



Australian Government

NWPHYS007 Use underwater acoustics to map waterways

Release: 1

NWP HYS007 Use underwater acoustics to map waterways

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to use underwater acoustics to map waterways.

It includes applying acoustic theory and using single beam, side scan sonar and swath echo sounders. It also includes using sonar systems, reviewing and reporting results and understanding the differences between the different methods.

This unit supports the attainment of skills and knowledge required for leaders with responsibility for performing hydrographic surveying and may lead to certification as a hydrographic surveyor.

Pre-requisite Unit

Not applicable.

Competency Field

Hydrographic Surveyor

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Apply underwater acoustics

PERFORMANCE CRITERIA

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

- 1.1 Analyse and determine the generation of acoustic waves in relation to hydrographic surveying
- 1.2 Analyse the propagation of acoustic waves for hydrographic surveys

- 1.3 Determine reflection and scatter of acoustic waves and analyse effects on system performance of acoustic equipment
 - 1.4 Analyse the reception of acoustic waves for hydrographic surveys
 - 1.5 Analyse the sonar equation for hydrographic surveys
 - 1.6 Apply quality control procedures to data acquisition and on-line processing to validate information according to workplace procedures
- 2 Use sonar systems**
- 2.1 Set up, deploy, operate and adjust underwater sonar systems according to manufacturer specifications and workplace procedures
 - 2.2 Interpret echo sounder returns through differentiation between return signals
 - 2.3 Calculate and report components in derived ranges according to workplace procedures
 - 2.4 Determine and analyse beams in relation to transducer settings
 - 2.5 Use phase and amplitude multibeam systems
 - 2.6 Analyse returns in the context of marine floor type, angle of incidence and backscatter from within the water column
 - 2.7 Determine sounding density and object detection capability as functions of system parameters
 - 2.8 Determine and use suitable mounting structure and location for transducers according to manufacturer instructions
 - 2.9 Determine and analyse error sources for phase and amplitude detection modes
- 3 Review and report acoustic results**
- 3.1 Review processes to ensure accuracy of information gathered, report anomalies and analyse solutions
 - 3.2 Complete acoustic reports and present to relevant personnel according to workplace procedures and industry standards

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.

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=26336bc0-04e5-49d9-8c31-46c49b6a0037>