



Australian Government

MARF058 Apply knowledge of Autonomous Underwater Vehicles (AUV) technical management

Release: 1

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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 apply knowledge of Autonomous Underwater Vehicles (AUV) technical management.

This includes applying technical knowledge of AUV battery technology, AUV operations and systems, AUV systems in the design and execution of diagnostic missions; and conducting technical post-mission and vehicle performance analysis.

This unit applies to people working in the maritime industry in the capacity of:

- AUV Technician.

This unit applies to AUV operations being conducted in Near Coastal (NC) waters within the limits of the operators AMSA Certificate of Competency.

Licensing/Regulatory Information

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

Pre-requisite Unit

MARH030 Apply knowledge of core Autonomous Underwater Vehicles (AUV) operations

MARH032 Conduct advanced Autonomous Underwater Vehicles (AUV) operations

MARH034 Demonstrate fundamental knowledge of Autonomous Maritime Systems (AMS) operations

MARH035 Demonstrate fundamental knowledge of Autonomous Maritime Systems (AMS)

Competency Field

F – Operational Quality and Safety

Unit Sector

Maritime Sector

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 Apply technical knowledge of AUV battery technology

- 1.1** AUV battery performance is logged and assessed according to operating procedures
- 1.2** AUV ground fault detection procedures are conducted

2 Apply technical knowledge of AUV operations and systems

- 2.1** Technical analysis of AUV acoustic communication systems is conducted
- 2.2** Technical analysis of AUV networks and security systems is conducted
- 2.3** Technical analysis of an AUV's internal state and decision-making processes is conducted
- 2.4** AUV calibrations for inertial navigation systems (INS), pitch-fin and rudder-fin control is conducted
- 2.5** Advanced principles of electromagnetic (EM) and radio frequency (RF) communications are outlined

3 Apply technical knowledge of AUV systems in the design and execution of diagnostic missions

- 3.1** AUV mission with faulty navigation involving doppler velocity logger (DVL) and INS is conducted and diagnosed
- 3.2** AUV mission with faulty control is conducted and diagnosed
- 3.3** AUV mission with faulty long baseline (LBL) array is conducted and diagnosed
- 3.4** AUV mission with poor ballast is conducted and diagnosed
- 3.5** AUV mission with untuned proportional-integral-derivative (PID) control is conducted and diagnosed
- 3.6** AUV mission aided with ultrashort baseline (USBL) is conducted and diagnosed

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| 4 Conduct technical post-mission and vehicle performance analysis | 4.1 | Technical post-mission analysis and vehicle performance analysis is conducted using graphical and numeric analysis |
| | 4.2 | Technical reports for diagnostic missions are completed according to operating procedures |

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>