

# On Becoming a Certified Hydrographer

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## Abstract

This paper presents a path for individuals aspiring to be hydrographic surveying specialists and professionals and wish to acquire hydrographic certification under the ACLS International Hydrographic Certification Scheme (IHCS). The IHCS ensures hydrographers have the appropriate skill, knowledge, experience, and continuous professional development to meet contemporary demands on a global basis.

The IHCS applies Fédération Internationale des Géomètres (FIG) International Hydrographic Organization (IHO) and International Cartographic Association (ICA) competency standards for hydrographic surveyors by confirming evidence of the following criteria:

- academic study
- relevant employment history and work experience,
- continuous professional development

Three tracks to certification have been identified: Fast, Medium, and Slow. The paper addresses procedures for candidates who have graduated from a recognized Category S-5A and Category S-5B academic programs. In addition, a roadmap is presented to graduates from other institutes that have a focus on ocean mapping such as the Canadian Ocean Mapping Research and Education Network (COMREN).

## ACLS International Hydrographic Certification Scheme

The ACLS International Hydrographer Certification Scheme (IHCS) provides a pathway for certification of hydrographic surveyors to international standards.

The IHCS is recognized by the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC).

The IHCS has implemented an International Hydrographic Certification Panel (IHCP) to review and assess candidates against the IHCS.

### **Levels of Hydrographic Certification**

There are three (3) Levels of Hydrographic Certification under the International Hydrographic Certification Scheme (IHCS).

- 1 The Certified Hydrographic Executive (CHE)
- 2 Level 1: Certified Hydrographer (CH)
- 3 Level 2: Certified Hydrographic Technician (CHTech)

Each Level has a set of requirements that are based on both the applicants educational background and work experience. In regards of the educational background, the Canadian Board of Examiners for Professional Surveyors (CBEPS), has exams on relevant subject matter that can assist applicants in bridging the gap from their existing academic qualifications to those required under the guidelines of the IHCS.

There is also available a “CH in Training” and a “CHTech in Training” level to accommodate students interested in acquiring hydrographic certification.

### **General Requirements and Approaches to Certification**

In all levels of Hydrographic Certification, the hydrographer must have the skills, knowledge and ability that are important for the safety of the worker, protection of the environment, as well as property. Therefore, the candidate shall be required to show proof of successful completion of the following marine courses, or equivalent:

- 1 Restricted Radio Operator’s Certificate
- 2 Marine Safety at Sea
- 3 Small Vessel Operator Proficiency

In all three levels, the candidate will be required to show proof of work experience through a Logbook and show competencies through two comprehensive Project Report.

There are three (3) approaches by which a candidate can achieve their desired level of Hydrographic Certification:

**Fast Track** – Provides a concise and clear path to certification whereby the applicant has graduated from an IBSC recognized Category S-5A or Category S-5B educational program.

**Medium Track** – Provides a more complex approach to certification whereby the applicant may not have graduated from an IBSC recognized program but has graduated with a BSc (or equivalent) and has taken additional focused hydrographic surveying subjects. There is provision in this approach for candidates who have completed some or all CBEPS exams or hold a CLS commission from the ACLS.

**Slow Track** – Provides a complicated, but achievable, approach to certification whereby the applicant has not graduated from an IBSC recognized program. In this situation, the applicant is required to show proof of significant additional learning via the CBEPS exams (or equivalent). There is provision in this approach for candidates who have completed some or all CBEPS exams or hold a CLS commission from the ACLS.

Table 1, 2 and 3 provides a general overview of the three tracks for Hydrographic Certification under the IHCS for each of the hydrographic certification levels. The reader is advised to visit the ACLS webpage for in-depth set of documentation explaining the requirements in their entirety.  
<https://www.acls-aatc.ca/members-home/forms/>

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	Education	Experience	Reporting
Fast Track	Category S-5A	2 years with 60% Hydrographer in Charge	Evidence of high-level management (e.g. Project Charter, Field Instructions, Policy and/or Standards Development, National and/or International Committees, Publications)
Medium Track	Category S-5B + BSc Geomatics	3 years with 60% Hydrographer in Charge	Evidence of high-level management (e.g. Project Charter, Field Instructions, Policy and/or Standards Development, National and/or International Committees, Publications)
Slow Track	BSc Geomatics + CBEPS E2 Advanced Hydrographic Surveying course	5 years with 60% Hydrographer in Charge	Evidence of high-level management (e.g. Project Charter, Field Instructions, Policy and/or Standards Development, National and/or International Committees, Publications)

**Table 1: Approaches for Certified Hydrographic Executive (CHE)**

	Education	Experience	Reporting
Fast Track	Category S-5A	2 years with 60% Hydrographer in Charge	Project Reports to demonstrate the candidate's skills, knowledge and ability as they pertain to the competency required by the Level 1 criteria
Medium Track	Category S-5B + BSc Geomatics	3 years with 60% Hydrographer in Charge	Project Reports to demonstrate the candidate's skills, knowledge and ability as they pertain to the competency required by the Level 1 criteria
Slow Track	BSc Geomatics + CBEPS E2 Advanced Hydrographic Surveying course	5 years with 60% Hydrographer in Charge	Project Reports to demonstrate the candidate's skills, knowledge and ability as they pertain to the competency required by the Level 1 criteria.

**Table 2: Approaches for Level 1: Certified Hydrographer (CH)**

	Education	Experience	Reporting
Fast Track	Category S-5	2 years working in Hydrography	Project Reports to demonstrate the candidate's skills, knowledge, and ability as they pertain to the competency required by the Level 2 criteria.
Medium Track	BSC Geomatics + Has completed CBEPS sections (or equivalent): E(2, 14, 16, 18, 19)	5 years working in Geomatics with 50% in hydrography	Project Reports to demonstrate the candidate's skills, knowledge, and ability as they pertain to the competency required by the Level 2 criteria.
Slow Track	2-3 yr College + Has completed CBEPS sections (or equivalent): C(2, 14, 16, 18, 19) E(2, 14, 16, 18, 19)	5 years working in Geomatics with 50% in hydrography	Project Reports to demonstrate the candidate's skills, knowledge, and ability as they pertain to the competency required by the Level 2 criteria.

**Table 3: Approaches for Level 2: Certified Hydrographic Technician (CH Tech)**

### Education Requirements

The IHCS certification is **not** an award of a Category S-5A or Category S-5B to the candidate.

The following educational programs are recognized by the IBSC as Category S-5A or Category S-5B:

- 1 The University of New Brunswick, Category S-5A
- 2 Marine Institute of Memorial University, Category S-5B
- 3 IIC Academy, Category S-5B
- 4 CIDCO, Category S-5B

The following Canadian Ocean Mapping Research and Education Network (COMREN) educational institutions have received relevant CBEPS exemptions that pertain to Hydrographic Certification under the IHCS:

- 1 York University – Lassonde School of Engineering
- 2 University of New Brunswick
- 3 British Columbia Institute of Technology

The following non-COMREN educational institutions have received relevant CBEPS exemptions that pertain to Hydrographic Certification under the IHCS:

1. Athabasca University
2. Lethbridge College
3. Northern Alberta Institute of Technology
4. Red River College
5. Saskatchewan Polytechnic
6. Southern Alberta Institute of Technology
7. University of Calgary
8. College of the North Atlantic

In cases where a candidate wishes to seek CPEBS exemptions, the candidate shall submit a completed IHCP Self Assessment using the IHCP Self Assessment Form

### **Work Experience**

The Certified Hydrographic surveyor experience is based on “hands-on” whereby the applicant is able to demonstrate that they have had extensive experience in the planning, collection, processing and analysis of the various aspect of hydrographic surveying. These include, but are not limited to, the following,

- 1 airborne bathy lidar
- 2 satellite derived bathymetry
- 3 remote operation of autonomous vehicles (surface or subsurface)
- 4 multibeam, singlebeam, sidescan, etc

Note, the majority of hydrographic surveys are still conducted by traditional at-sea survey vessel operations. Consequently, it is required that 75% of the hands-on experience include sea-time whereby the hydrographer is physically conducting survey operations on board a hydrographic survey vessel.

The experience for all candidates shall be detailed in the IHCP Experience Logbook. The purpose of the Logbook is to provide the IHCP with sufficient information to determine the candidate's achievement of specific hydrographic and/or offshore experience criteria, and the candidate's achievement of the requisite degree of hydrographic and/or offshore surveying competence for the certification level sought.

### **Project Report**

The Hydrographic Certification candidate will be required to submit two (2) comprehensive Project Reports that are approved for submission by the IHCP.

The goal of the Project Reports is to test the candidate's knowledge, implementation, and evaluation of procedures, standards, contracts, logistics, and survey equipment; assess the candidate's ability to liaise with the project team, client, and exterior organizations; and project management skills.

The IHCP Project Report Submission Guidelines provides detailed guidance on what constitutes an acceptable project, the required level of involvement by the candidate and general project report requirements.

### **Process of Application**

All applicants for Hydrographic Certification under the IHCS are required to submit a comprehensive set of documentation as per the IHCS set of guidelines and forms. The reader is advised to visit the ACLS webpage for the most up-to-date set of documentation. <https://www.acls-aatc.ca/members-home/forms/>

- IHCP Application, and IHCP Application Checklist
- IHCP Logbook Instructions for Initial Application and Logbook Summary
- Project Report Submission Guidelines and Project Report Approval Request
- Marine Course or Equivalent Instructions and Marine Course Equivalents
- IHCP Self Assessment Instructions and Self Assessment

Applicants can appeal the decision of the IHCP. In all cases the certified hydrographer is required to follow a Code of Ethics that governs the professional conduct of hydrographer.

Successful candidates will be issued a certificate indicating the Level attained and using either the CHE, CH or CH Tech designation. Those who have demonstrated academic training as either FIG/IHO/ICA Category S-5A, or S-5B, will have it mentioned on their certificate.

### **Continuous Professional Development**

All CHE, CH and CH Tech designation holders will have to meet the IHCS mandatory Continuous Professional Development (CPD) conditions. CPD must be recorded must be recorded via the GeoEd Canada website at <https://www.geoed.ca>.

Finally, a fee structure is in place for all candidates to support the administration of the certification process under the Association of Canada Lands Surveyors (ACLS).

### **Summary**

The ACLS International Hydrographic Certification Scheme (IHSC) has been developed to ensure that hydrographic services are provided to the public and private industry by certified and competently trained professional individuals.

There are three (3) levels of Hydrographic Certification: the Certified Hydrographic Executive, the Certified Hydrographer, and the Certified Hydrographic Technician. There is also available a “CH in Training” and a “CHTech in Training” level to accommodate students interested in acquiring hydrographic certification.

Each of the three levels have a Fast Track, Medium Track, and Slow Track approach to acquiring certification. The Fast Track provides a concise and clear path to certification whereby the applicant has graduated from an IBSC recognized Category S-5A or Category S-5B educational program. The Medium and Slow Tracks are more complex approach, but achievable and are based on the applicant’s educational background other than an IBSC recognized Category S-5A and S-5B program.



In all three levels, the applicant it to provide a proof of working experience in hydrography and also must provide a detailed and comprehensive technical report showing their hydrographic skills and competencies.