



Australian Government

MARL001 Carry out engineering calculations

Release: 1

MARL001 Carry out engineering calculations

Modification History

Release 1. New unit of competency.

Application

This unit involves the skills and knowledge required to carry out calculations related to fuel consumption, fuel storage and engine performance that conform to accepted engineering tolerances.

This unit applies to engine workers in the maritime industry working as a Marine Engine Driver Grade 1 Near Coastal on vessels up to 1500 kW.

This unit has links to legislative and certification requirements.

Pre-requisite Unit

Not applicable.

Competency Field

L - Marine Engineering

Unit Sector

Not applicable.

Elements and Performance Criteria

Elements describe the essential outcomes.

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

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|--|-----|---|
| 1 Calculate fuel consumption and storage | 1.1 | Information required for calculations related to fuel consumption and storage is obtained from relevant sources |
| | 1.2 | Calculations are completed to accepted working tolerances |
| | 1.3 | Results of calculations are verified |
| | 1.4 | Results of calculations are applied to managing fuel as required |
| 2 Complete calculations related to engine | 2.1 | Information required for calculations related to engine performance is obtained from relevant sources |
| | 2.2 | Calculations are completed to accepted working tolerances |

performance

- 2.3 Results of calculations are verified
- 2.4 Results of calculations are applied to managing engine performance as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

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

Calculations related to fuel consumption and storage must include:

- calculations involving:
 - specific fuel consumption
 - volume and capacity of regular shaped tanks
 - pumping capacities for tank filling and emptying
 - consumption of fuel and lubricating oil
 - hourly fuel consumption
- requirements for replenishing lubricating oil in oil tank
- using calibration tables to measure quantities in tanks
- using relative density/specific gravity to convert quantity in litres and volume to mass

Calculations related to engine performance must include:

- calculations involving:
 - theoretical steaming times
 - distances covered
 - specific power, speed and range
 - theoretical steaming times

- mechanical advantage, load, effort moments
- stress, strain and safe working load
- remaining steaming times

Unit Mapping Information

This is a new unit. This unit is equivalent to MARL4001A Carry out engineering calculations.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2>