

7th Meeting of the IHO Hydrographic Surveys Working Group (HSWG7)
ESA, Frascati - Italy
30th September to 4th October 2024

(Paragraph numbering is the same as the Agenda Item numbering and does not necessarily reflect the order in which matters were discussed.)

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Minutes notes:

On this document, references are used, according to the following:

- Doc HSWG7-xx, corresponds to a document in annex of the minutes.
- Ref HSWG7-xx, corresponds to a document available on the HSWG webpage of IHO website.

1. Welcome and opening remarks from Chair Group

The Chair started by welcoming all the members to the seventh meeting of HSWG, welcoming all and gave a brief talk on HSWG7 main objectives.

2. Welcome address from ESA

Mr Sam Harper, IHO Assistant Director, introduced himself, emphasising that HSWG is working on several documents the Standards, Bathymetric publications, and Capacity Building publications areas.

3. Very short introduction from all participants

(Doc HSWG7 – List of Participants)

The Chair invited all members to briefly introduce themselves, following around the table.

Chair David Parker, from United Kingdom Hydrographic Office (UKHO),
Vice Chair Megan Greenaway, from National Oceanographic and Atmospheric Administration – Office of Coast Survey (NOAA-OCS),
Secretary Carlos Marques, from Instituto Hidrográfico (IHPT) – Portugal,
Johan Verstraeten, from Vlaamse Hydrografie – Belgium;
Raymond Van De Veen, from Hydrographic Service - Royal Netherlands Navy – Netherlands;
Nickolas Guzman, from Servicio Hidrográfico y Oceanográfico de la Armada de Chile (SHOA) – Chile;
Ljerka Vrdoljak, from Hrvatski Hidrografski Institut (HHI) – Croatia;
Christian Comtois, from Canadian Hydrographic Service (CHS) – Canada;
Jean-Guy Nistad, from Bundesamt für Seeschifffahrt und Hydrographie (BSH) – Germany;
Dhira Adhiwijna, from Fugro, Expert contributor,
Ian Davies, from EIVA - Expert contributor UK;
Matt Carter, from the National Geospatial Agency (NGA) - USA;
Katsuhiko Kusunoki, from Japan Hydrographic Association – Japan;
Takuya Kumagai, from Japan Coast Guard H & O – Japan;

Seppo Mäkinen, from Finnish Transport and Communication Agency Traficom – Finland;
Jani Pötrönen, from Finnish Transport and Communication Agency Traficom – Finland;
Aristeidis Manou, from the Maritime and Coastguard Agency, UK;
Alban Lalanne, from Service hydrographique et océanographique de la Marine (SHOM) – France;
David Vincentelli from Exail – Expert contributor France;
Martin Tunwell, from XOcean - Expert contributor;
Jose Arias from IIC Technologies – Expert contributor;
Jason Creech from David Evans and Associates – USA, Expert contributor;
Leonardo Gomes de Araujo, from Diretoria de Hidrografia e Navegação (DHN) – Brasil;
Yohanis Kalambo, from Pushhidrosal - Hydrography and Oceanography Centre – Indonesia;
Yudi Cahyadi, from Pushhidrosal - Hydrography and Oceanography Centre – Indonesia;
Agus Iwan Santoso, from Pushhidrosal - Hydrography and Oceanography Centre – Indonesia;
Greg Don, from the European Space Agency – ESA, Expert contributor;
Ola Grabak, from the European Space Agency – ESA, Expert contributor;
Knut Hartmann, from EOMap – Expert contributor Germany;
Ilenia Batsu, from Istituto Idrografico della Marina (IIM) – Italy;
Nunziante Langellotto, from Istituto Idrografico della Marina (IIM) – Italy;
Silvio Gentili, from Istituto Idrografico della Marina (IIM) – Italy;
Matteo Guideri, from Istituto Idrografico della Marina (IIM) – Italy;
Aldo Monaca, from Oceans & Cables – Italy Expert contributor;
Emre Gülher, from Fugro, Expert contributor,
Lasse Schwenger, from the Danish Geodata Agency (GST) – Denmark;
Ga Mathew, from National Hydrographic Office (NHOI) – India;
Roberto Nardini, from Istituto Idrografico della Marina (IIM) – Italy;
Luis Carlos Figueirido Filgueira from Instituto Hidrográfico de la Marina (IHM) – Spain;
Phillip S Granding, from the Danish Geodata Agency (GST) – Denmark;
Hans Öiås from Swedish Maritime Administration (Sjöfartsverket) (SMA) - Sweden;
Sam Harper, Assistant Director at IHO;

4. Procedures of the Meeting

The Chair explained all meeting procedures, reminding all that HSWG documentation is online, and documents for the meeting were sent prior to the meeting. The Microsoft Teams is the online tool being used by the group. The voting procedure was explained, in most cases an informal vote will preferably be used, however, if a specific formal vote is required, it will be considered one vote per member state.

5. Approval of agenda

(Doc HSWG7 – HSWG7 Agenda)

The agenda was published as a draft for final acceptance by the meeting. The agenda was accepted and is available on Teams and the IHO/HSWG website.

HSWG7 Decision 01: HSWG7 Agenda is approved.

6. Review of TORs and ROPs

(Ref HSWG7 – TOR and ROP)

The Terms of Reference and Rules of Procedure are available to all on the IHO/HSWG website and were presented for any comments, having registered no comments.

HSWG7 Decision 02: There is no need for HSWG TOR to be reviewed.

HSWG7 Decision 03: There is no need for HSWG ROP to be reviewed.

7. Approval of Minutes of HSWG6

(Ref HSWG7 – Minutes from HSWG6)

The Secretary described the minutes from HSWG6 which are available on the IHO/HSWG website and were sent by email. All minor changes were corrected.

The Minutes were approved by all.

HSWG7 Decision 04: HSWG6 Minutes are approved with no further changes.

8. Review of actions from HSWG5

(Ref HSWG7 – HSWG6 Actions List status)

The Secretary presented the Actions List for all members, reviewing the work done and the current status of each action. All actions from last meeting were reviewed and updated accordingly. The following actions will remain as they are ongoing.

HSWG6-10_BCSG: BCSG to analyse current standards for Bathymetric Coverage and propose changes for next edition

HSWG6-11_BCSG: BCSG to clarify 200% coverage for Bathymetric Coverage for next edition

HSWG6-15_MDSG: MDSG to identify updates for next edition

HSWG6-17 PrSG: PrSG to create a survey (about S-44 usage) to use in Regional Hydrographic Commissions

HSWG6-18 PrSG: PrSG (Chair Team, David Vincentelli, Ian Slade, Sean Cullen) to share a stand-alone presentation for education on S-44

HSWG6 Action 21: Chair Team to reach TSCOM chair team for S-44 promotion.

HSWG6 Action 24: Chair to prepare a communication, to be released by IFHS, to encourage more industry and academia participation.

New actions to be considered.

HSWG7 Action 01: All to share events information (dates and locations) to be posted in the HSWG website.

HSWG7 Action 02: ALL to publicise and encourage the use of the Matrix beyond survey orders.

HSWG7 Action 03: IHO Secretariat and Chairing Team to identify available possibilities to post a Calendar webpage in the HSWG website.

9. Key objectives for HSWG7

The Chair summarised the intentions for HSWG7, focusing on the work of the Project Teams. It was explained that the 3rd and 4th day are reserved for parallel meetings on each PT. HSWG7 plenary session is resumed after.

10. HSWG Work Plan

(Ref HSWG7 – Work plan)

The Vice-Chair started by mentioning the work plan is published on MS Teams. The Work Plan was presented, and a brief explanation on major activities was given, updating the dates as needed and mentioning the liaison with other WG is of major importance.

The current procedure for meetings was discussed, with Finland supporting the current procedure. Some proposals were discussed, as considering a Hybrid meeting, and sharing in advance the meeting information or a brief resume immediately in the end. Adding live streaming was also an option considered, with some, but not all members agreeing.

HSWG7 Decision 05: It is a consensus that HSWG keep the current procedure for meetings, having two meetings a year, around March and October, one as virtual, one in person only.

11. Liaison with other HSSC Working Groups

11.1 DQWG

Leonardo Gomes de Araujo presented an update on DQWG current work. DQWG intends to update S-68 early in 2025. A draft version of an update to S-68 will be sent to HSWG and distributed to all members for comments.

HSWG7 Action 04: All to deliver possible contribution about the latest S-68 draft version until end of October 2024

HSWG7 Action 05: Chair Team to review and include contributions from HSWG Members on S-68 draft, and send a reviewed draft version to DQWG by mid November 2024.

11.2 HDCG (HDWG)

HDWG has moved to a HD Correspondence Group (HDCG), being the liaison with IHO Geospatial Information Registry. Being important to guarantee terminology and consistency, a liaison is needed to this WG.

Jean Guy Nistad volunteered as a liaison for the HDCG

HSWG7 Decision 06: Jean-Guy Nistad will be the liaison with the HDCG

HSWG7 Action 06: Chair team to introduce HSWG liaison to HDCG.

11.3 TWCWG

The Chair mentioned that a discussion is still in place in TWCWG about defining a standard for TWC to be included in S-44, making it easier for the user to refer to this information. TWCWG have been focused on S-100 standard and are expected to address this subject in the following months aiming for an update on the next S-44 update in 2 year time. The chair team will meet with TWCWG.

11.4 S-100WG

Hans gave a brief description on the work being done by the S-100WG, updating on the outcome of the WG meetings. The operational version of the standard S-101 will be finalised by the end of the year, to be used and the milestone of starting to use S-100 in January 2026 is the main focus.

11.5 GEBCO-TSCOM

Sam Harper gave a brief description of the GEBCO program and its current status, describing the vision and mission of GEBCO, and emphasising the importance of HSWG and its members in collaborating with GEBCO.

IRCC16 has endorsed a new strategy to use a 2 year review cycle and proposed to consider "Depth" a global essential variable.

11.6 Crowdsource Bathymetry Working Group

Sam Harper showed the importance of CSBWG, and explained the current focus is on understanding how to classify CSB with CATZOC and S-44 orders. A question was raised in HSWG as to CSB can be considered a Hydrographic Survey. Hans Oias mentioned that the data from CSB can already be classified using current CATZOC and S-44 matrix, and therefore maybe only a clarification on this is needed,

With the current work ongoing in CSBWG, it is now of major importance to have a HSWG liaison to this WG. David Vincentelli volunteered on a liaison for the CSBWG.

HSWG7 Decision 07: David Vincentelli will be the liaison with the CSBWG

12. MHPT Part 1

(Ref HSWG7 – MHPT breakout session agenda)

Ian Davies presented a brief summary on MHPT current status and agenda for the intersectional meetings. Considering the difficulty in progressing with the work, a new plan has been established taking into account the IBSC timelines. It was also emphasised that the option of retiring C-13 should not be considered as students may start following unverified documentation online. The possibility of IHO hiring someone for this task has been considered and requested, and consideration has also been taken on IBSC writing C-13. The possibility of IHO and Universities collaborating on this task was also raised.

A discussion will continue within MHPT, focusing on a new plan for continuing the work started.

13. SDBPT Part 1

(Ref HSWG7 – SDBPT breakout session agenda)

Knutt Hartmann presented a brief summary on SDBPT current status and agenda for the intersectional meetings.

14. Exchange experiences of new technology, approaches, and best practice

(Ref HSWG7 – Exploring New Frontiers: The Role of Crowd-Sourced and SatelliteDerived Bathymetry in Community Hydrography)

(Ref HSWG7 – Reference uncertainty Model)

Christian Comtois presented "Exploring New Frontiers: The Role of Crowd-Sourced and SatelliteDerived Bathymetry in Community Hydrography"

Jean Huy Nistad presented "Reference uncertainty Model"

15. S-44 Continuous Improvement

15.1 Current Status of S-44 and Maintenance Process

(Ref HSWG7 – S-44 maintenance plan)

Megan Greenaway shown a timeline for the maintenance process, considering this next update of S-44, which will probably be published by October 2026.

HSWG7 Action 07: Chair Team to create a one page welcome document for HSWG describing how to get access to MS Teams, Whatsapp Community, and where to get the most important files

15.2 S-44 Feedback Tracking

(Ref HSWG7 – S-44 Feedback Sheet)

The Vice Chair specified that the tracking changes spreadsheet was available on the MS Teams, presenting its layout. A review of the additions was shown by Megan Greenaway explaining the additions.

15.3 Detailed discussion on Thematic sub-groups

Backscatter

David Parker explained that GEOHAB backscatter working group is working with HSWG, and a meeting will take place some weeks after HSWG7 with the intention to discuss the inclusion of backscatter in the matrix.

Dhira asked to be included in the Backscatter Sub Group.

Bathymetric Coverage SubGroup

(Ref HSWG7 – BC Grid PPT)

(Ref HSWG7 – BC PD PPT)

The BCSG shared 2 presentations about the two proposals for clarifying Bathymetric Coverage and Feature Detection, a "Grid Solution" and a "Point Distance & Point Density". Followed by the discussion about these two proposals.

HSWG7 Action 08_BCSG: BCSG to analyse a possible clarification on the terms feature detection and feature identification.

Uncertainty SubGroup

(Ref HSWG7 – UNSG PPT)

Jean Guy Nistad presented about the developments on the Uncertainty SG, explaining a need for revising the terminology related to error theory with a liaison with HDCG. This revision will affect both C-13 and S-44.

HSWG7 Action 09_UnSG: UnSG to do a revision on the terminology related to error theory (uncertainty, accuracy, precision, etc ..)

HSWG7 Action 10_UnSG: UnSG to work on proposing needed updates on Uncertainty and Related Concepts in S-32 and C-13

HSWG7 Action 11_UnSG: UnSG to analyse the need for IHO Reference Uncertainty Model and propose a possible model

HSWG7 Action 12_UnSG: UnSG to discuss on the need to clarify confidence level and confidence interval terms.

15.4 Additional feedback on S44 from operational experience

Italy and Netherlands are both using special requisites using the matrix. Hans Oias mentioned the Matrix has been pointed out to be used for CSB in the CSBWG. Knutt Hartmann considered that, within the SDB community, the Matrix does not seem to be widely known, and a combination of requisites from the matrix can be used for different purposes in SDB. A pre definition of specific sets of requisites for specific purposes, in S-44, would be useful.

HSWG7 Action 13_SDBPT: SDBPT to identify possible use cases and define specific sets of matrix parameters for specific purposes

HSWG7 Action 14: ALL to consider ways on expanding the S-44 standard beyond safety of navigation needs, considering having new sets of matrix parameters

15.5 Promotion of S-44 and Links to IHO Strategic Objective 2.2

It was explained that the current metrics being used, is measuring the number of downloads of the document S-44.

15.6 Education on S-44

It was mentioned that in Chile, an invitation to private companies was sent, in order to explain S-44

15.7 Support for further translation of S-44 for onward IHO publication

Currently S-44 is posted in English, French (updated to version 6.1), Spanish (updated to version 6.1), Chinese (updated to version 6.1), Portuguese (updated to version 6.0).

16. Breakout Sessions #1

Breakout sessions for MHPT and SDBPT had separate meetings on day 3 with their respective members. Each group followed their own agenda, with separate minutes produced.

17. Breakout Sessions #2

Breakout sessions for MHPT and SDBPT had separate meetings on day 4 with their respective members. Each group followed their own agenda, with separate minutes produced.

18. S-44 Summary

(Ref HSWG7 – S-44 Review PPT)

Megan Greenaway presented the agenda, considering the main subjects discussed and showed the S-44 changes spreadsheet.

Vice Chair presented on the differences and misalignments between S-44 and S-100. The Chair explained there is an HSSC action for the WG to work on harmonizing these standards and asked for the WG opinion on this harmonization intention, with 3 member states not voting in favour of trying to harmonize, 0 member states in favour of leaving it as is.

A fruitful discussion about the inconsistencies that could be found across S-44, S-100 standards Misalignments took place, and several small misalignments could be found.

HSWG7 Decision 08: HSWG will keep investigating on the best ways to harmonize where possible with other IHO standards

HSWG7 Decision 09: No other discrepancies on S44 were identified through operational experience.

HSWG7 Action 15: Chair team to identify misalignments with other IHO standards, circulate on HSWG and discuss with other WG and build a case to present at HSSC.

19. MHPT Summary

(Ref HSWG7 – MHPT Review PPT)

Ian Davies presented the evolution of works by MHPT, and the outcomes of the breakout sessions. The actions and the changes to the work plan were shown. All the workplan was reviewed and a timeline for the update of C-13 was presented to all HSWG.

HSWG7 Decision 10: MHPT TOR are to be revised to include a definition of objectives and target audience for the review of C-13.

HSWG7 Action 16_MHPT: MHPT TOR to be revised to include a definition of the objectives and target audience for the update of C-13.

HSWG7 Action 17_MHPT: MHPT to move Annexes B, C, D on S-44 to C-13

HSWG7 Action 18_MHPT: MHPT Chair to prepare a proposal for approval for alternate provision and maintenance of C-13 content

20. SDBPT Summary

(Ref HSWG7 – SDBPT Review PPT)

Knut Hartmann presented a summary of the SDBPT breakout sessions result. Several Presentations from well known scientists on use cases were given during the breakout sessions. The priority of the discussions was the updating of B-13, with an update cycle agreed for 2 years, aiming to deliver the next update on March 2025 for an expected minor update in 2025. Some work is planned for intersectional meetings, for evaluating the need for and proposing a new order / use case related "orders" for the use of the matrix.

The new chair team was elected with Knut Hartmann and Emre Gülher as chair and vice-chair.

21. HSWG by-elections

Sam Harper, Assistant Director at IHO, proceeded to the election of the Co-Vice Chair of HSWG, with Carlos Marques (Portugal) having been nominated and elected by acclamation.

Sam Harper, Assistant Director at IHO, proceeded to the election of the Secretary of HSWG, with Lilei Lv (China) having been nominated and elected by acclamation.

HSWG7 Decision 11: Carlos Marques was elected by acclamation as Co-Vice Chair of HSWG

HSWG7 Decision 12: Lilei Lv was elected by acclamation as Secretary of HSWG

22. Any other business

The dates for future events were presented:

- October 2024 - Hydrographic Engineering Conference – Portugal/Spain – Cadiz,

- November 2024 – Hydro2024 in Rostock - Germany.
- UNH Ocean Mapping group Course in Finland in March 2025 in “Hydrographic Office in Helsinki
- Hydro Conference, Hydro24 in Rostock Germany, Organized by ? IFHS and BSH ?
- 5th to 7th of November 2024
- US Hydro 2025 Wilmington 17-20 March
- 3rd UN Oceans Conference in 2025, in Nice, June 2025, (Paper will be circulated IHO on Council 8)

Philip Granding asked for video capabilities so that there is a way for other elements on member delegations to view the meeting. Having this subject been considered before, some new options were considered, as record the meeting (with about 50% agreeing), Live stream (10 delegates agreeing), Live stream with chat (only 8 delegates agreeing).

About an alternative for the elements that are not able to use MS Teams, it was decided that, periodically (every month) documents would be posted on IHO website/ portal.

HSWG7 Action 19: All Members who do not currently have access to HSWG Teams site to pass details to HSWG Chair.

HSWG7 Action 20: Chair team to analyse the possibility of video recording or streaming on meetings (postponed to HSWG8).

23. Date, venue and method of next meeting

It was decided HSWG8 would be planned for the first week of March 2025.

Also HSWG9 will tentatively be in the American continent, alternatively in Monaco.

24. Review of updated Work Plan

The current Work Plan will be updated with the dates and will be posted in the IHO/HSWG website.

25. Intersessional activities

The Vice Chair reviewed the planned intersessional activities.

26. Review of Action List and items for agenda for HSWG8

(Doc HSWG7 – Decisions List)

(Doc HSWG7 – Actions List)

The list of Actions was reviewed and agreed by all members. The Actions List and Decisions List is annexed to this document.

HSWG7 Decision 13: HSWG agreed on the actions list presented.

27. Closing remarks

The Chair closed the meeting summarizing the meeting and thanking all the participants for all the hard work put through this meeting. The Chair thanked ESA for hosting this meeting and a symbolic exchange of compliments followed. There were closing remarks from Simonetta Cheli, Director of Earth Observation Programmes and Head of ESRIN, as well as an exchange of gifts with the IHO.

28. Annex A – Glossary

29. Annex B - Documents

30. Documents in external reference (IHO's HSWG website)

(Ref HSWG7 – TOR and ROP)

(Ref HSWG7 – Minutes from HSWG6)

(Ref HSWG7 – HSWG6 Actions List status)

(Ref HSWG7 – Work plan)

(Ref HSWG7 – MHPT breakout session agenda)

(Ref HSWG7 – SDBPT breakout session agenda)

(Ref HSWG7 – Exploring New Frontiers: The Role of Crowd-Sourced and Satellite Derived Bathymetry in Community Hydrography)

(Ref HSWG7 – Reference uncertainty Model)

(Ref HSWG7 – S-44 maintenance plan)

(Ref HSWG7 – S-44 Feedback Sheet)

(Ref HSWG7 – BC Grid PPT)

(Ref HSWG7 – BC PD PPT)

(Ref HSWG7 – UNSG PPT)

(Ref HSWG7 – S-44 Review PPT)

(Ref HSWG7 – MHPT Review PPT)

(Ref HSWG7 – SDBPT Review PPT)

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Annex A - Glossary

B-13 – Guidance to Satellite Derived Bathymetry IHO Publication

BCSG – Bathymetric Coverage Sub Group

C-13 - Manual on Hydrography IHO Publication

CSB – Crowdsourced Bathymetry

CSBWG – Crowdsourced Bathymetry Working Group

DQWG – Data Quality Working Group

GEBCO - General Bathymetric Chart of the Oceans

GEOHAB – Marine Geological and Biological Habitat Mapping

HDCG - Hydrographic Dictionary Correspondence Group

HDWG - Hydrographic Dictionary Working Group

HSSC - Hydrographic Services and Standards Committee

HSWG - Hydrographic Surveys Working Group

IHO - International Hydrographic Organization

MHPT – Manual of Hydrography Project Team

MS - Microsoft

PT – Project Team

ROP – Rules of Procedure

S-44 – Standards for Hydrographic surveys IHO Publication

S-57 – IHO Transfer Standard for Digital Hydrographic Data IHO Publication

S-100 - Based Product Specifications IHO Publication

S-101 – ENC Product Specification IHO Publication

S-100WG – S-100 Working Group

SDB - Satellite Derived Bathymetry

SDBPT - Satellite Derived Bathymetry Project Team

TOR – Terms of Reference

TSCOM – Technical Sub-Committee on Ocean Mapping

TWCWG – Tides, Water Level and Currents Working Group

UNSB – Uncertainty Sub Group

WG – Working Group

Annex B – Documents

(Doc HSWG7 – List of Participants)

(Doc HSWG7 – HSWG7 Agenda)

(Doc HSWG7 – Decisions List)

(Doc HSWG7 – Actions List)

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Doc HSWG7 – List of Participants

| Member State | Organization | Abbreviation | Name |
|--------------------|---|---------------------|--------------------------|
| Australia | Xocean | Xocean | Martin Tunwell |
| Belgium | Vlaamse Hydrografie | Vlaamse Hydrografie | Johan Verstraeten |
| Brazil | Diretoria de Hidrografia e Navegação (DHN) | DHN | Leonardo Gomes de Araujo |
| Canada | Canadian Hydrographic Service (CHS) | CHS | Christian Comtois |
| Chile | Servicio Hidrográfico y Oceanográfico de la Armada de Chile (SHOA) | SHOA | Nickolas Guzman |
| Croatia | Hrvatski Hidrografski Institut (HHI) | HHI | Ljerka Vrdoljak |
| Denmark | Danish Geodata Agency | DGA | Lasse Schwenger |
| Denmark | Danish Geodata Agency | DGA | Phillip S Granding |
| Expert Contributor | Oceans & Cables Limited | | Aldo Monaca |
| Expert Contributor | iXblue/AFhy Francophone Hydrographic Society | iXblue | David Vincentelli |
| Expert Contributor | EIVA | ?? | Ian Davies |
| Expert Contributor | David Evans and Associates | DEA | Jason Creech |
| Expert Contributor | IIC Technologies | IIC TEC | Jose Arias Cardoso |
| Expert Contributor | EOMap | EOMap | Knut Hartmann |
| Finland | Finnish Transport and Communication Agency Traficom / Hydrographic Office | TRAFICOM | Jani Pötrönen |
| Finland | Finnish Transport and Communication Agency Traficom / Hydrographic Office | TRAFICOM | Seppo Mäkinen |
| France | Service hydrographique et océanographique de la Marine (SHOM) | SHOM | Alban Lalanne |
| Germany | Bundesamt für Seeschifffahrt und Hydrographie (BSH) | BSH | Jean-Guy Nistad |
| India | Indian National Hydrographic Office (INHO) | INHO | Ga Mathew |
| Indonesia | Hydrography and Oceanography Centre | Pushhidrosal | Agus Santoso |

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|-------------|---|--------------|---------------------------------------|
| Indonesia | Hydrography and Oceanography Centre | Pushhidrosal | Yohanis Kalambo, Cdr |
| Indonesia | Hydrography and Oceanography Centre | Pushhidrosal | Yudi Cahyadi |
| Italy | European Space Agency | ESA | Greg Don |
| Italy | Istituto Idrografico della Marina | IIM | Ilenia Batzu |
| Italy | Istituto Idrografico della Marina | IIM | Langellotto |
| Italy | Istituto Idrografico della Marina | IIM | Matteo Guideri |
| Italy | European Space Agency | ESA | Ola Grabak |
| Italy | Istituto Idrografico della Marina | IIM | Roberto Nardini |
| Italy | Istituto Idrografico della Marina | IIM | Serena Bigelli |
| Japan | Japan Hydrographic Association | | Katsuhiko Kusunoki |
| Japan | Japan Coast Guard Hydrographic and Oceanographic Department (JHOD) | JHOD | Takuya Kumagai |
| Netherlands | Netherlands Hydrographic Office (NIHO) | NIHO | Raymon van de Veen |
| Observer | Maritime and Coastguard Agency | MCA | Aristeidis Manou |
| Portugal | Instituto Hidrográfico (IH) | IH | Carlos Videira Marques (Secretary) |
| SDB | Fugro | Fugro | Dhira Adhiwijna |
| SDB | Istanbul Technical University | ITU | Emre Gülher |
| Spain | Instituto Hidrográfico de la Marina (IHM) | IHM | Luis Carlos Figueirido |
| Sweden | Sjöfartsverket (SMA) | SMA | Hans Öiås |
| UK | United Kingdom Hydrographic Office (UKHO) | UKHO | David Parker (Chair) |
| USA | National Geospatial Agency (NGA) | NGA | Matt Carter |
| USA | National Oceanographic and Atmospheric Administration - Office of Coast Survey (NOAA-OCS) | NOAA-OCS | Megan Greenaway (Vice Chair) |

Doc HSWG7 – HSWG7 Agenda

Seventh Meeting of the IHO Hydrographic Surveys Working Group (HSWG 7) In person event – European Space Agency Centre for Earth Observation (ESRIN) Largo Galileo Galilei, 1, 00044 Frascati, Rome, Italy

30th September to 4th October 2024 (all times CEST)

Day 1 – Monday 30th September

0930 to 1300 – Informal meetings of the Bathymetric Coverage and Uncertainty Sub-Groups – Location TBC [Hotel in Frascati, not ESA] Contact your sub-group chairs if they have not already contacted you.

1300 – ESA Shuttle Bus from Frascati Piazza Marconi (Map annex A)

1320 – HSWG Members arrive ESA for security check in.

1400 - Plenary (Room = Magellan)

1. Welcome and opening remarks from chair group. (*Chair*)
2. Welcome address from ESA.
3. Very short introduction from all participants (in order stated by Chair)
4. Procedures of the Meeting. (*Chair*)
5. Approval of agenda. (*Chair*)
6. Review of ToRs and RoPs (*Secretary*)
7. Approval of Minutes of HSWG6 (*Secretary*)
8. Review of actions from HSWG6 (*Secretary*)
9. Key objectives for HSWG7 (*Chair*)
10. HSWG Work Plan (*Vice-Chair*)
11. Liaison with other HSSC Working Groups (including designation of individuals for liaison)
 1. DQWG
 1. Current situation
 2. CATZOC / S-1xx Quality / S44 mapping update, post HSSC

3. Common use of uncertainty formula
4. Further opportunities for collaboration
2. HDWG
 1. Current situation
 2. Terminology
 3. Further opportunities for collaboration
3. TWCWG (Chair)
 1. Current situation – DP to update on discussions.
 2. Further opportunities for collaboration
4. S-100WG (Hans Oias)
 1. Current situation
 2. Further opportunities for collaboration
5. GEBCO TSCOM (Sam Harper)
 1. Current situation
 2. Further opportunities for collaboration
6. Crowdsource Bathymetry Working Group (Sam Harper)
 1. Current situation
 2. Further opportunities for collaboration

1530 – 1545 Break (Room = Cook)

12. MHPT Part 1 (MHPT Chair)
 1. General update from MHPT
 2. Terms of Reference
 3. Workplan
 4. Review of Current Edition (if time available)

5. Structure of next edition of C-13
6. Outline for MHPT Breakout sessions
13. SDBPT Part 1 (SDBPT Chair)
 1. General update from SDBPT
 2. Terms of Reference
 3. Workplan
 4. General initial input from HSWG
 5. Outline for SDBPT Breakout sessions
14. Exchange experiences of new technology, approaches, and best practice.
 1. Christian Comtois [Canada]: "Exploring New Frontiers: The Role of Crowd-Sourced and Satellite-Derived Bathymetry in Community Hydrography"

(Member States and Expert Contributors to suggest introductory presentations to promote discussion to Chair in advance)

1730 Close of Day 1 Business

1730 – HSWG7 Icebreaker @ ESRIN (Drink and canapés)

1900 - ESA Shuttle bus from ESRIN to Piazza Marconi

Day 2 – Tuesday 1st October

0820 – ESA Shuttle Bus from Frascati Piazza Marconi to ESRIN

0900 - Plenary - S-44 Continuous Improvement (Room = Magellan)

15. S-44 Continuous Improvement (Vice-Chair)
 1. Current status of S-44 and Maintenance Process
 2. S44 Feedback Tracking
 3. Detailed discussion on Thematic sub-groups
 1. Backscatter (HSWG Chair and Vice Chair)
 2. Bathymetric Coverage (Jani) [Up to 2 hours]
 3. Uncertainty (Hans / Jean Guy) [Up to 2 hours]

4. Other items for consideration within the standard
4. Additional feedback on S44 from operational experience
5. Promotion of S-44 and Links to IHO Strategic Objective 2.2
6. Education on S-44
7. Support for further translation of S-44 for onward IHO publication

Breaks: 1030 to 1045, Lunch 1320 to 1420 ESA Canteen (Room = Cook - No afternoon break due to 1630 Finish)

1630 – ESA Phi Experience Guided Tour and ESRIN Visitor Center Tour (25 persons x 30 minutes each – swap at 1700)

1730 Day Ends - Free Evening

1730 - ESA Shuttle bus from ESRIN to Piazza Marconi

Day 3 – Wednesday 2nd October

0820 – ESA Shuttle Bus from Frascati Piazza Marconi to ESRIN

0900 – Project Team Breakout Sessions

16. Breakout Sessions #1 (running in parallel)
 - MHPT
 - SDBPT

Breaks: 1030 to 1045, 1320 to 1420, 1530 to 1545

1700 Close of Day 3 - Free Evening

1700 - ESA Shuttle bus from ESRIN to Piazza Marconi

Day 4 – Thursday 3rd October

0820 – ESA Shuttle Bus from Frascati Piazza Marconi to ESRIN

0900 – Project Team Breakout Sessions

17. Breakout Sessions #2 (running in parallel)
 - MHPT

- SDBPT

Breaks: 1030 to 1045, Lunch 1320 to 1440 ESA Canteen, 1530 to 1545

1700 Close of Business for Day 4

1715 - ESA Shuttle Bus from to ESRIN HSWG7 Dinner at Villa Grazioli

1900 – HSWG7 Delegate Dinner at Villa Grazioli. Arrangements assisted by ESA by not hosted – each delegate will cover own dinner costs. EIVA and EOMAP are kindly covering wine with dinner and pre-dinner drinks respectively.

2100 - ESA Shuttle Bus from Villa Grazioli to Frascati Piazza Marconi

Day 5 – Friday 4th October

0820 – ESA Shuttle Bus from Frascati Piazza Marconi to ESRIN

0900 – Plenary

18. S-44 Summary: (HSWG Vice-Chair)
 1. Present outcomes of S-44 Breakout Session
 2. Further HSWG Input
 3. Updated Workplan
 4. Next Steps
19. MHPT Summary: (MHPT Chair)
 1. Present outcomes of MHPT Breakout Session
 2. Further HSWG Input
 3. Updated Workplan
 4. Intersessional activities
 5. Next Steps
20. SDBPT Summary: (SDBPT Chair)
 1. Present outcomes of SDBPT Breakout Session

2. Further HSWG Input
3. Updated Workplan
4. Intersessional activities
5. Next Steps

1030 - 1045 Break

1045 - Plenary

21. HSWG by-elections
 1. Co-Vice Chair [1 nomination received from Carlos Marques [Portugal]]
 2. HSWG Secretary [1 nomination received from Lilei Lv [China]]
22. Any other business. (Chair)
 1. Conferences and other events [all delegates welcomed to promote]
23. Date, venue and method of next meeting – HSWG8 (Chair)
24. Review of updated Work Plan (Vice-Chair)
25. Intersessional activities. (Vice-Chair)
26. Review of Action List and items for agenda for HSWG8. (Secretary)
27. Closing remarks. (Chair and Vice-Chairs)

1200 Close of Day 6 Business and of HSWG7

1200 Lunch 1300 ESA Canteen

1300 HSWG7 Ends, delegates depart (no transport provided by ESA)

Doc HSWG7 – HSWG Decisions List

HSWG7 Decision 01: HSWG7 Agenda is approved

HSWG7 Decision 02: There is no need for HSWG TOR to be reviewed.

HSWG7 Decision 03: There is no need for HSWG ROP to be reviewed.

HSWG7 Decision 04: HSWG6 Minutes are approved with no further changes.

HSWG7 Decision 05: It is a consensus that HSWG keep the current procedure for meetings, having two meetings a year, around March and October, one as virtual, one in person only.

HSWG7 Decision 06: Jean-Guy Nistad will be the liaison with the HDCG

HSWG7 Decision 07: David Vincentelli will be the liaison with the CSBWG

HSWG7 Decision 08: HSWG will keep investigating on the best ways to harmonize where possible with other IHO standards

HSWG7 Decision 09: No other discrepancies on S44 were identified through operational experience.

HSWG7 Decision 10: MHPT TOR are to be revised to include a definition of objectives and target audience for the review of C-13.

HSWG7 Decision 11: Carlos Marques was elected by acclamation as Co-Vice Chair of HSWG

HSWG7 Decision 12: Lilei Lv was elected by acclamation as Secretary of HSWG

HSWG7 Decision 13: HSWG agreed on the actions list presented.

Doc HSWG7 – HSWG Actions List

HSWG7 Action 01: ALL to share events information (dates and locations) to be posted in the HSWG website

HSWG7 Action 02: ALL to publicise and encourage the use of the Matrix beyond survey orders

HSWG7 Action 03: IHO Secretariat and Chairing Team to identify available possibilities to post a Calendar webpage in the HSWG website

HSWG6 Action 10_BCSG: BCSG to analyse current standards for Bathymetric Coverage and propose changes for next edition

HSWG6 Action 11_BCSG: BCSG to clarify 200% coverage for Bathymetric Coverage for next edition

HSWG6 Action 15_MDSG: MDSG to identify updates for next edition

HSWG6 Action 17_PrSG: Promoting Sub Group (PrSG) to create a survey (about S-44 usage) to use in Regional Hydrographic Commissions

HSWG6 Action 18_PrSG: PrSG (Chair Team, David Vincentelli, Ian Slade, Sean Cullen) to share a stand-alone presentation for education on S-44

HSWG6 Action 21: Chair Team to reach TSCOM chair team for S-44 promotion.

HSWG6 Action 24: Chair to prepare a communication, to be released by IFHS, to encourage more industry and academia participation.

HSWG7 Action 04: All to deliver possible contribution about the latest S-68 draft version until end of October 2024

HSWG7 Action 05: Chair Team to review and include contributions from HSWG Members on S-68 draft, and send a reviewed draft version to DQWG by mid November 2024.

HSWG7 Action 06: Chair team to introduce HSWG liaison to HDCG.

HSWG7 Action 07: Chair Team to create a one page welcome document for HSWG describing how to get access to MS Teams, Whatsapp Community, and where to get the most important files

HSWG7 Action 08_BCSG: BCSG to analyse a possible clarification on the terms feature detection and feature identification.

HSWG7 Action 09_UnSG: UnSG to do a revision on the terminology related to error theory (uncertainty, accuracy, precision, etc ..)

HSWG7 Action 10_UnSG: UnSG to work on proposing needed updates on Uncertainty and Related Concepts in S-32 and C-13

HSWG7 Action 11_UnSG: UnSG to analyse the need for IHO Reference Uncertainty Model and propose a possible model

HSWG7 Action 12_UnSG: UnSG to discuss on the need to clarify confidence level and confidence interval terms.

HSWG7 Action 13_SDBPT: SDBPT to identify possible use cases and define specific sets of matrix parameters for specific purposes

HSWG7 Action 14: ALL to consider ways on expanding the S-44 standard beyond safety of navigation needs, considering having new sets of matrix parameters

HSWG7 Action 15: Chair team to identify misalignments with other IHO standards, circulate on HSWG and discuss with other WG and build a case to present at HSSC.

HSWG7 Action 16_MHPT: MHPT TOR to be revised to include a definition of the objectives and target audience for the update of C-13.

HSWG7 Action 17_MHPT: MHPT to move Annexes B, C, D on S-44 to C-13

HSWG7 Action 18_MHPT: MHPT Chair to prepare a proposal for approval for alternate provision and maintenance of C-13 content

HSWG7 Action 19: All Members who do not currently have access to HSWG Teams site to pass details to HSWG Chair.

HSWG7 Action 20: Chair team to analyse the possibility of video recording or streaming on meetings (postponed to HSWG8).

DRAFT