10th MEETING OF THE IHO INTER-REGIONAL COORDINATING COMMITTEE
IHO-IRCC10
Goa, India, 4-6 June 2018

Report of the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC)

Submitted by:	Chair, Adam Greenland
Related Documents:	- IHO Work Programme 2017 - WP2017E_approved - IHO 3 Year Work Programme - 3YEARWP2018-2020_ENG - Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (S-5A, S-5B, S-8A & S-8B) - Guidelines for the Implementation of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers - IHR-Nov-2017-Article *Maintaining the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers*
Related Projects:	N/A

Chair:	Mr Adam Greenland, New Zealand (FIG)
Vice-Chair1:	Mr Ron Furness, Australia (ICA)
Vice-Chair2:	Capt Nickolás Roscher, Brazil (IHO)
Secretary:	Mr. Alberto Costa Neves, IHO Secretariat
Members:	IHO: Captain Andrew Armstrong (USA), Commodore Rod Nairn (Australia), Prof. Nicolas SEUBE (Canada); FIG: Mr. Gordon Johnston (UK), Prof. Keith Miller (Trinidad and Tobago), Mr. Sobri Syawie (Indonesia); ICA: Prof. Lysandros Tsoulos (Greece).
Expert Contributors:	N/A
	see Annex D for full details

1. Meetings Held During Reporting Period

The IBSC41 meeting was hosted by Bandung Technical University, Indonesia (16-27 April 2018)
The IBSC42 meeting will be hosted by USA in 2019 (Venue and dates TBD)

2. Work Program

In addition to the annual meeting the IBSC has been working on the following tasks:

- New standards development - IBSC to develop a new Standards framework to separate competency requirements for Cat A and Cat B (Task 3.3.9.1, IHO Work Programme for 2017) and,
- Review the IBSC standards and maintain IBSC Publications (Task 3.8.4, IHO 3 year Work Programme 2018-2020)

Following decisions made at IRCC9 and IHO MS approval and adoption of S-8A and S-8B by CL45/17 and CL54-17 the following standards were published in 2017:

- S-5A *Standards of Competence for Category "A" Hydrographic Surveyors* (Ed. 1.0.1, June 2017)
- S-5B *Standards of Competence for Category "B" Hydrographic Surveyors* (Ed. 1.0.1, June 2017)
- S-8A *Standards of Competence for Category "A" Nautical Cartographers* (Ed. 1.0.0, September 2017)
- S-8B *Standards of Competence for Category "B" Nautical Cartographers* (Ed. 1.0.0, September 2017)

They are accompanied by the companion document *Guidelines for the Implementation of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers* (Ed 2.0.0, March 2017)

Engagement with the SEPRHC13 meeting, from 21 to 25 August 2017, in Cartagena, Colombia and visits to both Colombian academies - Academy for Petty Officers in Barranquilla and Course for Officers (Academy in Cartagena).

Article published in the IHR (November 2017) *Maintaining the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers* (available from www.iho.int/ibsc).

Sixteen (16) submissions were reviewed at the IBSC41 meeting against the new standards. The table below provides a summary of submissions reviewed.

Status	**N.**	**Standards of Competence**
Recognized	3	2 x Hydro S-5B 1 x Hydro S-5A
Recognized with Conditions	11	4 x Hydro S-5A 6 x Hydro S-5B 1 x Carto S-8A
Not recognized	2	1 x Hydro S-5A 1 x Carto S-8A
Total	**16**	

Full details of all 16 programmes are listed in **Annex A**. Note there were 5 new programmes submitted for recognition at IBSC41.

During IBSC41, the Board also reviewed the Guidelines for the Implementation of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers, considered requests for extensions (listed in **Annex A**) and other matters related to recognized programmes and schemes. This included, reviewing the annual reports received from institutions holding recognized programmes, adopting a formal process for receipt and intersessional review of annual reports, and reviewing the Rules of Procedure and the development of a document with lessons learned and frequently asked questions to support submitting institutions (see Tasks in **Annex B**). The Standards were reviewed following comments and proposals from IHO MS and clarifications/minor amendments were made to S-5A and S-8A (see Amendments to Standards and Guidelines in **Annex C**).

In the afternoon of the 25 April, the IBSC held a stakeholders' seminar with the following participants

- Head of Geospatial Information Agency
- Indonesian Hydrography Council
- Indonesian Surveyor Association
- Members of FIG/IHO/ICA IBSC
- Naval Hydro-oceanographic Education Centre

- National Forum of Chairs of Geodesy and Geomatics Study Programs
- Indonesian Association of Marine Survey Contractors
- Indonesian Association of Survey, Mapping, and Geospatial Information
- Indonesian Geodesy Students Association

3. Progress on IRCC Action Items
IRCC9 Action items 25 and 27 have been completed by the IHO Secretariat

4. Problems Encountered
The workload of the IBSC peaked at IBSC41 with 16 programmes submitted for review which coincided with the resignation of one IHO Board member (see below). The main problem is the poor quality of some submissions. The resources and effort required to identify issues, offer guidance and make corrections can be quite substantial which may require a part/full re-submission intersessionally.

The Board discussed the requirement for succession planning and whilst this remains a risk it is being managed. IHO has an established process for selecting new Board members. FIG and ICA Board Members are actively reviewing their succession planning requirements.

5. Any Other Items of Note
Prof. Nicolas SEUBE, Canada (IHO), past Chair 2014-2016, has resigned from the Board, effective April 2018. The IBSC Board Members wish to acknowledge his leadership and service in particular his significant contribution to the work of the Board in developing the new standards framework.

The IBSC acknowledges the high level of support from the IHO Secretariat in delivering the new standards framework and the ongoing work programme of the IBSC.

6. Conclusions and Recommended Actions
The new standards framework has been approved and adopted. The standards have been published in four documents – S-5A, S-5B, S-8A & S-8B with the companion document Guidelines for the Implementation of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers.

The IBSC will now turn its attention to assisting institutions improve the quality of submissions; to increase the likelihood a programme will be recognized at the first review stage, i.e. the *Right First Time* principle.

7. Justification and Impacts
The goal behind the *Right First Time* principle is to minimise the number of issues in programme submissions the first time is it submitted to the IBSC for review. This will prevent the unnecessary waste of time and resources associated with detecting and correcting issues by the IBSC and submitting institutions. Non-value-add activities such as second and third reviews are eliminated as errors are reduced and fewer are returned for multiple review cycles. This has become more critical as the workload of the IBSC has increased with more new programmes and schemes being submitted and the 6 year recognition period. We want to reduce the number of submissions that are either Recognized with Conditions or Not Recognized. Ultimately, the outcome we are seeking is that all programmes are Recognized at the first review stage.

This tasks to achieve this include, but are not limited to; development of FAQs to avoid past mistakes, early engagement with submitting institutions, assistance on interpreting the Standards and Guidelines, review the Guidelines for clarity and consistency, peer review, review submissions upon receipt to ensure all documentation is correct, enforce Guidelines requirements, visits to training institutions and seek opportunities for stakeholder engagement at conferences, meetings and workshops (see Tasks in **Annex B**)

8. Action Required of IRCC

The IRCC is invited to:

a) Note this report;
b) Acknowledge the work done by the Board in the delivery of the new framework for the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers
c) Approve the clarifications/minor amendments made in IHO Publications S-5A Ed 1.0.1 and S-8A Ed 1.0.0 (Annex C)
d) Note the IBSC goal of *Right First Time*
e) Agree the IBSC Proposed Work Plan – Q2 2018 to Q2 2019 (Annex B)
f) Take any other actions as appropriate

Annex A

List of Programmes and Decisions at IBSC41

No	Ed.	Programme	Submitted by		Cat	Last recognition	Decision
HYDROGRAPHY							
1	S-5A 1.0.1	Graduate Programme in Ocean Mapping	University of New Hampshire/NOAA-UNH Joint Hydrographic Center	USA	A	2011	Recognized
2	S-5B 1.0.1	B.S. Marine Science (Hydrography)	University of Southern Mississippi	USA	B	New	Recognized
3	S-5B 1.0.1	Technical Course in Hydrography	Portuguese Hydrographic Institute (IHPT	Portugal	B	2012	Recognized
4	S-5A 1.0.1	Programme for Bachelor of Engineering Degree in Hydrography	Dalian Naval Academy (DNA)	China	A	2012	Recognized with Conditions
5	S-5A 1.0.1	Hydrography Course	Naval Academy "Almirante Padilla"	Colombia	A	2001	Not Recognized
6	S-5B 1.0.1	Naval Technology in Hydrography	Naval Academy "Barranquilla"	Colombia	B	New	Recognized with Conditions
7	S-5B 1.0.1	Specialization Course in Hydrography for Navy Officers	School of Marine Sciences, Navy	Argentina	B	2011	Recognized with Conditions
8	S-5A 1.0.1	Hydrography and Marine Technology Programme (UTM Hydro III)	Universiti Teknologi Malaysia (UTM)	Malaysia	A	New	Recognized with Conditions
9	S-5A 1.0.1	Joint International Hydrographic Applied Science Program (JIHASP)	University of Southern Mississippi/Naval Meteorology and Oceanography Command	USA	A	2011	Recognized with Conditions
10	S-5A 1.0.1	MSc Geospatial Sciences - Hydrographic Surveying	University College London (UCL)/The Port of London Authority (PLA)	UK	A	2010	Recognized with Conditions

11	S-5B 1.0.1	Swedish Hydrographic Science	University of Gothenburg	Sweden	B	New	Recognized with Conditions
12	S-5B 1.0.1	Specialization Programme in Hydrography for Naval Officers	Peruvian Navy	Peru	B	2012	Recognized with Conditions
13	S-5B 1.0.1	Turkish Navy Hydrographic Course	Turkish Office of Navigation, Hydrography and Oceanography (ONHO)	Turkey	B	2011	Recognized with Conditions
14	S-5B 1.0.1	Applied Hydrographic Survey Programme (AHSP)	Fugro Academy / Fugro Great Britain (North) Marine Ltd.	UK	B	New	Recognized with Conditions
CARTOGRAPHY							
15	S-8A 1.0.0	Programme for Bachelor of Engineering Degree in Cartography	Dalian Naval Academy (DNA)	China	A	2012	Recognized with Conditions
16	S-8A 1.0.0	University Degree in Cartography	School of Marine Sciences, Navy	Argentina	A	2012	Not Recognised
Granted one year extension							
	S-5	Australasian Hydrographic Surveyors Certification Panel (AHSCP).	Surveying & Spatial Sciences Institute (SSSI) Competency Scheme	Australia	A B	2012	Granted one year extension

Note: Recognized with Conditions: further requirements or changes are necessary in response to identified issues. The required information is to be submitted within a period specified by the Board (Guidelines 8.2).

Annex B

IBSC Proposed Work Plan – Q2 2018 to Q2 2019

1. The IBSC will assist institutions to improve the quality of submissions to achieve *Right First Time* i.e. to reduce the number of submissions that are either not recognised or conditional recognition

IBSC Tasks

Task	Work Item	Priority	Milestones	Start Date	End Date	Status	Contact Person	Affected Pubs/Standard	Remarks
1	Review of IBSC41 Conditional Recognition submissions	H		Q2-Q3 2018		O	Board Members		Intersessional
2	Develop FAQ *Right First Time* companion document	H		Q4 2018	Q1 2019	P	Chair	New	1 week workshop
3	Review submission process	M	July 2018 Invitation Letters	Q2-Q3 2018		O	Chair IHO Secretariat	Guidelines	*Right First Time*
4	On-site visits to provide guidance and assistance to institutions	M		Q3-Q4 2018		P	Board Members		China, Colombia, Canada, Indonesia-Navy, Malaysia
5	Stakeholder engagement – workshops, presentations	M		2018-19		P	Board Members		Hydro18, Shallow Survey 2018, ICC 2019 General Assembly
6	Review item 6. competency schemes	L		2019		P	Board Members	Guidelines	Intersessional
7	IBSC42	M		2019		P	IHO Secretariat		Venue and dates TBD

Abbreviations:

1) **Priority:** H-high, M-medium and L-low
2) **Status:** P-planned, O-ongoing and C-Completed

Annex C

Clarifications/Amendments to Standards

Standard: S-5A 1.0.1
Task: review Maritime Zones, Delimitations (H8.2a) following proposal from India on the UNCLOS.

H8.2a Delimitations *(B)*	(i) Historical development of 1982 UNCLOS. ~~Baselines – normal (including closing lines); straight and archipelagic~~ (ii) Base points (iii) Low tide elevations (iv) Baselines: normal (including bay closing lines); straight and archipelagic (v) Internal waters. (vi) Territorial seas. (vii) Contiguous zones. (viii) Exclusive Economic Zone (ix) Extended continental shelf. (x) High seas	Define the types of baselines under UNCLOS and how the territorial sea limit and other limits are projected from them, including the use of low tide elevations. Plan and specify hydrographic surveys to be utilized in the delimitation of baselines and maritime boundaries~~Conduct and document surveys with appreciation for the type of baselines and the implication of the baselines~~. Describe the legal operational constraints that apply within maritime zones.

Standard: S-8A 1.0.0
Task: review comments provided by Chile in CL 54/2018 on Printing on Demand and two other clarifications.

F2.6 Depth measurement *(I)*	(i) Evolution of technology and methodologies for depth measurement (ii) Hydrographic vs. bathymetric data measurement (iii) Influence of the environmental factors on depth measurement (iv) Error sources in depth measurement.	Classify different methods and systems used for depth measurement with respect to their accuracy. Assess the suitability of different depth measurement methods to achieve specific ~~surveying and~~ charting objectives. Examine data for depth measurement uncertainty in relation to the measurement methods employed.
C1.5 ~~Cartographic data s~~Scales of measurement of cartographic and geographical variables *(I)*	(i) Scales of measurement of cartographic and geographical variables~~Scales of cartographic data measurement~~: • Nominal scale • Ordinal scale • Interval scale.	Differentiate cartographic and geographical variables~~data~~ according to their scale of measurement.
C4.3g Mapping on demand *(I)*	(i) Customized mapping from existing databases. (ii) Printing up-to-date official nautical chart from an existing catalog	Identify and apply the processes required for mapping and printing on demand.

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7 May 2018

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