Australian Government

Department of Education, Employment and Workplace Relations

TDMMH1507A MEASURE AND OBSERVE WEATHER CONDITIONS AND INTERPRET AND APPLY TO WATCHKEEPING

Release: 1

TDMMH1507A MEASURE AND OBSERVE WEATHER CONDITIONS AND INTERPRET AND APPLY TO WATCHKEEPING

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:
This unit involves the skills and knowledge required to measure and observe weather conditions and interpret and apply to watchkeeping on a vessel within limits of responsibility of Watchkeeper (**Deck**).
This includes observing current weather and ocean conditions and cloud formations, **taking measurements of relevant meteorological and oceanographic parameters**, **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 as a watchkeeper to adjust vessel operations based on local weather predictions**.

Application of the Unit

Application of the unit	The unit has applications in qualifications for a Watchkeeper (Deck) and Master (Less than 500 GT), i.e. Diploma of Transport&Distribution(Maritime Operations - Deck Watchkeeper).

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 the role and responsibilities of a Watchkeeper (Deck) and Master (Less than 500 GT).

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
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1 Collect and interpretweather and oceanographic data	a Ocean and weather conditions are observed and correctly interpreted in accordance with established nautical and meteorological practice and the role and responsibilities of a Watchkeeper (Deck) 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 as per 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

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ELEMENT	PERFORMANCE CRITERIA
1 Collect and interpretweather and oceanographic data (continued)	g Weather reports are obtained and interpreted
2 Forecast local weather and oceanographic conditions	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 f Collected data and local weather forecasts are applied to watchkeeping operations in accordance with standard operating procedures
3 Maintain records of weather and oceanographic information	a Weather and oceanographic measurements, observations, reports and forecasts are recorded and filed as per procedures and regulatory requirements b Action during watchkeeping operations initiated as a result of weather and oceanographic observations, measurements and forecasts is documented as required

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Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

1 Relevant maritime regulations, codes and conventions applicable to a vessel within the limits of responsibility of a Watchkeeper (Deck)

2 Principles and processes 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
- c cloud classifications
- d heat exchange process
- e synoptic chart analysis
- f pressure systems, cold and warm fronts
- g storms, gales and cyclones or tropical revolving storms (TRS), including origin, movement, life span and structure
- h tropical meteorology
- i sea state and ocean currents
- j weather data provided by shipboard instruments
- k tide prediction and the use of tide tables

3 Basic principles and procedures for making meteorological and oceanographic measurements using appropriate instruments and interpreting and deciphering the results

4 Standard procedures for making instrument observations, including:

- a atmospheric pressure and pressure tendency

REQUIRED KNOWLEDGE

b air temperature

c sea surface temperature

d relative humidity and dew point

e apparent wind direction and speed

5 The construction, principles of operation, and care and maintenance of instruments used for making instrument observations as a Watchkeeper (Deck)

6 Standard procedures for making non-instrument observations, including:

a clouds

b present weather

c past weather

d horizontal visibility

e true wind direction and speed

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f sea state and swell

g icing

f sea state and swell

7 Procedures for the calculation of the height of tide for a given time at any place listed using tide tables

8 Procedures for making a wave forecast

9 Procedures for predicting topographical effects on wind flow

10 Effects on navigation and vessel handling of wind, currents and bottom topography

11 Problems in forecasting of weather and oceanographic conditions 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 securing a vessel in a cyclone

12 Procedures for storing and handling weather and oceanographic reports, records of observations and instrument readings

13 Maritime communication techniques

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REQUIRED SKILLS

This describes the basic skills required for this unit.

1 Use relevant communication skills required when obtaining and interpreting weather information and applying it to watchkeeping operations on a vessel within limits of responsibility of a Watchkeeper (Deck)

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

4 Observe, interpret and forecast weather and oceanographic conditions

REQUIRED SKILLS

5 Complete any required records

6 Work collaboratively with others when interpreting and applying weather and oceanographic information to watchkeeping operations

7 Select and use relevant instruments and equipment as per instructions

8 Recognise problems that may occur when interpreting and applying weather information to watchkeeping operations and take appropriate action

9 Adapt to differences in vessels, equipment, instruments and standard operating procedures

10 Interpret and apply weather information when keeping watch on a vessel within limits of responsibility of a Watchkeeper (Deck)

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 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 apply collected data and local forecasts to watchkeeping operations on a 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.

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 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

4 forecasting weather and ocean conditions and applying them to watchkeeping operations on a vessel

c Shows evidence of application of relevant workplace and regulatory procedures, including:

1 relevant regulations, codes and conventions

2 procedures for the use of meteorological instruments, observations, reports and the forecasting of local weather and oceanographic conditions

3 use of relevant meteorological publications and charts

4 procedures for the storage of meteorological publications and charts

d Action is taken promptly to report and act upon adverse weather forecasts 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

Evidence Guide (continued)

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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
4Specific resources required for assessment	Access is required to opportunities to: a participate in a range of suitably simulated practical and knowledge assignments and exercises that demonstrate the ability to collect and apply to watchkeeping operations appropriate weather and oceanographic data from observations, weather charts and reports, satellite images and basic measurements and make forecasts of local weather and oceanographic conditions; and/or b collect weather and oceanographic data from observations, weather charts and reports, satellite images and basic measurements and make forecasts of local weather and oceanographic conditions when carrying out watchkeeping duties on an operational 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, 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 watchkeeping operations on a vessel within limits of responsibility of a Watchkeeper (Deck)
2. WORKSITE ENVIRONMENT	
a Vessel may include:	1 any Australian or international commercial vessel
b Sources of weather and oceanographic data may	1 measurements using appropriate instruments 2 observations of local weather and ocean conditions and cloud formations

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

include:	3 weather charts and reports 4 visible and infra red satellite images 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 6 instruments for measuring sea swell height, direction and period

Range Statement (**continued**)

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VARIABLE	SCOPE
d Meteorological and oceanographic parameters may include:	1 atmospheric pressure 2 pressure gradient 3 air temperature 4 relative humidity 5 wind strength 6 wind direction 7 swell height, direction and period

VARIABLE	SCOPE
	8 visibility 9 cloud cover
e **Documentation and records may include**:	1 operational orders 2 navigational charts of coastal waters 3 meteorological and oceanographic publications 4 coastal weather reports 5 annual and weekly notices to mariners 6 navigational warning records 7 relevant regulations, codes and conventions 8 vessel's log 9 company procedures 10 ship manufacturer's instructions and recommended procedures 11 instructions of relevant maritime authorities 12 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 marine regulations, NSCV and USL Code 4 International Regulations for Preventing Collisions at Sea 5 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.