INTERNATIONAL HYDROGRAPHIC ORGANIZATION

ORGANISATION HYDROGRAPHIQUE INTERNATIONALE

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CIRCULAR LETTER 83/2015

07 December 2015

ESTABLISHMENT OF THE IHO HYDROGRAPHIC SURVEYS SCOPING PROJECT TEAM (H2SPT)

References:

A. IHO CL 25/2015 dated 17 March - *Reorganized structure of the Hydrographic Services and Standards Committee (HSSC) - Consideration of the need to establish a Hydrographic Surveys Working Group*
B. IHO CL 37/2015 dated 1 June - *HSSC 7th Meeting, 10-13 November 2015, Busan, Rep. of Korea*
C. HSSC action 7/02 - *Participation in the work of the HSSC Hydrographic Surveys Scoping Project Team (H2SPT)*

Dear Hydrographer,

1. As requested by the IHO Hydrographic Services and Standards Committee (HSSC), Reference A sought the views of Member States on the adequacy of IHO Publication S-44 - *IHO Standards for Hydrographic Surveys*, on related work items which might be relevant, if any, and on the possible establishment of a dedicated hydrographic surveys working group.

2. The Directing Committee thanks the 41 Member States that responded to Reference A: Algeria, Australia, Bangladesh, Belgium, Brazil, Canada, Chile, Croatia, Cuba, Ecuador, Egypt, Estonia, Finland, France, Germany, Greece, Iceland, India, Ireland, Italy, Japan, Republic of Korea, Netherlands, Nigeria, Norway, Peru, Poland, Portugal, Romania, Russian Federation, Singapore, Slovenia, South Africa, Spain, Suriname, Sweden, Turkey, Ukraine, United Kingdom, United States and Uruguay.

3. A summary of the responses was prepared by the IHB for further consideration by HSSC at its 7th meeting in Busan, Republic of Korea from 10 to 13 November (Reference B). A copy of the report (without its annexes) is provided in Annex A to this letter.

4. The Committee noted the report and decided to create a Hydrographic Surveys Scoping Project Team (HS2PT) that would be tasked, for one year, to clarify the scope and the deliverables expected from any new hydrographic surveys working group, if and when established. The Committee approved the Terms of Reference provided in Annex B, requesting the Project Team to present its recommendations to the 8th meeting of the HSSC in November 2016. The representative of Brazil at HSSC-7, Mr Nickolas de Andrade ROSCHER, kindly offered to chair the Project Team. According to its Terms of Reference, the Project Team will conduct its work by correspondence.

5. In accordance with established IHO procedures, participation in the Project Team is open to representatives from all IHO Member States, from recognised IHO Observer organizations, and invited expert contributors.

6. As requested by the HSSC (Reference C), the Directing Committee invites Member States and IHO Stakeholders to consider nominating representatives to participate in the H2SPT and, if applicable, provide their name, affiliation, contact information and possible candidacy as an office bearer (Chair, Vice-Chair, Secretary).

7. Nominations should reach the IHB (info@iho.int, with a copy to adso@iho.int) not later than **15 January 2016**.

8. Member States are also encouraged to invite relevant national stakeholders to participate in the Project Team as expert contributors, in addition to the Stakeholders identified in the distribution list.

On behalf of the Directing Committee
Yours sincerely,

Gilles BESSERO
Director

Distribution:

- IHO Member States
- IHO Stakeholders:
  - International Federation of Hydrographic Societies (IFHS)
  - The Hydrographic Society of America (THSOA)
  - Chair, FIG Commission 4
  - 3D at Depth Pty Ltd
  - Aquamap Pty Ltd
  - Argans Ltd
  - Caris
  - EOMAP GmbH & Co.
  - Fugro LADS
  - Fugro Survey
  - Hypack Inc.
  - iXBlue
  - Konsberg Maritime
  - MMT
  - QPS BV
  - Satellite Applications Catapult
  - Teledyne Atlas Hydrographic
  - Teledyne Reson
  - Pilbara Ports Authority, Australia
  - Port of London Authority, UK
  - Center for Coastal and Ocean Mapping/Joint Hydrographic Center (CCOM/JHC) - University of New Hampshire, USA
  - Department of Marine Science – University of Southern Mississippi, USA

Annex A: Document HSSC7-03C - Consideration of the need to establish a Hydrographic Surveys Working Group (*in English only*)

Annex B: Hydrographic Surveys Scoping Project Team (H2SPT) - Terms of Reference (*in English only*)

DOCUMENT HSSC7-03C[1]

7TH MEETING OF THE HYDROGRAPHIC SERVICES AND STANDARDS COMMITTEE

Busan, Republic of Korea, 9-13 November 2015

Paper for Consideration by HSSC

Consideration of the need to establish a Hydrographic Surveys Working Group

Submitted by:	IHB
Executive Summary:	This paper summarizes the responses to IHO CL 25/2015 on the consideration of the need to establish a Hydrographic Surveys Working Group.
Related Documents:	Minutes of HSSC6 (paragraph 4.2 and action HSSC6/11) IHO CL 25/2015 dated 17 March - *Reorganized structure of the Hydrographic Services and Standards Committee (HSSC) - Consideration of the need to establish a Hydrographic Surveys Working Group*
Related Projects:	IHO Work Programme HSSC Work Programme Reorganized structure of the Hydrographic Services and Standards Committee (HSSC).

Introduction

1. During the consideration by HSSC6 of the re-organization of the structure of the working groups of the HSSC, concern was expressed by some Members that not a single working group in the new structure dealt with hydrographic surveying.

2. Discussion during HSSC6 indicated that there might be a need to address the use and standardization of new emerging hydrographic surveying technologies that were not already reflected in the relevant IHO standards and guidelines. The most relevant IHO Standard related to hydrographic surveying is IHO Publication S-44 – *IHO Standards for Hydrographic Surveys* – for which the edition in force is the 5th Edition. The 5th Edition was developed by the Working Group on Standards for Hydrographic Surveys (S-44WG) established in 2005 and adopted by IHO Member States in 2008. The S-44WG was then disbanded.

3. As indicated in its introduction, S-44 is intended to provide the minimum standards that are to be achieved. The publication does not describe the procedures for setting up the necessary equipment, for conducting a survey or for processing the resultant data. In this context, the need to revise S-44 should be driven by the identification of any shortcomings in the current edition or new issues arising from the development of new systems or new procedures. The discussions at the 5th Extraordinary International Hydrographic Conference (EIHC-5) on crowd-sourced bathymetry and satellite-derived bathymetry did not raise any specific requirement to revise S-44.

4. Action HSSC6/11 invited the IHB *to issue an IHO CL inviting IHO MS to provide their views on the scope, topics and work items, if any, to be addressed through the establishment of*

[1] The annexes to the document are not provided here. A complete version of the document can be accessed from the HSSC-7 document page on the IHO web site (www.iho.int > Committees & WGs > HSSC > HSSC-7).

an Hydrographic Surveys WG and on their involvement if such a WG was established. Accordingly, IHO CL 25/2015 sought the opinion of Member States, using the following questions, also attached in Annex A:

a. Does the 5th Edition of S-44 - *IHO Standards for Hydrographic Surveys* meet your current and foreseeable requirements?

b. Have you identified any additional topics to be addressed by the establishment of a Hydrographic Surveys Working Group?

c. If a working group was established, please indicate what would be your contribution to the working group?

d. Any additional comments?

5. This report provides a summary of the responses to CL 25/2015.

Summary of Responses to CL 25/2015

6. The IHB received replies from 41 Member States. The replies are tabulated at Annex B. The reply from Australia was supplemented by the views of a port authority and two survey companies.

7. Less than half of the Member States replied to the CL, thereby indicating an interest in the issues. Less than a fifth of the Member States, 14, indicated that S-44 does not meet their current or foreseeable requirements; 27 of the replies indicated that S-44 meets their current needs. Just over a fifth of the IHO Member States, 18, supported the establishment of a new HSWG and identified additional topics to be addressed. 23 Member States did not support the establishment of a new HSWG. 14 Member States provided additional comments.

8. 25 Member States express their willingness to be involved in a Hydrographic Surveys Working Group, with 15 indicating active involvement; the remainder would participate as correspondence members. Three Member States volunteered to take on the role of vice-chair and two to act as secretary. There was no volunteer to lead a working group.

9. **Conclusion 1**. Although some strong views were expressed in the replies, there was only minority support for the establishment of a new HSWG and even less support for a review of S-44.

10. A summary analysis of the comments received is provided in Annex B. The following table lists the topics and issues raised, for which HSSC might consider identifying subordinate bodies to progress the work under the relevant task of the (draft) IHO Work Programme for 2016:

Subject	Topic/Issue	Discussion	IHO Work Programme Task and Potential HSSC action
S-44	Broaden scope	9 replies suggested a broadening of the scope of S-44 to include standards for surveys in estuarine and rivers, engineering, dredging, environmental and site surveys; this would need to be undertaken in liaison with industry	2.10.2.1 Establish S-44WG
	Continental edge surveys	Two replies highlighted a lack of standards and guidance for continental shelf edge surveys and maritime boundaries; this	2.10.2.1 Establish S-44WG

Subject	Topic/Issue	Discussion	IHO Work Programme Task and Potential HSSC action
		would need to be progressed in liaison with ABLOS	
	New technologies	14 replies noted that S-44 did not contain standards for emerging and new technologies, such as LiDAR, autonomous underwater vehicles (AUV), satellite derived bathymetry, nor was there guidance on crowd-sourced bathymetry (CSB); some of these could be address by the CSBWG, the majority fall outside the CSBWG remit and would need to be addressed by another WG	2.10.2.1 Establish S-44WG and liaise with IRCC/CSBWG
	Change focus	Four replies indicated there was a need to change from equipment focused standards to minimum data quality standards, including a move away from point measurement data to surface accuracy assessment	2.5 Task DQWG
	C-55	One reply noted the lack of standards and guidance on survey assessment for calculation of percentage area surveyed	3.4.3 Refer to IRCC/CBSC
	Depiction of data quality	Two replies highlighted the need to depict the connection between survey data quality with charted data to allow a better appreciation by the chart user	2.5 Task DQWG
C-13	Review/revision	Two replies noted that no revisions had been undertaken to include new technologies in use for the collection of survey data	1.2.4.6 Refer to IRCC/IBSC and/or CBSC and/or establish a specific WG
Data processing	Maximization of data	Four replies identified the lack of guidance and standards to maximize survey data to obtain minimum depths, backscatter and water column data	2.10.2.1 Establish S-44WG
Tides	Use of RTK	Four replies highlighted the	2.7.2

Subject	Topic/Issue	Discussion	IHO Work Programme Task and Potential HSSC action
		lack of guidance and standards for the use of RTK in the determination of vertical heights in separation models	Task TWCWG
Post natural disasters	Surveys	One reply commented on the lack of guidance for the conduct of surveys after natural disasters	2.10.2.1 Establish S-44WG
Third party data	Data assessment	Two replies highlighted the lack of guidance and standards for the assessment of third party data for inclusion in HO databases and associated products	2.5 2.10.2.1 Establish S-44WG and/or task DQWG

Analysis of Responses

11. The responses can be considered under several headings:

a. IHO Publication S-44 – decide whether to broaden the scope of the document beyond the current nautical charting focus in liaison with industry. Suggested areas which could be included were:

(1) standards and guidance for continental shelf edge surveys;

(2) how to incorporate new emerging technologies including crowd-sourced bathymetry and satellite derived bathymetry in liaison with the Crowd-Sourced Bathymetry Working Group (CSBWG);

(3) make the standards data rather than equipment driven, including requirements for full seabed coverage, object detection and positional accuracy,

(4) consider moving focus away from point measurements to bathymetric surface accuracy assessment; and

(5) how to depict data quality standards to connect survey data and charted data for better understanding and clarification by the customer.

b. IHO Publication C-13 – up date in line with current technologies and practices, and additional focus on survey project deliverables;

c. Data Processing – maximizing survey data to obtain minimum depths and backscatter data;

d. Tides – appropriate standards for use of RTK in determination of vertical heights in separation models;

e. Surveys after natural disasters – guidance and procedures for surveys after natural disasters;

f. Third party data – guidance for assessment of third party data for inclusion in HO databases and associated products.

12. The two items, which generated the most comments, were the broadening of the scope of S-44 to include standards on traditionally non-Hydrographic Office related survey tasks and the inclusion of guidance and standards for new and emerging technologies, other than crowd-

sourced bathymetry and satellite derived bathymetry. In line with new technologies and increased data volumes, there were suggestions for S-44 to refocus from point data to surface accuracies with standards for object detection, seabed coverage, backscatter and integrated position systems as well as addressing data processing and the link between survey data and its presentation for use by customers. A number of replies expressed the view that the standards should be data orientated rather than their current product focus. One reply suggested a comprehensive review of S-44 Edition 5.

13. Two replies expressed the view that IHO Publication C-13 – *Manual on Hydrography* was out of date and needed to be revised to include new technologies and methods; however the WG tasked with producing C-13 was disbanded on completion of its work and no mechanism, other than the statement that the IHB would maintain the currency of the publication, was put in place to ensure the currency of the publication. At present the IHB does not have the resources to undertake a review and revision of C-13. Another reply suggested that C-13 should be complemented by separate guidance on specific topics. Additionally it was felt a HSWG could act as a knowledge transfer forum and develop Capacity Building (CB) guidance and requirements for Member States to meet Phase 2 of the IHO CB strategy as well as develop some guidelines on determining the values for the status of survey in IHO Publication C-55 – *Status of Hydrographic Surveying and Nautical Charting Worldwide*.

14. **Conclusion 2**. There is no majority support to establish a new HSWG but a number of issues identified fall under the remit of the disbanded S-44 WG rather than currently active subordinate bodies. It is clear there is some support, albeit not a majority, to review IHO Publication S-44 and/or to address a number of related hydrographic topics, which presently do not have a natural home amongst the current HSSC subordinate bodies.

15. **Conclusion 3**. The majority of identified topics could be allocated to existing subordinate bodies of HSSC and IRCC, although adjustment of Terms of Reference may be required to include these additional tasks.

16. **Conclusion 4**. There are five topics, that most directly relate to S-44 that do not easily lie within the scope of any of the currently established subordinate bodies or active Work Programme tasks. There may therefore be a case for re-establishing the S-44 WG or broadening the remit of the DQWG to include these topics within its Terms of Reference.

Stakeholders' Views

17. At the Shallow Survey 2015 conference an Open Forum on S-44 was conducted to elicit comment and input from a broad spectrum of survey practitioners and equipment manufacturers. The discussions were led by the IHB and assisted by a panel with representatives drawn from government and industry organizations. In general all participants agreed that S-44 was appropriate for surveys for nautical charting, although it was felt there was scope to consider some improvements including a higher specification than Special Order and the format of the publication in general. It was felt there could be a consideration to re-title the publication to make it clearer that the standards were for surveys for nautical charting and that there are other documented standards for data gathering for other uses. It was felt unwise and undesirable to try and create a broader set of standards for gathering data for a variety of survey uses. The use of derogations of some requirements for non-nautical charting surveys could be better explained and the need to refer to the entire document rather than just the Table of Orders should be highlighted to ensure all specifications were met for individual survey orders. Although there was no expressed urgency for the development of standards appropriate for data obtained from Satellite Derived Bathymetry (SDB) and Crowd-sourced Bathymetry (CSB), it was suggested these could be considered in any future work.

18. At the North Sea Hydrographic Commission Re-Survey Working Group meeting held immediately after Shallow Survey 2015, the participants suggested some modularization of the standards to allow a more flexible use of the standards for non-nautical charting surveys. The challenge for HOs on how to use quality data which did not meet all requirements of a particular Order was highlighted as an issue which needs HSSC input and Member State agreement. It was felt some adjustment to Order 1b would be appropriate and necessary to

include SDB data in the future, the creation of a new Order with higher specifications than Special Order, reflecting the significant equipment, techniques, software, processing and visualization advances since the publication of the 5th Edition, could be an area for consideration. There was support for a review of the publication format to clarify its contents to foster more appropriate use and better education to ensure surveys are completed to the full specifications, not just those articulated in the Table of Orders. The entire document should be used as many specifications are articulated in the text.

Options for Consideration

19. The IHB identifies the following options for further consideration by the HSSC:

    a. Option 1 – agree that there is insufficient support in the replies received for forming a new Hydrographic Surveys Working Group; however a number of items and tasks are identified, which may need to be addressed by HSSC and its subordinate bodies;

    b. Option 2 – although there is no majority in the replies for the creation of a new Hydrographic Surveys Working Group, a number of Member States identify a sufficient number of items and tasks to justify the creation of a new working group, for which there is ample support and volunteers for the positions of officers;

    c. Option 3 – agree there is insufficient support in the replies received for forming a new Hydrographic Surveys Working Group; however a number of Member States identify a sufficient number of items and tasks to consider broadening the remit of the Data Quality Working Group (DQWG), possibly to rename it to the Hydrographic Surveys Working Group (HSWG), and for the new group to be tasked with the items and tasks identified in addition to the current tasks of the DQWG;

    d. Option 4 – take no further action other than for HSSC to highlight to existing subordinate bodies those issues which already come within their Terms of Reference and Work Plans.

Action required of HSSC

20. The HSSC is invited to:

    a. **Note** this report;

    b. **Consider** if any of the four options described in paragraph 19 is an appropriate and effective way of addressing the concerns raised in the replies to IHO CL 25/2015;

    c. **Take any other actions** considered necessary.

HYDROGRAPHIC SURVEYS SCOPING PROJECT TEAM (H2SPT)

Terms of Reference and Rules of Procedure

Reference: 7th HSSC Meeting (Busan, Korea, 9-13 November 2015)

1. Objectives

a) consider Doc. HSSC7-03C "Consideration of the need to establish a HSWG";
b) justify the need for "hydrographic survey" related to standardization activities;
c) define the scope (subject areas, technology, standards, data usage, training, etc.) and possible tasks that may be considered by the IHO, and consult the IHO Member States as appropriate;
d) propose recommendations on the way forward (what, who, when, how) at HSSC-8.

2. Authority

The H2SPT is a subsidiary of the Hydrographic Services and Standards Committee (HSSC). Its work is subject to HSSC's approval.

3. Composition and Chair

a) The PT shall comprise representatives of IHO Member States (MS), Expert Contributors (EC), observers from accredited Non-Governmental International Organizations (NGIO), and a representative of the IHB ("IHB" to be replaced by "IHO Secretariat" when the IHO Secretariat is established). A membership list shall be maintained and posted on the IHO website.
b) EC membership is open to entities and organizations that can provide a relevant and constructive contribution to the work of the PT.
c) The Chair and Vice-Chair shall each be a representative of a MS. The election of the Chair and Vice-Chair shall be decided at the first meeting after each ordinary session of the International Hydrographic Conference (IHC) (Conference to be replaced by Assembly when the revised IHO Convention enters into force) and shall be determined by vote of the MS present and voting.
d) A Secretary should be appointed to ensure the smooth running of PT business; to administer consultation and collation of members' views; and may act as Editor of the PT's publications. The position is normally filled by a member of the PT.
e) If the Chair is unable to carry out the duties of the office, the Vice-Chair shall act as the Chair with the same powers and duties. If the position of Chair or Vice-Chair becomes vacant before the next ordinary IHC, inter-conference elections may be conducted at the next HSPT meeting/conference call or by correspondence between PT meeting/conference calls.
f) Any invitation of ECs shall be under approval of membership from the Chair.
g) EC membership may be withdrawn if a majority of the MS represented in the PT agrees that an EC's continued participation is irrelevant or unconstructive to the work of the PT.
h) All members shall inform the Chair in advance of their intention to attend meeting/conference calls of the PT.

i) In the event that a large number of EC members seek to attend a meeting/conference call, the Chair may restrict attendance by inviting ECs to act through one or more collective representatives.

4. Procedures

a) The PT's main tasks are listed in Section (1) above.
b) The PT conducts its business by correspondence.
c) Decisions shall generally be made by consensus. If votes are required on issues or to endorse proposals presented to the PT, votes shall be taken by a simple majority of the MS present and voting. When dealing with inter-sessional matters by correspondence, a simple majority of responding MS shall be required. Each MS shall have one vote.
d) Correspondence shall be distributed by the Chair (or the secretary) within six weeks of the end of meeting/conference calls and participants' comments should be returned within three weeks of the date of dispatch. Final minutes of meeting/conference calls should be posted on the IHO website within three months after a meeting/conference call.