Australian Government

Department of Education, Employment and Workplace Relations

TDM60307 ADVANCED DIPLOMA OF TRANSPORT & DISTRIBUTION (MARINE ENGINEERING - CLASS 2)

Release: 1

TDM60307 ADVANCED DIPLOMA OF TRANSPORT DISTRIBUTION (MARINE ENGINEERING - CLASS 2)

Modification History

Not applicable.

Description

Rationale: A qualification aligned to the educational requirements for certification as a Marine Engineer Class 2 as described in Marine Orders Part 3: Seagoing Qualifications (Version 6) under the Navigation Act 1912.

Successful completion will require competency in units that relate to work defined as characteristics of AQF Certificate 6:
'*The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved. Significant judgement is required in planning, design, technical or leadership/guidance functions related to products, services, operations or procedures*'.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability Skills Summary for
TDM60307 Advanced Diploma of Transport & Distribution (Marine Engineering Class 2)

The following table contains a summary of the employability skills as identified by the maritime industry for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that may vary depending on packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include**:
Communication	• Establish and implement vessel's engine room communication systems and procedures • Listen to and interpret complex verbal information related to the operation, maintenance and management of the vessel's hull, propulsion and auxiliary plant and systems • Read and interpret maritime regulations, engineering drawings, gauges and instrument readings, vessel's safety management system, vessel and equipment manufacturer's instructions, etc. • Speak clearly and directly on diverse and complex matters related to vessel's engineering operations, maintenance and management • Write complex documents including reports on vessel and engine room operations and maintenance, safety incident reports, entries in vessel's engine room records, etc. • Negotiate complex issues with others in the course of vessel operations • Recognise and interpret non-verbal signs, signals and behaviour • Interpret and record observations and equipment readings and displays • Communicate with multilingual crew • Use engine room communication equipment and GMDSS radio equipment
Teamwork	• Provide leadership to the crew of the vessel • Manage the resolution of any interpersonal conflicts that may arise on board the vessel • Motivate crew members • Assist crew members to achieve and maintain competency • Manage the avoidance and prevention of harassment of others on the vessel

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Employability Skill	**Industry/enterprise requirements for this qualification include**:
	• Collaborate with crew members in the course of vessel operations • Manage crew members of different ages, genders, race, religion, political persuasion, etc.

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Employability Skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Identify and solve or report complex problems arising in the course of vessel operations • Monitor and anticipate problems that may occur in the course of engine room operations including hazards and risks and take appropriate action (e.g. strategies for the avoidance of fire and explosion, avoidance of hazards in the engine room space, etc.) • Manage hazards and risks in complex and diverse situations (e.g. engine room hazards, crew working in confined spaces, engine room operations in heavy weather and seas, etc.) • Use advanced diagnostic and analysis techniques required when managing maintenance program for vessel's propulsion, electrical and auxiliary systems in conjunction with the master and other crew members on the vessel • Use mathematics to solve complex problems such as calculations related to engine and equipment performance and maintenance, safe working limits of equipment and calculations related to electrical system operations, fault finding and maintenance
Initiative and enterprise	• Modify activities dependent on differing work situations and contingencies such as changes in the weather and sea conditions, plant and equipment breakdown and emergency situations including fire, flooding or failure of steering or propulsion systems • Take appropriate initiatives in complex and diverse situations such as those above • Manage engine room responses to any changes in vessel's equipment, standard operating procedures and the vessel's working environment
Planning and organising	• Establish operational and emergency plans, systems and procedures for the engine room on the vessel, including safety management system and emergency procedures • Establish and implement systems and procedures for maintaining compliance with regulations and codes of practice • Establish and implement Engine Room Resource Management Strategy • Monitor and evaluate operational performance and compliance • Collect, manage and interpret information needed to plan and organise engine room operations • Organise and plan own management activities (as a Marine Engineer Class 1 or 2)

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Employability Skill	**Industry/enterprise requirements for this qualification include**:
	• Manage time and priorities in the course of management activities on the vessel
Self-management	• Interpret and apply regulations, survey requirements, standard procedures and codes of practice as they apply to the engine room operations on a vessel, including OH&S, environmental protection, security and SOLAS requirements • Establish and follow own work plans and schedules • Evaluate and monitor own work and performance (as a Marine Engineer Class 1 or 2)
Learning	• Plan and organise learning and assessment activities for engine room personnel on a vessel, including emergency drills, safety and security awareness training, and continuing professional development of crew members • Manage adaptation of crew members to any changes in the vessel's systems, equipment, procedures and the vessel's operating environment (e.g. sea and weather conditions) • Instruct, coach or mentor other crew members on the vessel • Contribute to the assessment of the competency of other crew members • Assist in creating a learning environment on board the vessel • Adapt own competency to any changes in the vessel type, its equipment and its operating environment • Update own knowledge and skills required for engine room management activities
Technology	• Operate complex equipment and systems including vessel's propulsion and auxiliary systems, and other engine room equipment and systems, etc. • Establish and implement operational and maintenance systems for the vessel's hull, propulsion and auxiliary systems, safety equipment and various engine room facilities • Establish safety management system and OH&S procedures for use and maintenance of engine room plant, equipment and facilities • Manage the preventative and remedial maintenance of vessel's hull, structures and engine room plant, equipment and tools

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Packaging Rules

Requirements for completion of the qualification:
A successful outcome of the **twenty-eight** units of competency listed below - plus be able to demonstrate competency in the **eight** basic engineering units also listed below. Additional units from those listed below or relevant units from this or other Training Packages Note 5 may be included in the qualification to satisfy specific additional needs beyond the minimum requirements. (They may also be achieved separately, either individually or in skill sets, leading to a National Statement of Attainment as described elsewhere in the Training Package)

MANDATORY REQUIREMENTS FIELD		**UNIT**	
A	**Handling Cargo and Vessel Stability**	TDMMA1007B	Control trim, stability and stress
B	**Equipment Checking and Maintenance**	TDMMB1507B	Detect and identify the cause of machinery malfunctions and repair faults on vessels over 750 kW propulsion power
		TDMMB1607B	Organise safe maintenance and repair procedures on vessels over 750 kW propulsion power
		TDMMB4107A	Test, detect faults and maintain and restore electrical machinery and equipment to operating condition on vessels over 750 kW propulsion power
		TDMMB4207A	Test, detect faults and maintain and restore electronic control equipment to operating condition on vessels over 750 kW propulsion power
E	**Communication**	TDMME707B	Use English in written and oral form to perform engineering duties
F	**Operational Quality and Safety**	TDMMF307B	Manage business and legal requirements on a vessel
		TDMMF407B	Maintain the operational condition of lifesaving, firefighting and other safety systems
		TDMMF507C	Develop emergency and damage control plans and handle emergency situations on board a vessel

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		TDMMF1007B	Provide elementary first aid
		TDMMF1107B	Survive at sea in the event of vessel abandonment
		TDMMF1807B	Apply medical first aid on board a vessel
		TDMMF1907B	Operate survival craft and other lifesaving appliances

F	**Operational Quality and Safety (continued)**	TDMMF2407B	Maintain safety of engine equipment, systems and services on vessels over 750 kW propulsion power
		TDMMF2507B	Ensure safe working practices
		TDMMF2607B	Establish watch keeping arrangements and procedures
		TDMMF5607A	Observe personal safety and social responsibilities Note 1
		TDMMF5807A	Adapt to basic industry and regulatory requirements for tanker operations
		TDMMF5907A	Work safely in enclosed spaces on a vessel
		TDMMF6107A	Manage marine firefighting and prevention activities on board a vessel Note 2
		TDMMF6207A	Prevent, control and fight fires on board an ocean-going vessel Note 3
L	**Human Resources**	TDMML407A	Manage administration of the vessel and its personnel Note 4
R	**Carry Out Operations on Equipment and Systems**	TDMMR1307B	Operate electrical machinery and electronic control equipment on vessels over 750 kW propulsion power
		TDMMR1407B	Manage fuel, bilge and ballast operations procedures on vessels over 750 kW propulsion power
		TDMMR1507B	Operate, monitor and evaluate engine performance on vessels over 750 kW propulsion power (Note: this unit is intended for persons preparing for AMSA

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			certification as Marine Engineer Class 2 specifically applying to motorships. Persons preparing for steamship certification should also fulfil the requirements for TDMMR5806A – see options below)
		TDMMR1607B	Plan and schedule operations on vessels over 750 kW propulsion power
		TDMMR1707B	Start up and shut down main propulsion and auxiliary machinery and associated systems on vessels over 750 kW propulsion power
U	**Environment**	TDMMU107B	Monitor compliance with legislative requirements and measures to ensure protection of the environment

An Engineer Class 2 must **also** be able to demonstrate competency in the eight basic engineering units listed below, either through completion of the appropriate engineering trade qualifications, or additional training and assessment, if required:

MEM18001C	Use hand tools	MEM05006B	Perform brazing and/or silver soldering
MEM18002B	Use power tools/hand held operations	MEM05007C	Perform manual heating and thermal cutting
MEM05001B	Perform manual soldering/desoldering – electrical/electronic components	MEM05015C	Weld using manual metal arc welding process
MEM05004C	Perform routine oxy acetylene welding	MEM07005B	Perform general machining

Note 1: TDMMF5607A is a **new unit** incorporating the requirements of the previous four units TDMMF701B Observe safe working practices, TDMMF801B Comply with emergency procedures, TDMML201A Contribute to effective human relationships on board a vessel and TDMME101A Understand orders and be understood in relation to shipboard duties
Note 2: TDMMF6107A is a **new unit** incorporating the requirements of the previous two units TDMMF1301A Manage marine firefighting and prevention activities and TDMMF2001A Prevent, control and fight fires on board a vessel
Note 3: TDMMF6207A is a **new unit** incorporating the requirements of the previous two units TDMMF901A Fight and extinguish fires and TDMMF1201A Minimise the risk of fire and maintain a state of readiness to respond to emergency situations involving fire
Note 4: TDMML407A is a **new unit** incorporating the requirements of the previous two units TDMML101A Organise and manage the crew and TDMMF3701A Manage vessel operations

OPTIONAL ADDITIONAL UNITS TO MINIMUM REQUIREMENTS

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The units**listed below or relevant units from this or other Training Packages Note 5may be included in the qualification to satisfy specific additional needs beyond the minimum mandatory requirements (they may also be achieved separately, either individually or in skills sets, leading to a Statement of Attainment as described elsewhere in the Training Package).**

Additional unit to prepare for AMSA certification as Marine Engineer Class 1 specifically applying to steamships.			
R	**Carry Out Operations on Equipment and Systems**	TDMMR5807A	Manage the operation, monitoring and evaluation of the performance of steam propulsion plant on vessels over 750 kW propulsion power

Skills set of additional units to prepare for AMSA endorsement as responsible officer on a liquefied gas tanker			
A	**Handling Cargo and Vessel Stability**	TDMMA407B	Manage procedures for the handling, loading and discharging of liquefied gas cargoes
F	**Operational Quality and Safety**	TDMMF1407B	Plan and implement special safety, maintenance and emergency procedures for liquefied gas tankers

Skills set of additional units to prepare for AMSA endorsement as responsible officer on a chemical tanker			
A	**Handling Cargo and Vessel Stability**	TDMMA507B	Manage procedures for the handling, loading and discharging of chemical cargoes
F	**Operational Quality and Safety**	TDMMF1507B	Plan and implement special safety, maintenance and emergency procedures for chemical tankers

Skills set of additional units to prepare for AMSA endorsement as responsible officer on an oil tanker			
A	**Handling Cargo and Vessel Stability**	TDMMA607B	Manage procedures for the handling, loading and discharging of oil cargoes

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F	**Operational Quality and Safety**	TDMMF1607B	Plan and implement special safety, maintenance and emergency procedures for oil tankers

O	**Security**	TDMMO107A	Follow maritime security procedures
		TDMMO207A	Carry out ship security officer functions
Optional imported units from the Business Services Training Package BSB01		BSBFLM505B	Manage operational plan
		BSBFLM506B	Manage workplace information systems
		BSBFLM509B	Facilitate continuous improvement
Optional imported units from the Training and Assessment Training Package TAA04		TAADEL301A	Provide training through instruction and demonstration of work skills
		TAAASS402A	Assess competence
		TAAASS301A	Contribute to assessment

Note 5: Where units of competency are included from another Training Package, Registered Training Organisations should check the National Training Information System (NTIS) or contact the Industry Skills Council responsible for the Training Package to check if the unit has any pre-requisite or co-requisite requirements.

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