

# Hydrographic Surveyor Certification Roles, Responsibilities and Definitions

## 1.0 Standards of Competence for Hydrographic Surveyors

The Australasian Hydrographic Surveyors Certification Panel (AHSCP) certifies hydrographic surveyor competence generally in accordance with the International Hydrographic Organisation (IHO) Publication S-5A, Standards of Competence for Category A Hydrographic Surveyors and S-5B, Standards of Competence for Category B Hydrographic Surveyors. S-5 is a Syllabus for Educational and Training Programmes, principally Category A and Category B Hydrographic Surveyors.

The subjects covered under the Standards are:

### S-5A Category A Hydrographic Surveyor

- **Basics:** Mathematics Statistics, theory of observations, Information and Communication Technology, Physics and Nautical Science, and Meteorology.
- **Foundation Science:** Earth Models, Oceanography, Geology and geophysics
- **Hydrographic Science:** Positioning, Underwater Sensors and Data Processing, LiDAR and Remote Sensing, Survey Operations and Applications, Water Levels and Flow, Hydrographic Data Acquisition and Processing, Management of Hydrographic Data, Legal Aspects.
- **Complex Multidisciplinary Field Project**

### S-5B – Category B Hydrographic Surveyor

- **Basics:** Mathematics Statistics, theory of observations, Information and Communication Technology, Physics and Nautical Science, and Meteorology.
- **Essentials:** Underwater Acoustics, Remote Sensing, Water Levels and Flow, Positioning, Hydrographic Practice, Hydrographic Data Management and Environment.

## 2.0 Hydrographic Surveyor Certification

Hydrographic Surveyors are certified at two competency levels, Level 1 and Level 2, which approximate the Category A and Category B academic qualification but with important differences. In addition to recognising the academic qualifications of an applicant who has completed a Category A or Category B course, the AHSCP also recognises equivalent qualifications and all applicants must demonstrate appropriate practical experience in order to attain certification as a Hydrographic Surveyor.

### 2.1 Level 1 Certification

Certification as a Level 1 Hydrographic Surveyor is the highest attainable level of professional hydrographic surveying certification. As a Level 1 Hydrographic Surveyor an individual is expected to have:

- A deep understanding (degree equivalent level) of the theoretical aspects of hydrographic surveying.
- Extensive experience in practical hydrographic surveying.
- Experience in leadership and management of project teams.

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A Level 1 Hydrographic Surveyor is expected to:

- Plan, undertake and manage complex hydrographic surveying projects.
- Identify sources of error and resolve data discrepancies.
- Maintain quality assurance principles.
- Provide professional advice on hydrographic matters.
- Compile and approve project reports.

## 2.2 Level 2 Certification

Certification as a Level 2 Hydrographic Surveyor recognises a practical comprehension of hydrographic surveying and is the initial professional level of hydrographic surveying certification. As a Level 2 Hydrographic Surveyor an individual is expected to have:

- A fundamental understanding (Diploma equivalent level) of the theoretical aspects of hydrographic surveying.
- Practical experience in conducting various hydrographic surveying tasks.

A Level 2 Hydrographic Surveyor is expected to:

- Undertake the survey plan as directed.
- Process data
- Prepare charting and reporting.

## **3.0 Certification of Sub-Specialisms**

Applicants are initially certified at Level 1 as a Hydrographic Surveyor i.e. they have demonstrated the requisite academic qualifications and experience to undertake any form of hydrographic survey at Level 1. The certified Hydrographic Surveyor is therefore a 'generalist', in theory able to undertake any type of hydrographic survey task. A similar 'generalist' analogy would be a medical student, who on passing their exams, then consolidates via practise as a General Practitioner.

The AHSCP however, also recognises that many surveyors will sub-specialise in a particular field of hydrography and may therefore wish to seek additional certification in that particular sub-specialism (discipline). The AHSCP considers that identifying a sub-specialism as an important activity. It aids in quickly identifying a hydrographic surveyor to conduct a very particular and more specifically practiced component of Level 1 hydrographic surveying.

Certification in any sub-specialism of hydrography may be applied for at the initial application or at any time post-certification. Certification in multiple sub-specialisms is possible.

Level 1 Hydrographic Surveyors can be certified in the following sub-specialisms of hydrography:

- (i) **Hydrography in support of Coastal Management** - incorporates previous S-5 Optional Units Nautical Charting, Military Hydrography, Remote Sensing and Hydrography to support Port Management and Coastal Engineering. Applicants will need to demonstrate a higher level of experience and expertise against the following S-5A units:
  - a. F1.3 – Land surveying methods and techniques
  - b. F3.1 – Geology
  - c. F3.2 – Geophysics
  - d. H2.5 – Backscatter
  - e. H3.1 – LiDAR

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- f. H3.2 – Remote Sensing
  - g. H4.1 – Hydrographic Survey Projects – with a focus on Dredge surveys, Port limit surveys, Berth surveys, Geotechnical surveys, Geophysical surveys, Engineering surveys, Profiling monitoring, Estuarine surveys, Rapid environmental assessment surveys and Climate change investigation.
  - h. H4.3 – Seabed Characterisation
  - i. H5.3- Tide Modeling
  - j. H5.4 – Ellipsoidal Separation models and vertical datums
  - k. H7.3 – Spatial Data Integration and Deliverables – with a focus on survey plans and drawings
- (ii) **Hydrography in support of Inland Waters Management** – incorporates previous S-5 Optional Units Inland Waters Hydrography and Remote Sensing. Applicants will need to demonstrate a higher level of experience and expertise against the following S-5A units;
- a. F1.3 – Land Surveying methods and techniques
  - b. H3.1 – LiDAR
  - c. H3.2 – Remote Sensing
  - d. H4.1 – Hydrographic Survey Projects – with a focus on Dam Surveys, River and Lake Surveys, Hydraulic engineering surveys, Flood plain mapping, Elevation modeling, and Volumetric Calculations
- (iii) **Hydrography in support of Offshore Infrastructure Development** - incorporates previous S-5 Optional Units Offshore Seismic Surveys, Offshore Construction Hydrography and Remote Sensing. Applicants will need to demonstrate a higher level of experience and expertise against the following S-5A units;
- a. F3.1 – Geology
  - b. F3.2 – Geophysics – with a focus on F3.2c Seismic Surveys
  - c. H1.4 – Subsea Positioning
  - d. H2.5 – Backscatter
  - e. H3.1 – LiDAR
  - f. H3.2 – Remote Sensing
  - g. H4.1 – Hydrographic Survey Projects – with a focus on Geophysical surveys, Seismic surveys, Rig positioning, Engineering Surveys, Volumetric calculations, Pipe and cable lay, Jacket / Platform installation, Seabed Mapping, Pipeline route surveys, and Geotechnical surveys.
  - h. H4.3 – Seabed Characterisation
- (iv) **Hydrography in support of Safe Navigation** - incorporates previous S-5 Optional Units Nautical Charting, Military Hydrography and Remote Sensing. applicants will need to demonstrate a higher level of experience and expertise against the following S-5A units :
- a. F1.3 – Land Surveying methods and techniques
  - b. F2.1 – Physical Oceanography and measurements
  - c. H3.1 – LiDAR
  - d. H3.2 – Remote Sensing
  - e. H4.3 – Seabed Characterisation
  - f. H4.1 – Hydrographic Survey Projects – with a focus on planning, collection, assessment and presentation of data to support marine navigation, rendering surveys to support official navigation products, Mine countermeasures, Route surveys, Submarine bottoming areas, and Surveys for declaration of depth.
  - g. H5.3 – Tide Modeling
  - h. H5.5 - Currents
  - i. H7.3 – Spatial Data Integration and Deliverables – with a focus on Nautical charting and Military Survey requirements
  - j. H8.2 – Maritime Zones