



The MACHC Hydrographic Certification Program?



Overview of IBSC Cat A & B ... S5 & S8 Program

Canadian Hydrographic Certification Program

Candidates Handbook

Canadian Certification Scheme

Case Studies

Papua New Guinea

New Zealand

Brazil

Summary

IBSC Cat A & Cat B Overview



Category A

S5 (Hydrographic Operations)

S8 (Nautical Cartography)

Category B

S5 (Hydrographic Operations)

S8 (Nautical Cartography)

Portable: Deliverable at customer site



(Marine Geospatial Information Program)

Korea Cat B S5 & S8 Programs



INTERNATIONAL HYDROGRAPHIC REVIEW

NOVEMBER 2017



Notes

SUCCESSFUL DELIVERY OF THE CAT.B MARINE GEOSPATIAL INFORMATION PROGRAMME By the Korea Hydrographic and Oceanographic Agency (KHOA)

The Phase 3 of the Category "B" Marine Geospatial Information Programme was successfully delivered from 3 to 28 July 2017 at the Korea Hydrographic and Oceanographic Agency (KHOA), Busan, Republic of Korea. The programme was run by the Capacity Building Fund of the International Hydrographic Association (IHO) sponsored by the RoK from 2015 to 2017. It was recommended by the IHO/ICA International Board on Standards of Training for Hydrographic Surveyors and Nautical Cartographers (IBSC) in April 2017.

Cat B S8



Cat B S5

Hydrographic Certification

INTERNATIONAL
FEDERATION OF
SURVEYORS



INTERNATIONAL
HYDROGRAPHIC
ORGANIZATION



INTERNATIONAL
CARTOGRAPHIC
ASSOCIATION



**GUIDELINES FOR THE IMPLEMENTATION OF THE
STANDARDS OF COMPETENCE
FOR HYDROGRAPHIC SURVEYORS**

6. PROFESSIONAL CERTIFICATION OR INDIVIDUAL RECOGNITION SCHEMES

The Board *does not provide recognition to individuals* directly. It does however seek to recognize formal systems and schemes that review and assess individuals' experience in order to provide them with professional certification or individual recognition of their Competency. These Schemes offer to monitor and assess

Why Individual recognition is important

General and Technical Specification for Surveying in Finnish lake areas

Savonlinna to Varkaus 2016 (SAVA2016)

- Information on hydrographers-in-charge available for the entire Project. Hydrographer-in-charge **shall** be a FIG/IHO “Category A” hydrographer or equivalent.
- Information on hydrographers (Party Chief/Surveyor in Charge) available for the Field Work on board of the survey vessel(s) at all times. Hydrographer **shall** be at least FIG/IHO “Category B” hydrographer or equivalent and a minimum of 5 years surveying experience including surveying for nautical charting purposes for a national Hydrographic Office.



1 (71)

INVITATION TO TENDER

Date

2017-03-13

Reference Number: 0307-16-03243

INVITATION TO TENDER FOR

**Multibeam Echo Sounder (MBES)
Hydrographic Surveys on Swedish shipping
routes in the Baltic Sea**

- Information on hydrographers-in-charge available for the project. **Shall** be a FIG/IHO “Category A” hydrographer or equivalent.
- Information on hydrographer(s) (Party Chief/Surveyor in Charge) available for the Field Work on-board of the survey vessel(s) at all times. **Shall** be at least FIG/IHO “Category B” hydrographer or equivalent and a minimum of 5 years surveying experience including surveying for nautical charting purposes for a national Hydrographic Office.



**National Maritime Safety Authority (NMSA)
Papua New Guinea**

Asian Development Bank

ADB Loan 2978-PNG

Maritime & Waterways Safe

**Procurement of
Single-Stage: One**

13. Personnel Requirements

Using Form PER-1 and PER-2 in Section 4 (Bidding Forms), the Bidder must demonstrate it has personnel that meet the following requirements:

No.	Position	Total / Similar Work Experience [years]
1	Surveyor-In-Charge, certified Level 1	10
2	Crew members and qualifications - To be stated by Bidders	
3		

Bidder shall propose all personnel based on Bidder's plan to implement the project.

Request for Proposals (RFP)

Hydrographic Surveying Services

2.16 Surveyor-In-Charge (SIC)

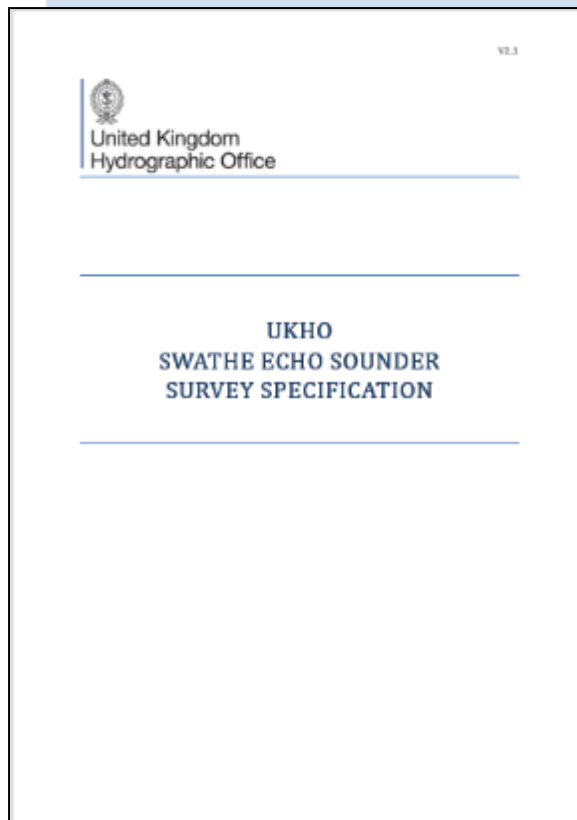
2. As a minimum, the nominated SIC is to have successfully completed an FIG-IHO-ICA IBSC **Category A recognised course and/or an FIG-IHO-ICA IBSC recognised National or Regional Scheme with a specialism in Nautical Charting.**
3. A proven track record of at least **five years recent field experience** as SIC, supported by evidence and references, is required which demonstrates that they are capable of meeting the requirements of a hydrographic survey for nautical charting purposes.

Part B – Swathe Specification

Personnel

B1.1 Charge Surveyor

A Charge Surveyor (Party Chief/Surveyor in Charge) shall be on site during all survey operations. The surveyor in charge shall have completed an IHO/FIG Category A accredited hydrographic survey course (or equivalent) and have a minimum of 5 years offshore surveying experience including surveying for nautical Charting purposes. The Charge Surveyor shall have the authority and experience to make and implement operational decisions and will be available for the Authority to contact regularly to assess progress and modify the survey plan if necessary. The Charge Surveyor's other duties and responsibilities shall be arranged such that they do not interfere with the management of the contract.





Standard Bidding Document

For

For Procurement of Non Consulting Services

Light Detection and Ranging (LiDAR) Bathymetry and
Topography Survey, Data Analysis, Modeling and
Development of High Accuracy Terrain and Bathymetric
Models

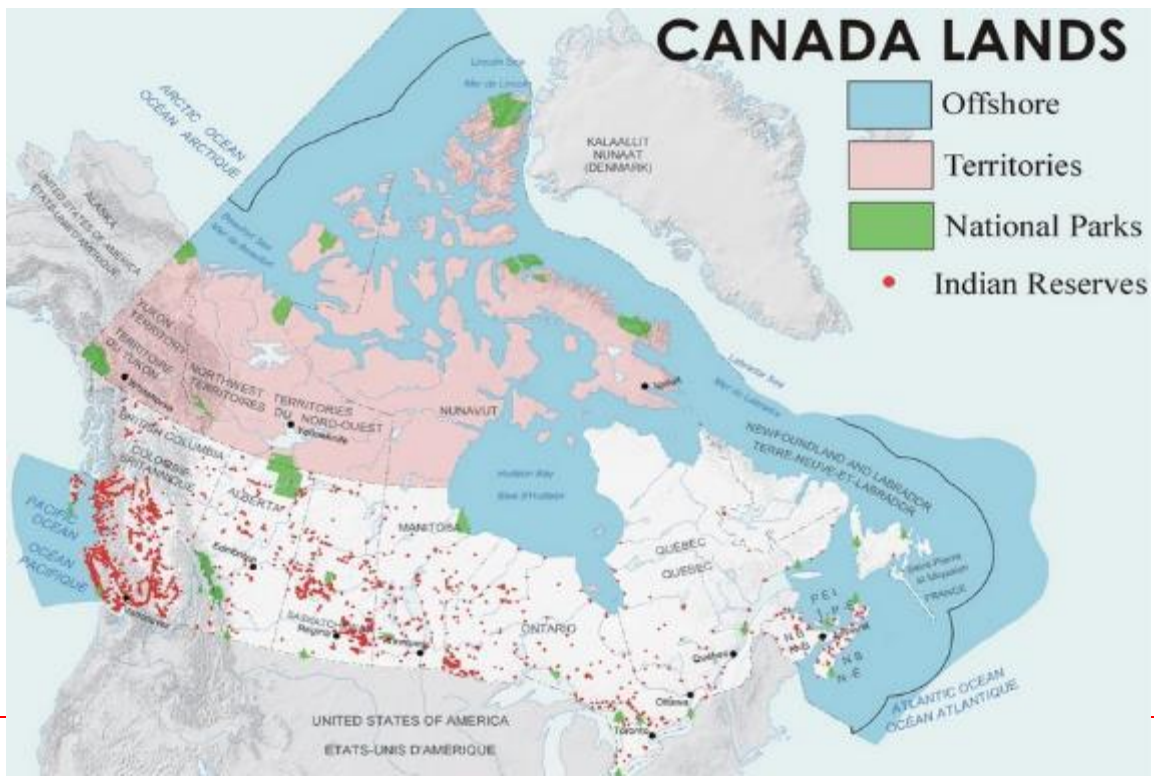
- **Task Leader(s) (Airborne Topographic LiDAR, Airborne Bathymetric LiDAR and Photogrammetrist) - at least 4 years of experience working within respective fields of discipline and Bachelor's Degree in Earth Science, Remote sensing, Geodesy, Photogrammetry, GIS or related discipline.**

Introduction: Canadian Hydrographic Certification Program

Association of Canada “Land’s” Surveyors

16 About ACLS

The ACLS is a non-profit, non-government organization, and the only federally-enacted self-regulated professional surveying association in Canada. The ACLS is multi-disciplinary encompassing all geomatics related services, including hydrographic and offshore surveying.





Association of Canada Lands Surveyors

900 Dynes Road, suite 100E

Ottawa, Ontario, Canada K2C 3L6

☎ 1-613-723-9200

English Français (French)

Offshore Expertise

UNCLOS

**Canadian Hydrographer
Certification Program**

Links and Resources

Canadian Hydrographer Certification Program

The Association of Canada Lands Surveyors (ACLS) has developed a certification model for hydrographers and offshore surveyors which has been officially recognized by the IHO/FIG/ICA International Board of Standards and Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) in April of 2016 and is now ready to receive applications.

The ACLS program is the second internationally recognized one in the world. The program is designed to promote IBSC-Accredited Category A or B training in Canada, while standardizing knowledge and experience requirements for individuals possessing non-accredited hydrographic surveying training and experience.

The ACLS Program has two levels of Certification. The first level is for project leaders and managers and the second level is for technologist. Each level has a variety of itineraries towards certification. There are paths available in both Level 1 and 2 for non-holders of IBSC-Accredited Category A or B training to become certified. The ACLS Certification program is open to both ACLS-commissioned and non-commissioned hydrographic and offshore surveyors in Canada

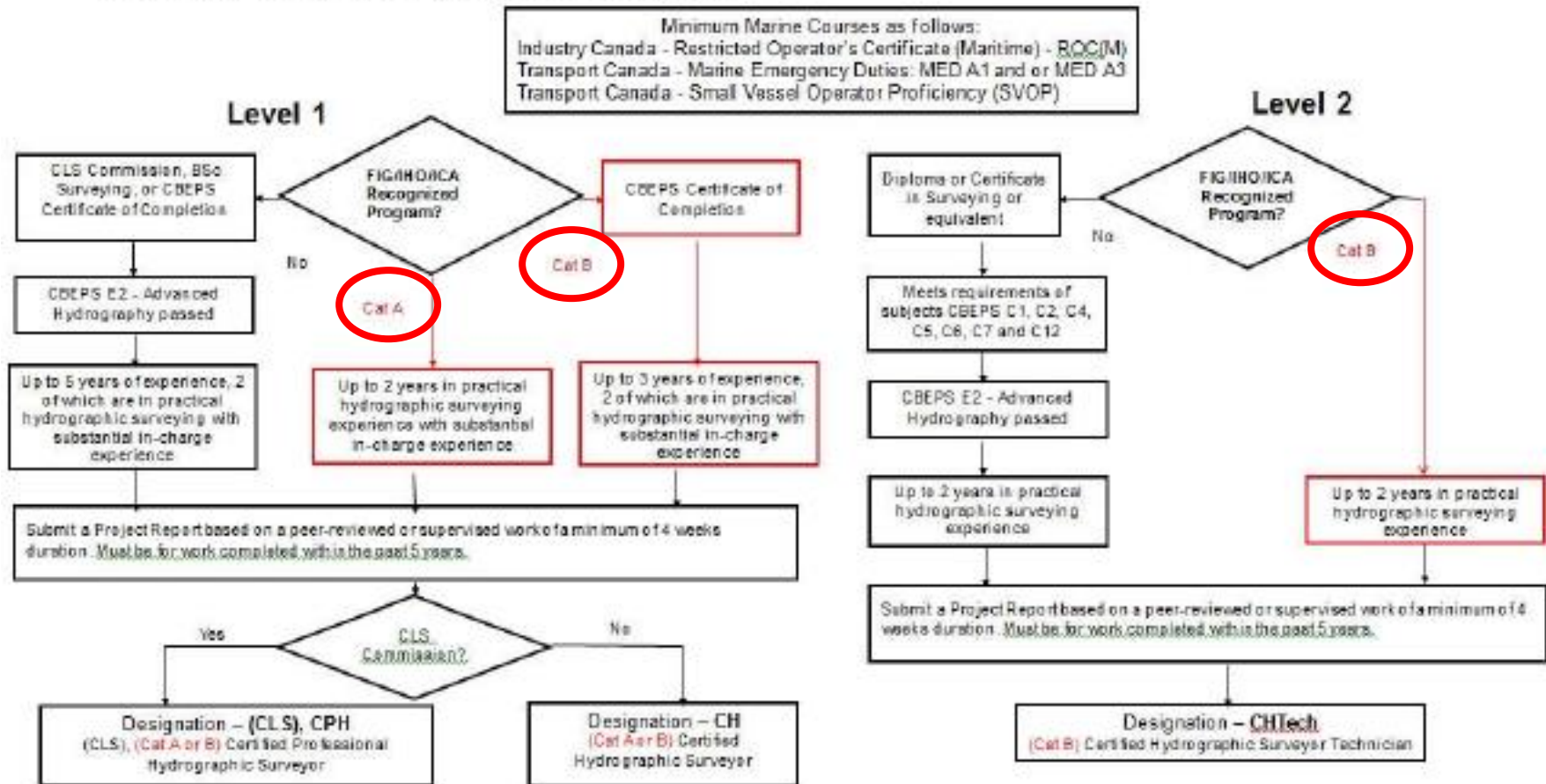
<https://www.acls-aatc.ca/offshore-expertise/canadian-hydrographer-certification-program/>

Certification Scheme for Individuals



Level 1 – Certified Professional Hydrographic Surveyor or Certified Hydrographic Surveyor
Competent to undertake and manage hydrographic surveying projects

Level 2 – Certified Hydrographic Surveyor Technician
Competent to support hydrographic surveying projects



To be clear, no person shall be allowed to use the Category A or Category B designation unless that person has completed an FIG/IHO/ICA recognized Category A or Category B pathways.

2 Scope

The Canadian Hydrographer Certification Panel (CHCP) is structured within the ACLS, comprising of individuals from Government, Academia and the private sector who are experts in various fields of hydrographic and offshore surveying. The CHCP assesses applications under ACLS Hydrographic Certification Scheme and informs the ACLS Board of Examiners of its decisions.

The ACLS Hydrographic Surveyor Certification Scheme was recognized on 8 April 2016 by the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) as complying with the standards defined in Publication S-5: Standards of Competence for Hydrographic Surveyors, Eleventh Edition, Version 11.1.0 dated December 2014.

The ACLS Hydrographic Surveyor Certification Scheme is open to all persons, and to obtain certification a person need not be a member of the ACLS. A person wishing to achieve certification will have to satisfy the requirements stipulated by the relevant criteria.

Canadian Hydrographic Certification Panel 2017



Denis Hains	CHS (Permanent Position)	Government Hydrographic Surveys
Dr. Jonathan Beaudoin	Industry	Academia, Industry
Dr. David Dodd	Industry	Academia, Industry
Julian Goodyear	Private Consultant	Government, Hydrography, Seafarer
Robert Lyall	Industry	Legal Surveys
Andre Roy	Marine Institute (Cat B S5)	Academia
Derrick R. Peyton	Industry	Industry
Dr. Ian Church	University of New Brunswick	Academia
Dr. Jose M'Bala	Natural Resources Canada	Legal Surveys, Oil and Gas Surveys
David Matthews	Public Works Canada	Ports and Harbours

Candidates Handbook

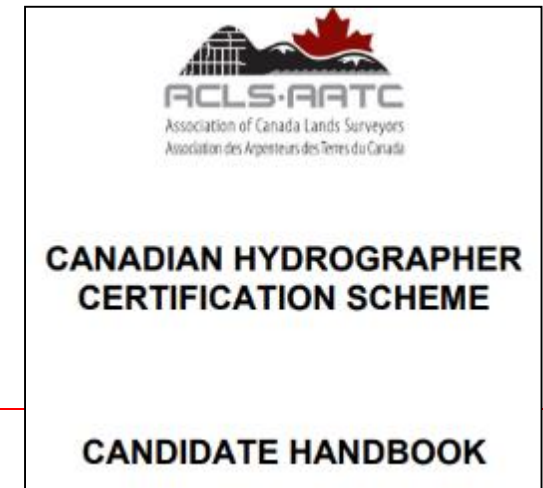
Procedure for Submission

7 Procedures for Submission

The CHCP meets every four months to review applications and notify the ACLS Board of Examiners of its decision. The deadline for the submission is one month prior to each CHCP meeting. Dates of meetings can be obtained from the ACLS Website.

Candidates must provide the following:

- a) A completed application form (available in the “Forms” section of the ACLS Website) and pay the application fee.
- b) Completed copies of the ACLS Hydrographic and Offshore Surveyor Experience Logbook (available in the “Forms” section of the ACLS Website).
- c) Details of their educational background in support of their application (see section 8).
- d) Proof of successful completion of the required marine courses (see section 3).
- e) Copy of a suitable Project Report.



<https://acls-aatc.ca/files/english/forms/CHCP%20Candidate%20Handbook%20March%202017.pdf>

Presentation on the Surveying
Profession

Job Opportunities

- CLS Solemn Affirmation PDF, WORD (PAY FEES)

Hydrographer Certification Program

- CHCP Candidate Handbook (PDF)
- CHCP Application Form (WORD)
- CHCP Application Checklist (WORD)
- CHCP Application Instructions (PDF)
- CHCP Exemption Request Form (WORD)
- CHCP Exemption Request Instructions (PDF)
- CHCP Hydrographic and Offshore Surveyor Experience Logbook (WORD)
- CHCP Logbook Summary (WORD)
- CHCP Logbook Instructions (PDF)
- CHCP Marine Courses or Equivalent Instructions and Form (PDF)
- CHCP Project Report Approval Request (PDF)
- CHCP Project Report Submission Guidelines (PDF)

<https://www.acls-aatc.ca/members-home/forms/>



CANADIAN HYDROGRAPHER CERTIFICATION PANEL

CANDIDATE APPLICATION – INSTRUCTIONS AND DIGITAL FILE STRUCTURE

To ensure the candidate's application is processed efficiently it is critical that the supporting documentation is submitted in a clear and unambiguous manner, **which if not the case will delay certification**. These instructions lay out some of the specifics to achieve that goal to avoid the Canadian Hydrographer Certification Panel (CHCCP) from having to spend time reviewing the candidate's application and send the candidate back to the start. Candidates should refer to the Candidate Handbook and refer to other various forms.



CANADIAN HYDROGRAPHER CERTIFICATION PANEL

CANDIDATE APPLICATION – CHECKLIST

8.2 ACLS Hydrographic and Offshore Surveyor Experience Logbook

The purpose of the Logbook is to provide the CHCP with sufficient information to determine the candidate's achievement of specific hydrographic and/or offshore experience criteria as specified in Section 4 and achieve of the requisite degree of hydrographic and/or offshore surveying competence for the certification level sought.

The Logbook should contain comprehensive descriptions of specific hydrographic surveying tasks or projects undertaken including the following information:

- Task or projects description and their aim.
- The candidate's personal responsibilities.
- Equipment used by the candidate.
- A brief description of the work undertaken in order that the CHCP can determine the practical requirements of the work undertaken.
- Independent authentication of a candidate's involvement in these projects. The CHCP considers authentication by signature on the candidate's Logbook by the candidate's immediate supervisor to be the preferred option.

Surveyor Experience Logbook



CHCP – Hydrographic and Offshore Surveyor Experience Logbook - Instructions

For each project please complete one (1) Logbook Form. Thank you.

For simplicity when submitted, each logbook entry should be a separate entity (usually 2 pages long) and is not to be concatenated together in a continuous multi-page document even when the same supervisor is signing all of the documentation. This should simplify sorting through the various logbook entries.

Hydrographic and Offshore Surveyor Experience Logbook										Year:
										Project Short Title:
Candidate Details										
Surname		Given Name		Address (chose which applies)				Residence / Office		
Address		City		Province / State		Country		Postal Code		
Phone numbers with country and area code		Home Cell		E-mail Address						
Professional Designation(s)				Acronym		Full Wording				
				Acronym		Full Wording				
				Acronym		Full Wording				
Employer Details										
Employer				Address				City		
Province / State		Country		Postal Code		Phone numbers with country and area code		Direct Cell		
Experience Details										
Dates (dd/mmm/yyyy)		Period Days	Office Days	Sea Time Days	CHCP Comments					
From	To									
Total Days										
Description					Particulars					
Project Name / Task										
Project Location										
Vessel / Barge / Rig / Platform Name										
Description of Work					Choose from list on Instructions, page 2					

8.1 Evidence of Educational Qualifications

Canadian Hydrographer Certification Scheme – Candidate Handbook – August 2017

One of the following should be included with application:

- Copy of CLS Commission
- Copy of certificate for the completion of a Category A or B course
- Copy of CBEPS Certificate of Completion
- Copy of diploma or certificate in surveying

Where the candidate has a Bachelor of Surveying (or equivalent) educational qualifications then the candidate will provide at least the following:

- An official transcript(s) of marks (official copy mailed directly to the ACLS Registrar).
- Detailed course description of material covered in each course during the year taken, together with a breakdown of the number of hours spent on each major part.
- Number of hours in the academic term that were reserved for (a) classes and (b) laboratory assignments.
- List of prerequisite courses for each course taken.

Exemptions Request



CANADIAN HYDROGRAPHER CERTIFICATION PANEL

EXEMPTION REQUEST – INSTRUCTIONS

For each CBEPS¹ syllabus item, list the course(s) having equivalent content. Refer to the CBEPS syllabus at <http://cbeeps-ceaq.ca/cms/?q=en/node/86> for the complete description of learning outcomes for syllabus items C1, C2, C4, C5, C6, C7, C12 and E2.

Please Note: At the time of writing this document, for C12 and E2, please refer to the CHCP Candidate Handbook for the relevant Learning Outcomes. These course syllabi will be published on the CBEPS website once endorsed by all of the provincial land surveying associations, which the ACLS is currently actively pursuing.



CANADIAN HYDROGRAPHER CERTIFICATION PANEL

EXEMPTION REQUEST – FORM

Surname: _____ Dr. Mr. Ms. Mrs. First Name: _____

Please provide an Office or Residence address Office Residence

Company Name (if applicable): _____

Address: _____

City or Town: _____ Prov. / Terr. / State: _____ Postal or Zip Code: _____

Country: _____ Tel: _____ Ext: _____ Email: _____

Exemptions Requested are as follows:

- C1 – Mathematics
- C2 – Least Squares Estimation and Data Analysis
- C4 – Coordinate Systems and Map Projections
- C5 – Geospatial Information Systems
- C6 – Geodetic Positioning
- C7 – Remote Sensing and Photogrammetry



CANADIAN HYDROGRAPHER CERTIFICATION PANEL

MARINE COURSES or EQUIVALENTS

The following documentation is provided to show the training provided by the marine courses on the CHCP application form or equivalents to one or more of those marine courses, has been obtained and shall be submitted by the candidate to the CHCP.

- **Innovation, Science and Economic Development Canada - Restricted Operator's Certificate (Maritime) – ROC(M)**

Objectives

This certificate is mainly intended for pleasure boaters, as they do not fall within the scope of Transport Canada's Ship Station (Radio) Regulations, 1999. As of September 1, 2000, Industry Canada delegated the examination and administration of the ROC-M certification program to

8.3 Project Report

The candidate is required to submit a satisfactory Project Report. The purpose of this submission is to allow the CHCP to determine that the candidate has been engaged in hydrographic or offshore surveying at a responsible and professional level. Below are guidelines as to what constitutes an acceptable project, the required level of involvement by the candidate and general project report requirements. It is highly recommend that the candidate structure the project report in accordance with these guidelines.

The subject of the proposed Project Report must be approved by the CHCP before the Report is submitted. In the request for approval the candidate should provide: (a) a general description of the project; (b) the role of the candidate in the project; (c) the purpose of the project, for whom it was done and when it was carried out.

The project must be related to hydrographic or offshore surveying and be of such a nature, extent and level of complexity as to demonstrate clearly the professional competence and judgment required of a professional surveyor.



Canadian Hydrographer Certification Panel

Project Report – Submission Guidelines

As a partial fulfillment towards obtaining certification as a Certified Hydrographer or Certified Hydrographic Technician, the candidate is required to submit a satisfactory Project Report to the Canadian Hydrographic Certification Panel (CHCP). The purpose of the Project Report is to allow the CHCP to validate the candidate's management experience in hydrographic or offshore surveying at a responsible and professional level as well as their ability to communicate in writing.

The goal of the Project Report is to test the candidate's knowledge on specific aspects of hydrographic or offshore surveying including but not limited to the following:

- General presentation
- Project outcomes, conclusions and recommendations
- Project critical analysis
- Hydrographic or offshore survey procedures / equipment / methodologies
- Planning and logistics including mobilization and survey equipment installation
- Safety
- Project execution
- Data collection and reduction including quality control
- Charting, plans and sketches preparation (if applicable)

Project Report Marking Scheme



Marking Scheme

The following marking scheme generally outlines the items upon which the candidates will be evaluated. This marking scheme is based on the ACLS Project Report requirements updated for hydrographic and offshore surveys. Major differences should be explained in the covering letter submitted with the Project Report.

General Presentation

Task	Description	Point Value
1	General appearance of the Project Report including professional layout, table of contents, and layout of appendices	
2	Adherence to best practice principles of writing and grammar	
3	The logical flow of the Project Report	
4	Structure and relevant use of tables, illustrations and images	
Total		4

Project Outcomes, Conclusions and Recommendations

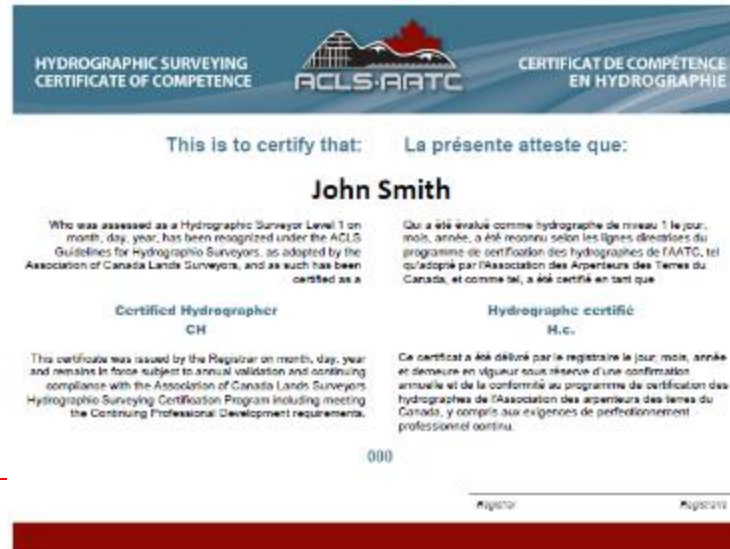
Task	Description	Point Value
1	Brief summary of project outcomes, which may include client expectations, scope of work, budget issues, etc. (No more than 2 pages.)	
2	Executive summary containing a table listing vessel, equipment, survey...	

12 Certificate and Designation

Candidates having met all requirements at the satisfaction of the CHCP for a particular level will be issued a certificate indicating the Level attained. In addition, those who have demonstrated academic training as either Category A or B will have it mentioned on the certificate.

Individuals having completed all of the Level 1 requirements will be able to use the designation CH. If the candidate also completed a Category A or B course, the candidate will be able to use the designation Cat A CH or Cat B CH depending on the IBSC recognized course taken.

Individuals having completed all of the Level 2 requirements will be able to use the designation CHTech. If the candidate also completed a Category B course, the candidate will be able to use the designation Cat B CHTech.





14 Continuing Professional Development

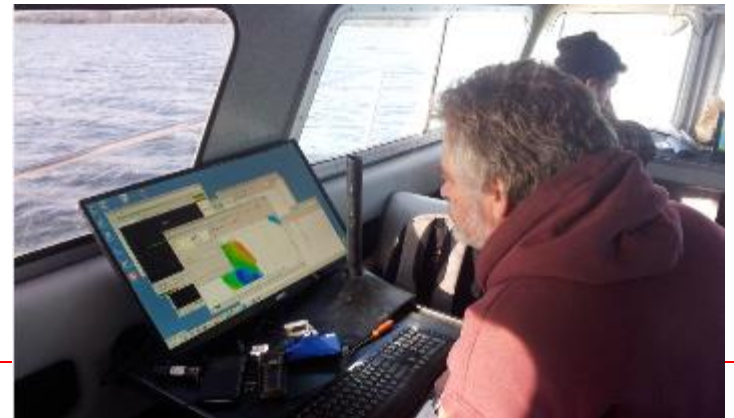
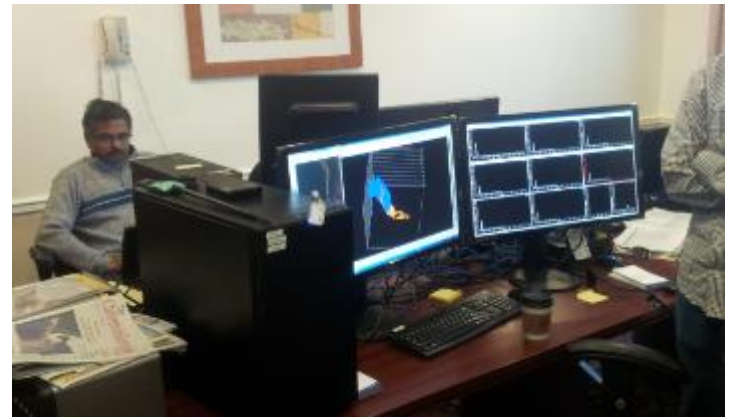
For the purposes of the ACLS Hydrographic Surveyor Certification Scheme, all CH or CHTech designation holders will have to meet the ACLS Mandatory CPD conditions.

The ACLS Registrar and the ACLS CPD Committee manage the ACLS CPD program. The minimum required CPD credit hours is 45 hours over the previous 3 calendar years.

For the ACLS Hydrographer Certification Scheme, a certified individual who is unable to comply with the requirements of the ACLS CPD program due to extenuating circumstances may apply to the Registrar for an exemption.

In all cases mandatory CPD required:

- Focused on hydrographic and/or offshore surveying.
- 45 hours over 3 calendar years.
- Minimum of 5 hours per year of formal Courses and Seminars.



So why not the

MACHC Hydrographic Certification Scheme?

*A MACHC Hydrographic Scheme Sub-Committee
to explore a way forward?*

14:00-15:30

Scaling up geospatial research and innovation to meet the needs of the SDGs

90mins

Moderator: Ms. Carol Agius, UN-GGIM: Europe Administrator, EuroGeographics, Belgium

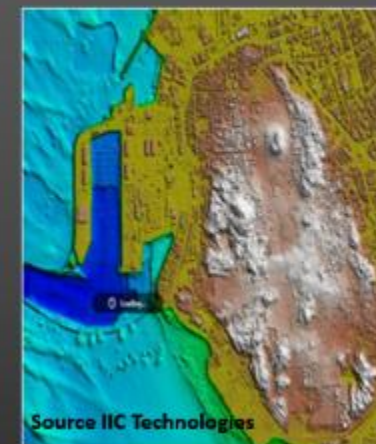
Keynote Presentation: Mr. Rajesh Alla, Chairman & Managing Director, IIC Technologies Ltd., India
(20 minutes)



Ocean & Climate Change Studies



- diverse data sources;
- spatial and temporal components and their correlations over time;
- multiple dimensions of data – collected from physical, chemical, and biological oceanography; marine environment and economy;
- specific attributes such as, water temperature, salinity, pH, density, and velocity
- data validity;
- privacy and confidentiality.



Thank You