



Australian Government

MARN018 Contribute to basic marine dredging operations

Release: 1

MARN018 Contribute to basic marine dredging operations

Modification History

Release 1. This is the first release of this unit of competency in the MAR Maritime Training Package.

Application

This unit involves the skills and knowledge required to contribute to basic marine dredging operations on a vessel.

This includes:

- knowledge of dredging types
- preparing for dredging operations
- following safety procedures for safe dredging operations
- communicating during dredging operations
- conducting dredging operations
- following emergency procedures
- completing dredging operations

This unit applies to people working in the maritime industry in the capacity of a crew member on a dredge.

Licensing and Regulatory information

No licensing, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

N – Seamanship.

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare for dredging operations

- 1.1** Identify the differences between hydraulic, mechanical and air lift dredges
- 1.2** Dredging documentation, tasks and work requirements are confirmed with appropriate personnel during dredging operations pre-start meeting
- 1.3** Emergency procedures and contingency plans are confirmed with appropriate personnel
- 1.4** Method of communication to be used during dredging operations is confirmed and tested with appropriate personnel in accordance with workplace procedures and instructions
- 1.5** Clarification is sought when any instruction or workplace procedure is not understood (if relevant)
- 1.6** Appropriate personal protective equipment (PPE) is selected, checked and used according to workplace procedures

2 Follow safety procedures for safe dredging operations

- 2.1** Hazards and environmental issues for dredging operations are identified, risks assessed, and control measures implemented in accordance with workplace procedures, instructions and scope of own work responsibilities
- 2.2** Equipment and gear for dredging operations are located and checked in accordance with pre-operational checks, workplace procedures, manufacturers' specifications, and instructions
- 2.3** Faults or damage to equipment and gear are reported immediately to the appropriate person in accordance with workplace procedures and instructions
- 2.4** Routine maintenance of dredging equipment and gear is performed according to workplace procedures, instructions and safe work practices

3 Communicate during dredging operations

- 3.1** Communication is maintained and is clear, appropriate and timely with personnel during dredging operations in accordance with workplace procedures and instructions at all times
- 3.2** Appropriate methods are used to communicate with personnel during dredging operations at all times and in

accordance with workplace procedures and instructions

- 3.3** Hazards and risks that occur during dredging operations including debris in dredging equipment are reported to the appropriate personnel at all times in accordance with workplace procedures and instructions

4 Assist with dredging operations

- 4.1** Safety on deck is maintained during dredging operations at all times in accordance with workplace procedures and instructions
- 4.2** Situational awareness when working on deck, including overhead dangers, pipe movements and spoil discharge points is maintained at all times
- 4.3** Dredging equipment and gear is operated in accordance with manufacturers' specifications, workplace procedures and instructions
- 4.4** Dredging equipment is cleared and cleaned of debris as required
- 4.5** Working load limit (WLL)/SWL of gear and equipment are identified and not exceeded and are maintained within certified limits at all times
- 4.6** Environmental protection procedures are followed at all times and any sign of a potential environmental threat is recognised and immediately reported to appropriate personnel

5 Follow emergency procedures

- 5.1** Emergency procedures are followed in accordance with the vessel safety management system (SMS) and dredging plan
- 5.2** PPE is selected and used according to emergency procedures and instructions
- 5.3** Communication with appropriate personnel is maintained at all times during an emergency according to emergency procedures and instructions

6 Complete dredging operations

- 6.1** Dredging equipment and gear is recovered, cleaned, stowed and secured in accordance with workplace procedures and instructions
- 6.2** Suction and discharge disconnection is completed in accordance with workplace procedures and instructions
- 6.3** Dredging equipment and gear are inspected during recovery and faults and damage are reported immediately to the

appropriate personnel in accordance with workplace procedures and instructions

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the MAR Maritime Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit. No equivalent unit.

Links

Companion Volume Implementation Guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2>

Assessment Requirements for MARN018 Contribute to basic marine dredging operations

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one separate occasion and include:

- determining relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures, instructions, and manufacturers' specifications
- identifying the three different types of marine dredges
- participating in risk assessment in accordance with workplace procedures, instructions, and safe work practices
- reading and interpreting written information relevant to work tasks in accordance with workplace procedures
- selecting and testing appropriate communication equipment in accordance with workplace procedures
- selecting appropriate personal protective equipment (PPE) in accordance with workplace procedures

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- documentation and records including:
 - dredging management plan
 - dredging permit
 - incident report
 - pre-operational checklists
 - work requirements
- environmental considerations associated with dredging including:
 - capturing/damaging marine life, flora and fauna into dredging equipment
 - contaminants in dredging materials
 - contamination of dredging material dumping site
 - discharging of pumping (dredging) materials
 - impact of noise and vibration

- incorrect disposal of waste
- marine pollution
- silt plumes
- spillage
- features and characteristics of dredging works including:
 - capital dredging (new work dredging) including:
 - dredging new channels
 - reclaiming land
 - maintenance dredging including deepening and/or widening of:
 - existing channels or berths
 - pre-existing ports and harbours
- gear and equipment used for dredging operations including:
 - anchor and spud system
 - bottom doors
 - bow connection
 - cranes
 - cutter head
 - suction/drag head
 - dredge pipe
 - dredging plant
 - floating line
 - hopper (split hopper)
 - pipes
 - pneumatic gear
 - pontoon line
 - scows
 - submerge line
 - winches including suction/drag head winch
- hazards and dangers associated with dredging including:
 - adverse weather and sea conditions
 - bunker fuel and provision transfer while in operation
 - crew transfers while in operations
 - danger zones including:
 - exclusion zones
 - drop zones
 - deck and deck space including:
 - overhead hazards
 - slippery surface
 - uneven surface

- equipment getting fouled with submerged objects
- faulty, damaged or malfunctioning equipment and gear including:
 - hoisting failure
 - winch failure
- movement of machinery and equipment including:
 - cranes
 - dredging arm
 - gantries
 - trunnion
 - winches
- pinch points
- restricted areas and confined spaces
- sea and weather conditions including:
 - light
 - low visibility
 - sea swell
 - tides
 - water awash on deck
 - wind
- transferring crew and provisions including bunker fuel during dredging operations
- wires and debris caught in suction/drag head including:
 - falling rocks and clay
 - flying particles
- working in proximity of HV cables, sewer pipes, moorings, buoys, high pressure oil and gas pipelines
- inspection of work area, dredging equipment and gear including pre-operational checks of gear and equipment
- maintenance, clearing and cleaning of dredging gear and equipment including methods and techniques used to remove debris from dredging equipment
- methods and techniques used to remove obstacles including use of suction/drag head winch
- operating and handling dredging equipment and gear in accordance with workplace procedures, instructions, and safe work practices
- PPE used during dredging operations and/or emergency situations, including:
 - earplugs when using pneumatic tools
 - gloves
 - lifejackets
 - lifebuoy
 - personal locating beacons (PLB)
 - portable lights
 - radiocommunication equipment

- safety goggles
 - wet weather protection
- reporting and/or rectifying hazards or safety incidents in accordance with workplace procedures, instructions and scope of own job responsibilities
- Safety Management System (SMS) including:
 - alarms and gauges
 - contingency plans
 - workplace procedures for hazards recovered in dredge gear
- types of dredges, dredging features and excavation methods used to complete dredging operations including:
 - bucket ladder dredge
 - cutter dredge
 - dipper and backhoe dredge
 - grab (clamshell) dredge
 - plain suction dredge
 - trailing suction hopper dredge
- working load limits (WLL)/safe working loads (SWL) of gear and equipment.
- workplace procedures including:
 - communicating with the bridge and chain of command
 - emergency procedures
 - environmental protection procedures
 - housekeeping procedures
 - incident reporting
 - inspection procedures for dredging gear and equipment
 - maintenance, clearing and cleaning of dredging gear and equipment
 - reporting of faulty, damaged or malfunction of equipment
 - reporting of emergencies and hazards
 - following instructions with regards to COLREG signals

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations, where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace

conditions.

Resources for assessment must include access to:

- applicable documentation such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- tools, equipment, machinery, materials and personal protective equipment (PPE) currently used in industry.

Links

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