Australian Government

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

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 demonstrate fundamental knowledge of Autonomous Maritime Systems (AMS) operations.

This includes explaining elements of risk that apply to AMS operations, critical elements involved in AMS operations, elements and process of mission planning, importance of and interplay between post-mission analysis and vehicle performance analysis; outlining regulatory framework and rules that govern AMS operations and best-practices for data management; and determining immediate and longer-term future for AMS.

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

- Autonomous Underwater Vehicles (AUV) and Autonomous Surface Vessel (ASV) Operators
- AUV and ASV Technicians
- a person managing, leading, or supporting AMS operations.

This units applies to AUV and ASV 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

Not applicable.

Competency Field

H – Navigation

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. Explain elements of risk that apply to AMS operations	**1.1** Hazards for AMS operations are identified
	1.2 Key challenges for AMS insurance and liability are identified
	1.3 Important lessons learned from historical case studies of AMS loss and/or damage are outlined
2. Outline regulatory framework and rules that govern AMS operations	**2.1** Regulatory framework for the Australian Maritime Safety Authority (AMSA) and AMS operations is outlined
	2.2 Implementation of AMSA regulations for 'autonomous operation' is explained
	2.3 Implementation of AMSA regulations for 'underwater' operations is explained
3. Explain critical elements involved in AMS operations	**3.1** Key personnel and roles in AMS operations are outlined
	3.2 Key equipment and key phases in AMS operations are outlined
	3.3 Critical factors in AMS search and rescue are explained
4. Explain elements and process of mission planning	**4.1** Sources of navigational charts are identified, and key information extracted
	4.2 Core elements of mission planning software are outlined
	4.3 Principles of depth-controlled (ASV and AUV) and altitude-controlled (AUV) missions are explained
	4.4 Key elements of mission execution and monitoring are outlined
5. Explain the importance of	**5.1** Use of post-mission analysis to assess mission success

	and interplay between post-mission analysis and vehicle performance analysis		and refine data collection is explained
		5.2	Use of vehicle performance analysis to assess AMS behaviour and improve mission outcomes is explained
6.	**Apply practical approaches to undertaking complex AMS missions**	**6.1**	Best practises for planning AMS operations around infrastructure are determined and outlined
		6.2	Best practises for planning AMS operations in strong currents are determined and outlined
		6.3	Best practises for planning AUV missions over submerged riverbeds are determined and outlined
		6.4	Best practises for planning AUV missions over steep terrain are determined and outlined
7.	**Outline best-practices for data management**	**7.1**	Fundamental principles of documenting metadata are identified
		7.2	Fundamental principles of data storage and backup are identified.
8.	**Determine immediate and longer-term future for AMS**	**8.1**	Next generation of AMS, including sensors, are identified
		8.2	Challenges for multi-platform campaigns are determined

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