and determining appropriate solutions
- c Shows evidence of application of relevant workplace and regulatory procedures, including:
 - 1 relevant regulations, codes and conventions
 - 2 standard operating procedures and instructions on the use of meteorological instruments, reports and observations and the forecasting of local weather and oceanographic conditions
 - 3 use of relevant meteorological publications and charts
 - 4 procedures for the storage and care of meteorological publications and charts

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.