

10<sup>th</sup> IHO-HSSC Meeting

**Report and Recommendations of the HSSC Project Team on  
Standards for Hydrographic Surveys (HSPT)**

<b>Submitted by:</b>	Chair, HSPT
<b>Related Documents:</b>	S-44
<b>Related Projects:</b>	None

<b>Chair:</b>	Christophe Vrignaud, France
<b>Vice-Chair:</b>	Nickolás de Andrade Roscher (Brazil)
<b>Secretary:</b>	David Wyatt, IHO
<b>Member States:</b>	Australia, Brazil, Canada, France, Germany, Italy, Netherlands, Norway, Portugal, Republic of Korea, Sweden, United Kingdom and United States.
<b>Expert Contributor:</b>	International Federation of Hydrographic Societies (IFHS), ARGANS, Fugro, IIC Technologies, iXblue and the University of Southern Mississippi
	See <i>Annex A for full details on HSPT membership</i> <i>Annex B for work plan 2018 – 2019</i> <i>Annexe C Questionnaire Analysis – Extract from the final document</i>

**Meetings Held During Reporting Period**

Nil

**Future Meetings**

HSPT2	3-6 July 2018	Niterói, Brazil
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**Work Program**

Work has continued on the identified limitations in the current version of S-44, with a spreadsheet developed to correlate the limitations with potential improvements, amendments and changes, which can be considered further by the HSPT.

Work has continued on the development of revisions to Table 1 in a variety of formats.

The results of the Customer Requirements Survey questionnaire, which is being coordinated by the observer from IFHS, has been analysed (see Web link). This document will provide a broader view of the industry needs beyond the current national Hydrographic Office perspective. The survey received 500 replies from a diverse cross-section of related professionals. The answers and additional comments will provide a statistically robust sample from which further considerations can be developed (see an extract in annexe C).

The four following points can be highlighted from the analysis:

- 72.6% of the respondents replied as an individual. 22.6% responded on behalf of company/organization and 4.8% responded on behalf of an IHO Member State (India, Brazil, Finland, Denmark, Thailand, Oman, South Korea, Italy, Portugal, Sweden, Indonesia and France).
- 45.2% of respondents identified as IHO Certified Hydrographers or Cartographers (Cat. A/Cat. B)

- A large majority of the surveys undertaken by respondents are based on a documented standard (81.3%). Of those 70% use S-44, 29% use a standard more restrictive based on S-44 and 8% use a standard less restrictive based on S44.
- IHO recognised survey criteria would benefit 86.1% of the respondents and 83.5% consider S-44 Edition 5 is relevant to them. 61% use criteria additional to S-44 (most mentioned criteria - client specifications, in-house standards, LINZ, USACE, NOAA specs.).
- Furthermore, regarding the exclusive purpose of safety of navigation, the majority consider S-44 as sufficiently strict (53.5%).
- A majority (60.8%) consider S-44 should be extended for other purposes and includes 43.6% who think the S-44 focus must be safety of navigation (most mentioned activities – offshore construction, marine science, coastal zone management, ports and harbours, all aspects of hydrography). Less than 50% want other types of measurements in S-44 than those already included.

The next HSPT meeting (HSPT2) is planned for 3-6 July 2018 in Niterói, Brazil.

### **Progress on HSSC Action Items**

HSSC9/5.6:

HSSC encouraged the HSPT to continue its work following the course of actions submitted at HSSC-9, with the view of submitting a draft 6th Edition of S-44 for endorsement in 2019-20.

DQWG will request HSPT to think about a methodology from survey to CATZOC – no modification of the CATZOC classification will be made (see the minute meeting 13).

### **Problems Encountered**

The spreadsheet on identified limitations was circulated in October 2017; a reminder was sent in November 2017. To date, progress on inputting into this file has been slow, this will be a major focus in the lead-up to the HSPT2 meeting in Niterói.

### **Any Other Items of Note**

None

### **Conclusions and Recommended Actions**

None

### **Justification and Impacts**

N/A

### **Action Required of HSSC**

The HSSC is invited to:

- a. Note this report;
- b. Endorse the continuation of HSPT to pursue its work under its Terms of Reference; and
- c. Review and endorse the work plan at Annex B.

## ANNEXE A : MEMBERS OF HSPT

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**ANNEXE B: STANDARDS for HYDROGRAPHIC SURVEYS PROJECT TEAM (HS PT) WORK PLAN 2018-19****Tasks**

A	Review the existing edition of S-44 (5 <sup>th</sup> edition) and identify any deficiencies in either the standards or explanatory content.
B	Identify Orders of Surveys (in terms of horizontal and vertical uncertainty requirements, feature detection requirements, and statistical confidence levels), which are required to meet certain user requirements, noting that user requirements include, but are not limited to, the differing levels of CATZOC (S-57) / Quality of Bathymetric Data (S-10X).
C	Define, if and as appropriate, a relationship between survey orders in the IHO S-44 Publication and CATZOC used in S-57 ENC and Quality of Bathymetric Data in S-101 ENC.
D	Following review, update the content and structure of S-44 to the extent identified during the review, with the intention of publishing revisions as a sixth edition of S-44.
E	Identify any other emergent requirements not addressed within the scope of tasks A to D, and develop a proposal and recommendations on whether the Hydrographic Survey Project Team should close, continue working on specific tasks, or be migrated to a standing Working Group with an expanded Work Plan.
F	On completion of publication of a sixth edition of S-44, submit a proposal and recommendation to HSSC on whether the Project Team should continue as a standing Working Group and, if so, what tasks have been identified to justify transition to a standing Working Group.

## Work items

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
A-1	Review the existing edition of S-44 (5 <sup>th</sup> edition) and identify any deficiencies in either the standards or explanatory content.	H	HSSC 9	2016	2017	P-C	Chair	S-44 Edition 5	
B-1	Identify Orders of Surveys (in terms of horizontal and vertical uncertainty requirements, feature detection requirements, and statistical confidence levels), which are required to meet certain user requirements, noting that user requirements include, but are not limited to, the differing levels of CATZOC (S-57) / Quality of Bathymetric Data (S-10X).	H	HSSC 10	2017	2018	P-O	Chair / MS	S-44 Edition 5 S-57	
C-1	Define, if and as appropriate, a relationship between survey orders in the IHO S-44 Publication and CATZOC used in S-57 ENC and Quality of Bathymetric Data in S-101 ENC.	M	HSSC 9 & 10	2017 2018	2018 2019	P-O O	MS / Experts	S-44 Edition 5 S-57 S-101	
C-2	Define, if and as appropriate, a relationship between survey orders in the IHO S-44 Publication and S-5 in order to mitigate the human element factor.	M	HSSC 9 & 10	2017 2018	2018 2019	P-O O	MS / Experts	S-44 Edition 5 S-5	

## Annex B to HSPT Report to HSSC10

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
D-1	Following review, update the content and structure of S-44 to the extent identified during the review, with the intention of publishing revisions as a sixth edition of S-44.	H	HSSC 10	2018	2019	P O	MS / Experts / IHO Bodies	S-44 Edition 5	
E-1	Identify any other emergent requirements not addressed within the scope of tasks A to D, and develop a proposal and recommendations on whether the Hydrographic Survey Project Team should close, continue working on specific tasks, or be migrated to a standing Working Group with an expanded Work plan.	H	HSSC 10	2018	2019	P O	Chair / MS	C-13	
F-1	On completion of publication of a sixth edition of S-44, submit a proposal and recommendation to HSSC on whether the Project Team should continue as a standing Working Group and, if so, what tasks have been identified to justify transition to a standing Working Group.	H	HSSC 9 & 10	2017	2019	P O	MS/HSSC Bodies	C-13	
G-2	Start the discussion on the way forward.	H	HSSC 10	2018	2019	P O	MS/HSSC		

**Meetings**

<b>Date</b>	<b>Location</b>	<b>Activity</b>
20-22 June 2017	Paris, France	HSPT1
3-6 July 2018	Niterói, Brazil	HSPT2

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PT Vice Chair: Nickolás de Andrade Roscher

PT Secretary: David Wyatt

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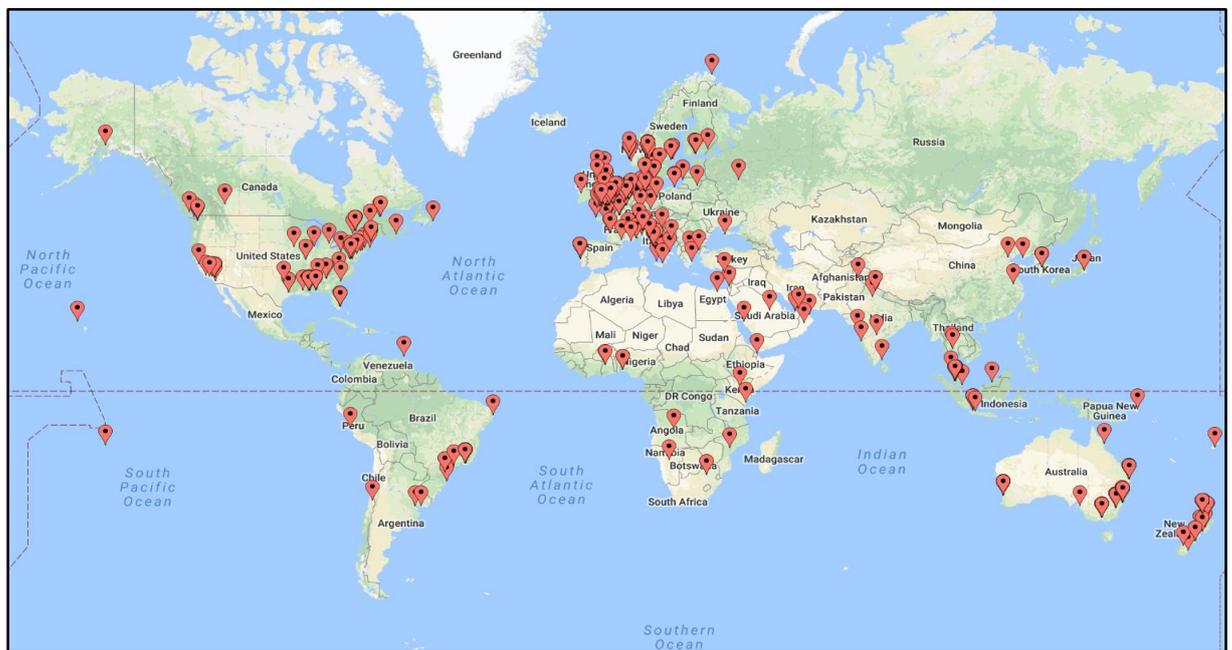
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## ANNEXE C: Questionnaire Analysis – Extract from the final document

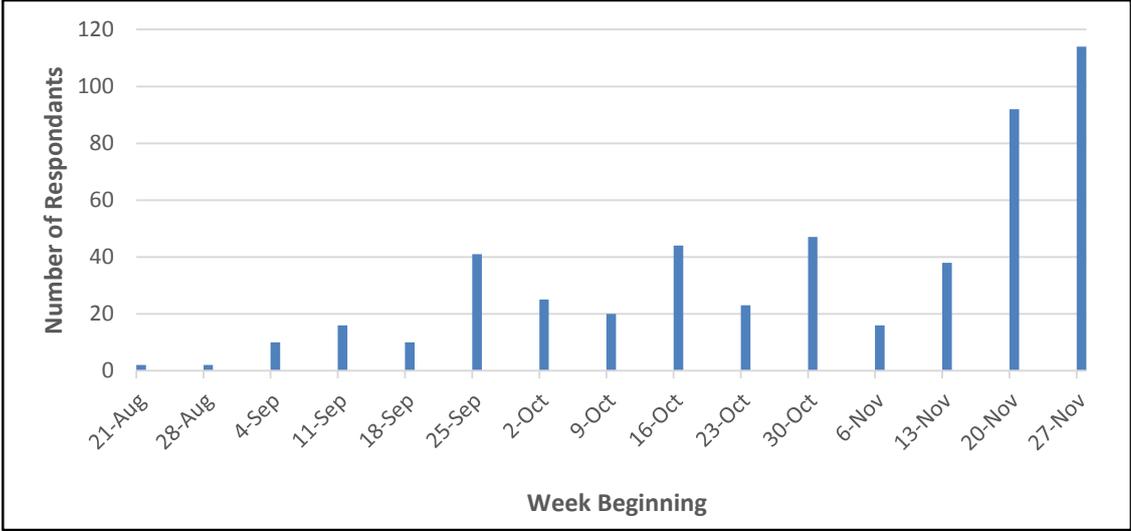
### OVERVIEW

As part of the review of S-44, members of the international hydrographic community were asked for their views in a questionnaire covering a wide range of topics related to hydrographic survey standards. Designed by the HSPT and administrated by IFHS, the questionnaire was disseminated by IFHS, IHO, FIG and HSPT members from mid-August to the end of November 2017. 500 replies were received, with 114 respondents replying in the last week following Hydro17 conference see Figure **Error! No text of specified style in document..2** and **Error! Reference source not found.** for more detail. Responses were received from all over the world with the highest concentration from Europe and Eastern USA see Figure **Error! No text of specified style in document..1** for the distribution.



**Figure Error! No text of specified style in document..1: Global Distribution of S-44 Questionnaire Respondents.**

IHO HSSC Project Team on Standards for Hydrographic Surveys (HSPT)  
S-44 Questionnaire Analysis



**Figure Error! No text of specified style in document.: Weekly Respondent Response S-44 Questionnaire**

## ANALYSIS SUMMARY

Between August and November 2017, 500 responses were received by HSPT.

- Only 11% of respondents have been involved in hydrography, or an allied industry or profession less than 5 years. It is therefore safe to assume that the questionnaire responses are based on considered professional opinion.
- Respondents identified their principal industry sectors as Navigation and Charting for Safety.
- Respondents identified their principal role as Surveyor although a significant number of other disciplines are represented including dredging, geophysical and pipeline/cable.
- 45.2% of respondents identified as IHO Certified Hydrographers or Cartographers (Cat. A/Cat. B)
- Nearshore and coastal vessel are the most commonly used platforms (71.6%) and use of autonomous vehicles is considered significant (Surface: 22.6%, Underwater: 24.6%, Aerial: 15.8%).
- Multibeam Echosounder is the main sensor used by respondents.
- A large majority of the surveys undertaken by respondents are based on a documented standard (81.3%). Of those 70% use S-44, 29% use a standard more restrictive based on S-44 and 8% use a standard less restrictive based on S44.
- IHO recognised survey criteria would benefit 86.1% of the respondents and 83.5% consider S-44 Edition 5 is relevant to them. 61% use criteria additional to S-44 (most mentioned criteria - client specifications, in-house standards, LINZ, USACE, NOAA specs.).
- Furthermore, regarding the exclusive purpose of safety of navigation, the majority consider S-44 as sufficiently strict (53.5%).
- 48.4% of respondents understand the differentiation between S-44 standards and CATZOC, and 55.2% consider it important to have a clearer connection between both.
- A majority (60.8%) consider S-44 should be extended for other purposes and includes 43.6% who think the S-44 focus must be safety of navigation (most mentioned activities – offshore construction, marine science, coastal zone management, ports and harbours, all aspects of hydrography). Less than 50% want other types of measurements in S-44 than those already included.
- More than  $\frac{3}{4}$  of respondents want guidelines included for survey verification and verification of survey system capabilities as meeting S-44 expectations. More than  $\frac{3}{4}$  would also like guidelines for other activities (backscatter, water column data).
- Regarding the IHO Manual on Hydrography (C-13), 73% know this document and 20.1% use it. 92% consider it is important to update it (and keep it updated).
- 46.4% of respondents will consider using crowdsourced bathymetric data in the future
- 58% are moving from point measurement to bathymetric surfaces, and 30.4% considering it in the future.