

Hydrographic Surveys Project Team

Introduction HSPT2 Christophe Vrignaud (Chair)

Nickolas de Andrade Roscher (Vice Chair) – David Wyatt (Secretary)



Reminders: HSPT

→ HSPT created in March 2017 – Extract from the Terms Of References:

2. Objective

To maintain IHO standards which apply to hydrographic surveys: to prepare a draft 6th Edition of IHO publication S-44 - *Standards for Hydrographic Surveys* for approval by IHO Member States (MS).

When undertaking this task the Project Team (PT) should consider, as a minimum, the following matters, in support of safety of navigation data products and services:

- (i) Review the existing edition of S-44 (5th edition) and identify any deficiencies in either the standards or explanatory content;
- (ii) 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 6th edition of S-44;
- (iii) On completion of publication of a 6th edition of S-44, submit a proposal and recommendation to the Hydrographic Services and Standards Committee (HSSC) on whether the PT should continue as a standing working group and, if so, what tasks have been identified to justify transition to a standing working group.



Reminders: HSPT1

→ First meeting in Paris (kick-off, June 2017)

→ 10 limitations on the S-44 have been defined

→ Online Questionnaire about S-44 (published from Sept. to Nov. 2017)

→ Works done on “Table1 / Matrix” alternatives



Reminders: Limitations

- 1 – Currently S-44 is focused only on a final objective, which is the nautical chart, with a depth classification (possible solution to consider: updated table or matrix)
- 2 - Difficulty to have an overview of all requirements (possible solution: updated table or matrix)
- 3 - Limited number of definitions (possible solution: support and liaison with the DQWG and VIM3)
- 4 – Misalignment/lack of connection between S-44 and CATZOC
- 5 - Grid resolution and bathymetric surfaces not addressed
- 6 - Confusion on S-44 use between a-priori TPU and a-posteriori Qualification
- 7 - S-44 should remain technology neutral, be focused on the resultant data and not focus on specific systems or methods
- 8 - Confusion of attributes in metadata and the importance of metadata to support the resultant dataset
- 9 - Outdated chapters
- 10 - Annexes A & B could be placed in C-13 - *Manual on Hydrography*



Reminders: the Spreadsheet

With the Coordinating Editors, we developed a spreadsheet, sent in November 2017. Based on the file used by the previous team (5th Edition)

HSPT members were invited to look at and contribute to populating this Excel file (reminder done in March).

This spreadsheet provides the necessary elements to write the first draft of the new S-44, collectively during HSPT2

	A	B	C	D	E	F
1	S-44 Working Group - IHO Standards for Hydrographic Surveys					
2						
3	Topic: S-44 only focused on nautical chart, with depth classification (possible solution: matrix or updated table)					
4						
5	Section	Current S-44 Wording (if present)	Proposed New S-44 Wording	Proposer	Reason for the Proposed Change	Decision
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

1-Chart Focused 2-See All Requirements 3-Limited Definitions 4-Misalignment CATZOC 5-Grid Resolutions Surfaces 6-TPU



HSSC9

Nov 2017 – HSSC9 meeting / OTTAWA (Canada) – Extracts from the Final Minutes:

- Noting that it was one of the key priorities of the IHO Work Programme highlighted to the Council, the Committee commended the work done by the HSPT up to now and encouraged to pursue it as proposed in its report.

→ Decision [HSSC9/37](#)

5.6 Project Team on Standards for Hydrographic Surveys (HSPT)					
	Report and Recommendations of HSPT	HSSC9/37	HSSC encouraged the HSPT to continue its work following the course of actions submitted at HSSC-9, with the view of submitting a draft 6 th Edition of S-44 for endorsement in 2019-20.	HSSC-10 (progress report) HSSC-11/-12	Decision



From Chair - March 2018

Dear HSPT members,

You will recall the first meeting took place 9 months ago in Paris. Today, in this message, I would like, as a reminder, to highlight the main outcomes from this first gathering. I would like also to underline the importance of the spreadsheet sent last November, and, furthermore, I'm glad to announce that the analysis of the Questionnaire, circulated by HSPT, is now completed!

So please consider the points below, remember that the new version of the S-44 will be the result of our work, and don't forget to register for the next meeting in Brazil (see last point).



HSSC10

May 2018 – HSSC10 meeting / Rostock (Germany) – Extracts from the Final Minutes:

5.6 Project Team on Standards for Hydrographic Surveys (HSPT)					
	S-44	HSSC10/48	HSSC stressed the importance of the HSPT inter-sessional work. HSPT Members to provide inputs to the spreadsheet on S-44 identified limitations which will be a major focus at HSPT2 meeting in Niterói	1 June 2018	Decision

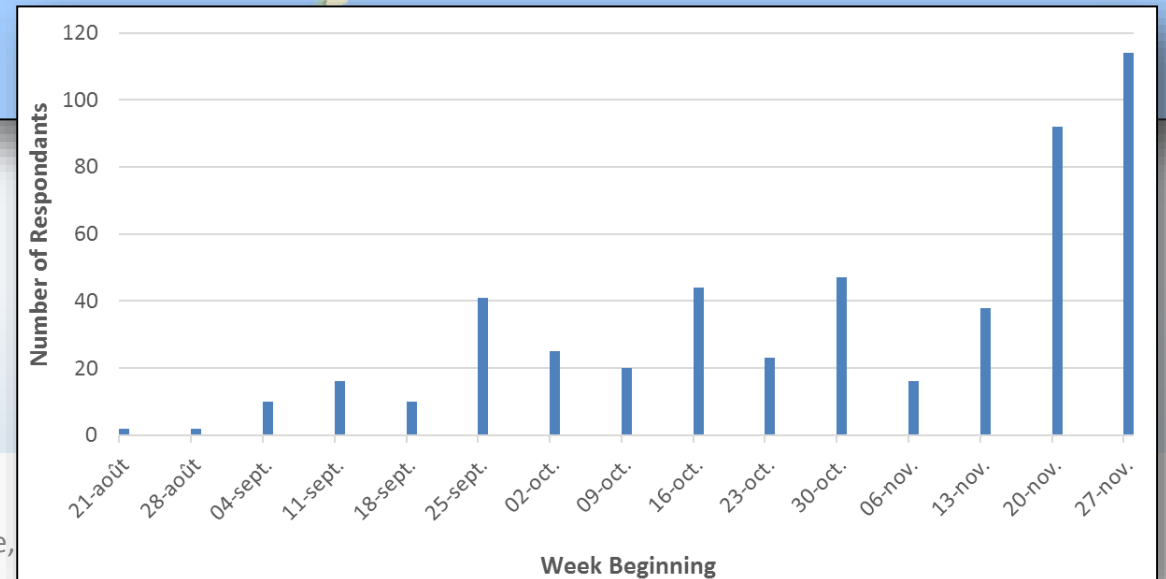
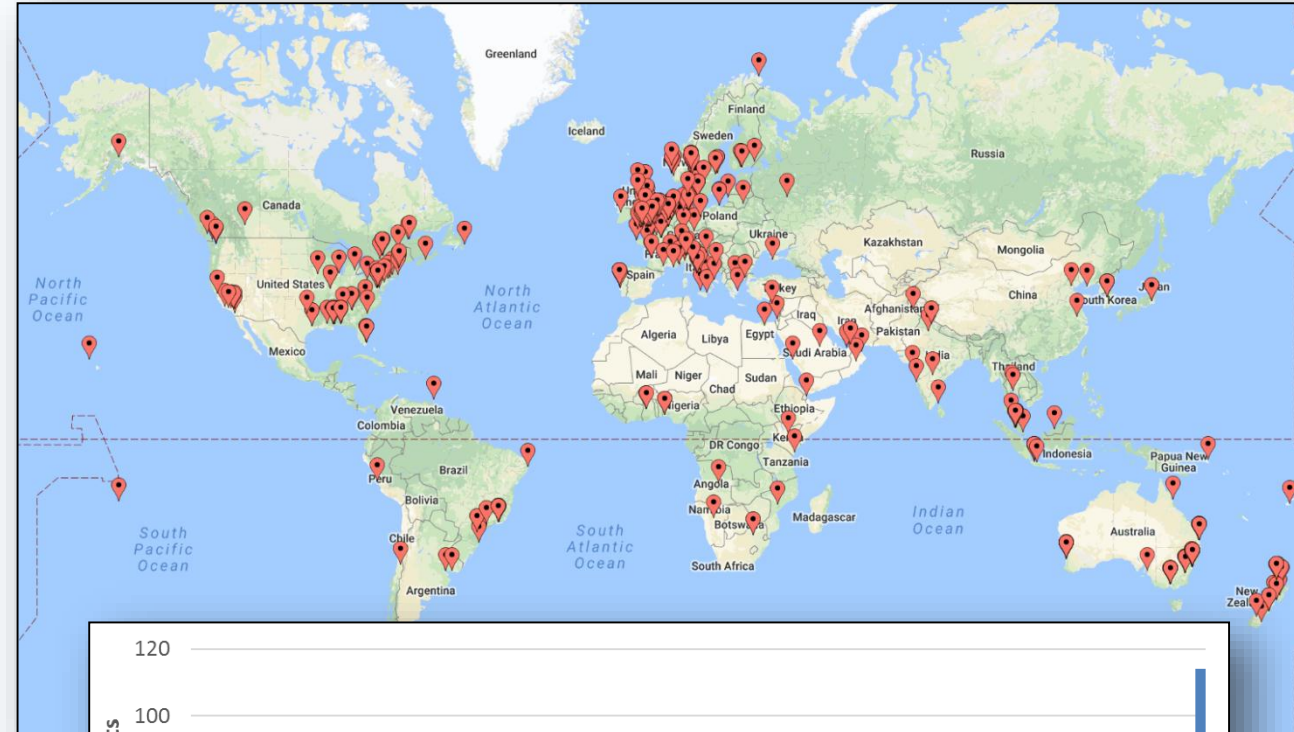


Principal achievements: The questionnaire

Questionnaire Results (March 2018):

Designed by the HSPT and administrated by IFHS
Disseminated by IFHS, IHO, FIG and HSPT members
From mid-August to the end of November 2017
38 Questions
500 replies
Responses were received from all over the world
→ Results statistically relevant!


Thanks to **Iain Slade** (IFHS/Fugro) and **Simon IronSide** (FIG/Eliot Sinclair)



Principal achievements: The questionnaire

- One of the goal of the questionnaire is to see how the S44 is used, but also, to give guidance on how to update the document for the future.
- The slides to come give a snapshot of some of the results of the survey.
- For a more comprehensive view, we recommend HSPT Members review the entire results.

Link – HSPT Web page: [Questionnaire Results](#)




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


This questionnaire is intended to gauge the views of users and stakeholders on a range of topics that will help to inform the decision-making processes of the IHO HSSC Project Team on Standards for Hydrographic Surveys (HSPT) on the future evolution of IHO Standards for Hydrographic Surveys Special Publication No. 44 (S-44). The current (5th) edition was adopted in February 2008, a copy can be downloaded free-of-charge from the IHO website: https://www.iho.int/iho_pubs/standard/S-44_5E.pdf

We greatly value your opinions and hope that you will find 10 minutes to complete the online questionnaire, all completed questionnaires will be treated in the strictest confidence and processed anonymously. However, if you don't mind providing your name and email address the final question allows you to do so.


The closing date for responses is Friday 17th November 2017.

Section 1 is compulsory. Please answer all of the remaining questions as appropriate.

Section 1: About you 

* 1. To the nearest whole year, how long have you been involved in hydrography, or an allied industry or profession? 

<input type="radio"/> 0 - 5	<input type="radio"/> 16 - 20	<input type="radio"/> 31 - 35
<input type="radio"/> 6 - 10	<input type="radio"/> 21 - 25	<input type="radio"/> 36 - 40
<input type="radio"/> 11 - 15	<input type="radio"/> 26 - 30	<input type="radio"/> 41+

* 2. In which industry sectors(s) are you currently working and/or have you previously worked?
(Tick all that Apply) 

<input type="checkbox"/> Academia	<input type="checkbox"/> Geophysical	<input type="checkbox"/> Oil & Gas
<input type="checkbox"/> Coastal	<input type="checkbox"/> Geotechnical	<input type="checkbox"/> Ports & Harbours
<input type="checkbox"/> Construction	<input type="checkbox"/> Instrumentation	<input type="checkbox"/> Renewables
<input type="checkbox"/> Dredging	<input type="checkbox"/> Military	<input type="checkbox"/> Research & Development
<input type="checkbox"/> Environmental	<input type="checkbox"/> Navigation/Charting	<input type="checkbox"/> Seismic
<input type="checkbox"/> Fisheries	<input type="checkbox"/> Oceanography	<input type="checkbox"/> Subsea Engineering
<input type="checkbox"/> Other (please specify)		



Principal achievements: The questionnaire

- Questionnaire Results - about respondents “Experience” (Q1)

Only 11% of respondents have been involved in hydrography less than 5 years → **the questionnaire responses are based on considered professional opinion.**

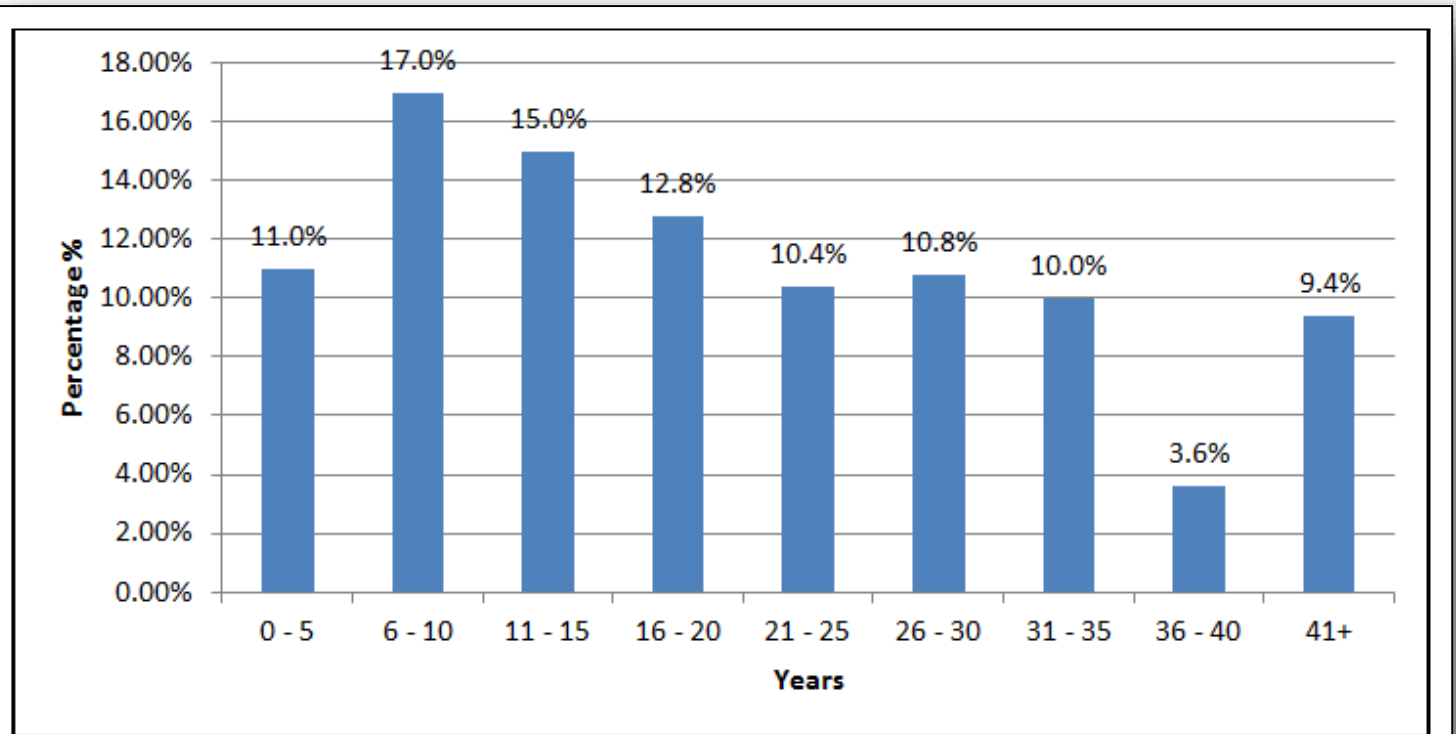


Figure 3.1: Q1 Questionnaire Respondents Years of Hydrography or Allied Experience.



Principal achievements: The questionnaire

- Questionnaire Results - about respondents “Industry Sectors” (Q2)

Respondents identified their principal industry sectors as **Navigation and Charting for Safety**.

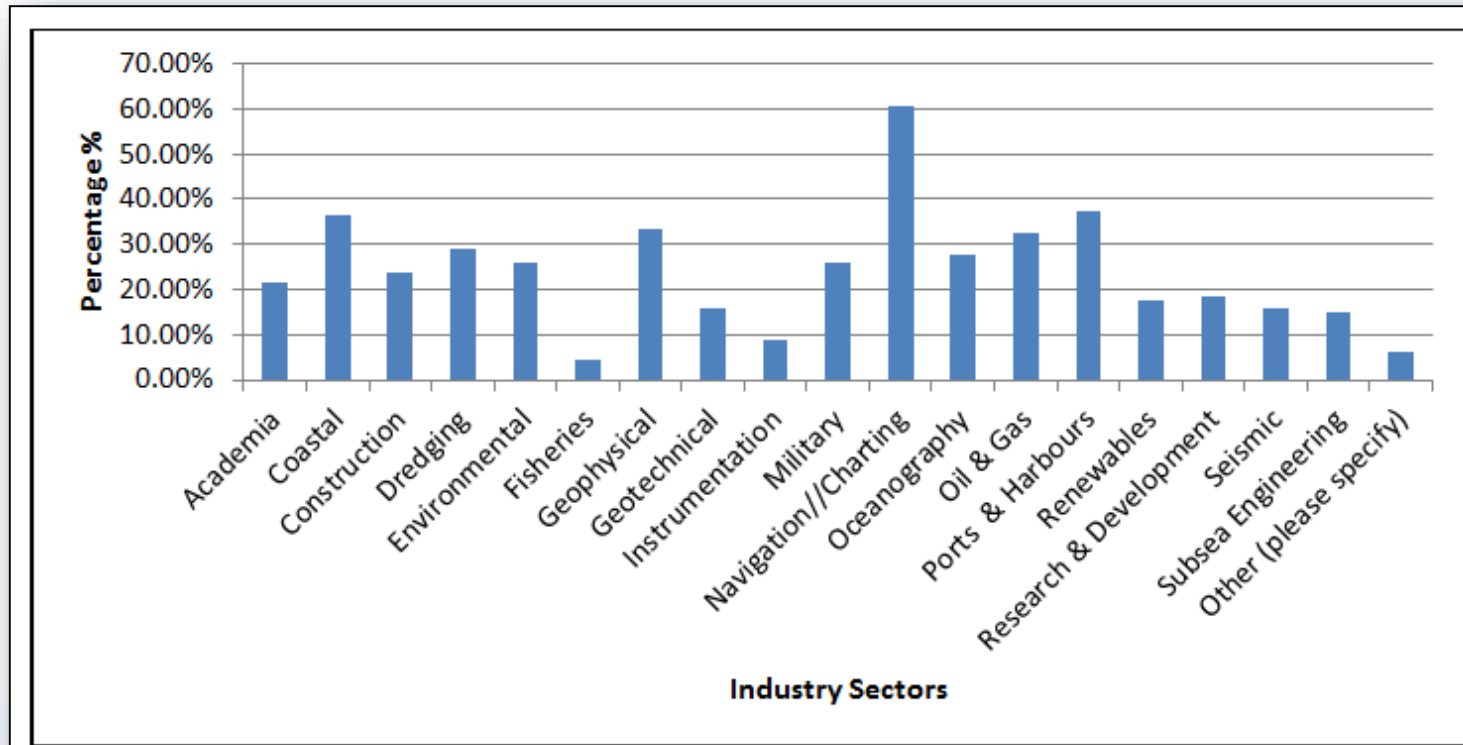


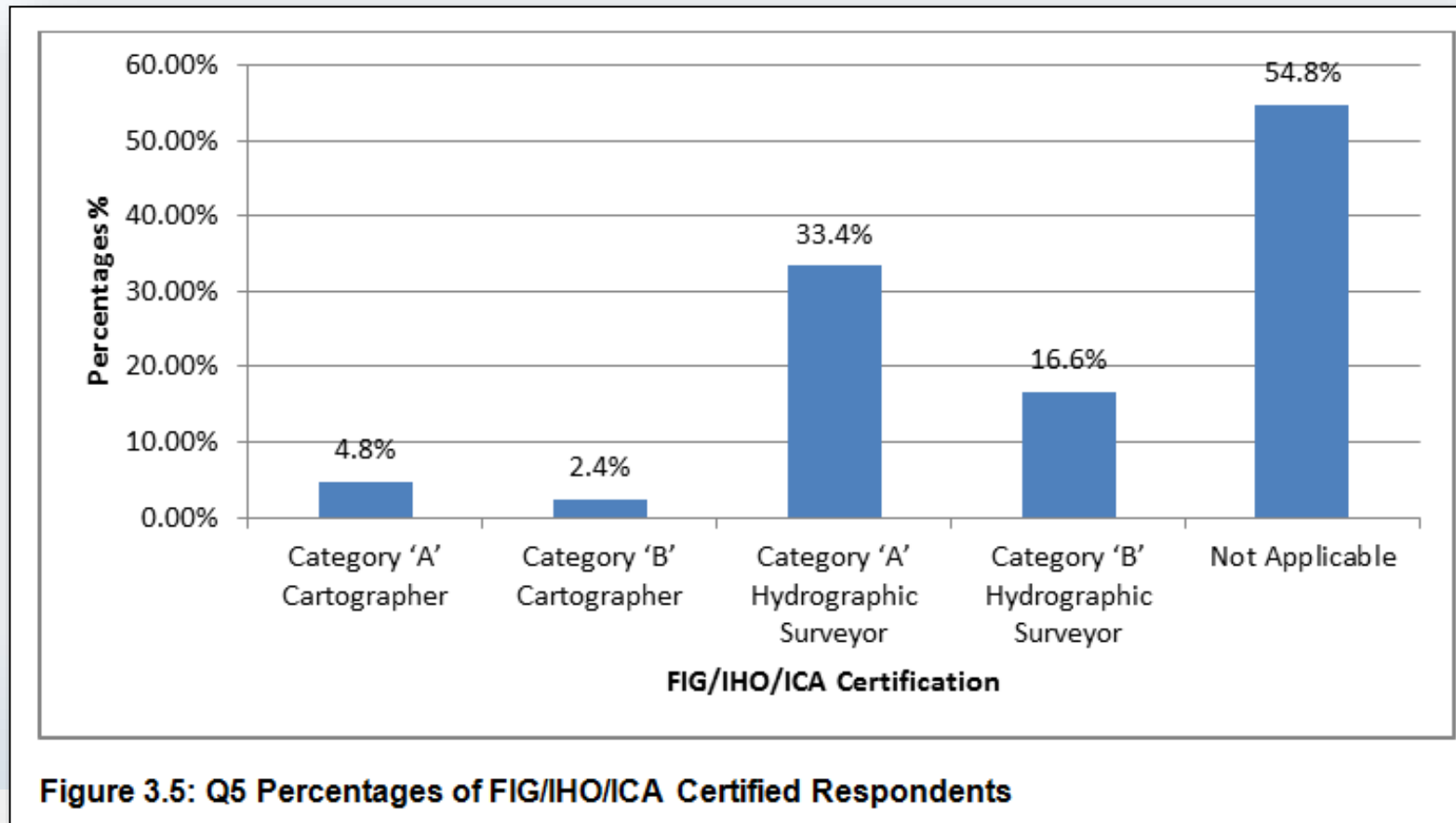
Figure 3.2: Q2 Industry Sectors where Questionnaire Respondents are or have Previously Worked.



Principal achievements: The questionnaire

- Questionnaire Results - about respondents “Certification” (Q5)

45.2% of respondents identified as IHO Certified Hydrographers or Cartographers (Cat. A/Cat. B)



Principal achievements: The questionnaire

- Questionnaire Results - about respondents (Q6)

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 (= 24 MS : India, Brazil, Germany, Finland, Denmark, Thailand, Oman, South Korea, Italy, (x2) Portugal, Sweden, Indonesia, France, Malaysia, USA (x5), Papua New Guinea).

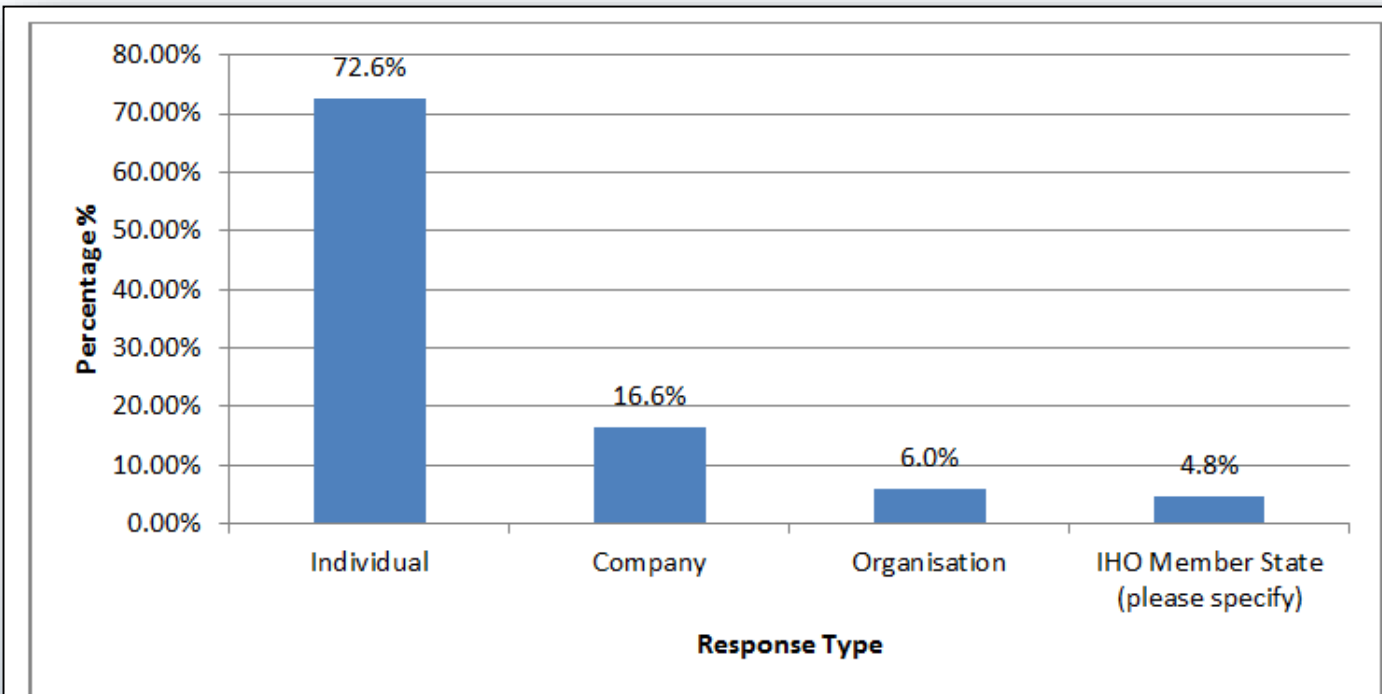


Figure 3.6: Q6 S-44 Questionnaire Response Type

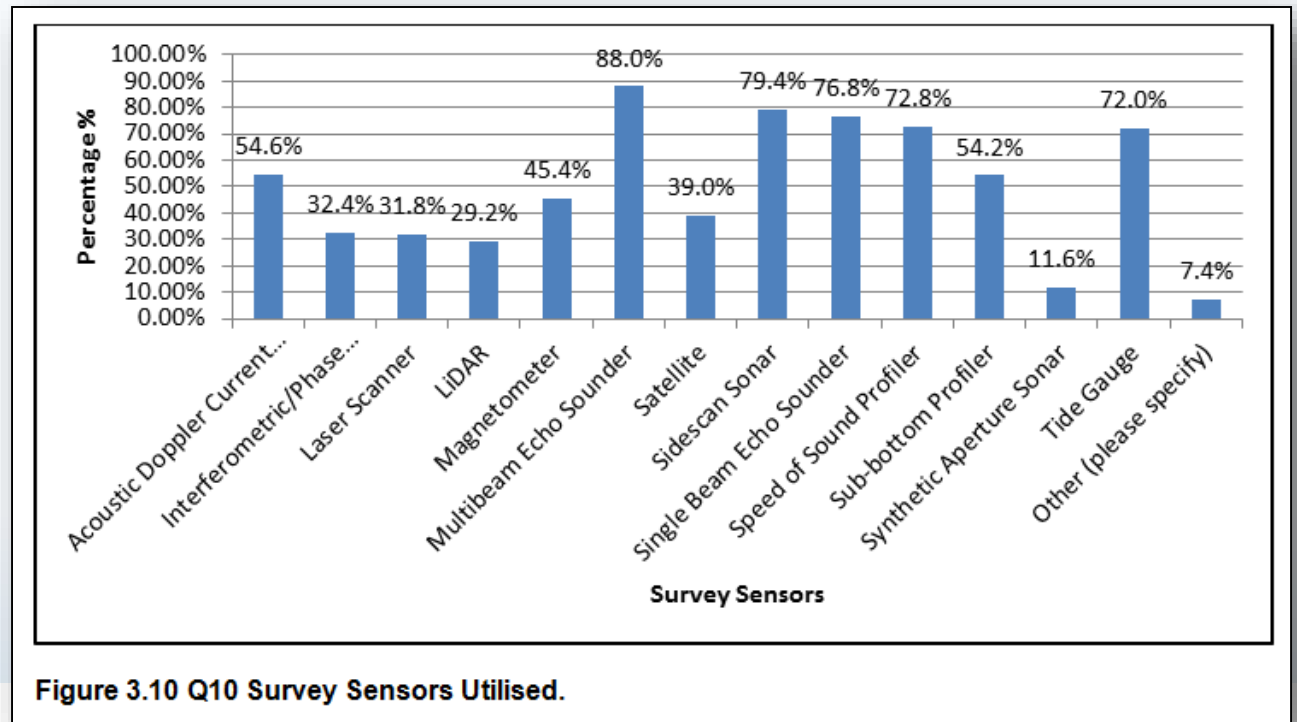


Principal achievements: The questionnaire

- Questionnaire Results - about respondents “Most Used Platform” (Q9)

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.

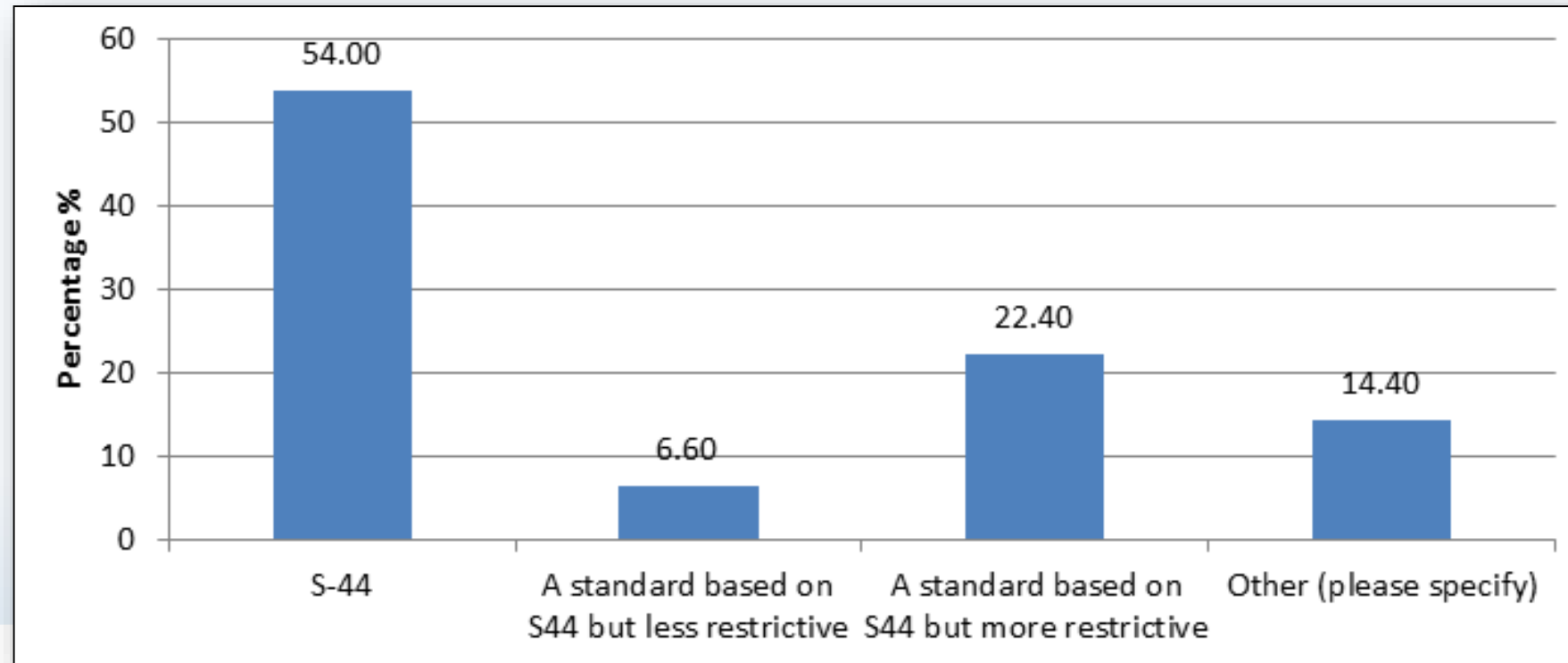


Principal achievements: The questionnaire

- Questionnaire Results: “Documented Standard?” (Q12)

A large majority of the surveys undertaken by respondents are based on a documented standard (81.3%).

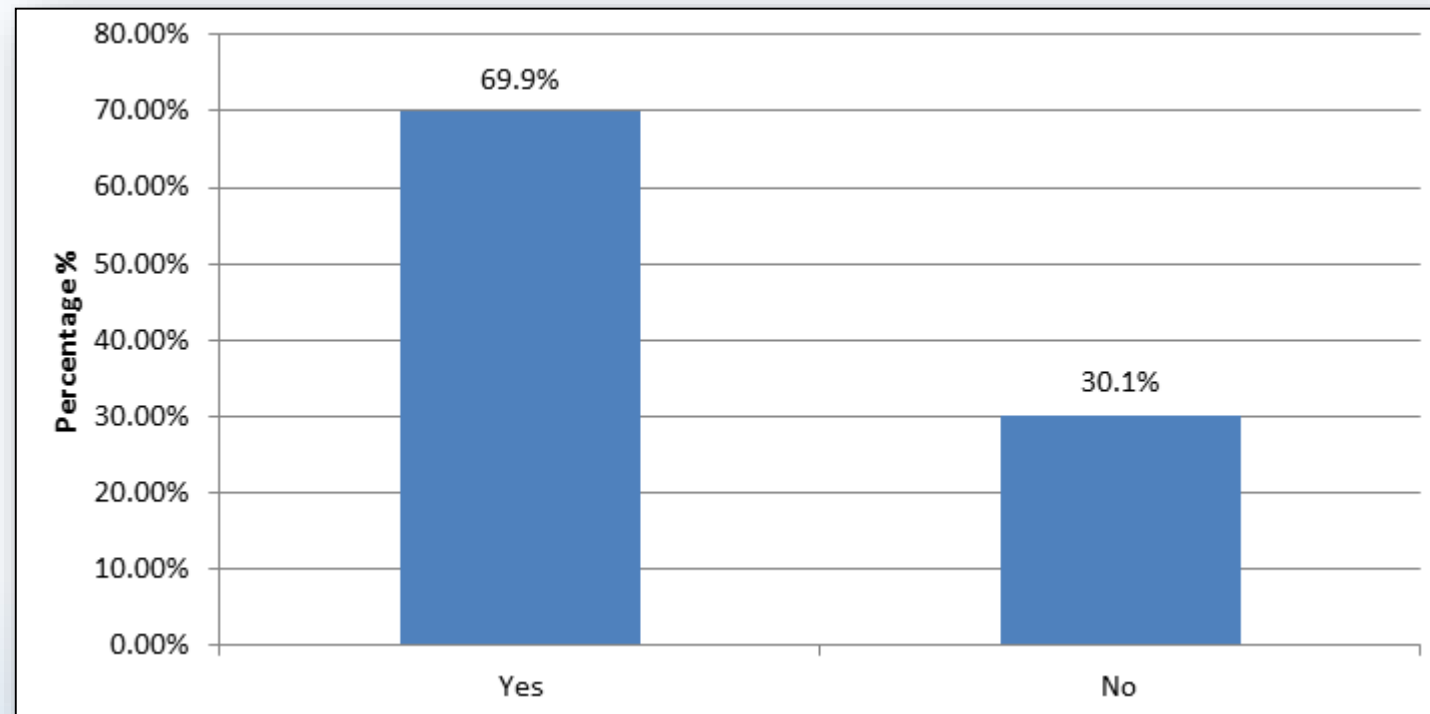
Of those, 54% use S-44, 22.4% use a standard more restrictive based on S-44 and 6.6% use a standard less restrictive based on S44 (most mentioned criteria: client specifications, in-house standards, LINZ, USACE, NOAA specs.).



Principal achievements: The questionnaire

- Questionnaire Results: “Does your field of surveying require IHO recognised survey criteria?” (Q14)

Close to 70% of respondents require IHO recognized survey criteria

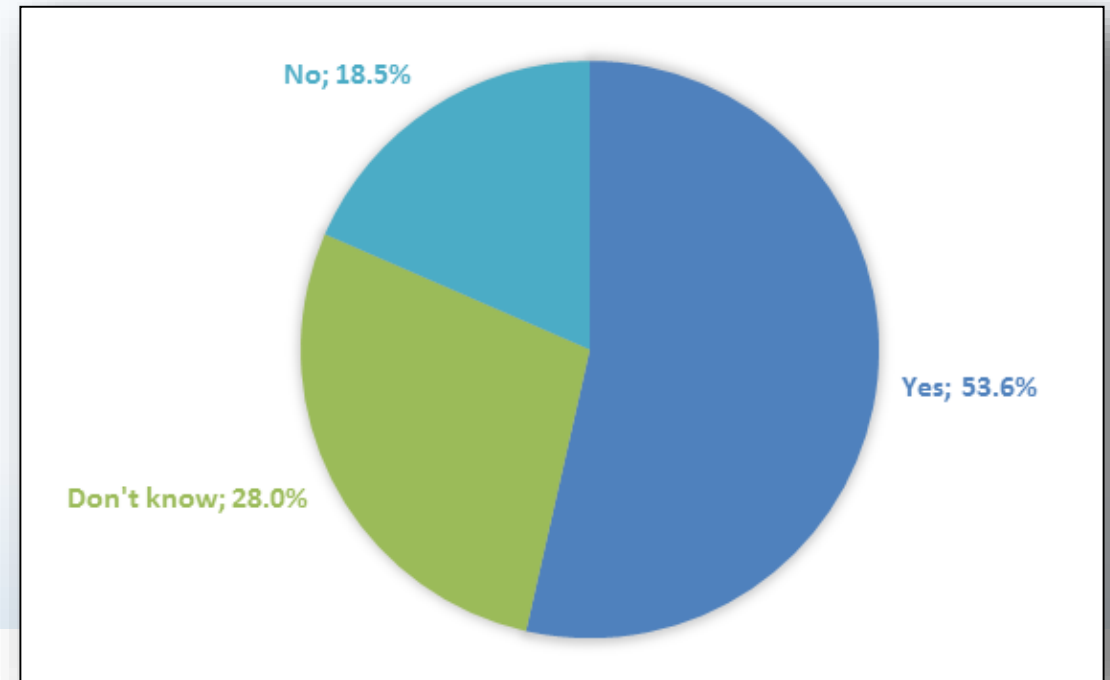


Principal activities and achievements

- Questionnaire Results: “S-44 relevant and S-44 Sufficiently Strict?” (Q15, Q17, Q19)

IHO recognised survey criteria would benefit for 86.1% of the respondents and 83.5% consider S-44 Edition 5 is relevant to them.

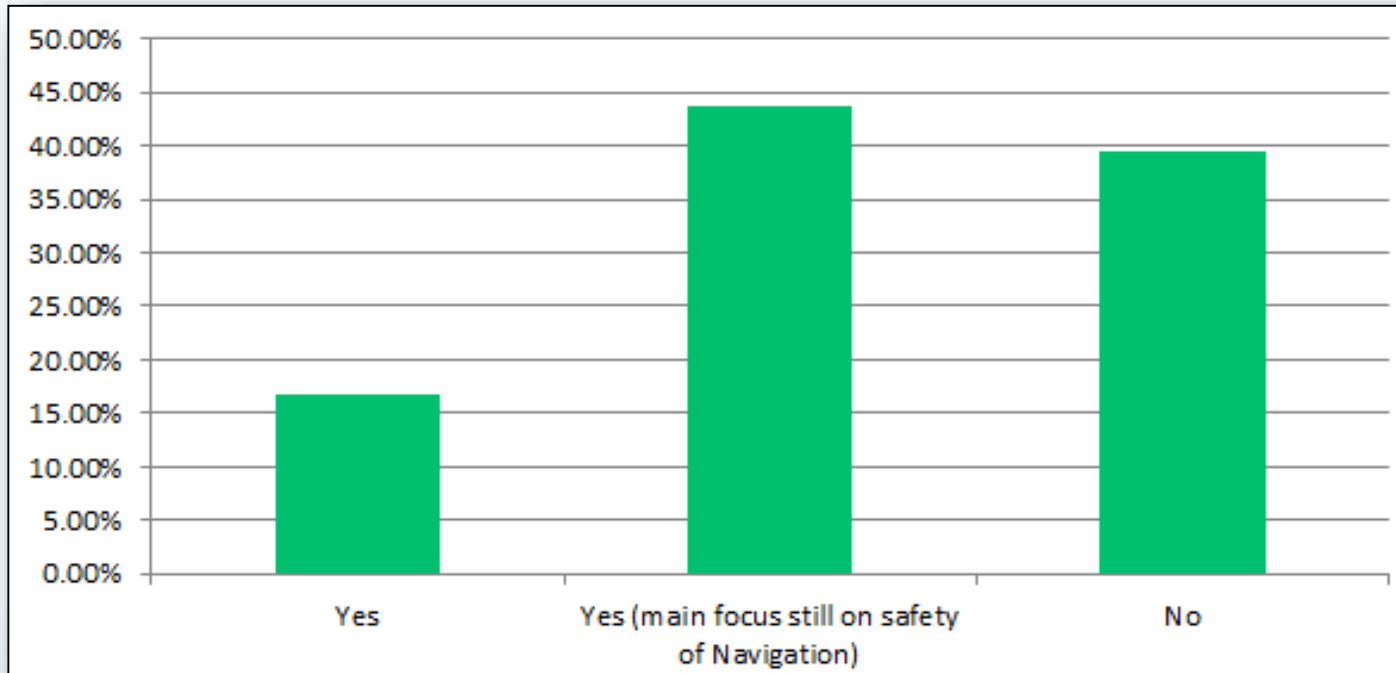
Furthermore, regarding the exclusive purpose of safety of navigation, the majority consider S-44 as sufficiently strict (53.5%).



Principal achievements: The questionnaire

- Questionnaire Results: “S-44 extended to other purposes” (Q25)

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.



Principal achievements: The questionnaire

- Questionnaire Results: “Which part(s) of S-44 do you find most useful?” (Q20)

Table 1 x59

Chapter 1 (Classification of Survey) x18

TVU x14

Depth and Position Accuracies x14

Chapter 3 x13

All (Whole document) x13

Chapter 2 x10

THU x8

TPU x7

Definitions x4

Object Detection x4

Chapter 5 x4

Special Order x3

Chapter 6 X3

Sounding Density Object detection x3

Full seafloor Search x3

Feature Detection x3

Error Budgets x3

Annexes x2

Coverage Definitions x2

Glossary x2

TPE x2

How to design Specs x1

Depths. For use in Under-keel Clearance

Systems. X1

Data Quality Control x1

Elimination of doubtful Data x1

SBES accuracy Formulae x1?

Tides x1

Survey Accuracies

Depth Accuracy x1

Definitions – Vertical Uncertainty x1

Depth Criteria x1

CATZOC x1

Page 5 x1

Accuracy and confidence level guidelines x1



Principal achievements: The questionnaire

• Questionnaire Results: “Which part(s) of S-44 do you find least useful?” (Q21)

Tides and currents disproportionate x1

Guidelines for Data Processing x1

Chapter 4 x2

Chapter 6 x3

Annex A x2

Annex B (Guides for data Processing) x4

Table 2 x1

Chapter 5 x1

Chapter 7 x1

Seabed search and Object detection criteria

Search criteria are too mathematical

SBES

Being too specific towards bathymetry surveys for hazards to nav

Repeated terminology

Conflict's between bottom coverage, survey resolution, horizontal and vertical accuracy

Tidal Section

Surface positioning

Annexes x3

Accuracy

Chapter 4

Horizontal and vertical precision

Lone spacing Guidelines

Other measurements

Horizontal uncertainty

Positional accuracy is often mis quoted as navigational accuracy – needs addressing in the text.

Crosslines (not economically viable when running pipeline surveys)

Main text poorly written

Other survey orders x1

TPU modelling. This is poorly understood by the community. People treat this as the silver bullet but forget that a low uncertainty does not validate a correct sounding. For example, false sounding may have a lower TPU but would you credit them more? A dataset with artefacts may have a low TPU but is it acceptable for the purpose of the survey? Repetitive mapping is a far better way to validate a survey.

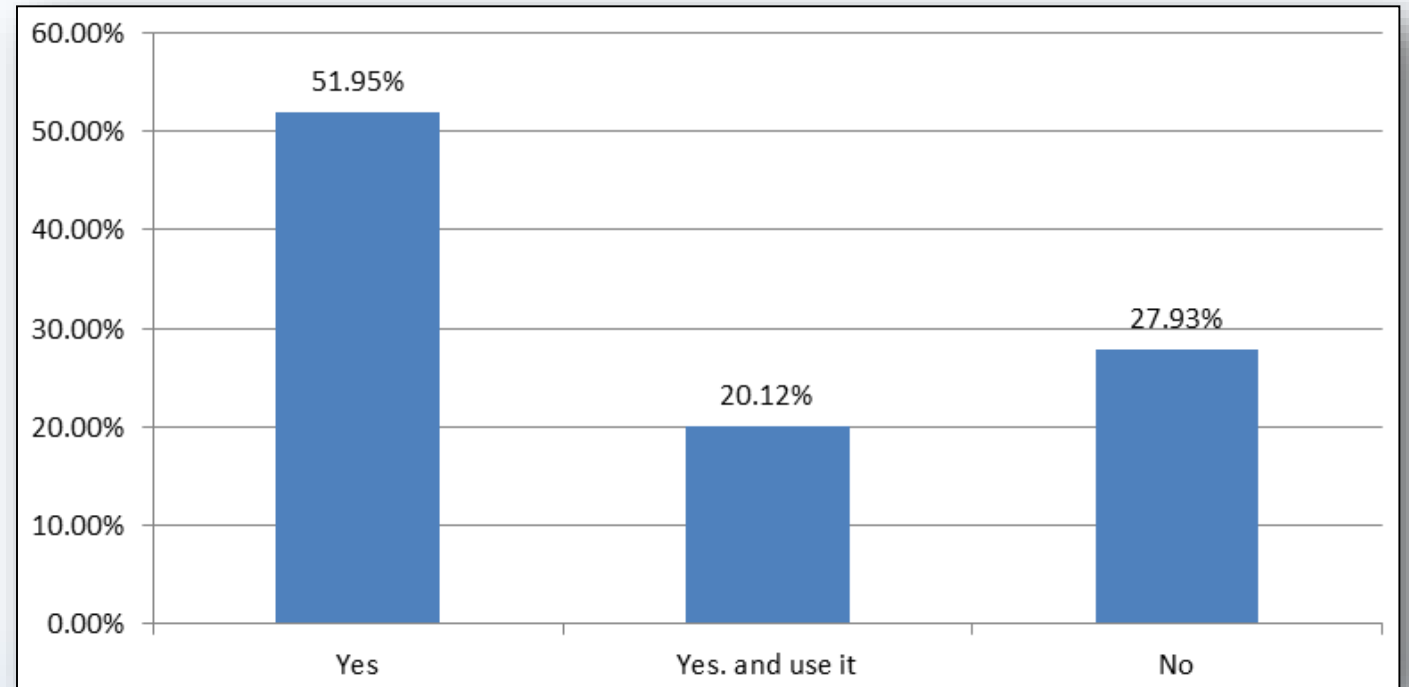


Principal achievements: The questionnaire

- Questionnaire Results: “Manual on Hydrography C-13” (Q34, Q35)

72% of 333 respondents are aware of the C-13 ‘Manual on Hydrography’ and 20% use it

91.81% of the respondents, aware about C-13, consider it will be relevant to update C-13 in the future



Main lines for HSPT2



- Presentation by the Coordinating Editors of the inputs coming from Members, after 7 months.
- Based on inputs received so far, review and agree Limitations and identify additional impacts on other areas of S-44 standards descriptions
- Using agreed Table 1 format and identified Limitations, divide publication into chapters/sections with individual leads to develop initial draft wording

Key objective: make it simple, make it practical and usable !!



What I would like to achieve

- Achieved a 'version 1.0.0' for the end of 2018 (based on work done during HSPT2, and inter-sessional discussions)
- Proposed a 'Edition 6.0.0' to HSSC11, in 2019.



What we must achieve

- Achieved a 'version 1.0.0' for the end of 2019 (based on work done during HSPT2 and HSPT3, and inter-sessional discussions)
- Up date status report to HSSC11 in 2019, indicating progress, work completed and tasks still to be undertaken plus any difficulties/challenges
- **Proposed a 'Edition 6.0.0' to HSSC12, in 2020.**



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- Presentation of HSPT2 Programme....



Thanks for your support and your commitment!

