

**9TH MEETING OF THE HYDROGRAPHIC SERVICES AND STANDARDS COMMITTEE
(HSSC-9)
Ottawa, Canada, 6 - 10 November 2017**

FINAL MINUTES

- Notes:**
- 1) *The numbering of sections is the same as in the agenda, although the order of taking the items was not exactly followed.*
 - 2) *The decisions and actions are listed in Annex C only. When reading the text in the main part of the report, click on the hyperlink to view the associated action if any. Then, when in Annex C, press **ALT+ left arrow** on your keyboard to return to the original section in the main part of the report.*
 - 3) *All documents referred to in these report are available and “hyperlinked” to the HSSC page of the IHO website (www.iho.int > Committees & WGs > HSSC > HSSC-9).*

- Annexes:**
- A [Terms of Reference of the Data Quality Working Group \(DQWG\)](#).
 - B [Terms of Reference of the Hydrographic Dictionary Working Group \(HDWG\)](#).
 - C [List of Decisions and Actions arising from HSSC-9](#).

1. OPENING AND ADMINISTRATIVE ARRANGEMENTS

| | | |
|--------------|--------------------------------|--|
| <i>Docs:</i> | HSSC9-01A | List of Documents (IHO Secretariat) |
| | HSSC9-01B Rev1 | List of Participants (IHO Secretariat) |
| | HSSC9-01C | HSSC – List of Contacts (IHO Secretariat) |
| | HSSC9-01D | TORs for HSSC and related Working Groups (IHO Secretariat) |

The ninth meeting of the Hydrographic Services and Standards Committee (HSSC) took place at the Hotel Fairmount Château Laurier in Ottawa, Canada, from 6 to 10 November 2017, hosted by the Canadian Hydrographic Service (CHS). The meeting was opened by Mr Mike Prince (Australia) Acting Chair of the HSSC, followed by Dr Mathias Jonas, Secretary-General of the IHO and former Chair of the HSSC, and by Mr Denis Hains, Director General of CHS.

Mr Hains welcomed all the participants on behalf of the Government of Canada, Fisheries and Oceans, and informed them that Dr Arran MacPherson, the Acting Assistant Deputy Minister of Ecosystems and Oceans Science in the Department of Fisheries and Oceans, to whom the CHS reports, had sent her regrets for not being able to open the meeting. Mr Hains then introduced his CHS Management Team and reported that it was a great honour for the CHS to host this important meeting in 2017 on the occasion of the 150th anniversary of Canada. He also reported on the history of the Château Laurier Hotel itself and its link to the sea, as it was commissioned by Mr Charles Melville Hays, President of the Grand Trunk Railway who perished with the *Titanic* on April 14th 1912. Mr Hains concluded on the importance of the work of HSSC, on the good relationship with Arctic neighbouring countries and on the continuing commitments of Canada towards the IHO.

Making reference to his previous position as HSSC Chair, the Secretary-General expressed his appreciation to the HSSC, Working Groups and Project Teams’ Members for their energy, support and investment into this important work programme of the organization. He also paid tribute to the work achieved by Gilles Bessero, former Technical Director and HSSC Secretary, and for his outstanding support for five years.

He reported that his last outgoing duty as HSSC Chair had been to present the HSSC achievements to the first Session of the IHO Assembly in April. This was well received and the Assembly approved the HSSC work programme for the next three years.

He reported on the lively strategic discussions that occurred at the first meeting of the IHO Council, three weeks ago, welcoming the role assigned to the Council as a bridge between the high level policy of the Assembly and the technical level of technical standardization and interregional cooperation (IRCC), giving strategic directions but likewise allowing flexibility for the direct interaction of the HSSC with the Member States. He reminded that the two work programmes of the IHO, supported by the IRCC and HSSC, were strongly interrelated.

He concluded that the IHO, which is technical and consultative by nature, is tasked by its Member States to be "... *standard makers, enablers of regional cooperation, motivators for education, advertiser for the importance of hydrography, members of the brotherhood of those who argue for a careful treatment of the seas and oceans.*"

Outcome:

- The Committee noted the administrative arrangements and the related documents.

→Action [HSSC9/01](#)

2. APPROVAL OF AGENDA

Doc: HSSC9-02A Rev2 [Agenda and Timetable](#) (IHO Secretariat)

Outcome:

- The Committee approved the agenda and timetable without any change.

→Decision [HSSC9/02](#)

3. MATTERS ARISING FROM MINUTES OF 8th HSSC MEETING

Docs: HSSC9-03A [Minutes of the 8th HSSC Meeting](#) (IHO Secretariat)
HSSC9-03B [List of Actions from the 8th HSSC Meeting and Status](#) (IHO Secretariat)

The IHO Secretariat reported that the minutes of HSSC-8 meeting had been agreed as reported in the IHO CL 08/2017 dated 25 January and were included in the list of documents for ease of reference only.

Most of the actions had been either completed or would be addressed under the relevant agenda items during the meeting. Feedback was needed on the following action items.

Outcome:

- The Committee noted the report and agreed that all pending actions would be reviewed under the appropriate agenda items, pending actions being renamed as appropriate.

→Actions [HSSC9/03](#), [HSSC9/04](#)

4. HSSC ADMINISTRATION

4.1 IHO Assembly-1 Decisions related to HSSC

Doc: HSSC9-04.1A [IHO Assembly-1 Decisions related to HSSC](#) (HSSC Chair/IHO Sec.)

The HSSC Chair reported that there were several issues related to the work of the HSSC and its subordinated bodies that were discussed at the first IHO Assembly. The most significant item affecting HSSC was the task to review the IHO Resolution 2/2007 as amended with the view to develop some guidance on the conduction of impact study, in particular for S-100 based products. The HSSC Chair made also reference to the outcome of the first meeting of the Council for this very IHO Resolution. A

draft revision of this IHO Resolution will have to be submitted to the next Council, with a first step to be considered at HSSC-10 in May 2018.

Outcome:

- The Committee noted the report.

→Action [HSSC9/27](#)

4.2 Decisions from the IHO Council (C-1) affecting HSSC

Doc: HSSC9-04.2A INF3 [Decisions from the IHO Council \(C-1\) affecting HSSC \(HSSC Chair/IHO Sec.\)](#)

As reported in the [IHO CL 55/2017](#) dated 31 October – *Outcome of C-1* - , the following key priorities of the IHO Work Programme 2 for 2018 were highlighted at the 1st meeting of the Council:

- Develop an S-100 Interoperability Specification
- Develop all the components needed to make S-101 a reality
- Develop S-121 Product Spec for Maritime Limits and Boundaries
- Consolidation and clarification of standards in relation to ECDIS/ENC
- Consider data quality aspects in an appropriate and harmonized way for all S-100 based product specifications
- Prepare Ed. 6.0.0 of S-44
- Develop initial guidance on definition and harmonization of Maritime Service Portfolios

It was confirmed that there was no “ranking” in this list of key items endorsed at the Council meeting but there was a clear intention to monitor the progress made at the 2nd meeting of the Council.

The other decisions and actions of the Council having a direct effect on the activities of HSSC were presented and reviewed. It was noted in particular that the Council tasked HSSC to establish by C-2 a prioritized list of work items that need to be funded through the Special Project fund. This list has to be maintained on a yearly basis.

Outcome:

- The Committee reviewed the list of Decisions and Actions from C-1 that affect HSSC and noted that all the revisions of standards submitted by HSSC to the Council had been endorsed at C-1.

→Action [HSSC9/05](#)

- The projects that need to be funded through the Special Project fund for 2018 were defined in the course of the HSSC-9 meeting, in response to the applications received from the WGs (S-100WG, ENCWG and NIPWG).

→Decisions [HSSC9/10](#), [HSSC9/20](#), [HSSC9/25](#)

4.3 Election of HSSC Chair and Vice-Chair (IHO Sec.)

Doc: HSSC9-04.3A [Election of HSSC Chair and Vice-Chair \(IHO Sec.\) – Curriculum vitae \[Olumide Olugbode\]\(#\), \[Mike Prince\]\(#\), \[Louis Maltais\]\(#\)](#)

In accordance with the HSSC ToRs and RoPs, the Chair and Vice-Chair positions must be put up for re-election at the first meeting following each ordinary session of the Assembly. The IHO Secretariat reported that one single nomination had been received from the position of HSSC Chair and three for the position of HSSC Vice-Chair.

In accordance with the proposed procedure, the Chair invited additional nominations to be provided before the close of the first day of the meeting. He also suggested a brief presentation from each of the nominees for the Vice-Chair position. The Chair confirmed that the vote would take place on the final day of the HSSC meeting.

Outcome:

- The Committee noted the voting procedure for HSSC Chair and Vice-Chair.

→ Decision [HSSC9/06](#)

On Friday morning, at the end of the meeting, the IHO Secretariat officiated the election process: 22 Member States were represented (Australia, Brazil, Canada, China, Denmark, Finland, France, Germany, India, Indonesia, Italy, Netherlands, Nigeria, Norway, Poland, Republic of Korea, Singapore, Spain, Sweden, Turkey, United Kingdom and USA).

Captain Luigi Sinapi (Italy) was elected as HSSC Chair unanimously, and Mr Michael Prince (Australia) was elected as Vice-Chair after a secret ballot¹. Director Abri Kampfer congratulated the incoming Chair and Vice-Chair and wished them good success for the challenges facing the HSSC.

Outcome:

- The Committee welcomed the election of Captain Luigi Sinapi (Italy) as Chair of HSSC, and Mr Michael Prince (Australia) as Vice-Chair of HSSC.

5. REPORTS BY HSSC WORKING GROUPS

5.1 S-100 (S-100WG)

Docs: HSSC9-05.1A

[Report and Recommendations of S-100WG \(S-100WG Chair\) - Presentation](#)

[IHO Geospatial Standard for S-100 ECDIS Interoperability Specification Version 0.1 \(.doc \)](#)

[Report on S-100 Interoperability Workshop \(KR\)](#)

[S-100 Product Specification Roll Out Implementation Plan](#)

[S-100 Test Bed Platform Presentation](#)

[S-100 Infrastructure Presentation](#)

[S-121 Presentation](#)

HSSC9-05.1B Rev1

[Request for Financial Support for the S100 Portrayal Catalogue Builder and the S-101 Portrayal Catalogue \(S-100WG Chair/IHO Sec.\)](#)

[Progress Report on S-100 DCEG Builder Development](#)

HSSC9-05.1C INF4

[S-100 Products Validation - Presentation](#)

Report and Recommendations of S-100WG (S-100WG Chair)

The S-100WG Chair reported that S-100 Ed 3.0.0 had been published in June 2017. At its last meeting, the S-100WG also agreed on a schedule for the publications of future edition of S-100 in order to accommodate maintenance and extension to the standard.

¹ Results of the election for HSSC Vice-Chair: Mike Prince (12), Louis Maltais (8), Olumide Olugbode (2).

| Month/Year | Action | Notes |
|------------------|--|--|
| April 2018 | Final Consideration of proposals for the next edition of S-100 | S100WG3 |
| May 2018 | Notification to HSSC10 of a new edition of S-100 | |
| Early 2019 | Publication of next edition of S-100 | Edition 4.0.0 (have proposals that extend S-100) |
| March/April 2020 | Final Consideration of proposal for next edition | |
| May 2020 | Notification to HSSC12 of a new edition of S-100 | |
| Early 2021 | Publication of the next edition of S-100 | |

Maintain and Extend S-100 (Work Item A.1)

A draft Edition 1.0.0 of the S-100 Interoperability Specification has been completed and is undergoing review by the S-100WG. It is anticipated that the specification will be submitted to HSSC-10 for endorsement. UK requested that the Specification should have an appropriate title in order to make it clear that it is for navigation only.

As a consequence of the extensions to the IHO Registry, work has commenced on a new edition of S-99 - *Operational Procedures for the Organization and Management of the S-100 GI Registry* -. The S-100WG Chair proposed that the maintenance of S-99 should be moved to the HSSC Work Plan. After discussion, it was agreed that the IHO Secretariat will resource the maintenance of S-99 as it is closely associated to the IHO Registry which is maintained by the S-100 Registry Manager. S-99 will however remain on the S-100WG work program.

At its last meeting, the S-100WG proposed to establish a hydro cross-domain Control Body and Executive Control Body for the IHO Registry. The body will comprise members from the S-101 project team and NIPWG to ensure harmonization of proposals that are submitted to the hydro domain. HSSC-9 agreed that the management of the cross-domain Control Body and Executive Control Body should be moved from the S-100WG Work Plan to the HSSC Work Plan.

The S-100WG Chair also presented the S-100 Master Plan and noted that a complete review was needed. Finally, comments were made on the usability and ergonomics of the S-100 webpage.

The continued collaboration with IALA was noted in the presentation given by the S-100WG, in particular for the proposals on session oriented services and marine resource identifiers.

Outcome:

- The Committee noted the report of the S-100WG, including the pending actions from HSSC-8, and agreed to move the management of the Domain Control Body and Executive Control Body, from the S-100WG Work Plan, to the HSSC Work Plan.
- The Committee endorsed the proposal of the S-100WG for undertaking a complete review of the S-100 Master Plan for submission at HSSC-10.

→Decisions [HSSC9/07](#), [HSSC9/09](#)

→Decision&Action [HSSC9/08](#)

→Actions [HSSC9/03](#), [HSSC9/04](#), [HSSC9/11](#), [HSSC9/15](#)

The S-100WG Chair also reported that due to other commitments, she was no longer able to continue as Chair of the S-101 Project Team, and Mr Al Armstrong (USA) will take over this position.

→Decision [HSSC9/12](#)

Following a discussion regarding the proposal for the establishment of a “transversal” ENC Display Sub-Working Group to concentrate on improvements to ENC display, it was agreed that this will be dealt under the umbrella of the ENCWG. The ENCWG Chair noted that the plan is to spend about a year to identify what the issues are, and at the meeting in April 2018, the ENCWG will look how the reported issues could be fixed using better/different encoding methods.

→Decision [HSSC9/14](#)

The S-100WG Chair reported that the UKCM Project Team (UKCMPT) – *Under Keel Clearance Management Information* - had made good progress and is now testing the data model. The UKCMPT’s target for completing Edition 1.0.0 of the S-129 Product Specification is late 2018.

S-121 – Maritime Limits and Boundaries - Presentation provided by Sebastien Durand (S-121 PT Vice-Chair)

Mr Sebastien Durand (Vice-Chair of the S-121 Project Team) reported on the progress made in the development of the S-121 Product Specification - *Maritime Limits and Boundaries* -. He reminded the HSSC that S-121 is developed as part of a request from the UN Division for Oceans and Law of the Sea (DOALOS) to enable member States to meet their obligation to depositing their maritime limits and boundaries. The recent achievements made in 2017 include the finalization of the data model, the identification of the core feature attributes and the integration of the ISO19152 standard describing the Party, Roles, Rights, Restrictions, Responsibilities associated with Maritime Limits and Boundaries. The S-121 PT will run an OGC pilot project in 2017. The S-121 PT Vice-Chair also reported on the new communication strategy on this matter which is implemented through the development of a dedicated website (www.S-121.com).

Italy and India thanked Mr Durand for the update on S-121. India stated that there was a need for a mechanism to ensure that the positions defining boundaries are correctly represented within the geodetic framework in use. Mr Durand confirmed that this important aspect was acknowledged and that the S-121 PT was looking at using a human readable encoding format to describe the boundary geometries. When the S-100 Test Bed Platform topic was addressed (see below), it was also noted that the results of an impact assessment study needed to be provided together with Ed. 1.0.0 of S-121 when it is submitted to HSSC for endorsement.

→Action [HSSC9/13](#)

Request for Financial Support for the S-100 Portrayal Catalogue Builder and the S-101 Portrayal Catalogue (S-100WG Chair/IHO Sec.)

The S-100WG Chair reported on the current status of the S-100 Portrayal Catalogue Builder (PCB) and proposed that IHO funds should be made available for further development. The HSSC Chair questioned whether it would not be better to use the funds to build an Edition 1 Portrayal Catalogue, noting the priority to get a completed S-101 Edition 1.0.0 ready for testing. The S-100WG Chair stated that it was not practical to build a portrayal without a builder tool and noted that the main items requiring funding were:

- assistance with troubleshooting issues with the current S-101 portrayal catalogue application, and
- the implementation of the conditional procedures based on the Lua scripting language.

The estimated cost for these tasks was provided.

→Action [HSSC9/10](#)

Report on the development and maintenance of the IHO Geospatial Information Registry (IHO GI Registry)

Mr Yong Baek (S-100WG Vice-Chair) provided a report and demonstration on the updated IHO GI Registry application. Improved interfaces, the addition of a concept register, and an extension to maintain product specification metadata were noted.

IEC reminded the participants that the ability to generate and exchange machine readable data will greatly facilitate the ability to issue Feature and Portrayal Catalogue updates. He also proposed to consider the development of “Alerts and Indicators Catalogue” which should also be generated from the Registry.

S-100 Product Validation

France proposed that as the S-1xx products reach a degree of maturity, there will be a need for validation checks to ensure data consistency. France proposed that the DQWG should be tasked to develop validation checks for S-101 ENC for implementation in production software and tools. IEC supported the proposal made by France and noted that there must be robust validation checks for all products used for navigational purposes. The HSSC Chair proposed that a distinction should be made between product validation and data validation. The NIPWG Chair noted that there should be S-100 validation at a generic level, and more specific product validation for individual Product Specifications.

→Action [HSSC9/16](#)

S-100 Test Bed Platform

Mr Yong Baek (S-100WG Vice-Chair) provided an overview of the Test Bed Platform and the different components that need to be considered in the process of Product Specification development and endorsement. Noting that the S-100WG is developing an Interoperability Specification (IS) to support the harmonized display of different sets of S-100 product data in an ECDIS, he proposed that consideration should also be given to providing more flexible and systematic mechanism for testing and sharing all information relating to S-100 Product Specifications under development.

→Decision [HSSC9/17](#)

→Action [HSSC9/18](#)

Progress report on the development of the S-100 Data Classification and Encoding Guide (DCEG) Builder

Mr Yong Baek (S-100WG Vice-Chair) provided a progress report on the status of the S-100 Data Classification and Encoding Guide (DCEG) builder. This work has identified some inconsistencies between the S-101 DCEG and Feature Catalogue. A prototype DCEG editor is under development. The plan is to establish a DCEG builder application database in January 2018 and carry out tests between January and March 2018.

S-100 Interoperability Workshop

Mr Yong Baek (S-100WG Vice-Chair) reported on the Interoperability Workshop activity and the recommendations by the workshop that took place in the Republic of Korea during August 2017. The aim of the workshop was to test seven S-100 Product Specifications (S-101, S-102, S-112, S-122, S-124, S-411 and S-412). He reported that the main activities of the workshop were to test the draft Interoperability Specification (IS), develop test scenarios and test those scenarios within their test bed application software. The workshop helped to identify a number of issues with the IS which will be taken into account for its further development. Mr Baek invited the developers of S-100-based products to provide comments or recommendations on the Interoperability Specification.

Outcome:

- The Committee noted the progress made for facilitating and speeding up the development of S-100-based product specifications and commended the outstanding support provided to the IHO by the Republic of Korea (KHOA², KRISO³) on this matter.

5.2 ENC Standards Maintenance (ENCWG)

² Korea Hydrographic and Oceanographic Agency

³ Korea Research Institute of Ships & Ocean engineering

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| <i>Doc: HSSC9-05.2A Rev1</i> | <u>Report and Recommendations of ENCWG (ENCWG Chair) - Presentation</u> |
| <i>HSSC9-05.2B Rev1</i> | <u>Some perspectives for Additional Bathymetry Layer standard (France) - Presentation</u> |
| <i>HSSC9-05.2C</i> | <u>Comments on the Status of HSSC8/27 - High density contour lines ENC in HSSC9-05.2A (Germany)</u> |
| <i>HSSC9-05.2D</i> | <u>End users perspective on ENC and ECDIS (INTERTANKO) – Presentation</u> |
| <i>HSSC9-11B-INF2</i> | <u>Request for the funding of ENC datasets for checking S-58 Edition 6.0.0 “Critical” checks</u> |

The ENCWG Chair reported that revisions to the following publications had been completed since HSSC-8: S-52; S-64; S-58 and S-65. New editions of S-57 Use of the Object Catalogue and S-66 were pending Member States’ approval.

He reported that action HSSC8/27 concerning High Density Contours in ENC had been discussed at the ENCWG 2 meeting. The ENCWG could not reach a conclusive decision about the proposed new bENC specification. He therefore invited the HSSC to decide if a new standard is necessary in view of the fact that high resolution contours are already being included in ENCs that are based on the current S-57 ENC Product Specification.

Sweden argued that it is already decided to separate ENC data and bathymetry using S-102, and proposed that the meeting should endorse the bENC specification as an interim measure. US noted that an advantage of the overlay, is that it would be easier to maintain a separate bathy layer, which could be subject to frequent change in certain areas. The standard does not necessarily have to be used in ECDIS, and noted that the role of HSSC is to produce standards. Singapore reported that the feedback from navigators in general is that they don’t like ECDIS display to be cluttered.

UK argued that what is being proposed can already be done with the existing S-57 ENC Product Specification, and questioned whether the bathy overlay will trigger alarms, and how contour discrepancies between the ENC and bENC datasets would be resolved (i.e. which one will be regarded as correct?).

Germany stated that, while they appreciated the comments provided, they were of the opinion that bENCs are only intended as an ENC overlay. India supported the adoption of the bENC specification.

US reminded the participants of the request from Intertanko for more contours in ENCs and suggested to consider the following approach as two different requirements may need different solutions: whereas additional contours might satisfy the Intertanko requirement, there may be a large requirement for high resolution contours that could be provided as a separate specification.

Canada supported the UK approach and recommended that the development of S-102 products should be accelerated.

Italy proposed that an IHO CL should be issued inviting Member States to include more contours in their ENCs. The ENCWG should also be tasked to investigate what issues might create problems e.g. will it be possible to increase the ENC file size from 5 to 10 MB (i.e. to bring it in line with S-101 ENCs).

Considering the different views, the meeting agreed that a new standard for high density bathymetry was not required at this stage.

→Actions [HSSC9/22](#), [HSSC9/23](#)

The NIPWG Chair reported that draft S-122 - *Marine Protected Areas* - and S-123 - *Radio Services - Product Specifications* have been completed and are planned to be submitted to HSSC-10 for endorsement, dependant on the completion of an impact study in accordance with IHO Resolution 2/2007.

With the exception of S-127 – *Traffic Management* – and S-128 – *Catalogue of Nautical Information* - the other S-100-based product specifications related to nautical information (Physical Environment, Harbour Infrastructure, etc.) have been put on hold. With the experience gained in outsourcing the development of S-122 and S-123, it was now proposed to contract out the development of S-127 as well, noting that it was necessary that this development incorporates in a consistent manner what is envisaged for S-129 – *Under Keel Clearance Management Information*. It was also noted that the provision of UKCM information in nautical publications depends on the requests from national authorities. The NIPWG Chair also pointed out that there was a need to consider the harmonization of S-101 and S-201 (Aids to Navigation Information) data models.

The NIPWG Chair summarized the lessons learned from the Visualization Workshop that took place in May 2017 as part of the NIPWG meeting.

With regard to the development of e-navigation and the IMO Maritime Service Portfolios⁴, the NIPWG Chair requested the IHO Secretariat to improve the presentation of e-navigation information and supporting documents on the IHO website. It was also agreed that the IHO Secretariat will continue to support the NIPWG/SNPWG wiki server subscription.

With regard to the amendments to the IHO Resolution 2/2007 as decided by the Assembly (Decision A1/12b), the NIPWG and S-100WG Chairs reported on the preliminary draft Annex under development for the provision of some guidance for conducting harmonized impact assessment studies.

Outcome:

- The Committee noted the report from NIPWG, recognized the completion of the S-122 and S-123 Product Specifications and endorsed the request for the development of the S-127 Product Specification under contract, as a separate product from S-122.

→Actions [HSSC9/24](#), [HSSC9/27](#)
→Decision [HSSC9/25](#)

During the meeting, the NIPWG Chair addressed on several occasions the forthcoming challenges (effective and harmonized production, quality assurance, distribution, carriage requirements, etc.) associated with the publication of S-100 based product specifications and commissioning of S-100 based products (such as S-101 ENCs, S-12x nautical publication products, S-111 Surface Currents, S-104 Water Level Information for Surface Navigation) and the associated maritime services in the near future ; Hydrographic Offices need to prepare themselves and their stakeholders in advance to develop their position on these challenges. Discussions should start in the working groups, regional hydrographic commissions, and other IHO appropriate bodies.

→Action [HSSC9/26](#)

⁴ Now renamed Maritime Services.

5.4 Nautical Cartography (NCWG)

Doc: HSSC9-05.4A [Report and Recommendations of NCWG \(NCWG Chair\) - Presentation](#)

The NCWG Chair reported on the main achievements of the NCWG since HSSC-8: Ed. 4.7.0 of S-4, Ed. 3.0.0 of S-11 Part A⁵, framework for the development of a study report on the Future of the Paper Chart. He also reported on the results of the election in May 2017 of Mr Mikko Hovi (FI) and Ms Jacqueline Barone (US) as Chair and Vice-Chair of the NCWG respectively. It was noted that Mr Andrew Heath-Coleman (UK) will continue as secretary at present but will retire in 2018, likely around April-May. Therefore his position will need to be filled in order to ensure continuity, as the next NCWG meeting will take place in Nov. 2018 (tbc).

Outcome:

- The Committee noted the report, including the pending actions from HSSC-8, and approved the proposed amendments to the NCWG TORs.
- The Committee noted the existence of three recent investigation reports that need to be considered by the NCWG.

→Actions [HSSC9/28](#), [HSSC9/30](#), [HSSC9/31](#), [HSSC9/62](#)
→Decision [HSSC9/29](#)

5.5 Data Quality (DQWG)

Docs: HSSC9-05.5A [Report and Recommendations of DQWG \(DQWG Chair\) - Presentation](#)
HSSC9-05.5B [Proposal for new DQWG TORs \(DQWG Chair\) – New TORs \(.doc\)](#)
HSSC9-05.5C [Proposal for Portrayal of Bathymetry Quality in S-101 \(DQWG Chair\) - Presentation](#)
HSSC9-05.5D [Proposal for a New Publication - Mariners' Guide to Accuracy and Reliability of ENC \(DQWG Chair\) – S-67 draft version 0.5](#)
HSSC9-05.5E [Comments by NIPWG Chair/Vice-Chair, Germany and UK, on DQWG Report \(NIPWG Chair\)](#)
HSSC9-05.5F [Comments by France on Draft S-67 \(France\)](#)
HSSC9-05.5G_INF2 [Comments by DQWG Chair/Vice-Chair on Doc. HSSC9-05.5E \(DQWG Chair\)](#)

Report and Recommendations of DQWG (DQWG Chair)

The newly elected DQWG Chair proposed the continuation of the activities of the DQWG supported by new DQWG TORs aiming to ensure that data quality aspects are addressed in an appropriate and harmonized way for all S-100 based Product Specifications.

The NIPWG Chair questioned whether data quality expertise was a specialist skill, rather than being best addressed by relevant subject matter experts within the appropriate working groups. He also questioned whether there was further work required of the DQWG once it has delivered bathymetric survey quality aspects?

Following the concerns raised by the NIPWG Chair, a drafting group prepared a revised version of the DQWG TORs (See Annex A).

Proposal for Portrayal of Bathymetry Quality in S-101

The DQWG Chair also reported that the DQWG had been tasked to investigate ways of ensuring that ECDIS displays provide a clear warning or indication to the mariner on the quality of the underlying

⁵ Since the 1st meeting of the Council, Ed. 3.1.0 of S-11 Part A has been submitted to the approval of IHO Member States by IHO CL 59/2017.

bathymetry, through appropriate use of the attribute CATZOC and/or improvement of the existing display capabilities. As a result of discussions at its last meeting, the DQWG developed a draft methodology which include a combination of criteria (safety contours, CATZOC values) and portrayal options. As part of this discussion, it was suggested that NCWG Members consider the possibility of participating in the workshop at the next DQWG meeting in January 2018 in Monaco.

Italy questioned whether this draft methodology which includes a combination of criteria (safety contours, CATZOC values) has already received any feedback from the maritime community (e.g., mariners, INTERTANKO, relevant think-tank, etc.). In response, Director Abri Kampfner made reference, as an example, to the issues raised by INTERTANKO, and indicated that it was a good step forward to addressing these quality issues. The US drew the attention that there should be no confusion between data quality and portrayal. Turkey stated that the basic requirement was that portrayal should be simple and easy to understand for the mariner. It was also generally agreed that there was a need to address these issues and mature possible options internally first, before launching a survey involving possibly CIRM and other interested stakeholders.

Proposal for a New Publication - Mariners' Guide to Accuracy and Reliability of ENC

The DQWG Chair introduced a proposal for a new publication *Mariners' Guide to Accuracy and Reliability of ENC*, as a result of a work item that was included in the DQWG work plan for some years. This proposed publication is derived from, and expands upon content previously published in the Australian Seafarers Handbook. He noted that material has been progressively refined in conjunction with representatives of the Nautical Institute, Carnival Cruises, and Smartship Australia, an accredited deliverer of the IMO generic ECDIS training course. France noted that the document should be reviewed by the other HSSC WGs. UK proposed that this should be a Guidance (G) document which could be rolled in with other guidance documents such as S-66.

→Action [HSSC9/59](#)

Due to the timelines and the objective to submit Ed. 1.0.0 of S-67 for endorsement at HSSC-10, other WGs were invited to collate the comments and inputs from their members prior to mid-January 2018, so the DQWG can compile and address them at its next meeting (mid-January 2018). Once Ed.1.0.0 of S-67 is approved by Member States, it was suggested to consider the possibility of deriving an educative corresponding video to be posted on the internet.

Outcome:

- The Committee noted the report, agreed on the continuity of the activities of the DQWG and approved the new DQWG TORs as given in Annex A.

→Decisions [HSSC9/32](#), [HSSC9/33](#)

→Actions [HSSC9/34](#), [HSSC9/35](#), [HSSC9/36](#)

5.6 Project Team on Standards for Hydrographic Surveys (HSPT)

Doc: HSSC9-05.6A [Report and Recommendations of HSPT](#) (HSPT Chair) - [Presentation](#)

The HSPT Chair reported that the project team held its 1st meeting in June 2017. It identified a number of the limitations in the current version of S-44 and discussed why they were considered to be weaknesses. The HSPT has also produced a [questionnaire](#) intended to gauge the views of users and stakeholders. The next HSPT meeting is tentatively planned for July 2018 in Niterói, Brazil. The meeting will consider different approaches in order to develop a progress report for HSSC-10.

Following a question from Italy on what extent the results of the questionnaire will influence the way forward, it was indicated that the responses would be used as a guide, however currently the matrix approach is the HSPT's preferred method.

Outcome:

- 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](#)

5.7 Tides, Water Level and Currents (TWCWG)

Doc: HSSC9-05.7A [Report and Recommendations of TWCWG \(TWCWG Chair\) - Presentation](#)

The TWCWG report was presented by the TWCWG Vice-Chair on behalf of the Chair. It was noted that the activities in relation to the development of S-100 based product specifications are segmented in work packages corresponding respectively to S-104 – *Water Level Information for Surface Navigation* – and S-111 – *Surface Currents*. For S-111, a validator tool will be available soon and test datasets are already available. This product is progressing well, even if the finalization of the dynamics information is still required for supporting future e-navigation products. The viewer developed by the Republic of Korea (KRISO) was noted. Member States have also started to engage with their meteorological authorities, as appropriate, for encoding water level data into HDF5 format.

Following Action HSSC8/42 that requested the TWCWG to investigate the use of the NetCDF format in the S-100 framework, the conclusion made in liaison with the S-100WG was that the HDF5 format, already used in S-100 based products, was akin to NetCDF and as a consequence, no further action was needed.

It was also reported that the Tides, Water Level and Currents Capacity Building (CB) course had been discussed and the contents reviewed.

The HSSC and S-100WG were also invited to provide guidance and consider the development of a generic S-100 Data Transfer standard rather than continuing the development of S-112 - *Dynamic Water Level Data Transfer* as the task related to the transmission of real time tidal data is already included in the development of S-104.

Outcome:

- The Committee noted the report and agreed that the TWCWG discontinues the development of S-112 - *Dynamic Water Level Data Transfer* - Product Specification.

→Decision [HSSC9/38](#)

5.8 Hydrographic Dictionary (HDWG)

Doc: HSSC9-05.8A [Report and Recommendations of HDWG \(HDWG Chair\) - Presentation](#)

The HDWG held a meeting in London this year during which the HDWG reviewed and updated its Terms of reference and its business rules. The HDWG reached an agreement on a symmetrical architecture and database application valid for both the S-32 Hydrographic Dictionary Registry and the S-100 Registry. The meeting also reached an agreement on the Hydrographic Dictionary (HD) content and determined a way-ahead to be submitted to HSSC-9.

Following a presentation by the US representative of the HDWG, on a proposed new model, the HDWG Chair added that it was also intended to carry out a review of the dictionary content. He proposed that English should be the primary working language. A unique concept IDentifier index will be used to provide the mechanism to linking equivalent definitions and terms together, for all languages.

Singapore commended the HDWG on the report and proposed that the HDWG should attempt to hold meetings with other working groups to increase participation. China noted that this work was very

important and reported that they had produced a Chinese version of the HD. China will assess whether to join the HDWG. KHOA suggested that the IHO GI Registry Manager should be a member of the HDWG.

Outcome:

- The Committee noted the report, approved the new HDWG TORs as given in Annex B and requested Member States to consider appointing new active members in the HDWG.

→Decisions [HSSC9/39](#), [HSSC9/40](#)
→Action [HSSC9/41](#)

6. INTER-ORGANIZATIONAL BODIES

6.1 IHO-IAG Advisory Board on the Law of the Sea (ABLOS)

Doc: *HSSC9-06.1A* [Status Report on ABLOS activities](#) (Canada on behalf of ABLOS Chair) - [Presentation](#)

Professor Sunil Bisnath (Canada) presented the ABLOS report on behalf of Dr Niels Andersen (ABLOS Chair). The last ABLOS meeting was held in Monaco in October 2017. The meeting worked on revisions to Chapter 3 of Edition 5.0.0 of IHO publication C-51. The ABLOS meeting was followed by a Law of the Sea Seminar – *Roles of the Law of the Sea and the Hydrography in Asian Region* - which was hosted by KHOA and the Hydrographic Society of Korea.

Outcome:

- The Committee noted the report.

7. DECISIONS OF OTHER BODIES AFFECTING HSSC

7.1 IRCC (incl. MSDIWG)

Docs: *HSSC9-07.1A* [IRCC activities \(including MSDI\) affecting HSSC](#) (IRCC Chair) - [Presentation](#)
HSSC9-07.1B [Development of a S-100 Product Specification for Navigational Warnings](#) (France) - [Presentation](#)
HSSC9-07.1C [SCUFN Undersea Feature Names Project Team Progress Report](#) (Canada) - [Presentation](#)

IRCC activities (including MSDI) affecting HSSC (IRCC Chair)

The IRCC Chair reported on the main outcomes of the IRCC-8 meeting that were of interest for the HSSC. He highlighted the achievements of the Committee such as the development of the draft Edition 1.0.0 of Publication B-12 – *Guidance on Crowd-sourced Bathymetry* - and the new Edition 2.0.0 of C-17 – *Spatial Data Infrastructures “The Marine Dimension” – Guidance for Hydrographic Offices*. Members were invited to consider providing comments on B-12 in response to IHO CL49/2017.

The IRCC Chair reported on the important decision made at the United Nations in August 2017 with the establishment under the UN-GGIM⁶ of the Marine Geospatial Information Working Group (MGIWG). The aim is to encourage global cooperation in mapping the seas and oceans; encourage integration of land and marine geospatial information; and facilitate improved inter-governmental coordination of marine geospatial data activities, standards and infrastructure development.

The US stated that it was very encouraging to note that the IHO has now established good links between the UN-GGIM, the OGC Marine domain WG and IHO spatial data frameworks.

⁶ United Nations Committee of Experts on Global Geospatial Information Management

Development of a S-100 Product Specification for Navigational Warnings (France)

France, on behalf of the Chair of the S-124 Correspondence Group (S-124CG), provided a comprehensive report on the development of the S-124 Product Specification for Navigational Warnings, highlighting important aspects (data modelling, tests and experimentations, use of html and of the maritime resource name concept, harmonization of legends to be displayed on ECDIS, management of navigational warnings, consistency with S-53, co-operation with NIPWG, etc.). S-124 will be a technical component of e-navigation maritime services and of the modernization of the Global Maritime Distress and Safety System (GMDSS).

The S-100WG Chair expressed some concerns about some components of S-124 that may deviate from the core S-100 structures while the NIPWG Chair confirmed the established relation with the S-124CG.

SCUFN Undersea Feature Names Project Team Progress Report (Canada)

Canada, chairing the SCUFN Undersea Feature Names Project Team (UFNPT), reported that the HSSC-8 meeting had approved the establishment of the UFNPT with three objectives which include the registration of terms/definitions developed by SCUFN in the IHO Registry; the establishment of procedures for the management and registration of Undersea Feature Names; and the provision of recommendations to SCUFN on the management of the UFN database.

Outcome:

- The Committee noted the reports of the IRCC, of the S-124CG and of the UFNPT and acknowledged, with gratitude, the substantial contribution made by Yves Le Franc (France) in leading the S-124CG since 2013.

→Actions [HSSC9/42](#), [HSSC9/43](#), [HSSC9/44](#)

7.2 IMO

Doc: HSSC8-07.2A [IMO activities affecting HSSC \(including e-navigation\) \(IHO Sec.\) - Presentation](#)

Director Abri Kampfer noted that the IHO, as an accredited observer to the IMO, was formally represented at IMO meetings. The report covered relevant items discussed at the 4th session of the Sub Committee on Navigation, the Communications and Search and Rescue (NCSR), and the 97th session of the Maritime Safety Committee.

He provided a brief overview of the status of agreed outputs related to the IMO e-navigation Strategy Implementation Plan (SIP) listed in table 1 of the report.

He noted that IHO Secretariat submitted a document on the contribution of the S-100 framework to the harmonized display of navigation information to the NCSR-4 meeting. The Sub-Committee agreed to the establishment of the Harmonization Group on Data Modelling (HGDM), a Correspondence Group to develop the guidelines with a target completion date of 2018.

Director Abri Kampfer noted that cyber security was an item of growing concern and the S-100WG had been invited to continue monitoring the development of guidance on cyber security and ensure that provision is included in the S-100 data protection scheme component. The S-100WG chair confirmed that this was an important issue that was being taken into consideration for the security and authentication work. The ENCWG Chair confirmed that this is also an issue that was being monitored by the ENCWG.

Outcome:

- The Committee noted the report.

→Actions [HSSC9/45](#), [HSSC9/46](#), [HSSC9/47](#)

7.3 IALA

Doc: HSSC9-07.3A IALA activities affecting HSSC (IALA) - Presentation

There was no report or presentation provided.

7.4 IEC

Doc: HSSC9-07.4A IEC activities affecting HSSC (IEC) - [Presentation](#)

The IEC TC80 Chair reported that Ed. 4 of IEC 61174 had been published in August 2015 and this edition makes specific reference to S-52, S-57 and S-63 as required source standards. S-64 is also an important document for ECDIS testing. It was noted that no issue related to Ed. 4 of IEC 61174 and IHO standards have been reported for ECDIS type approval so far.

The main issue relates to Route Exchange which is not in the remit of the IHO. IEC TC80 has requested to register for a block of S-100 based Product Specification number for their Route Plan specification and requested a block of S-xxx numbers for future product specifications. The meeting agreed the range of S-421 to S-430 would be assigned to this IEC domain, with S-421 assigned to "Route Plan".

The IEC TC80 Chair presented a typical time line required to produce a major new revision document which includes S-100 concepts for ECDIS, as well as the IEC concept of stability date. As an example, there is no new Edition of IEC 61174 planned before 1 Jan 2020. He proposed that 2 years to draft the technical content for a Committee Draft (CD) and 1 year to progress it to the Final Draft International Standard (FDIS) for commenting and to pass the voting phases. He noted that there will be probably some timing implications for the acceptance requirements for S-100 based products that will be used in ECDIS related products.

The S-100WG Chair invited IEC to ensure that their production and harmonization of their testing procedures is aligned with the production of their standards. The ENCWG Chair proposed that the type approval authorities should also be invited to participate in establishment of a testing regime.

The meeting noted the report and agreed to assign the number range of S-421 to S-430 for future IEC Product Specifications

Outcome:

- The Committee noted the report and assigned the number range of S-421 to S-430 for future IEC Product Specifications.

→Action [HSSC9/48](#)
→Decision [HSSC9/49](#)

7.5 CIRM

Doc: HSSC9-07.5A CIRM activities affecting HSSC (CIRM) - Presentation

There was no CIRM report or presentation.

7.6 Inland ENC Harmonization Group (IEHG)

Doc: HSSC9-07.6A Status Report on Inland ENC Development and Standardization (IEHG) - [Presentation](#)

The Co-Chair of the IEHG provided an update on activities related to the alignment with IHO S-100, S-99, S-101 and the GI Registry. It was good to note that the IEHG plans to follow S-101 as much as possible to ensure compatibility and to leverage the S-101 Feature Catalogue as a starting point for the

S-401 Feature Catalogue.

The use of S-101 symbols is a core principle while inland-specific symbols, which have already been produced, will be used where necessary. The IEHG wishes to establish an Inland ENC Portrayal Domain in the S-100 Portrayal Register where all inland specific symbols will be located. She also reported that the IEHG would also like to use the Portrayal Catalogue Builder when it becomes available.

In addition, the IEHG reported that it has begun to align its Bathymetric Inland ENCs PS with S-100. This will be a contour product and not a gridded one.

All Inland ENC publications and functions are hosted at a consolidated Inland ENC website (See: <http://ienc.openecdis.org>).

Outcome:

- The Committee noted the report and assigned the number S-402 to Bathymetric Inland ENCs.

→Decision [HSSC9/50](#)

7.7 ISO

Doc: HSSC9-07.7A [ISO activities affecting HSSC \(IHO Secretariat\) - Presentation](#)

Assistant Director Tony Pharaoh (IHO Secretariat) reported that the IHO is a Class A liaison member of ISO/TC211, and has contributed to its standards development activities. He highlighted the important resources that are available for developers of S-100 based Product Specifications. These include a harmonised UML model that can be downloaded from the ISO web site in an Enterprise Architect format. The model is also available as HTML web pages. He also informed the meeting of the “UML best practices” WIKI which has been developed to assist users/implementers of the harmonised model. ISO/TC211 have also established a Registry for “Geodetic Codes and Parameters.” The Registry is currently being populated and will be available via a web interface.

As a result of S-100WG activities and the development of experience gained from developing Product Specifications, feedback has been provided to TC211 Working Groups on various issues for consideration.

Outcome:

- The Committee noted the report.

7.8 OGC

Doc: HSSC9-07.8A [OGC activities affecting HSSC \(OGC\) - Presentation](#)

Mr Trevor Taylor, Director, Services for Asia and the Americas, Open Geospatial Consortium (OGC), and Mr Andy Hoggarth, Co-Chair of the Marine Domain Working Group (Marine DWG) delivered a comprehensive presentation and reported on the mission, goals and structure of the Open Geospatial Consortium and highlighted initiatives affecting the HSSC work.

The Arctic Spatial Data Pilot project which includes information such as shipping activities, arctic wildlife, search and rescue was presented. Mr Taylor also highlighted OGC specifications that may be relevant to IHO activities. These include the “Discrete Global Grid Systems” abstract specification and the 3D Portrayal Services specification. Among other useful information, he also noted that OGC has set up a Domain Working Group for Unmanned Systems.

Mr Hoggarth presented the OGC Marine DWG and noted that one of the main aims of the marine DWG is to support smart exchange methods required for interoperability with organizations such as the IHO and IOGP⁷ and their data standards. It aims to broaden the use of marine data through the understanding of the interoperability-related requirements for relevant use cases.

Member States should be encouraged to participate in the Marine DWG. It was also agreed that MS should also be encouraged to participation in OGC Technical Committee (OGC TC) meetings on regional basis as this can be done either in person or remotely via web conference

The USA commended the OGC and the Marine DWG, and noted that it is a good example of collaboration between industry and governmental bodies on standards development. A comment was made on the fact that the IHO has often been too introspective and that it is encouraging to see the increasing activity in the international arena.

The Chair of MSDIWG commended the OGC for their very good work, but suggested that the scope of the Marine DWG might be too wide and they will be a need to prioritize their work.

Outcome:

- The Committee commended the achievements by OGC and the work of the Marine DWG and thanked their representatives for their very informative presentation.

→Actions [HSSC9/51](#), [HSSC9/52](#)

7.9 IOGP

Doc: HSSC9-07.9A IOGP activities affecting HSSC (IOGP) - Presentation

Beyond the references made to IOGP in the OGC presentation (paragraph 7.8), there was no specific presentation or paper provided by the IOGP.

7.10 JCOMM

Doc: HSSC9-07.10A [JCOMM activities affecting HSSC \(Report of the 5th meeting of the WMO-IOC Joint Commission on Oceanography and Marine Meteorology \(JCOMM-5\)\) \(JCOMM\) - Presentation](#)

Director Abri Kampfer reported that JCOMM had held its technical conference and meeting in Genève, Switzerland during October 2017. In the presentation given by the IHO Secretariat at these events, the lack of high resolution global bathymetric coverage and the potential impacts on WMO and IOC model forecasts results were highlighted.

The main items of interest discussed during the meeting included the WMO engagement with marine meteorological services; coastal inundation forecasting; the Global Multi-hazard Alert System (GMAS); and the implementation of the Met-ocean observing system. JCOMM also noted the IHO / IALA work to progress the IMO e-Navigation initiative which uses the IHO S-100 framework. The establishment of the Worldwide MetOcean Information and Warning Service (WMMIWS) Committee, a body that closely replicates the network of National Coordinators within the NAVAREA framework (WWNWS) was noted. The next joint meetings of the WWNWS-Sub-Committee and WMMIWS Committee will be held in Monaco at the end of August 2018.

Outcome:

- The Committee noted the report.

⁷ International Association of Oil & Gas Producers.

7.11 RTCM

Doc: HSSC9-07.11A RTCM activities affecting HSSC (RTCM) - [Presentation](#)

Mr Raphael Ponce gave an update on the activities of the RTCM Special Committee 133 with regard to the development of the new RTCM Standard for Internet-based Automatic Identification System Services (AIS-i) which provides AIS type information via cellular networks for recreational boats. The final draft is under revision and subject to vote until 2 December 2017. More information is available on www.AIS-i.com.

Outcome:

- The Committee noted the report and thanked the RTCM representation for his presentation.

7.12 ICPC

Doc: HSSC9-07.12A ICPC activities affecting HSSC (ICPC) - [Presentation](#)

The Chair of ICPC reported on the principal activities since the last meeting. The ICPC Focus Group has been changed to an IHO Working Group with enhanced membership. He welcomed the approval by the IHO Assembly of the amendments to IHO Resolution 4/1967 on the text box related to submarine cables.

The Chair of ICPC reported on the outcome of the 23rd Session of the International Seabed Authority, highlighting the fact that deep seabed mining was a threat for uncharted cables.

Following action HSSC8/70, the ICPC believes however that the development of a roadmap contributing to the implementation of the IHO-ICPC MoU is now on target for presentation at HSSC-10.

It was noted the ICPC will work with the MSDIWG with a focus on exchanging data about submarine cables, data quality issues, and an S-4xx submarine cable product specification.

The Chair of ICPC confirmed that ICPC supports the principle of crowd sourced bathymetric data collected as part of cable route surveys in general, and will continue to pursue the release of cable route survey data for this purpose, but remains aware of the different associated obstacles.

India stated that protecting submarine cables impacts everyone and there should be an action plan to promote the inclusion of all submarine cables on charts. Germany reported that the ICPC advises cable owners to provide data to HOs so cables can be charted, however there is some reticence due to security concerns about malicious attacks. Italy confirmed that it is quite often difficult to get submarine cable data and to determine the level of accuracy.

Outcome:

- The Committee noted the report, thanked the ICPC Chair for his informative and comprehensive presentation and acknowledged that cable awareness (and charting) is of paramount importance to cable protection.

→ Actions [HSSC9/53](#), [HSSC9/54](#)
[HSSC9/55.1](#), [HSSC9/55.2](#)

7.13 DGIWG and NATO GMWG

Docs: HSSC9-07.13A DGIWG activities affecting HSSC (UK Rep. tbc) - Presentation
HSSC9-07.13B NATO GMWG activities affecting HSSC (UK Rep. tbc)

There was no report or presentation so the Chair requested that HSSC Members consider the possibility of designating a new liaison officer to these working groups.

→Action [HSSC9/56](#)

8. REVIEW OF NEW DEVELOPMENTS AND OTHER INFORMATION PAPERS

No paper was considered under this agenda item.

9. LIAISON WITH EXTERNAL STAKEHOLDERS

Doc: HSSC9-09A [Status of potential Stakeholders' events in 2018 \(IHO Secretariat\) - Presentation](#)

Director Abri Kampfer reported on the new cooperative arrangements that were established since HSSC-8: one with the Open Geospatial Consortium (OGC) and the other one with the Mediterranean Science Commission (CIESM).

He reported on past events and proposed to consider holding an IHO Stakeholders forum to showcase S-101 developments in 2019 or later, noting that S-101 will not be sufficiently mature in 2018.

The IHO Secretariat currently maintains a database of over 500 external stakeholders.

→Action [HSSC9/57](#)

10. REVIEW AND ENDORSEMENT OF HSSC WORK PLAN AND LIST OF ACTIONS

Docs: HSSC9-10A [Status report on IHO Publications on Standards, Specifications and Guidelines \(IHO Secretariat\)](#)
HSSC9-10B [Draft HSSC Work Plan 2018-19 \(IHO Secretariat\)](#)

The IHO Secretariat reported on the status of IHO publications. He reported that Spain had indicated its intention to provide translation of IHO technical standards into Spanish on a case-by-case basis. The NIPWG Chair requested to be informed on the availability of the Spanish version of the last updates in M-3.

The S-100WG Chair reminded the meeting that the ENCWG Chair had proposed a “Guidance – G” category of IHO document that could be used for more general information, and that would not be subject to a rigorous maintenance regime (e.g. Res 2/2007) as is the case for most S-xx (Standards) documents. She noted that some of the existing documents such as S-66 should fall into this category. Information in these documents could be maintained far more easily (e.g. by approval of the responsible WG). It was agreed that a formal proposal should be submitted to the next HSSC meeting, and should take into account the amendments to be made in the revision process of the IHO Resolution 2/2007.

→Actions [HSSC9/58](#), [HSSC9/59](#), [HSSC9/60](#)

11. ANY OTHER BUSINESS

Mr Yong Baek (KHOA) presented the enhancements expected through the development of the phase II of the INToGIS project. The INToGIS system is an online database / webservice focused on S-11 INT chart information that has been designed to provide systematic management procedures and to share the digital data among Member States. Phase II of the project aims to add polar projection, ENC scheming, upgrades of management procedures and additional information layers.

Outcome:

- The Committee noted the report, thanked KHOA for this support and encouraged members to provide feedback, comments and recommendations.

12. DATE & LOCATION OF THE NEXT MEETINGS

The next meeting (HSSC-10) is scheduled to take place in Rostock-Warnemünde, Germany, in May 2018. Considering that HSSC-10 will be in six months only and that several working groups will meet in April 2018, it was agreed to adjust the arrangements as follows:

- HSSC Chair Group meeting, on Monday 14 May afternoon at the BSH in Rostock;
- HSSC-10 plenary sessions from Tuesday 15 to Thursday 17 May, noon, in Warnemünde;
- HSSC Chair Group meeting, on Thursday 17 May afternoon, for the preparation of the proposals to the 2nd meeting of the IHO Council.

Director Abri Kampfer also reported that he had received an invitation from the National Hydrographer of South Africa to host the HSSC-11 meeting in Cape Town, South Africa (May 2019).

→Decision [HSSC9/61](#)

13. CLOSURE OF THE MEETING

Mr Mike Prince, HSSC Acting Chair, concluded the meeting thanking the HSSC Members, stakeholders and expert contributors for their substantial contribution to the work being done by the HSSC. He especially thanked the members of the various subordinate bodies who have worked so hard to progress the activities of the programme. He also thanked the IHO Secretariat for the work in preparing the meeting and their support during the meeting. On behalf of all the meeting participants, he thanked the Canadian Hydrographic Service and Mr Douglas Brunt in particular for organising the meeting and the support provided during the course of the week.

Captain Luigi Sinapi, incoming HSSC Chair, took over from Mr Prince, and paid tribute to his chairmanship during this HSSC-9 meeting.

DATA QUALITY WORKING GROUP (DQWG)

Terms of Reference

Ref: 1) 1st HSSC Meeting (Singapore, October 2009)
2) 9th HSSC Meeting (Ottawa, Canada) (Full revision)

1. Objective

To ensure that the data quality aspects are addressed in an appropriate and harmonized way for all S-100 based product specifications.

2. Authority

This WG is a subsidiary of the Hydrographic Services and Standards Committee (HSSC). Its work is subject to HSSC approval.

3. Procedures

- a. HSSC requires DQWG to provide advice on data quality aspects to all Working Groups (WGs) and Project Teams (PTs) developing S-100 based product specification.
- b. The WG should:
 - i. Develop and maintain a data quality checklist for product specification developers;
 - ii. Periodically review S-100 based product specifications to ensure the data quality aspects have been taken into consideration and provide input papers for WGs and PTs consideration if deemed necessary;
 - iii. Monitor periodically developments of ISO and other international standards regarding quality information, and advise the S-100WG accordingly;
 - iv. Provide guidance on data quality aspects to hydrographic offices, in particular to ensure harmonized implementation;
 - v. Provide data quality educational material for the use of mariners;
 - vi. Review appropriate methodology for the display of quality information to product specification developers;
 - vii. Propose new data quality topics for consideration by HSSC.
- c. The WG should work by correspondence, group meetings, workshops or symposia. Permanent or temporary sub-working groups may be created by the WG to undertake detailed work on specific topics such as: quality indicators for hydrographic data, tidal information, etc. The WG should meet as necessary. When meetings are scheduled, and in order to allow any WG submissions and reports to be submitted to HSSC on time, WG meetings should not normally occur later than nine weeks before a meeting of the HSSC.
- d. The WG should liaise with other relevant HSSC WG's and other IHO bodies, and international bodies as appropriate and as instructed by HSSC.

4. Composition and Chairmanship

- a. The WG shall comprise representatives of IHO Member States (M/S), Expert Contributors and Accredited NGIO Observers.

- b. Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented.
- c. Expert Contributor membership is open to entities and organisations that can provide a relevant and constructive contribution to the work of the WG.
- d. The Chair and Vice-Chair shall be a representative of a Member State. The election of the Chair and Vice-Chair shall be decided at the first meeting after each ordinary session of the Assembly and shall be determined by vote of the Member States present and voting.
- 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.
- f. Expert Contributors shall seek approval of membership from the Chairman.
- g. Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agree that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.
- h. All members shall inform the Chairman in advance of their intention to attend meetings of the WG.
- i. In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.

IHO WORKING GROUP ON THE HYDROGRAPHIC DICTIONARY (HDWG)

Terms of Reference

Ref: 1st HSSC Meeting (Singapore, October 2009)
9th HSSC Meeting (Ottawa, Canada, November 2017)

1. Objectives

- To provide to all users a unique definition of hydrographic terms with a unique identifier validated by the IHO.
- To review and update systematically the hydrographic definitions which fall within the IHO technical and scientific domain.
- To incorporate all unambiguous terms contained in the IHO Geographical Information Items (GII) registry for the digital use.
- To facilitate the use of the Hydrographic Dictionary by allowing the creation of additional languages versions connected by the unique identifiers (ID).
- To offer the dictionary users additional definitions of technical terms that do not fall within the IHO technical and scientific domain, but are nonetheless relevant to hydrographic sciences and activities.

2. Authority

The HDWG is a subsidiary of the Hydrographic Services and Standards Committee (HSSC) and its work is subject to HSSC approval.

3. Operating principles

- Each hydrographic definition should be unique and maintained as the IHO reference from which other language versions will be derived.
- Unambiguous definitions used in digital cartography are provided under the responsibility of the custodians of the IHO GII registry.
- Additional non-hydrographic definitions are provided as a convenience without guaranteeing exhaustivity either of the definition or of the sources.
- Each hydrographic term will be associated with a unique identifier to facilitate further multilingual cross-comparisons.
- Whilst the format of individual language versions of the HD dictionary is defined by the HDWG, the content and details of translations, either complete or simplified, shall remain under the responsibility of the Member States wishing to develop their national.
- HD national versions will comprise a database structure format generated by the HDWG, which should contain as a minimum the unique identifier and the IHO reference term.

4. Procedures

a. The WG should work by correspondence, teleconferences and group meetings. The WG should meet about once a year. When meetings are scheduled, and in order to allow any WG submissions

and reports to be submitted to HSSC on time, WG meetings should not normally occur later than nine weeks before a meeting of the HSSC.

b. The HDWG should liaise with other IHO bodies developing publications containing glossaries to ensure consistency. 'Terms and Definitions' should be a standing agenda item for meetings of all HSSC subordinate bodies.

c. The WG should liaise as appropriate with other organisations developing dictionaries and/or glossaries.

d. The WG should develop a work programme for each year that includes target completion and dates where appropriate.

5. Composition and Chairmanship

a. Membership of the HDWG is open to all Member States wishing to participate actively. The IHO Secretariat will maintain a list of nominated members. Ideally the HDWG should have one representative from each relevant HSSC subordinate body.

b. The HDWG may invite expert contributors to participate in its deliberations during and between meetings. Accredited Non-Governmental International Organizations (NGIO) may also participate as observers in the work and meetings of the HDWG.

c. Expert Contributor membership is open to entities and organisations that can provide a relevant and constructive contribution to the work of the WG.

d. The Chair and vice-Chair shall be representatives of Member States and be independent of any HSSC subordinate body. The election of the Chair and vice-Chair should normally be decided at the first meeting following each ordinary session of the Assembly and, in such case, shall be determined by vote of the Member States present and voting. If no qualified candidates are members of the HDWG, the IHO Secretariat will call for suitable volunteers from Member States and submit the list to HDWG members for election.

e. Decisions should generally be made by consensus. If a vote is required, only Member States may cast a vote. Votes shall be on the basis of one vote per Member State represented.

f. If a secretary is required it should normally be drawn from a Member State representative of the HDWG.

g. 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.

h. Expert Contributors shall seek approval of membership from the Chairman.

i. Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agree that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.

j. All members shall inform the Chairman in advance of their intention to attend meetings of the WG.

k. In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.

LIST OF DECISIONS & ACTIONS ARISING FROM HSSC-9

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| AGENDA ITEM | SUBJECT | ACTION No. | ACTIONS (in bold, action by) | TARGET DATE/EVENT | STATUS (at 18 December 2017) |
|--|---|-------------------------------|--|-------------------|------------------------------|
| 1. Opening and Administrative Arrangements | | | | | |
| | Contact List | HSSC9/01 | IHO Member States and Stakeholders to provide the IHO Sec. with their updates to the HSSC List of Contacts. | Permanent | Last update 1 Nov 2017 |
| 2. Approval of Agenda | | | | | |
| | Agenda and Timetable for HSSC-9 | HSSC9/02 | HSSC approved the agenda and associated timetable. | | Decision |
| 3. Matters arising from Minutes of 8th HSSC Meeting | | | | | |
| | E-navigation implementation | HSSC9/03 (Former HSSC8/05) | ENCWG and S-100WG to monitor any possible impact of the work on the agreed e-navigation outputs on ECDIS related standards and S-100 related standards respectively. | HSSC-10 | |
| | S-101&IMO Performance Standards | HSSC9/04 (Former HSSC8/19) | S-100WG invited to investigate if S-101 ENCs will meet the current IMO Performance Standards so there is no need to consider proposing amendments to the IMO. | HSSC-10 | |
| | Equivalent T&Ps for ENCs | HSSC9/62 (Former HSSC8/28) | NCWG and ENCWG to draft a single educative IHO authoritative document addressing the issue of “equivalent” T&Ps for ENCs, in view of its distribution to HOs, Port State Control authorities and mariners after approval. | HSSC-10 | |
| 4. HSSC Administration | | | | | |
| | Decisions from the IHO Council (C-1) affecting HSSC | HSSC9/05 | IHO Sec. in liaison with HSSC Chair Group to draft proposed amendments to HSSC TORs as instructed by C1 (Action C1/05 refers) | HSSC-10 | |
| | Election of HSSC Chair and Vice-Chair | HSSC9/06 | HSSC agreed on the voting procedure for the election of Chair and Vice-Chair | | Decision |
| 5. Reports by HSSC Working Groups | | | | | |

| AGENDA ITEM | SUBJECT | ACTION No. | ACTIONS (in bold, action by) | TARGET DATE/EVENT | STATUS (at 18 December 2017) |
|----------------------------|---------------------------------------|------------|--|--|------------------------------|
| 5.1 S-100 (S-100WG) | | | | | |
| | Report and Recommendations of S-100WG | HSSC9/07 | HSSC approved the proposed publication cycle of S-100 (Ed. 4.0.0 in 2019, 2 years cycle, then 3 years cycle). | | Decision |
| | Interoperability | HSSC9/08 | HSSC assigned S-98 to the S-100 Interoperability Specification for Navigation Systems S-100WG to consider how to incorporate generic interoperability into future editions of S-100 | HSSC-11 | Decision |
| | S-99 | HSSC9/09 | IHO Sec. agreed to resource the maintenance of S-99 - <i>Operational Procedures for the Organization and Management of the S-100 GI Registry</i> – noting that the oversight remains under the S-100WG umbrella | | Decision |
| | S-101/S-100 | HSSC9/10 | HSSC agreed to use the IHO Special Project funds to build the first iteration of the S-101 portrayal catalogue and potential fixes and enhancements to the Portrayal Catalogue Builder | | Decision |
| | IHO S-100 webpage | HSSC9/11 | IHO Sec. to revamp the S-100 page of the IHO website to include a repository for different product specifications under development | | Done |
| | S-101 | HSSC9/12 | HSSC welcomed the nomination of Mr Al Amstrong (US) as S-101 Project Team Lead | | Decision |
| | S-121 | HSSC9/13 | S-100WG/S-121PT to submit Ed. 1.0.0 of S-121 for endorsement by HSSC | HSSC-10 (- 7 weeks = 26 March 2018) | |
| | ECDIS Display | HSSC9/14 | HSSC welcomed the establishment of the “transversal” ENC Display SubWG under the ENCWG , to concentrate on the improvement of ENC display. | | Decision |
| | IALA Marine Resource Identifier | HSSC9/15 | HSSC approved the adoption the IALA Marine Resource Identifier concept IHO Sec. to register to the um:mm:iho domain and S100WG to establish a management process for the namespace once it has been registered | Dec. 2017 HSSC-10 | Decision |

| AGENDA ITEM | SUBJECT | ACTION No. | ACTIONS (in bold, action by) | TARGET DATE/EVENT | STATUS (at 18 December 2017) |
|--|--|------------|---|--|------------------------------|
| | Data Validation | HSSC9/16 | HSSC agreed on the proposal made to consider the systematic development of validation checks within every S-10x Product Specification. S-100WG/DQWG to consider at their next meeting how the development of a “minimum” standard for data validation in S-1xx based products, can be handled, and report back at HSSC | HSSC-10 | Decision |
| | Test Bed Platform | HSSC9/17 | HSSC endorsed the Test Bed Platform as the mechanism to be used by developers of S-100 based Product Specification for the IHO and other interested domain owners. | | Decision |
| | Test Bed Platform | HSSC9/18 | S-100WG to further develop and finalize the Test Bed Platform and associated guidelines to be used by developers of S-100 based products | HSSC-11 | |
| 5.2 ENC Standards Maintenance (ENCWG) | | | | | |
| | End-users perspective on ENC and ECDIS | HSSC9/19 | ENCWG to address the issues raised by INTERTANKO in its paper submitted to HSSC-9 and provide HSSC/IHO Sec. with appropriate comments for further consideration by HSSC WGs and PTs if appropriate IHO Sec , then to provide INTERTANKO with a consolidated response on the issues raised in its submission paper | Feb.2018 March 2018 | |
| | S-58 test datasets | HSSC9/20 | HSSC approved the funding request to create S-58 ENC datasets to support validation test for critical errors only. | | Decision |
| | S-58 test datasets | HSSC9/21 | ENCWG to manage the technical aspects of the contract (acceptance tests, etc.) and make these datasets available. | March 2018 | |
| | High Density Bathymetry ENCs | HSSC9/22 | ENCWG to identify the individual components in S-57 (file size, etc.) that prevent ENC Producers from providing high density contour lines and propose subsequent recommendations | ENCWG-3 | |

| AGENDA ITEM | SUBJECT | ACTION No. | ACTIONS (in bold, action by) | TARGET DATE/EVENT | STATUS (at 18 December 2017) |
|---|--|----------------------------|--|---|------------------------------|
| | High Density Bathymetry ENC's | HSSC9/23 | In the IHO CL reporting on the outcome of HSSC-9, IHO Sec. to invite IHO MS to include more contour lines in their ENC's, as appropriate | Dec. 2017 | |
| 5.3 Nautical Information Provision (NIPWG) | | | | | |
| | Report and Recommendations of NIPWG | HSSC9/24 | NIPWG to provide draft Ed. 1.0.0 of S-122 and S-123 (incl. impact assessment results) for endorsement by HSSC | HSSC-10 | |
| | Request of financial support to outsource S-127 completion | HSSC9/25 | HSSC endorsed the request for funding the S-127 Product Specification | | Decision |
| | S-100-based products services | HSSC9/26 | NIPWG to submit a paper addressing the issue of delivering new S-100 based products and services (production, quality control, carriage requirements...) | HSSC-10 | |
| | IHO Resolution 2/2007 | HSSC9/27 | S-100WG/NIPWG in consultation with other HSSC WGs Chairs and IHO Sec. to further develop amendments to IHO Resolution 2/2007 in accordance with Decision A1/12 (guidance for impact assessment) and Action C1/05 (endorsement/approval procedure of standards listed in Appendix for instance) | HSSC-10 (1st step), HSSC-11 (2nd step) | |
| 5.4 Nautical Cartography (NCWG) | | | | | |
| | Portrayal | HSSC9/28 (Former HSSC8/03) | NCWG to compile portrayal requirements relating to product specifications in general as part of its programme of work, following a protocol to be distributed to the other WGs. | HSSC-10 | |
| | NCWG TORs | HSSC9/29 | HSSC approved the amendments of the NCWG TORs as proposed by the NCWG | | Decision |
| | NCWG TORs | HSSC9/30 | IHO Sec. to upload the NCWG TORs as proposed by the NCWG and approved by HSSC | Dec. 2017 | |

| AGENDA ITEM | SUBJECT | ACTION No. | ACTIONS (in bold, action by) | TARGET DATE/EVENT | STATUS (at 18 December 2017) |
|--|---|------------|--|--|------------------------------|
| | Nautical Accident | HSSC9/31 | NCWG to consider the 3 recent investigation reports (<i>Vasco de Gama, Nova Cura, Muros</i>) by correspondence if possible, or at their next meeting, and provide recommendations as appropriate | HSSC-10/-11 | |
| 5.5 Data Quality (DQWG) | | | | | |
| | Report and Recommendations of DQWG | HSSC9/32 | HSSC agreed on the continuity of the activities of the DQWG | | <u>Decision</u> |
| | Proposal for new DQWG TORs | HSSC9/33 | HSSC approved the new DQWG TORs as proposed by the DQWG and amended during HSSC-9 | | <u>Decision</u> |
| | Proposal for new DQWG TORs | HSSC9/34 | IHO Sec. to upload the new DQWG TORs accordingly | Dec. 2017 | |
| | Proposal for Portrayal of Bathymetry Quality in S-101 | HSSC9/35 | HSSC endorsed the proposal made by the DQWG to further develop the conditional visualization methodology of quality of bathymetric data in liaison with NCWG, NIPWG, ENCWG, S-101PT | | <u>Decision</u> |
| | Proposal for a New Publication - Mariners' Guide to Accuracy and Reliability of ENC | HSSC9/36 | NIPWG, NCWG, ENCWG, HSPT to provide their initial comments on the draft Publication S-67 to the DQWG Chair DQWG to further submit Ed.1.0.0 of S-67 for endorsement by HSSC and to consider a video version of S-67 when approved by MS. | 12 January 2018 for DQWG-13 HSSC-10 | |
| 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 | <u>Decision</u> |
| 5.7 Tides, Water Level and Currents (TWCWG) | | | | | |
| | Report and Recommendations of TWCWG | HSSC9/38 | HSSC noted that development of S-112 - <i>Dynamic Water Level Data Transfer</i> – is no longer required as the functionality will be in S-104 – <i>Water Levels</i> - and agreed to reassign the S-112 identifier to another product specification as appropriate | | <u>Decision</u> |

| AGENDA ITEM | SUBJECT | ACTION No. | ACTIONS (in bold, action by) | TARGET DATE/EVENT | STATUS (at 18 December 2017) |
|---|---|------------|---|---------------------------|------------------------------|
| 5.8 Hydrographic Dictionary (HDWG) | | | | | |
| | HDWG TORs | HSSC9/39 | HSSC approved the amendments to the HDWG TORs as proposed by the HDWG | | Decision |
| | HDWG TORs | HSSC9/40 | IHO Sec. to upload the new HDWG TORs accordingly | | Decision |
| | Participation in HDWG | HSSC9/41 | IHO Sec. to invite IHO Member States to appoint new active members to the HDWG | Jan. 2018 | |
| 6. Inter-Organizational Bodies | | | | | |
| 6.1 IHO-IAG Advisory Board on the Law of the Sea (ABLOS) | | | | | |
| 7. Decisions of other bodies affecting HSSC | | | | | |
| 7.1 IRCC (incl. MSDIWG) | | | | | |
| | IRCC activities (including MSDI) affecting HSSC | HSSC9/42 | HSSC Members invited to provide their responses to IHO CL 49/2017 on the draft publication B-12 - <i>Guidance Document on Crowdsourced Bathymetry</i> - | 24 Nov 2017 | |
| | S-124 | HSSC9/43 | HSSC invited IHO MS to consider the possibility of nominating a new S-124 Correspondence Group Leader | | Done |
| | S-124 | HSSC9/44 | S-124CG to reinvigorate the liaison with S-100WG and NIPWG | NIPWG-5, S-100WG-3 | |
| 7.2 IMO | | | | | |
| | IMO activities affecting HSSC | HSSC9/45 | HSSC to ensure that the HGDM monitors the on-going consideration by IMO Facilitation Committee (FAL) of the single-window concept | HSSC-10 | |
| | Maritime Services (former Maritime Service Portfolio) | HSSC9/46 | NIPWG to coordinate for the HSSC WGs, the actions related to the development and the use of a high level HGDM template for Maritime Services and provide recommendations on the way forward at the next HSSC meeting | NIPWG-5, HSSC-10 | |
| | Cyber security | HSSC9/47 | HSSC tasked the S-100WG/ENCWG to continue monitoring the development of guidance on cyber security and advise on appropriate actions in relation with the development of the S-100 data protection scheme | HSSC-10 | |
| 7.3 IALA | | | | | |
| 7.4 IEC | | | | | |

| AGENDA ITEM | SUBJECT | ACTION No. | ACTIONS (in bold, action by) | TARGET DATE/EVENT | STATUS (at 18 December 2017) |
|--|---------------------------------|------------------------------|--|------------------------------|------------------------------|
| | IEC activities affecting HSSC | HSSC9/48 | IEC to consider the possibility of presenting the typical timetable to develop a new major revision of ECDIS at the next S-100WG meeting | S-100WG-3 | |
| | IEC TC80 Product Specifications | HSSC9/49 | HSSC allocated S-421 to S-430 as IEC TC80 product specification identifiers (Route Plan, ...) | | Decision |
| 7.5 CIRM | | | | | |
| 7.6 Inland ENC Harmonization Group (IEHG) | | | | | |
| | Bathymetric Inland ENC | HSSC9/50 | HSSC allocated S-402 to the Bathymetric Inland ENC | | Decision |
| 7.7 ISO | | | | | |
| 7.8 OGC | | | | | |
| | OGC activities affecting HSSC | HSSC9/51 | HSSC encouraged IHO MS to participate in the OGC Marine Domain WG | | |
| | OGC activities affecting HSSC | HSSC9/52 | HSSC encouraged regional IHO MS participation in OGC TC meetings either in person or via web conference | | |
| 7.9 IOGP | | | | | |
| 7.10 JCOMM | | | | | |
| 7.11 RTCM | | | | | |
| 7.12 ICPC | | | | | |
| | Cables and Deep Sea Mining | HSSC9/53 (Former HSSC8/68) | ICPC IHO Working Group (former Focus Group) to resubmit a proposal to NCWG for adapting S-4 charting specifications for submarine cables taking into account deep sea mining (amendments to S-4 B-443.8). | Sept. 2018 for NCWG-4 | |
| | GEBCO 2030 | HSSC9/54 (Former HSSC8/69) | ICPC/IHO Working Group invited to comment on the GEBCO roadmap for “Seabed 2030” (seabed2030.gebco.net/). | Jan 2018 | |
| | ICPC-IHO Action Plan | HSSC9/55.1 (Former HSSC8/70) | ICPC IHO Working Group to consider in liaison with the IHO Sec. the development of a roadmap. | HSSC-10 | |
| | Crowd sourcing | HSSC9/55.2 | ICPC to report on the progress made on the development of crowd sourcing policies and data release. | HSSC-10/IRCC-10 | |

| AGENDA ITEM | SUBJECT | ACTION No. | ACTIONS (in bold, action by) | TARGET DATE/EVENT | STATUS (at 18 December 2017) |
|---|--|----------------------------|--|-------------------|------------------------------|
| 7.13 DGIWG and NATO GMWG | | | | | |
| | DGIWG and NATO GMWG activities affecting HSSC | HSSC9/56 | HSSC Members to report to the IHO Sec. on the possibility of designating a liaison officer with DGWIG and NATO GMWG for matters affecting HSSC (development of AML S-501 to S-525 Product Specifications in particular) | HSSC-10 | |
| 8. Review of new developments and other information papers | | | | | |
| 9. Liaison with External Stakeholders | | | | | |
| | ECDIS Stakeholders's Forum | HSSC9/57 | HSSC will consider at HSSC-10 the need and possibility of arranging an ECDIS Stakeholder's Forum in 2019 or later. | HSSC-10 | |
| 10. Review and Endorsement of HSSC Work Plan and List of Actions | | | | | |
| | Status report on IHO Publications on Standards, Specification and Guidelines | HSSC9/58 | IHO Sec. to report on the availability of the Spanish version of M-3 (updated until June 2017) | Dec. 2017 | |
| | Guidelines and Guidance IHO Documents | HSSC9/59 | S-100WG/ENCWG to submit a proposal opening the possibility of establishing G-series in the list of IHO Publications, for guidelines, and guidance documents. | HSSC-10 | |
| | Status of IHO Publications | HSSC9/60 (Former HSSC8/75) | IHO Member States to provide their additional requirements, if any, and contributions for translation in French and/or Spanish of IHO Publications (Doc. HSSC9-10A refers). | Permanent | |
| 11. Any other business | | | | | |
| 12. Date & Location of the next meetings | | | | | |
| | HSSC-10 HSSC-11 HSSC-12 | HSSC9/61 | HSSC welcomed the confirmation from Germany for hosting HSSC-10 (Rostock, May 2018) and South Africa for hosting HSSC-11 (Cape Town, May 2019) as well as the UK provisional offer for hosting HSSC-12 (May 2020). | | Decision |